Public Policies Supporting the Transition from the Oil and Gas Industry to a Sustainable Blue Economy

The Case of the Cluster GCE NODE in Agder, Norway

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Foreword

This thesis is submitted as the final product of the master's programme in political science and management at the University of Agder. Although, writing this thesis has been demanding it has also been very instructive. I would like to extend a greeting to everyone who has supported me on this instructive and demanding journey.

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Abstract

In 2019, the European Union (EU) introduced a comprehensive strategy called the '*European Green Deal*' to become the first climate-neutral continent by 2050. On the path toward this goal, several policy instruments have been introduced to reduce emissions by at least 55% by 2030, compared to 1990 levels (European Commission, 2019, p. 2-4). One of the primary sources of climate regulation toward this objective is within the oceans (Regjeringen, 2017, p. 102). Therefore, a transition to a sustainable blue economy can be an essential climate measure and an important new source of income for Norway (Regjeringen, 2021a). As the oil and gas industry is one of the primary ocean industries in Norway and the most profitable relative to value creation, the region of Agder has developed world-leading competence in the supplier industry for the oil and gas industry (Forskningsrådet, 2020). This puts Norway and the region of Agder in a good position for the transition to a sustainable blue economy (Regjeringen, 2017, p. 7).

But which policy instruments produced at the multinational (EU), national (Norway) and regional (Agder) levels are currently the most important in supporting the transition from the oil and gas industry to a sustainable blue economy?

To explore what role public authorities at the various levels play in this transition, document analysis is used, and a semi-structured interview with an informant from the industry-driven cluster GCE NODE is conducted. The document analysis includes an analysis of the policy instruments introduced by categorizing them using the NATO Taxonomy developed by Hood & Margetts (2007).

The result shows that the EU lay the basis for this transition by legislating the objective of becoming a climate-neutral society by 2050 in the Climate Law. Norway has also committed to this transition by legislating the aim of the EU in the Norwegian Climate Change Act. The region of Agder will facilitate this transition through increased investment in research, development, and innovation, focusing on project development and developing collaboration forums with relevant actors to gain increased knowledge and competence on the potential of a sustainable blue economy.

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1.0 Introduction

Climate change represents a major challenge for the world. Energy production, industry, transport, buildings, and agriculture are all adding CO_2 into the atmosphere. Climate change implies long-term shifts in temperature and weather patterns. Human activities that originate from the industrial revolution are responsible for climate change through the combustion of coal, oil, and gas. This has led to the Earth becoming 1.1°C warmer than before industrial levels. Climate change affects many of the critical resources necessary for us humans to live. For example, our health, ability to grow food, safety, and work-life are affected by climate change. At the same time, the world is experiencing more droughts, water scarcity, severe fires, and rising sea levels (United Nations, n.d.a).

Therefore, the world must stand together in taking responsibility for limiting emissions in the atmosphere to reduce global warming. In 2019 the European Union (EU) introduced the '*European Green Deal*' to become the first climate-neutral continent by 2050. This comprehensive strategy affects all sectors of the European economy and contains several policies to reduce emissions by at least 55% by 2030, compared to 1990. This objective is also legally binding through the European Climate Law (European Commission, 2021b, p. 1).

Among several actions on the path to becoming climate neutral in 2050, the European oceans are seen as one of the primary sources of climate regulation. The oceans offer clean energy and sustain the need for oxygen and food, among other critical resources necessary for us humans to live. In 2014 the EU launched a strategy for '*blue growth*', which supports sustainable growth within the marine and maritime sectors (Regjeringen, 2017, p. 102). The EU has taken this strategy further by shifting the focus from blue growth to a sustainable blue economy to put the blue economy into the Green Deal. This new approach to a sustainable blue economy encompasses all industries and sectors in the EU that are related to the ocean, seas, and coast and gives an understanding of the importance of the various sectors across the blue economy (European Commission, 2021a, p. 1-3).

This includes activities in both the established blue economy sectors and in the emerging blue economy sectors:

> Activities in the *established blue economy sector* consist of seven sectors, which are marine living resources (primary production and, processing and distribution of fish products), marine non-living resources (oil & gas, and other minerals), marine renewable energy (offshore wind), port activities (cargo, warehousing, port and water projects), shipbuilding and repair (shipbuilding, equipment, and machinery), maritime transport (passenger and freight transport, and services), coastal tourism (accommodation, transport, and other expenditure) (European Commission, 2021f, p. 34). Activities in the *emerging blue economy sectors* consist of marine renewable energy, such as floating offshore wind, wave and tidal energy, floating solar energy, and offshore hydrogen. Other sectors and activities are the blue bio-economy, marine minerals, desalination, maritime defense, security, and surveillance (European Commission, 2021f, p. 78).

For some countries, this transition is particularly important and challenging because of the importance of the economic sector producing high rates of CO_2. Norway is among these countries, since the Norwegian oil and gas industry is the most important resource of the country in terms of revenue to treasury, investments, and share of total value creation (Regjeringen, 2021a), but it is also one of the largest sources of greenhouse gas emissions after transport (Miljødirektoratet, 2021).

The oil and gas industry are one of the primary ocean industries in Norway, followed by the maritime industry and seafood industry. In Norway's ocean strategy, the Norwegian government sets the objective to be the world-leading ocean nation. To achieve this goal, the government will, on the one hand, develop the Norwegian ocean industries based on existing industries. On the other hand, invest in research, innovation, skills, and technology development to create new sustainable industries. This investment is also considered to be crucial for maintaining and developing strong local communities (Regjeringen, 2017, p. 6-13).

It is not only the multinational and national levels that play a role in this transition, but regional or local levels are expected to play an active and important role (Regjeringen, 2017, p. 15). However, so far little attention has been paid to exploring the role of regions in this transition. The goal of this thesis is to examine the case of the Agder region, which is located in South Norway. The region has a world-leading environment for high-technological equipment deliveries to the oil and gas industry (Forskningsrådet, 2020). The transition involves a complex ecosystem of public and private organizations. In the specific case of Agder, a prominent economic actor is the Global Center of Expertise Node (GCE NODE), which is an industry-driven cluster in Agder for ocean technologies that was established in 2006 to assemble joint competence around deliveries to the oil and gas industry. The objective of the GCE NODE is to increase competitiveness in existing markets (oil & gas) and transfer competence and technology to new emerging markets "*blue growth*" (GCE NODE, n.d.a).

Transferring competence and technology to a sustainable blue economy can be a vital climate measure and an important new source of income for Norway. Therefore, the capability to transition effectively is not only a concern for the private sector or the companies in the oil and gas industries alone. Instead, public authorities at multiple levels - multinational, national, and regional - are expected to play an active role. Several policy instruments have been introduced where impacts and effectiveness are unexplored, especially at the regional level. Therefore, it is essential to investigate which policy instruments have been introduced and their effects on the transition from existing markets (oil & gas) to new emerging markets within a sustainable blue economy.

1.1 Research Questions and Goals

The study will address the following research questions in the specific context of the region of Agder in Norway and looking at the network GCE NODE in particular:

- **Question 1:** According to the actors involved in the GCE NODE, which policy instruments produced at the multinational (EU), national (Norway) and regional (Agder) levels are currently the most important in supporting the transition from the Oil and Gas Industry to a Sustainable Blue Economy?
- **Question 2:** How can these types of policy instruments be categorized, using the "NATO - *nodality*, *authority*, *treasure*, and *organization*" Taxonomy (Hood and Margetts, 2007)?

Responding to these questions will help understand what type of role the public authorities at multiple levels play in the transition from traditional oil and gas industry to a sustainable blue economy, and what types of policy instruments that are effective for the region of Agder in pushing this transition forward.

2.0 Background

2.1 Historical Timeline with Actions on Addressing Climate Change

An interactive timeline on the European Union's (EU) website shows that negotiations on climate change started in Stockholm in 1972. The United Nations Conference on the Human Environment was arranged by the United Nations Organization (UN). This was the first conference focusing on challenges that affect the international environment. Further, the first World Climate Conference took place in Geneva in 1979 with the attendance of scientists worldwide with multidisciplinary knowledge, which led to the establishment of the World Climate Programme (European Parliament, n.d.).

The World Climate Programme consists of three major international actions to cope with the complexity of climate change. The program's first action was to build knowledge on the problems of climate science, where the focus was on improving the understanding of climate change and improving the ability to predict natural variations that occur within the climate. Then, the second action was aimed to produce a new set of climate information throughout the world, with the purpose, to improve several services that affect the climate, especially in developing nations. The final action focused on understanding the integrated impact of climate change and variability that affect the society (World Meteorological Organization, 1979, p. 8-9).

In December 1983, the Norwegian representative at the UN and former prime minister Gro Harlem Brundtland was asked to chair a World Commission on Environment and Development by the UN Secretary-General Javier Pérez de Cuéllar. Brundtland is known for developing the broad political concept of sustainable development. Recommendations in the commission's report "*Our Common Future*", also known as Brundtland's report published in London in 1987 led to the Earth Summit in Rio de Janeiro in 1992 (Norway in the UN, 2017).

The main objective of the Earth Summit focused on producing a broad agenda and a new model for international actions that were aimed at questions about environmental and development challenges that could assist international cooperation. The conference concluded that the broad

political concept of sustainable development could be achieved at several levels - local, national, regional, and international (United Nations, n.d.b).

Before The United Nations (UN) invited governments all around the world to Rio de Janeiro in 1992, the Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization (WMO) and UN Environment Programme (UNEP) in November 1988. The main objective of the Intergovernmental Panel on Climate Change is to provide scientific information about climate change to governments at several levels that could be used in developing climate policy. The IPCC has contributed several vital reports, mainly the information on the Global Warming of 1.5ºC, published in 2018. The report contains impacts of global warming of 1.5°C above pre-industrial levels and pathways to reduce global greenhouse gas emissions (IPPC, n.d.).

In 1994 the United Nations Framework Convention on Climate Change enters (UNFCCC) into force. The main objective with the Convention is:

> Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner (United Nations, 1992, p. 3).

The Kyoto Protocol was established in 1997 and entered into force in 2005. The Kyoto Protocol binds developed countries to limit and reduce greenhouse gas emissions through binding emission reduction targets. These countries are primarily responsible for the high rate of greenhouse gas emissions (United Nations, n.d.c). In 2005 the EU Emission Trading System Scheme (ETS) was also adopted. The Emissions Trading System aims to reduce the industry's carbon emission by obliging companies to hold a permit for each tonne of CO_2 they emit. Companies can either be allocated allowances or buy them through auctions (Mld. St. 13 (2020-2021), p. 157). Norway took responsibility to limiting emissions in 1991 when the government by-law introduced CO_2 taxes, and Norwegian companies have participated in the EU Emissions Trading System (EU ETS) since 2008 (Mld. St. 13 (2020-2021), p. 20).

In 2015 the Paris Agreement was adopted and entered into force in 2016. This is a binding agreement where each country submits ambitious climate goals every fifth year containing actions that will reduce their greenhouse gas emissions. The agreement's objective is to limit global warming to well below 2ºC, preferably to 1.5 degrees Celsius, compared to levels before the industrial revolution (United Nations, n.d.d).

The European Union (EU) presented the European Green Deal in 2019 to make Europe the first climate-neutral continent globally. This comprehensive strategy focuses on transferring the EU into a modern, resource-efficient, and competitive economy. In the plan, the EU has adopted several proposals that affect all sectors of the European economy. For example, actions targeting cleaning the energy system require higher shares of renewable energy and greater energy efficiency. To achieve the objective of becoming the first climate-neutral continent, all of the 27 members of the EU, including Norway, through the Agreement on the European Economic Area (EEA), have committed to reducing emissions by at least 55% by 2030 compared to 1990. This objective is also legally binding through the European Climate Law, which entered into force in 2021 (European Commission, n.d.).

A review of a historical timeline of measures targeting climate actions shows that, to a great extent, it is the supranational institutions, especially the United Nations and the European Union, that have taken a greater responsibility to introduce and implement actions against climate change. However, this timeline also shows that little attention is paid to the regional level.

3.0 Theoretical part

This section presents the theoretical framework for the focus of this thesis. To study the transition process previously described and the role of public authorities, it is essential to consider which public authorities play an important role and what kind of policy instruments they introduce. Two streams of literature are particularly relevant to building arguments and contribute to analyzing the findings in the empirical data and analysis part, namely research on the term multi-level governance (Hooghe & Marks, 2003) and the NATO taxonomy (Hood & Margetts, 2007). A description of the multi-level governance will explain that collaboration across borders has become more common in recent decades as the world faces more complex issues, so-called '*wicked problems'* (Rittel & Webber, 1973). A description of the NATO taxonomy will explain what policy instruments public authorities at several levels can introduce to change the behavior of individuals or organizations.

3.1 Multi-level Governance

In recent decades, new forms of governance have gained increased attention. Mainly, the focus has been on that dispersion of decision-making, to a greater extent, has been moved away from the central states and been dispersed across multiple centers of authority (Hooghe & Marks, 2003, p. 233). Based on this, multi-level governance is a concept that has become increasingly popular and familiar as the world faces more complex issues, so-called '*wicked problems'* (Rittel & Webber, 1973).

During the industrial revolution, efficiency was considered one of the dominant ideas, focusing on how specific tasks could be solved by using the lowest possible degree of resources. Since this, the term wicked problems have emerged, as the world at large has learned to ask more ethical questions about what is right or wrong and, at the same time, emphasize a greater focus on what consequences of different actions may entail. With this focus, there has been an increased emphasis has also been on understanding how social processes are drivers that can connect open systems to large and interconnected networks of systems. An example of a wicked problem is societal problems. Rittel and Webber (1973) distinguish these problems from other issues that often concern scientists or

engineers. The issues that affect scientists or engineers often include definable or clarifying characteristics that make them easier to solve. This is not the case for societal problems, which will further be called wicked problems. These problems often depend on political judgment for resolution, as they have issues that must take into account several policy areas simultaneously. It is expressed that these problems are never solved, but they can be re-solved. Therefore, Rittel and Webber use the term resolution instead of solution (Rittel & Webber, 1973, p. 158-160).

These wicked problems have several characteristics; They have, among other things, no definitive formulations, which means that one has to strive to develop a comprehensive overview of all possible solutions ahead of time. In these cases, problem understanding and problem resolution are highly associated with each other to find a solution. With wicked problems, there are no specific criteria for understanding these problems, nor is it no ending to causal links that make it easier to be able to solve these problems. Every performed solution to a wicked problem can involve a wave of consequences that can last an unbounded period. Therefore, can solutions only be described as good or bad as these leave traces that cannot be undone (Rittel & Webber, 1973, p. 161-164).

As it has become more complex to find solutions to solving wicked problems, new forms of governance have gained increased attention. A concept of governance where the dispersion of decision-making has been dispersed across multiply centers of authority is multi-level governance. This concept can be defined as "*a system of continuous negotiation among nested governments at several territorial tiers - supranational, national, regional, and local*" (Hooghe & Marks, 2003, p. 234).

Gary Marks (1993) developed the concept of multi-level governance based on a study of developments in the structural policy of the European Union (EU). In the definition mentioned above, the term '*multi-level*' refers to the increased interdependence of governments, which are operating at different territorial levels. The term '*governance*' refers to the increased interdependence that has emerged between governments and non-governmental actors at various territorial levels (Bache & Flinders, 2004, p. 3).

Wielding of authority that is extended over large territorial areas has several benefits, among other things, exploiting economies of scale in the provision of public goods, more efficient taxation, and facilitation redistribution of taxes. Such large jurisdictions are still minor efficient when imposing single policies on heterogeneous territorial areas (Hooghe & Marks, 2003, p. 235). Multi-level governance is a form of governance that is more adaptable to varying scale efficiencies from policy to policy than a centralized state. It can be custom designed to a greater extent to deal with such variations, unlike the centralized government, which is more insensitive to this phenomenon. Another criticism of the centralized government is its unsuitability for accommodating diversity (Hooghe & Marks, 2003, p. 235-236).

Researchers in political science have responded differently to this phenomenon, leading to two types of how multi-level governance should be structured. Federalism scholars have applied this approach to focus on power-sharing among and within states. In contrast, scholars of international relations have extended theories of international regimes to include diffusion of authority within states (Hooghe & Marks, 2003, p. 234). Still, researchers have the same perception that the dispersion of governance across multiple jurisdictions is more flexible than the concentration of governance in one jurisdiction (Hooghe & Marks, 2003, p. 235).

3.2 Types of Policy Instruments

To understand what kind of policy instruments public authorities at multiple levels have introduced, a description of the NATO taxonomy developed by Hood and Margetts (2007) will follow in the following sections. The NATO taxonomy describes four types of policy instruments that the government can use as detectors and effectors: *nodality*, *authority*, *treasure*, and *organization* (Hood & Margetts, 2007, p. 5).

This thesis focuses on how public policies support the transition to a sustainable blue economy. On the one hand, the government can use policy instruments as '*detectors*' to collect information. On the other hand, the government can use policy instruments as '*effectors*' to change behavior. Therefore, an emphasis will be on the government's tools for 'effecting' when describing the policy instruments (Hood & Margetts, 2007, p. 3-5). The government can use the following policy instruments in a '*particular*' or '*general*' way. If the government uses the policy instruments in a particular way, they are aimed at a specific or named individual. If the government is using the policy instruments generally, they target the world at large. The government can also use the policy instruments in a '*group-targeted*' way when targeting a particular group (Hood & Margetts, 2007, p. 7).

3.2.1 Instruments of Nodality

The *instruments of nodality* include that the governments have a central position by being in the middle of a social network (Hood & Margetts, 2007, p. 21). The 'effecting' instruments of nodality focus on the government's several ways to share information with the population (Hood & Margetts, 2007, p. 28). The government's most particular form of sharing information is through bespoke messages. Here, the government can use direct notifications, unprompted query responses, and prompted query responses to adapt the communication to whomever it individually concerns. When the government uses direct notification, people do not need to seek after information because the government invests in giving out information itself by approaching the people about a particular issue (Hood & Margetts, 2007, p. 31).

The government can also share information using an unprompted query response and prompted query response. The government can share information as an unprompted query response by being available for individuals through general-purpose inquiry points. Here individuals can reach out to the government concerning a difficult question about a piece of the particular information that suddenly appears. The government can also invite individuals to seek enlightenment by publishing the available information that the government possesses. This method is named prompted query response. For example, the government allows people to search in multiple registers for information of relevance. A more particularly form for this is using operated advice services to counsel about a particular issue area (Hood & Margetts, 2007, p. 32-33).

By using group-targeted messages, the government can focus on a particular group when sharing information rather than on whomever the information particular concerning. There are three main types of broadcast messages: privished messages, packaged self-serve messages, and propaganda (Hood & Margetts, 2007, p. 34-35). The privished messages include that the government publishes something to a small circle. This includes that people who want to build knowledge on a piece of specific information must make an effort to gain access to it, for example, by a particular code or password for accessing the relevant report or statement. The packaged self-serve messages are official publications that the government publishes on its website, for example, official publications developed by various government bodies with pertinent information. This includes minor requirements for gaining access. Still, this requires an initiative to find the specific information. Propaganda is another method that authorities use when they want to persuade a person's perception of something. There are no requirements for effort or knowledge for an individual in such cases, as the information is aimed at a mass audience (Hood & Margetts, 2007, p. 35-38).

3.2.2 Instruments of Authority

The *instruments of authority* include that the government, through legal authority, can demand or prohibit linked to a token of authority. The 'effecting' instruments of authority focus on elements that can change behavior. When 'effecting' with instruments of authority, the government distinguishes between 'particular' and 'general' applications, where the former is named direct tokens. Here the government relates primarily to specific and named individuals when wielding

authority. The latter is called blanketed tokens, where the government's wielding authority applies to everyone (Hood & Margetts, 2007, p. 56-57).

Directed tokens consist of certificates, conditional tokens, and enablements. A certificate can be used to confirm the characteristics of an individual or object possessed. For example, the government can establish common standards or a seal of approval for allowing different companies to operate with a particular business (Hood & Margetts, 2007, p. 57-58). While certificates include low involvement of constraint, conditional tokens and enablements involves more medium forms of constraints. A conditional token is an obligation by the government to perform an action based on a causal link. In particular cases, the government has guarantees programs for industries. The government can use enablement to regulate business. For example, the government can allow a specific business to continue its otherwise prohibited activity. This is considered a medium constraint as it only permits the company to continue and does not force it to perform the activity. Enablements can be seen as limited or unlimited and qualitative or quantitative (Hood & Margetts, 2007, p. 59-61). Enablement can also be generalized if they are transferable. This general form for enablements is called open permits (Hood & Margetts, 2007, p. 59-61).

Constraints are a more constraining form of direct token that governments use when demanding or prohibiting an activity. The government uses negative constraints when wielding prohibitions on particular individuals or objects. When the government is demanding positive actions, they use positive constraints. The government can also use its legal authority to constrain against a background of a conflict or an eventual potential conflict. This method is called an arbitrament (Hood & Margetts, 2007, p. 62-64).

3.2.3 Instruments of Treasure

The *instruments of treasure* include positive incentives public authorities can use to secure information or change behavior (Hood & Margetts, 2007, p. 78). The ‘effecting’ tool for instruments of treasure focuses on the fact that the government can exchange its treasures for some goods or services or give them away without requiring anything in return if the receiver, for example, deserves it or fulfills the criteria (Hood & Margetts, 2007, p. 85).

As a particular form of instrument of treasure, the government can use customized payments to shape behavior. Here, the government customizes payments to the circumstances of a particular individual. Another method of customized payments is the use of contracts, where the government customizes payments to specific individuals or organizations. This method is also conditional to the extent that the government requires something in return. The government also uses contracts to encourage people to perform particular activities that they usually would not do, sometimes also to 'distance' itself from specific operations that can be controversial. Through contracts, the government customizes payments to individuals or organizations, with requirements of conditions to be fulfilled. For example, grants or loans. Contracts can have substantive or procedural conditions. An example of procedural conditions is the matching requirements. Under such conditions, the grantee has to find a proportion of the money required for a specific purpose from its own resources or with help from other sources. This ensures that the grantee has incentives to avoid wasting the money received from the government. Through transfers, the government can also transfer its treasures to particular individuals without requiring any conditions to be met (Hood & Margetts, 2007, p. 85-88).

A less particularized method for the government to allocate financial resources is through the use of conduits. In these cases, the government uses intermediaries to move treasure to its final receiver. These intermediaries can be used for exchanges and unconditional payments. The government can find it convenient for several reasons to conduit payments through intermediary organizations. For example, the government uses intermediaries to avoid getting too closely involved in controversial political questions about how much to pay to whom. A different form for conduits is where the government uses companies or organizations as channels for collecting several forms of taxes (Hood & Margetts, 2007, p. 89-90).

As more general forms for instruments of treasure, the government can use open payments to shape behavior. Then, the government is less concerned about the identity of the receiver of the treasures. This process for disbursing treasure is rare. The government can also provide payments in exchange for something in return through bounties, where the condition is not specified. For example, the

government can pay bounties to encourage organizations to perform particular activities (Hood & Margetts, 2007, p. 91-92).

3.2.4 Instruments of Organization

The instruments of organization include those material or intangible resources that the government is in direct possession of or is available to use to change behavior (Hood & Margetts, 2007, p. 102). For the 'effecting' tools of organizations, the government spends its resources in the form of direct action or treatment. Here, the government can use individual treatment, referring to direct action targeting individuals or organizations. This can be by physically marking an item, storing, moving, or distributing some items. It may also be processing an item or changing its state (Hood & Margetts, 2007, p. 106). The government can also use group treatment, where direct actions are aimed at a specific group, or at-large treatment, which applies to whomever it may concern or everyone (Hood & Margetts, 2007, p. 114).

4.0 Research Design and Methods

A research design is a plan for how the project will be performed. Oddbjørn Bukve (2021) presents two priorities for how the method is performed. Namely, what purpose does the project have and how to construct data to answer the question of the thesis (Bukve, 2021, p. 83). Therefore, this section presents the purpose of this thesis, the choice of research design, and a description of what constitutes data in this study and how this information was gained and analyzed.

4.1 Case Study

The purpose of this thesis aims to investigate which policy instruments have been introduced and their effects in the transition from traditional oil and gas markets to new emerging markets within a sustainable blue economy. Several policy instruments have been introduced at a multinational, national, and regional level, where impacts are to some extent unexplored, especially at the regional level. Therefore, this thesis will shed a more detailed focus on the regional level, specifically the region of Agder and the case of GCE NODE. Based on the research question and the purpose of this thesis, this case study is exploratory. In exploratory case studies, the objective is to develop relevant hypotheses and propositions for further inquiry (Yin, 2018, p. 40).

Robert K. Yin (2018) defines the scope of a case study as an empirical method that investigates a contemporary phenomenon in depth and within its real-world context, especially when these boundaries between the phenomenon and context are not necessarily clearly evident (Yin, 2018, p. 45). This thesis is an embedded, single-case study design. The case addresses the policy instruments that public authorities at a multinational, national, and especially the regional level, focusing on the region of Agder, have introduced to affect the transition to a sustainable blue ocean. The public authorities at several levels, namely the EU and Norway, are several subunits of analysis (Yin, 2018, p. 88). With this focus, this thesis investigates characteristic features of policy instruments that are being introduced in this transition for the different levels, with a specific focus on the region of Agder (Bukve, 2021, p. 127-128).

This can also be described by using George and Bennett's (2005) two basic requirements for a case study. This includes that the case study must be 'structured' and 'focused'. A case study is structured by asking a set of standardized and general questions for each case. By asking questions about which policy instruments were produced at EU, Norway, and Agder in the transition from the traditional oil and gas industry to a sustainable blue economy will contribute to guiding and standardizing the data collection in the empirical data and analysis section. A case study is focused by undertaking a specific research objective and a theoretical focus. The research question is theoretically oriented by using the NATO taxonomy developed by Hood and Margetts (2007) to describe what policy instruments public authorities have access to use to 'detect' and 'effect' social behavior. The lenses developed by Hooghe and Marks (2003) about multi-level governance will provide an understanding of the increased importance of dispersion of authority across several jurisdictions to solving 'wicked problems' (Rittel & Webber, 1973), such as dealing with global warming (George & Bennett, 2005, p. 67-70).

4.2 Data Collection

In this thesis, the primary sources for collecting information about the phenomenon have been analyzing documents and interviews. Denzin (1970) developed the principle known as triangulation (Maxwell, 2009, p. 236), which focuses on using multiple methods and sources of information to collect information will better assess the generality of the developed explanations of the phenomenon. It will also reduce the risk of chance associations and systematic biases due execution of a single method (Maxwell, 2009, p. 245).

The objective of analyzing documents has been to map, classify and assess the relevance of different policy instruments that public authorities have introduced on the various levels of the transition from oil and gas production to a sustainable blue economy. By analyzing official publications submitted by the European Union, the Norwegian government and the region of Agder have contributed to mapping and classifying the policy instruments that have been introduced in this transition for the various levels. Analyzing documents has also contributed to assessing the

relevance of these policy instruments by studying contextual information from official and unofficial reports.

Much of the information already exists in this area through the availability of official publications. This thesis also relies on other qualitative insights to better understand the relevance of the policy instruments introduced at the various levels, especially at the regional level. To the extent that the region of Agder is less explored, an interview with a central employee in the GCE NODE, will be conducted as a contribution to attempt to provide more knowledge about the relevance of these policy instruments introduced in this transition for the region of Agder. Conducting an in-depth interview with an expert in this area will also contribute to an increased sense of what documents have been particularly important for the focus of this transition and what impact these policy instruments have had on the region of Agder. A more descriptive description of the document analysis and the interviews will follow in the following sections.

4.2.1 Document Analysis

One of the strengths of a case study is dealing with various functions of evidence (Yin, 2019, p. 43). Bowen presents five specific functions where documents can provide a variety of purposes for the research. Firstly, documents can provide data on the context within the particular research area. Secondly, the information in the relevant document may suggest some questions or situations that need further investigation as part of the research. In these cases, interviews can be used as complementary information. Thirdly, data and insights derived from documents can provide supplementary research data. Fourthly, documents can trace change and development. Finally, documents can be analyzed to prove findings or disprove evidence from other sources of information (Bowen, 2009, p. 29-30).

In the following sections, a description of the documents used to analyze what policy instruments are being introduced at the various levels will follow. The documents mentioned below are the currently most influential documents for the different levels of this transition.

The documents used to analyze what policy instruments the EU has introduced in this transition are narrowed down to the '*European Green Deal*' (European Commission, 2019), '*Offshore Renewable Energy Strategy*' (European Commission, 2020a), '*a new approach for a sustainable blue economy in the EU*' (European Commission, 2021a), and the '*Fit for 55-Package*' (European Commission, 2021b). These documents are accessible for everyone, as they are published on the website to the European Commission. This is actually mentioned as one of the advantages of document analysis, where many documents are accessible through the internet. This makes the research method less expensive than other research methods, as much of the data or information is already collected. Still, the information and quality within the document have to be interpreted (Bowen, 2009, p. 31).

In this thesis, the European Green Deal strategy is used as an overall document for describing the policy measures for the EU in the transition to a sustainable blue economy. This strategy includes several actions targeting the economic sector in Europe with the objective of Europe becoming a low-emission society by 2050. On the path to achieving this goal, the EU has published a new approach for a sustainable blue economy. This document is a part of the European Green Deal strategy and focuses, among other things, on how to make the ocean one of the climate regulations in Europe. This is a helpful document to describe the main priorities for the EU in the ocean areas. An essential resource for this is, for example, renewable energy. As a part of the energy sector in the European Green Deal strategy, the EU has published a strategy for offshore renewable energy strategy. This document is helpful in describing the objective of the development of offshore renewable energy in the EU. In addition to these documents, the EU has presented the Fit for 55-Package with policy instruments for achieving what can be called the subgoal of the European Green Deal objective. The objective of the subgoal is to reduce greenhouse gas emissions by 55% by 2030 compared to 1990 levels. This document has been the central document to describe the policy instruments that the EU has introduced in this transition to a sustainable blue ocean.

The documents used to analyze what policy instruments Norway has introduced in this transition are narrowed down to the '*Regjeringens havstrategi*' (Regjeringen, 2017), and the following white

papers '*Klimaplan for 2021-2030*' (Meld. St. 13 (2020-2021)) and '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*' (Meld. St. 36 (2020-2021)).

The '*Regjeringens havstrategi*' can be translated from Norwegian to English as the '*The Norwegian Government's Ocean Strategy*'. This document has been used to describe the objectives and the focus areas of the oceans on the Norwegian continental shelf. This document has been helpful in understanding better how Norway will use its ocean resources to become the leading ocean nation in the world. Essential focusing areas are to both focus on existing maritime industries and stimulate research, innovation, and technology development to create new sustainable initiatives. This document does not produce any policy instruments. Therefore, the focusing areas presented in this document have to be examined further.

The white papers '*Klimaplan for 2021-2030*' and '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*' present policy instruments for these focusing areas. These documents were accessible by searching through the register for documents on the Norwegian government's website. The '*Klimaplan for 2021-2030*' presents several policy instruments regarding climate action for the period of 2021-2030, while the '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*' builds further upon the climate plan and identifies how Norway can use its energy resources to create growth and new jobs. These documents present several policy instruments which are not necessarily relevant to the purpose of this thesis. Therefore, as a process after the selection of which documents are central, a large part of the work has been to analyze the documents to find relevant data that applies to the purpose of this thesis. This includes that policy instruments located in the '*Klimaplan for 2021-2030*' are delimited to focus on the Norwegian government's plan to reduce emissions for the industries that are part of the EU Emission Trading System. This is based on the basis that a large part of the oil and gas business is connected to the EU Emission Trading System. In addition to policy instruments in this area, information about the most important elements in the applicable Norwegian climate policy has been used to locate policy instruments. This document has also been used to describe Norway's contribution and collaboration with the EU and worldwide. Essential policy instruments that are located from the '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*' have been delimited to

focus on offshore wind and mineral extraction on the seabed as focusing areas on a sustainable blue economy.

The documents used to analyze what policy instruments the region of Agder has introduced in this transition are the '*Regionplan Agder 2030*' (Agder fylkeskommune, 2019) and the '*Handlingsprogram for 2021-2024*' (Agder fylkeskommune, 2021). These documents are available at the website to the Agder County Municipality.

The '*Regionplan Agder 2030*' describes focus areas and perspectives for the region toward 2030. This document has been helpful to better understand the challenges and opportunities the region of Agder will experience towards 2030, especially with a greater focus on the supplier industry to the oil and gas industry. As a complementary document to this, the region of Agder has published the '*Handlingsprogram for 2021-2024*' covering policy instruments toward 2030. This document is based on the three perspectives presented in the '*Regionplan Agder 2030*' and includes business development and collaboration on new jobs, climate, environment, living conditions, gender equality, inclusion, and diversity. As with the other documents mentioned above, these documents also require analysis to find the relevant information for the purpose of this thesis. Therefore, to locate the policy instruments introduced in the '*Handlingsprogram for 2021-2024*', the document is delimited to focus on policy instruments regarding business development and collaboration on new jobs, as these policy instruments can be directly linked to the purpose of this thesis.

An overview of the current relevant documents in this transition for the various levels:

	Title of Document	Published	Body Responsible	References to the Documents
The Multinational Level (The EU)	*The European Green Deal*	2019	The European Commission	https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF
	The Offshore Renewable Energy Strategy	2020	The European Commission	https://ec.europa.eu/energy/sites/ener/files/offshore_renewable_energy_strategy.pdf
	A new approach for a sustainable blue economy in the EU	2021	The European Commission	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0240&from=EN

	The 'Fit for 55-Package'	2021	The European Commission	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN
The National Level (Norway)	*'Regjeringens havstrategi'*	2017	The Ministry of Petroleum and Energy The Ministry of Trade, Industry and Fisheries	https://www.regjeringen.no/contentassets/097c5ec1238d4c0ba32ef46965144467/nfd_havstrategi_uu.pdf
	The white paper 'Klimaplan for 2021-2030'	2021	The Ministry of Climate and Environment	https://www.regjeringen.no/contentassets/a78ecf5ad2344fa5ae4a394412ef8975/nn-no/pdfs/stm202020210013000dddpdfs.pdf
	The white paper 'Energi til arbeid - langsiktig verdiskaping fra	2021	The Ministry of Petroleum and Energy	https://www.regjeringen.no/contentassets/3d9930739f9b42f2a3e

	norske energi ressurser'			65adadb53c1f4/no/pdfs/stm202020210036000dddpdfs.pdf
The Regional Level (Agder)	*The 'Regionplan Agder 2030'*	2019	Agder County Municipality	https://agderfk.no/_f/p1/i4d721a77-52f4-49e3-ba9e-42cb0c5a8b4e/regionplan-agder-2030.pdf
	The 'Handlingsprogram for 2021-2024'	2021	Agder County Municipality	https://agderfk.no/_f/p1/id39ab966-5bd0-4992-aded-16a6267828a4/handlingsprogram-regionplan-agder-2030-endelig.pdf

Table 4.1*: Overview of the currently relevant documents for the various levels in this transition*

4.2.2 Semi-Structured Interview

An interview was conducted with an employee in the GCE NODE as a complementary method to the document analysis. The informant has work experience in both the public and private sectors. The purpose of the interview was to elaborate on the role of Agder and GCE NODE in this transition. The format of the interview was chosen as a semi-structured interview. A semi-structured interview is especially applicable when there are several open-ended questions that

require following-up questions. This method makes it more possible to lead a dialogue around topics and discuss unforeseen issues that one has not previously thought about (Adams, 2015, p. 493-494).

Since it was not possible to meet physically, the interview was conducted through a digital platform at the request of the interview subject. The interview lasted approximately about one hour. At the beginning of the interview, a clear description of the purpose of this thesis, including a repetition of the research questions, was given. The purpose is to provide the interview subject with a greater insight into the focus of this thesis. Then, an emphasis was targeted on the questions. The questions are formulated as open-ended to ensure independent thoughts from the interview subject and encourage dialogue about the topic, which is considered one of the advantages of semi-structured interviews (Adams, 2015, p. 494).

The questions were structured to focus mainly on the role of the GCE NODE and to elaborate on information targeting the region of Agder. As the interview subject is employed in the GCE NODE, the informant is particularly relevant to answering questions about the organization. This was the first focus area of the interview, which focused on the organization's origin and evolution over time. This focus area also sheds light on what projects are of priority and the relationship between the organization and public authorities, especially at the regional level. This leads to the next focusing area, which is questions asked to elaborate on the role of the region of Agder. The informant works closely with this region through being employed in GCE NODE. A large part of the job requires being active in discussion and collaboration forums with the region of Agder. Since the informant is not an employee of the Agder County Municipality, no direct questions were asked regarding the policy instruments in the '*Regionplan Agder 2030*', which is a document published by the Agder County Municipality. A greater emphasis was to see it from the GCE NODE's point of view. Therefore, the interview subject was asked questions about how the GCE NODE senses that Agder facilitates this transition and their perspective on what could be done from a political standpoint. As this thesis emphasizes more focus on the document analysis, questions were asked about the relevance of the selected documents used at the various levels. The purpose here was to uncover any missing documents currently relevant for this transition at the different levels.

Semi-structured interviews are considered labor-intensive, where the process of preparing-, setting up, conducting-, and analyzing the interviews are time-consuming (Adams, 2015, p. 493). Some methodological challenges and mitigation with the semi-structured interviews are especially concerning reliability and validity. Reliability refers to the trustworthiness of observations or data, while validity refers to the trustworthiness of interpretations or conclusions (Stiles, 1993, p, 601). In terms of reliability, this thesis could contain several interview subjects functioning in different positions, both public and private, to get a different or several points of view regarding the thesis focus. In terms of validity, the question is formulated to be open-ended and connected to a relevant source to avoid desirability biases.

5.0 Empirical Data and Analysis

In this section, a presentation of the different types of policy instruments introduced at multinational, national, and regional levels follow. The structure for this section will firstly include a description of the multi-level policy between the EU and Norway. Then, a description of what policy instruments the various levels have introduced follows. Finally, a table with the policy instruments introduced at the various levels in the transition to a sustainable blue economy will be presented as a summary.

5.1 Multi-level Policy

The UN's Climate Convention and the Paris Agreement are the juridical frameworks for global cooperation. The Paris Agreement sets the binding target for the long-term preferable temperature, and the UN indicates national contributions to help countries reduce emissions (Meld. St. 13 (2020-2021), p. 30). The Paris Agreement is also a critical element that the European Union (EU) will ensure remains the essential multilateral framework for coping with climate change in the Green Deal (European Commission, 2019, p. 20).

The EU is an economic and political union that consists of 27 countries in Europe (European Commission, 2020c, p. 7). Norway is not a member of the EU but has access to the EU's single market through the Agreement on the European Economic Area (EEA Agreement), which entered into force in 1994 (Regjeringen, 2021b).

The single market consists of four functions: free movement of goods, services, people, and capital. Participation in the single market for Norway includes a more competitive business and more efficient utilization of resources in the market. For the EU Member States, regulations from the EU will function as applicable jurisdictions for the countries. This will not apply to Norway, which is only committed to the EU regulations through the EEA Agreement. Still, Norway must follow and implement those jurisdictions that are incorporated into the EEA Agreement (Regjeringen, 2021c). This can significantly impact Norwegian businesses. For example, the European Green Deal

provides several climates and environmental regulations that affect global cooperation in reducing greenhouse gas emissions (Innovasjon Norge, 2021).

Climate and environmental regulations are essential elements of the EEA Agreement that affects the EU's single market and the framework conditions for Norwegian economic actors. Therefore, the EU extensively lays most of the basis for the framework of Norway's climate policy since about 80 percent of the Norwegian climate regulations are based on the EU regulations incorporated into the EEA Agreement. Norway has also participated in the EU Emission Trading System since 2008, which covers emissions from industries and the petroleum industry. This system will be explained further in the description of the EU policies (Regjeringen, 2021d). Norway has committed to participate in the EU's climate regulations, which encompass emissions from all sectors of the European economy for the period 2021 to 2030. The Ministry of Climate and the Environment is responsible for preparing annual strategies for which EU/EEA issues shall be addressed in the climate and environment area. Norway is connected to the European Commission when advising on the climate and environment. Still, Norway does not have the wielding authority to decide jurisdictions. For the EU's rules for the environment to be incorporated into Norwegian law, there must be an agreement between the EEA countries and the EU. Environmental and climate regulations that are prepared by the EU and incorporated into the EEA agreement will be implemented in Norwegian law through rules and regulations (Regjeringen, 2021d).

5.1.1 Policies at the Multinational Level (EU)

This section describes the primary strategic policy documents and policies at the EU level that are currently relevant for the focus of this thesis. These include the European Green Deal and other policy instruments specifically relevant to the transition to a sustainable blue economy. Finally, it follows an analysis of the policy instruments according to the NATO taxonomy by Hood and Margetts (2007).

The EU presented the strategic document '*European Green Deal*' in 2019, which involves actions covering all sectors of the EU's economy (e.g., climate, energy, transport, buildings, land, and foresty) to become the first climate-neutral continent in 2050 (European Commission, 2019). The

EU has developed policy documents on the road to delivering the European Green Deal in 2021, where oceans and energy are considered vital to making the economy more sustainable. Essential documents for the transition to a sustainable blue economy are the '*Offshore Renewable Energy Strategy*' (European Commission, 2020a) and '*a new approach for a sustainable blue economy in the EU*' (European Commission, 2021a).

In the view that the energy sector stands accountable for 75 percent of emissions in the EU, energy savings and renewables are considered essential actions for reducing emissions (European Commission, 2021b, p. 9). The European Union (EU) proposes making offshore renewables a core component of Europe's energy system by 2050 in the Strategy on Offshore Renewable Energy. The EU has set an objective of installing an offshore wind capacity of 60 GW by 2030. In the long-term goal towards 2050, the EU will strive to reach 300GW installed capacity in 2050 (European Commission, 2020a, p. 1-2). In a report from Wind Europe, it is being expressed that this requires a considerable expansion in offshore wind energy (Wind Europe, 2018, p. 2).

An essential part of the European Green Deal is that all industries in the blue economy have to reduce their environmental impact to achieve the EU's objective of climate neutrality by 2050. This new approach for a sustainable blue economy focuses on building coherence across the blue economy. The EU states that oceans play a significant role in climate neutrality (European Commission, 2021a, p. 1-2).

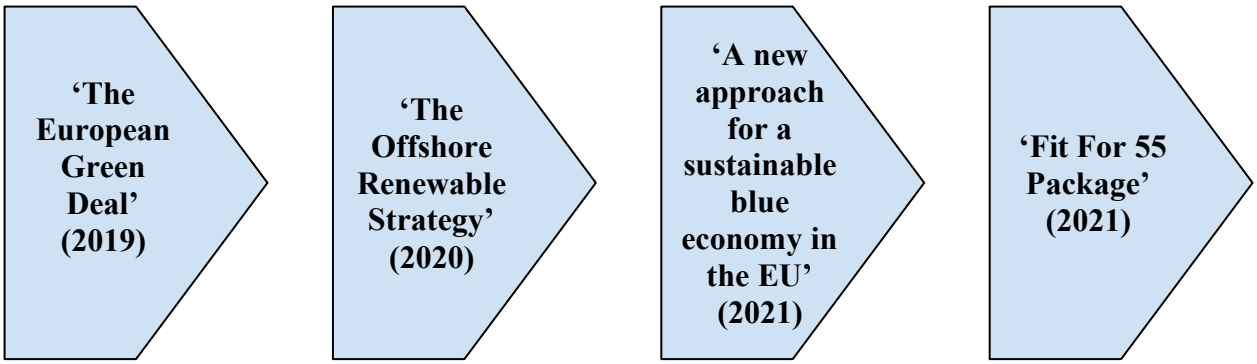

Figure 5.1: *Description of the currently relevant documents toward delivering the European Green Deal*

To achieve the main objective of becoming climate-neutral by 2050, the EU delivered the European Green Deal with the '*Fit for 55 Package*' in July 2021 (European Commission, 2021b). This package refers to Europe will reduce emissions by 55% compared to 1990 levels by 2030 and includes several proposals that revise the current laws and regulations in the EU targeting the climate and energy sectors. The following sections will describe the policy instruments that the EU introduces in the 'Fit For 55 Package' relevant to the transition to a sustainable blue economy. The package addresses eight existing legislation and five new initiatives, where the composition of the policy instruments is balanced between pricing, targets, rules, and support measures (European Commission 2021b, p. 1-3).

The '*pricing mechanism*' includes continuing the EU Emission Trading System and strengthening it and a Carbon Border Mechanism. These are considered essential instruments for reducing greenhouse gas emissions and avoiding carbon leakages (European Commission 2021b, p. 3-5).

The EU Emission Trading System entered into force in 2005 and is considered one of the main instruments for reducing greenhouse gas emissions by setting a total cap on the number of emissions emitted from year to year. Emissions units can be bought through auctions or allocated freely within this total cap. Through this market, companies that are regulated emitters have the opportunity to reduce their emissions or trading allowances. Still, they must surrender an emissions unit per ton of emissions (World Bank Group, 2020, p. 16). The commission proposes that sectors

covered by the revised EU ETS reduce their greenhouse gas emissions by 61% compared to 2005-levels and will gradually extend the EU ETS to the maritime sector from 2023 to 2025 to strengthen the role of emission reductions. This indicates that the annual emission cap has to be lowered (European Commission 2021b, p. 6).

Introducing a Carbon Border Mechanism aims to prevent the risk of carbon leakages by equalizing the carbon price between domestic products in the EU and imports of goods. The risk of carbon leakage focuses on that companies can move their business out of the country if their costs are higher and the framework conditions worse than in other operating countries. The commission proposes a Carbon Border Adjustment Mechanism to protect the integrity of the EU and global climate policy by setting a price on imports of a limited number of goods containing high pollution (European Commission, 2021b, p. 7-12). In this way, the global emissions effect of climate measures can be reduced (Meld. St. 13 (2020-2021, p. 172).

The package's content of '*rules*' is primarily linked to the transport sector and consists of, among others, new standards for maritime transport. The proposals of FuelEU Maritime promote sustainable maritime fuel, which will encompass new requirements for ships (European Commission, 2021b, p. 8).

The '*support measures*' consist of the Social Climate Fund, the Modernisation Fund, and the Innovation Fund, which are the financial resources used to provide dedicated funding to the Member States (European Commission, 2021b, p. 3-4). The Social Climate Fund addresses the social impacts of this new system by supporting the Member States with funding and investments in increased energy efficiency (European Commission, 2021c, p. 1-2). The Modernisation Fund supports specific Member States in modernizing their energy systems and improving energy efficiency from the period 2021 to 2030 (European Commission, 2020b, p. 1). The Innovation Fund supports innovative technologies, processes, and products that have a significant potential to provide emission mitigation. The funding program is financed through revenues gained from the EU Emission Trading System (European Commission, 2021d, p. 1).

The '*targets*' include an updated Renewable Energy Directive and an updated Energy Efficiency Directive (European Commission, 2021b, p. 3). The Renewable Energy Directive is the legal framework concerning renewable sources in the EU. The Renewable Energy Directive sets national binding targets on the share of renewable energy in energy consumption for the Member States (European Commission, 2018, p. 2). The Energy Efficiency Directive sets guiding principles for the EU's energy policy toward becoming climate-neutral by 2050 (European Commission, 2021e, p. 2-3). The updated Renewable Energy Directive proposes to increase the overall binding target of renewables in the EU energy mix to 40%, and the updated Energy Efficiency Directive proposes raising the level of ambition of the EU energy efficiency targets and making them binding for the Member States (European Commission, 2021b, p. 9).

Analysis of the EU-level policy instruments typology:

The pricing mechanism can be seen as a combination of policy *instruments of authority* and *instruments of treasure*. The EU uses *instruments of authority* to demand industries reduce emissions and avoid carbon leakages through the EU Emission Trading System and Carbon Border Adjustment Mechanisms. This can be linked to positive constraints, an *instrument of authority* that public authorities use to demand positive actions, such as reducing greenhouse gas emissions for industries part of the EU Emission Trading System (Hood & Margetts, 2007, p. 63). The EU Emission Trading System can also be seen as a quantitative form of enablement. The EU decides a quota for emissions for industries part of the EU Emission Trading System. This is a quantitative form of enablement as this quota is set along a scale (Hood & Margetts, 2007, p. 61-62). The EU uses *instruments of authority* through open permits when the allowances in the EU Emission Trading System are transferable (Hood & Margetts, 2007, p. 66).

Through revenues raised from the EU Emission Trading System, the EU uses *instruments of treasure* and *instruments of authority* by using the revenues as public funding to promote innovation and reduce impacts on the vulnerable in this transition. For example, the EU supports the vulnerable in this transition through the Social Climate Fund by reducing energy poverty and mobility challenges (European Commission, 2021b, p. 3-4). Through the Innovation Fund, the EU finances innovative projects that invest in low-carbon technologies that can lead to clean energy

(European Commission 2021b, p. 6). These supporting measures can also be as *instruments of authority*, where the EU supports the vulnerable through guarantee program, which can be linked to conditional token (Hood & Margetts, 2007, p. 60).

The EU uses a combination of the *instruments of authority* and *instruments of nodality* when proposing the updated Renewable Energy Directive and an updated Energy Efficiency Directive. The EU uses *instruments of authority* when presenting the binding targets for the EU energy mix and when proposing to make the increased energy efficiency target binding for the Member States. These submitted proposals will come with indicative national contributions to how the Member States specific can contribute to achieving the targets (European Commission, 2021b, p. 9). In this way, the EU is using *instruments of nodality* as a particular form for prompted query response. The EU uses operated advice services to counsel about how each Member State can contribute to these targets (Hood & Margetts, 2007, p. 33).

5.1.2 Policies at the National Level (Norway)

This section describes the primary strategic policy document and policies at the Norwegian level that are currently relevant for the focus of this thesis. These include the Norwegian government's ocean strategy and other white papers specifically suitable for describing the policy instruments for the transition to a sustainable blue economy. Finally, it follows an analysis of the policy instruments according to the NATO taxonomy by Hood and Margetts (2007).

The Norwegian government[1] presented Norway's ocean strategy in 2017 (Regjeringen, 2017). In the ocean strategy, the government states that Norway aims to be the leading ocean nation in the world. The Norwegian maritime industries are considered wealthy. Therefore, the government will focus on existing maritime industries and, at the same time, stimulate research, innovation, and technology development to create new sustainable initiatives. This strategy does not include any

[1] This chapter refers to the Erna Solberg government that functioned from 2013 to 2021. This government published the documents used in this chapter. In 2021, there was a change in the government after the general elections.

policy instruments. Still, it identifies three areas of how Norway should contribute to sustainable value creation and employment in the ocean industries (Regjeringen, 2017, p. 6-8).

Firstly, the government will develop framework conditions by developing effective and predictable regulations for the maritime industries. Secondly, the government will facilitate competence and technological development in the maritime industries to strengthen the basic knowledge about the oceans through research, innovation, education, and competence. Thirdly, the government will work on ensuring a global, predictable, and competitive framework to strengthen international competitiveness (Regjeringen, 2017, p. 11).

Since the ocean strategy does not include any policy instruments, the following white papers '*Klimaplan for 2021-2030*' (Meld. St. 13 (2020-2021)) and '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*' (Meld. St. 36 (2020-2021)) can be used to describe the policy instruments introduced by the Norwegian government for the transition to a sustainable blue economy. The former describes Norway's plan for climate action and presents policy instruments for reducing greenhouse gas emissions from 2021 to 2030 (Meld. St. 13 (2020-2021)). The latter builds further on the government's climate plan and shows how Norway can use its energy resources to create growth and new jobs (Meld. St. 36 (2020-2021). The following sections will describe Norway's policy instruments that are relevant to the transition to a sustainable blue economy.

Norway has legislated in the Climate Law that by 2050 the country will become a low emission society (Meld. St. 36 (2020-2021), p. 12). This requires a vast transition of the economic sector where greenhouse gas emissions have to be reduced by approximately 80-95 percent in Norway compared to levels in 1990. The government has proposed that this goal for 2050 be changed to 90-95 percent, and towards this goal, emissions have to be reduced by a minimum of 50-55 percent by 2030 compared with the 1990 levels (Meld. St. 36 (2020-2021), p. 12). In Europe, one of the important causes of greenhouse gas emissions is the production of electricity- and heat energy. As Norway has extraordinary access to natural resources, the Norwegian energy supply is virtually

emission-free compared to Europe. In contrast, Norway has higher oil and gas production emissions than the Member States of the EU (Meld. St. 14 (2020-2021), p. 152-153).

The central policy instruments for reducing greenhouse gas emissions in Norway have been taxes and tradeable quotas. Norway was actually one of the first countries that adopt CO_2 taxes in 1991. Norwegian companies have also been a part of the EU Emission Trading System (EU ETS) since 2008, specifically through the EEA agreement. These two types of pricing mechanisms are considered to cover over 80 percent of the greenhouse gas emissions in Norway (Meld. St. 13 (2020-2021), p. 20). To continue the pricing mechanisms, the government will gradually increase the CO_2 taxes by 2030. The government will increase the CO_2 taxes on industries that are part of the EU Emission Trading System so that the total price of carbon is approximately 2 000 NOK per tonne of CO_2 equivalent by 2030. This total price shall not exceed 2 000 NOK in 2021-2030. Setting a stable and predictable price on carbon will provide incentives to further investments in technologies of low emission and contribute to making it straightforward and profitable for the industries to plan and reduce emissions (Meld. St. 13 (2020-2021), p. 156-157).

Other policy instruments, such as direct regulation, where prohibitions against flaring when it is not necessary, have been an important measure from the beginning of the oil and gas industry to ensure safety reasons. It is the Ministry of Petroleum and Energy that gives permits for this (Meld. St. 13 (2020-2021), p. 164). Flaring is a method to get rid of gas surplus during extraction. This may be necessary if there occurs a fault during the process of extraction (NTB, 2015). Because of the risk of pollution, there are strict requirements for using the best available technology (BAT) when developing new developments set by the Pollution Control Act. All petroleum activities must have a permit from the Norwegian Environment Agency (Miljødirektoratet, 2021).

Financial support is considered an essential supplement to the pricing mechanisms for the transition to becoming a low emission society and innovation toward a sustainable blue economy. The government has appointed Enova as the primary financial incentive for climate for 2021-2024 (Meld. St. 13 (2020-2021), p. 24). The Ministry of Climate and Environment manages Enova, which contributes to the transition to becoming a low emission society through supporting

developing technology and innovation that contributes to emissions reduction (Meld. St. 14, (2020-2021), p. 157). This contributes to increasing the pace of piloting, demonstrating, and testing new products to ensure new technologies and solutions can be implemented rapidly into the market (Meld. St. 13 (2020-2021), p. 63).

The government will provide public funding for research, development, and innovation from a low emission perspective to contribute to increased value creation and ensure a safe, cost-effective, and sustainable utilization of the country's energy and petroleum resources. The Ministry of Petroleum and Energy has established research and development strategies, '*OG21*' and '*Energi21*', to provide advice and recommendations targeting the petroleum and energy sector. The Research Council of Norway manages the public funding targeting energy and petroleum research. The Research Council also facilitates international collaboration, where increased international experience is essential for Norwegian competitiveness. International collaboration provides greater access to knowledge and expertise from other countries. This is essential for economic growth and market access. Norway also participates in Horizon Europe, which is the main research funding framework of the EU (Meld. St. 36 (2020-2021), p. 125-130).

To accelerate emission reductions towards 2050, the government has set ambitions for new profitable industries based on the Norwegian energy resources (Meld. St. 13 (2020-2021), p. 176). A central focus will be to facilitate profitable business activities in the oceans through efficient and predictable framework conditions. The government presents the following policies for long-term value creation based on the Norwegian energy resources (Meld. St. 36 (2020-2021), p. 8). Here, the government will focus on facilitating a profitable socio-economic development of offshore wind and continue to map the potential of minerals on the seabed (Meld. St. 36 (2020-2021), p. 83).

The government will facilitate a socio-economically profitable development of offshore wind in Norway. This is based on the considerable potential for renewable energy production of offshore wind in the Norwegian oceans. The government wants the development of bottom-fixed offshore wind to be without public funding. The government will appoint Enova as the primary financial

instrument for supporting floating offshore wind since costs for developing floating offshore wind are set to be more expensive (Meld. St. 36 (2020-2021), p. 8). The government aims to develop 10 GW of offshore wind by 2030, where a part of this will be floating offshore wind (Meld. St. 36 (2020-2021), p. 91).

The government will continue to participate in international collaboration on offshore wind and establish a collaborative forum for offshore wind with Norwegian business actors, public authorities, research environments, and clusters (Meld. St. 36 (2020-2021), p. 83). The purpose is to develop predictable regulations for the activity and establish coexistence with existing businesses (Meld. St. 36 (2020-2021), p. 91-92). The government will appoint Statnett to have the system responsible for the ocean to ensure a stable balance between production, consumption, and power exchange between countries (Meld. St. 36 (2020-2021), p. 95).

Increased investments in renewable energy production lead to increased demand for batteries, solar energy, and wind turbines. Production of these sources requires an enormous amount of minerals. Therefore, the government will continue to map the potential of minerals on the seabed. Since the technology and competence for extracting minerals on the seabed are limited nationally and internationally, the government committed to facilitate research and extraction of minerals on the seabed. The Norwegian Petroleum Directorate is responsible for mapping the potential for minerals on the seabed on the Norwegian continental shelf (Meld. St. 36 (2020-2021), p. 122-124). The government will implement an opening process for businesses on the Norwegian continental shelf (Meld. St. 36 (2020-2021), p. 83). The Seabed Minerals Act legislates those areas must open before a business can be initiated. This is based on the fact that the mineral extraction business must not be a barrier to other businesses such as maritime transport or fishing (Meld. St. 36 (2020-2021), p. 124-125).

Analysis of the Norwegian-level policy instruments typology:

As *instruments of nodality*, the Norwegian government has published the '*Regjeringens havstrategi*' which addresses three focus areas and identifies sustainable value creation and employment in the ocean industries. This strategy and the white papers '*Klimaplan 2021-2030*'

and '*Energi til arbeid - langsiktig verdiskapning av norske energiressurser*' describe policies for Norway and are published by the Norwegian government on their websites. This corresponds with the self-serve package messages, which the government uses to spread information by posting official publications on their websites. To gain access to this information requires minor requirements for the individuals. Still, it requires an effort to find the information (Hood & Margetts, 2007, p. 35-38).

As *instruments of authority,* the government has legislated in the Climate Change Act that Norway will become a low-emission society by 2050. This is in accordance with the EU's Climate Law and entails that greenhouse gas emissions have to be reduced by approximately 80-95 percent in Norway compared to levels in 1990. Here, the government has increased the goal for 2050 to be changed to 90-95 percent. In order to achieve this goal, the government will gradually increase the CO_2 taxes by 2030, and work closely with the EU on climate regulations. Norway contributes to reducing emissions by being a part of the EU Emission Trading System through the EEA agreement. By gradually increasing the CO_2 taxes the government demands industries part of the EU Emission Trading System to invest in low-emission technologies. This corresponds with the constraints, especially positive constraints, where the government demands industries to take a positive action, which is to reduce emission. Through direct regulations the government is using negative constraints to prohibit against flaring when it is not necessary for safety reasons (Hood & Margetts, 2007, p. 62-63). The Pollution Control Act stipulates strict requirements for using the best available technology (BAT) when developing new technology. This corresponds with certificates, where the government uses a seal of approval approach where the Ministry of Petroleum and Energy permits petroleum activities. As regulations on the ocean activities the government has appointed Statnett to have the system responsibility, as an instrument of constraints (Hood & Margetts, 2007, p. 57-58).

As *instruments of treasure*, the government has appointed Enova as the primary financial instrument targeting climate actions. This can be linked to *instruments of treasure*, where the government has given Enova the responsibility through the use of contracts to support the development of technology and innovation that contributes to reducing emissions (Hood &

Margetts, 2007, p. 86-87). Enova is also given the responsibility for being the primary financial instrument regarding support for floating offshore wind. The Ministry of Petroleum and Energy has established the 'OG21' and 'Energi21' strategies through the Research Council.

Figure 5.2*: Description of the currently relevant documents for Norway in this transition*

5.1.3 Policies at the Regional Level (Agder)

This section describes the primary policy documents at the Agder level that is currently relevant for this thesis's focus. This includes the '*Regionplan Agder 2030*' (Agder fylkeskommune, 2019) and the '*Handlingsprogram for 2021-2024*' (Agder fylkeskommune, 2021). As in the previous chapters describing policies at the multinational and national level, it follows an analysis of the policy instruments for the regional level according to the NATO taxonomy by Hood and Margetts (2007).

The Agder County Municipality has set the objective to become a low-emission society by 2030 in the 'Regionplan Agder 2030'. To achieve this objective, the region will develop Agder into an environmentally, socially, and economically sustainable region by 2030. This includes, among others, a collaboration to achieve the UN's sustainability goals at regional and local levels and to reduce greenhouse gas emissions in Agder by at least 45% by 2030. This plan focuses on five primary focus areas and three perspectives toward 2030. The primary focus areas are attractive and lively cities, towns and districts, value creation and sustainability, education and competence, transport and communication, and culture and art. The perspectives focus on business development and collaboration on new jobs, climate and environment, living conditions, gender equality, inclusion, and diversity. Particularly relevant to the transition to a sustainable blue economy are

value creation and sustainability, education and competence, and the perspective of business development and cooperation on new jobs (Agder fylkeskommune, 2019, p. 5).

Further, the 'Regionplan Agder 2030' addresses challenges and opportunities for the region of Agder and describes how Agder will look in 2030. The region of Agder consists of a competitive business environment where two industries are considered particularly wealthy. This is the process industry and the supplier industry for oil and gas. With a greater focus on the supplier industry for oil and gas based on the focus of this thesis, the region Agder has developed a long tradition of international cooperation due to an export-oriented business environment. Towards 2030, it is expressed that Agder has excellent potential for sustainable growth through strong technology expertise and a surplus of renewable energy (Agder fylkeskommune, 2019, p. 7-8). The region of Agder aims to have further developed its strong competence and technology from the oil and gas and maritime sector to new sustainable industries in the oceans (Agder fylkeskommune, 2019, p. 15).

To describe which policy instruments Agder has introduced relevant to the transition to a sustainable blue economy, an action program called 'Handlingsprogram Agder 2021-2024' follows. This action program describes policy instruments for achieving the targets in the 'Regionplan Agder 2030' (Agder fylkeskommune, 2019, p. 31). The action program focuses on the three perspectives mentioned in the paragraph on the description of the 'Regionplan Agder 2030'. Based on the focus of this thesis, there will be emphasized attention on policy instruments for business development and collaboration on new jobs (Agder fylkeskommune, 2021, p. 2).

The following sections will describe several relevant policy instruments introduced from the perspective of business development and collaboration on new jobs. Firstly, the region of Agder will focus on further developing policy instruments for innovation and business development. Here, the region of Agder focuses on three actions when developing policy instruments for innovation and business development. The first action is to follow up on policy measures and improvements in the regional policy instruments review. The second action is to develop better and more efficient licensing applications and case processing processes, especially in the ocean

industries. Finally, the Agder will strengthen and dedicate funding to support the vulnerable actors in the marine industry with licensing applications (Agder fylkeskommune, 2021, p. 8).

The region of Agder will strengthen the work on entrepreneurship and innovation with a targeted focus on climate-friendly and sustainable organizational change and a circular economy. Here, the region of Agder will establish competence centers for new sustainable industries and facilitate development projects within ocean industries through increased investments in research, development, and innovation, and establishments of support measures (Agder fylkeskommune, 2021, p. 8). Based on developing competence centers for value creation in the ocean industries, the region of Agder will establish arenas for collaboration and competence development. Further, the region of Agder will establish a joint strategic commitment to the ocean industries in Agder and continue the '*Blått Kompetansesenter Sør*' which is a collaboration project (Agder fylkeskommune, 2021, p. 8). This is a collaboration project between research, academia, industries, and politics, where the Agder County is the project owner, and is financed through the national budget (Agder fylkeskommune, 2022).

To achieve a knowledge-based mapping of the suitable ocean areas for value creation in the oceans, the region of Agder will map the marine business areas. The purpose of this is to increase the competence and cooperation in managing the oceans. In collaboration with 'Blått Kompetansesenter Sør' and others, the region of Agder will develop an overview of the availability in the ocean areas in Agder. This will be based on, among others, knowledge of environmental conditions and existing regulations (Agder fylkeskommune, 2021, p. 8).

The region of Agder will facilitate for development of renewable energy resources by 2030 (Agder fylkeskommune, 2019, p. 17). To achieve this goal, the region of Agder will establish regional collaboration with central actors, other regions, and industries based on opportunities for offshore wind. The purpose is to establish new regulations and policy instruments for offshore wind. Here, the region of Agder will congregate relevant actors to develop a collaboration strategy and develop new business models and collaboration projects for existing and new emerging business areas. A central action is also to define new projects for research and innovation, where collaboration with

national and international innovation environments are essential (Agder fylkeskommune, 2021, p. 10).

Analysis of the Agder-level policy instruments typology:

Towards the main objective of the 'Regionplan Agder 2030' the region of Agder will facilitate business development and collaboration on new jobs by using its position by being a central actor in a social network, which refers to *instruments of nodality* (Hood & Margetts, 2007, p. 21). The region of Agder will focus on establishing centers of competence for new sustainable industries, where establishing arenas for collaboration and competence development are essential focusing areas. In developing renewable energy, the region of Agder will develop regional collaboration projects with central actors to establish new regulations and policy instruments for offshore wind. This can be linked to a particular form for 'prompted query response', which is individual counseling. The region of Agder congregates relevant actors to collaborate, among other things, on a collaboration strategy and forms centers of competence that can function as individual advisory services in the ocean areas for Agder (Hood & Margetts, 2007, p. 32-33).

As *instruments of authority*, the mapping of the marine business areas can be seen as an 'arbitrament', where the region of Agder uses its official authority to constrain against an eventual potential conflict by making an overview of accessible areas in the ocean for Agder (Hood & Margetts, 2007, p. 64).

The region of Agder uses *instruments of treasure* in terms of facilitating for development projects in ocean industries through investments in research, development and innovation, and the establishment of support measures. The region of Agder will also strengthen and dedicate funding to the minor actors in the marine business, regarding license applications. This also corresponds with customized payments, where the region of Agder assists the vulnerable actors by transferring funding to these particular organizations, without any strings attached. The region of Agder will continue the collaboration project 'Blått Kompetansesenter Sør'. This corresponds with bounties, where the region of Agder establish a collaboration project to focus on developing a strategic invest for the ocean industries in Agder (Hood & Margetts, 2007, p. 91-92).

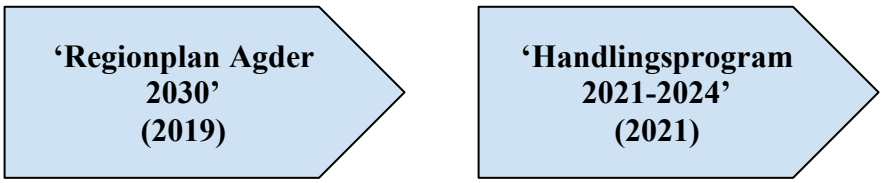

Figure 5.3: *Description of the currently relevant documents for Agder in this transition.*

5.1.4 Overview of the Policy Instruments Introduced at the Various Levels

In the next section, an overview of those current policy instruments discovered in this transition to a sustainable blue economy will follow. This contributes to a better overview of what types of policy instruments the EU, Norway and Agder are introducing - according to the “NATO - *nodality*, *authority*, *treasure*, and *organization*” Taxonomy (Hood and Margetts, 2007).

	Instruments of Nodality	**Instruments of Authority**	**Instruments of Treasure**	**Instruments of Organization**
The Multinational Level (The EU)	The European Green Deal The Offshore Renewable Strategy A new approach for a sustainable blue economy in the EU The updated Renewable	The European Climate Law EU Emission Trading System Carbon Border Mechanism FuelEU Maritime	The Social Climate Fund The Modernisation Fund The Innovation Fund Horizon Europe	-

	Energy Directive The updated Energy Efficiency Directive			
The National Level (Norway)	Norway's Ocean Strategy '*Klimaplan for 2021-2030*' '*Energi til arbeid - langsiktig verdiskaping fra norske energi ressurser*'	Legislatation of low-emission society by 2050 in the Climate Change Act Prohibition against flaring when it's not necessary, as a regulation in the Pollution Control Act EU Emission Trading System Increase the CO_2-taxes gradually by	Enova Research Council of Norway Innovation Norway	-

		2030		
The Regional Level (Agder)	The 'Regionplan Agder 2030' The 'Handlings-program for 2021-2024' Congregate invited actors to develop a collaboration strategy for offshore wind	Mapping of the marine business areas	Strengthen and dedicate public funding to assist the minor actors in the ocean industries with licences applications Facilitating for development projects in blue oceans through increased invest in R&D&I, and establishments of support measures 'Blått kompetanse-senter sør'	-

Table 5.4: *An overview of the currently relevant policy instruments introduced at the various levels in this transition*

5.2 The Case of Agder and the GCE NODE

The GCE NODE is an industry-driven cluster for ocean technologies which was established in 2006 (Bjugan, 2019). On the website of the GCE NODE, it is described that the industry-driven cluster consists of approximately 100 companies within the supplier industry to the oil & gas, offshore, energy, and maritime industries. Through the cluster, the companies participate in research, development, and innovation projects, addressing issues that need to be resolved. The cluster offers companies, among other things, insight into market developments and transfer of technology from the oil and gas industry to offshore renewables and other emerging markets. The cluster also collaborates with several government bodies on the local, regional, national, and international levels and with other nationally and internationally organizations (GCE NODE, n.d.b).

This makes the organization particularly relevant for the focus of this thesis, and the employee of the organization is highly suitable as an interview subject for the semi-structured interview. To explain the case of Agder and the GCE NODE in this transition, the semi-structured interview addresses to a great extent the role of the GCE NODE in this transition and how the organization experiences how that the region of Agder facilitates this transition through political aspects. The following sections will describe the information collected from the interview, including some direct quotes from the informant to express the information better. After a soft start to the semi-structured interview to get to know each other better, the informant starts by elaborating on the question of how the industry-driven cluster was established, with the following statement:

'The cluster was established on the initiative from Kjell Olav Johannessen to congregate joint competence around all supplies to the oil and gas industry to raise awareness about significant issues. These issues did not focus on competition between the various actors, but more on the issues that the market was facing.'

Further in the description of the establishment of the cluster, the informant describes that the founder had close contact with the significant supplier industries within oil and gas, such as

National Oil Well (NOV), MacGregor, and MHWirth (today HMH), to name some of the companies. These, among other companies, were assembled to discuss how to supply total packages to the oil and gas industry based on best practices. The informant states further that:

'*The cluster is now well established and considered as one of the ten best clusters in Europe.*'

This is proven by the gold label "*Cluster Management Excellence*". On the website to the GCE NODE, it is expressed that the cluster first received this gold label in 2015 (GCE NODE, n.d.b). The informant describes this process as:

'This process includes several actors that come from different countries to analyzing the cluster in-depth. It is the international organization, the European Secretariat for Cluster Analysis (ESCA) that is responsible for the examination process to achieve this gold label.'

In the description on how this is achievable, the informant describes it as:

'*The cluster has a good constellation of companies, which is called for participants and not members, as it requires a two-way communication between the cluster and the companies. This includes that the companies have to invest in maintaining the clusters competence and participating in the clusters work, for the cluster to succeed in raising large projects on behalf of the companies.*'

This statement provides a better understanding of how the collaboration between the companies and the cluster occurs. Further in the interview, it was then emphasized a focus on how the cluster has developed over time, where the informant shares the following statement:

'*Traditionally, the cluster has been concerned that the participants should have their office located in the region of Agder with the purpose of ensuring that their value chain of companies is easily accessible. In 2020, the cluster chose to open up for all companies to participate because digitalization has brought us closer.*'

As for the projects that the GCE NODE is highly involved in, the informants put it like this:

'*The focus is largely on transferring competence and technology to new emerging markets, as it is in these areas the companies have an increased need for competence.*'

The informant emphasizes that the participants in the cluster have large competence in the existing markets. Therefore, the participants have requested the cluster to follow up and provide the companies with market analysis and input on what happens in the markets. Further, the informant describes that traditionally, the supplier industries to the oil and gas industry specialized in, among others, drilling, loading, and mooring technology.

The informant describes that the technology for products in new emerging markets, within a sustainable blue economy, is similar to a great extent. Still, the technology needs some small innovations and adjustments to meet the requirements of the industries in these emerging markets. The competence and technology are nevertheless considered very transferable. Based on this, to a large extent, the role of the cluster is to help or assist the companies by being a part of the marketing toward these new markets, states the informant. Further, the informant describes that the cluster is doing this by inviting several actors to meetings and by being present at national and international arrangements, with both foci on existing and new emerging markets. To be clear, emerging markets refer to industries within a sustainable blue economy. The informant also expresses that if the companies need help with a policy instrument regarding applications, for instance, then the cluster assists them with that. This answer actually links to the next question, where the informant is asked to address about the relationship the cluster has with the local, regional level, and national levels:

'*The cluster is the link between the public and the private sector since the companies don't have the opportunity to follow up on political influence*.'

As a part of this statement, the informant explains further how the cluster is financed, both by the public and private sector, as an explanation of the relationship with the various levels. The

informant describes that clusters in Norway are funded by the Innovation Norway, the Research Council of Norway, and the Enova. The Innovation Norway has the primary responsibility for the cluster program. The informant further explains that the cluster can only be financed 50% by the Norwegian Government, where grants are allocated from the National Budget. This includes the participation fee to fund the remaining. The informant expressed that this is not only paid in cash by the participants but is also through active hours engaged in various projects. As this answer explains how the cluster is financed by both the public and private sectors, the informant addresses the question about the cluster influence on these levels by describing:

'*The influence is good, we (the GCE NODE) do not have the authority to make decisions, but experience that the doors are open for dialogue and feel that the National Incentive Structure is listening to inputs on policy instruments and how these can be continued best possible*.'

The informant describes that the relationship the cluster has with the different actors in the National Incentive Structure (Innovation Norway, Research Council of Norway, and Enova) is good, where the information expresses that the cluster is at the intersection point, as the cluster simultaneously performing an active political impact. Further, the informant describes that the cluster has a close dialogue with the Storting and *'Agderbenken'*, which are representatives that represent the region of Agder on the Storting. On addressing the cluster's relationship to the region of Agder, the informant describes that the cluster is also funded by the Agder County Municipality and the municipalities Kristiansand and Arendal on a project basis. This focuses to a great extent, that many of the cluster's participants are located in the region of Agder, although the cluster has open up for companies in other regions to become members. Based on this, the informant expresses further that the region of Agder will contribute and facilitate in the best possible way for the businesses to thrive in the region and to ensure that the region of Agder is an attractive place, also for new establishments. This description, leads to the following statement from the informant:

'*Making the region an attractive place for new establishments will not be possible if you do not have structures that are more strongly rooted in the industry and simultaneously a great and good understanding of how public administration works*.'

The statement by the informant mentioned above links to one of the previous statements about how the cluster is being the link between the public and the private sectors as the companies don't have the opportunity to follow up on political influence. The informant describes that companies rarely ask the municipality for project help as an element of bureaucracy. This is because companies have a complex relationship with the how public administration work. Therefore, the informant expresses further that the clusters have an essential role of being the link between the public and the private sectors to affect those relevant focus areas concerning the cluster. Here, the informant mentions especially policy areas such as education, infrastructure, business development, and innovation. These policy areas are central elements in the 'Regionplan Agder 2030', which is described earlier in this chapter, under policies at the regional level. This leads to the following statement from the informant when asked to address about how the cluster experience that Agder facilitates the transition to a sustainable blue economy.

'*I miss key performance indicators (KPI) in the 'Regionplan Agder 2030' for the region of Agder*.'

The informant expresses that there could be a need for key performance indicators in the 'Regionplan Agder 2030' to ensure closer connection towards what the industry actually can contribute to reaching the objectives. This includes, among others, a precise measure of how many jobs there are needed in 2030, what competence in the educational system can facilitate this need for jobs, etc. Further, the informant describes that, on the one hand, the GCE NODE wants that the Agder County Municipality to determine measurable goals to achieve these targets. On the other hand, the informant expresses that they experience the county municipality listening to GCE NODE's inputs in discussion areas. As a final statement, the informant says the following:

"*I am very glad that the Agder County Municipality, unlike other municipalities, dare to say explicitly that it is the marine industry that it the advantages of the region of Agder*."

The informant experience that the relationship between the Agder County Municipality and how they facilitate for the transition to a sustainable blue economy is only getting better. Further, the

informant expresses that the result of the region of Agder to be explicit in who they can be in the bigger picture of this transition will result in having a large role in the attractiveness to create new establishments.

By conducting this interview, additional information about the Agder County Municipality is also a funding instrument. The informant explains that the Agder County Municipality is a funding instrument where regional research funds and are released for projects based on the 'Regionplan Agder 2030', to contribute to low emission technology. Examples here are the '*Regionale forskningsfond Agder*' and the '*Sørlandets kompetansefond*'. In this way, the county municipality opens up the possibility to GCE NODE to apply for funding in this transition as an additional means of facilitating the development potential through dialogue and discussion forums expressed by the informant. Further comment to this information is that the informant explains that the amount of this funding is still not enough to cover the coverage ratio of project development to the companies as the degree of support from the county municipality is not high enough. This means, among other things, that the company is covered a specified percentage of the project or technology development but must pay the remaining percentages through other means.

6.0 Conclusion

The first aim of this thesis was to map the policy instruments produced at the multinational (EU), national (Norway), and regional (Agder) levels that are currently the most important in supporting the transition from the Oil and Gas Industry to a Sustainable Blue Economy.

Answering this question, it is essential to first look at the relationship between the EU and Norway. The EEA Agreement is the basis of the relationship between Norway and the EU. Through the EEA Agreement, Norway has access to the EU's single market, which includes, among other things, a more competitive businesses. Still, the EEA Agreement does not give Norway the authority to wield decisions in the EU, but Norway has the opportunity to provide input and advice to the EU. Since Norway is not a complete Member State of the EU, not all regulations that the EU adopts will function as current jurisdictions for Norway as a state, as is the case for the Member States. Still, Norway has to follow and implement the jurisdictions that are being incorporated into the EEA Agreement. Essential elements in the EEA agreement include the climate and environmental regulations, which are a key focus area of this thesis. Norway has also committed to cooperating with the EU on climate regulations in the period 2021 to 2030.

In the area of climate and environment, the European Green Agreement is a comprehensive strategy that the EU has implemented with the objective of becoming a climate-neutral continent by 2050. This strategy also touches on the EEA agreement, and Norway supports the ambitions set by the EU to become climate neutral in 2050. The EU and Norway have both enshrined the ambitions in climate law. This strategy functions as an umbrella for the thesis focus and purpose. The transition to a sustainable blue economy is considered an essential factor and important climate regulator for Europe to achieve the objective of becoming climate neutral by 2050. On this basis, Norway experiences, on the one hand, a push from the EU to cut greenhouse gas emissions in the oil and gas industry, which is one of the most important sources of income for Norway and a relevant focus for this task. On the other hand, Norway is experiencing a pull toward the transition to a sustainable blue economy to explore new income and value creation opportunities that may be critical for value creation in Norway.

On the basis that the EU is an essential driver in this transition, the EU has introduced the following currently relevant policy instruments based on pricing, targets, rules, and support measures that are currently relevant in the transition to a sustainable blue economy. The EU has introduced pricing mechanisms with the purpose of reducing greenhouse gases and avoiding carbon leakages, where the latter focuses on that companies can move their businesses to other countries with less strict rules for reducing greenhouse gas emissions. These policy instruments concentrate on continuing the well-adapted EU Emission Trading System, and also strengthening it in the maritime sectors. The EU also introduces a Carbon Border Mechanism with the purpose to avoid carbon leakages by setting a price on imports of goods that are consisting of high pollution. As for the policy instruments of rules that the EU has introduced, these are primarily linked to the transport sector but also will imply new requirements for sustainable maritime fuel, namely the FuelEU.

Further, the EU has introduced several policy instruments of support measures where the purpose is to use financial resources to provide funding to the Member States. Especially with the focus on addressing the social impacts of the new system to support the Member States in modernizations of the energy system and innovative technologies targeted to reduce greenhouse gas emissions. The EU has also proposed several targets for this transition, among others, to increase the overall target of renewables and to raise the ambition level of the EU energy efficiency targets. These targets will the EU also make binding for the Member States.

As for the policy instruments that Norway has introduced in this transition, the Norwegian government has proposed to increase the objectives of greenhouse gas emissions to be reduced by 90-95 percent by 2050. This indicates that Norway will commit to climate action with the aim of becoming climate neutral in 2050. Considering that Norway also has legislated this objective in the climate law and committed to collaboration with the EU on climate regulation from 2021 to 2030, it indicates that Norway will contribute to reducing greenhouse gases. The essential policy instruments to reduce greenhouse gas emissions have primarily been taxes and tradeable quotas. This includes the EU Emission Trading System, which companies in Norway related to this sector, have been a part of since 2008. When it comes to the taxes, the government will gradually increase

these toward 2030 to provide incentives for the industry to invest in technology development that involve lower emissions. Direct regulations such as the prohibition against flaring when it is not necessary are policy instruments that Norway uses to reduce greenhouse gas emissions. Strict requirements for using the best available technology (BAT) for developing new technologies or projects are policy instruments used to ensure that the development is done according to clear guidelines that the Pollution Control Act sets. The government has appointed Enova as of the primary financial incentive for the climate from 2021 to 2030. The Norwegian government uses policy instruments as public funding to support research, development, and innovation of the energy and petroleum resources, intending to contribute to increased value creation from a low emission perspective. The Norwegian government has developed the following research and development strategies 'OG21' and 'Energi21', where the Research Council of Norway steers the public funding in this area. As for the international collaboration, Norway is closely connected to the EU through the research program Horizon Europe, which the Research Council of Norway facilitates for this.

When it comes to renewable resources, the Norwegian government will facilitate the socio-economic development of offshore wind, with ambitions of developing 10GW of offshore wind by 2030. This will be done in collaboration with Norwegian business actors, public authorities, research environments, and clusters with the purpose of developing predictable frameworks for the development of offshore wind. When it comes to ensuring a stable balance between production, consumption, and power exchange, the Norwegian government has appointed Statnet to be the system responsible at the ocean on the Norwegian continental shelf. As the technology and competence for extracting minerals on the seabed are currently limited, the Norwegian government will facilitate research and extraction of minerals on the seabed and continue to map the potential of minerals on the seabed.

The region of Agder is committed to following all the policy instruments mentioned above, and also introduced the following policy instruments to support the transition. First, it will establish competence centers for new sustainable businesses and increase investment in research, development, and innovation to facilitate development projects within ocean industries toward

2030. The region will continue the collaboration project between research, academia, industries, and politics, called 'Blått Kompetansesenter Sør', to, among others, establish a shared strategic commitment to the ocean industry for Agder. The region will map the areas of the oceans in Agder to collect competence on the potential of value creation for businesses in Agder and cooperation in managing the oceans. When it comes to renewables, the region of Agder has ambitions to develop renewable resources by 2030. Essential policy instruments are the establishment of regional collaboration projects between actors, industries, and regions to establish regulations and develop a collaboration strategy. Collaboration projects with both national and international are considered to be essential policy instruments for collecting information about this transition.

To understand more about the role of the public authorities in this transition, the second aim of this thesis was to categorize the policy instruments introduced at the various levels using the NATO - *nodality*, *authority*, *treasure*, and *organization* Taxonomy (Hood and Margetts, 2007).

The EU uses a combination of the policy *instruments of authority* and *instruments of treasure* to demand industries reduce emissions and avoid carbon leakages. Here, the EU demands positive actions from the industries part of the EU Emission Trading System to reduce greenhouse gas emissions (Hood & Margetts, 2007, p. 63). As these allowances in the EU Emission Trading System are transferable, they can be linked to open permits, which is an *instrument of authority* (Hood & Margetts, 2007, p. 66). Further, the EU uses revenues earned from the EU Emission Trading System as *instruments of treasure* as public funding with the purpose of promoting innovation that contributes to low emissions. Here the EU also uses *instruments of authority* in terms of supporting the vulnerable in this transition with guarantee programs. The EU uses instruments of authority when proposing binding targets for the EU energy mix and making binding increased energy efficiency targets for the Member States. Here, the EU also uses *instruments of nodality* to contribute with indicative national contributions to the Member States and as an operated advice service on how they can contribute to this transition (Hood & Margetts, 2007, p. 33).

The Norwegian government uses *instruments of nodality* by being transparent in publishing official publications on their website that help the businesses to gain relevant and necessary information about this transition. As *instruments of authority*, the government has legislated the objective of becoming a low-emission society by 2050 in the Climate Change Act. The government will also gradually increase the CO_2 taxes to demand the industries that are a part of the EU Emission Trading System to increase investments targeting low emission technology. The Norwegian government also uses negative constraints to prohibit the oil and gas industry against flaring when it is not necessary (Hood & Margetts, 2007, p. 62-63). The Norwegian government uses the seal of approval approach through the Ministry of Petroleum and Energy permits petroleum activities. In terms of approval, there are strict requirements for the petroleum industries through the Pollution Control Act for using the best available technology (BAT). As another policy instrument of constraints, the Norwegian government has appointed Statnett to be the system responsible for the regulations of ocean activities (Hood & Margetts, 2007, p. 57-58). As an *instrument of treasure*, the Norwegian government has given Enova the contract to be the primary funding instrument targeting climate actions as instruments of treasure. The focus is to develop technology and innovation that contributes to reducing emissions. This contract also includes that Enova is the primary funding program regarding support for floating offshore wind (Hood & Margetts, 2007, p. 86-88).

The region of Agder uses *instruments of nodality* in terms of establishing centers of competence for new sustainable industries and the development of collaborative projects with central actors and regions on renewable energy, which will function as advisory services for the ocean areas for Agder (Hood & Margetts, 2007, p. 32-33). As *instruments of authority*, the region will map the marine business areas and make an overview of the accessibility in the ocean in order to prevent a potential conflict (Hood & Margetts, 2007, p. 64). As for the instruments of treasure, the region facilitates increased investment in research, development, innovation, and development project in the ocean industries. By interviewing the informant in the GCE NODE, it becomes more familiar that the region of Agder also will function as a funding program. The region will customize payments by dedicating funding to the minor actors in the marine business, focusing on license applications. To encourage a strategic investment for the ocean industries in Agder, the region of

Agder will continue the collaboration project ‘Blått Kompetansesenter Sør’ (Hood & Margetts, 2007, p. 91-92).

The third aim of this thesis was to examine the case of the region of Agder and the GCE NODE, as little attention has been paid to exploring the role of Agder in this transition. By conducting an interview with an informant in the industry-driven cluster GCE NODE, it gets familiar that the cluster is the link between the public and private sectors, as companies do not have the ability to follow up on political influence. The informant experience that the Agder County Municipality is very clear in that it is the marine industry that is the focus area for the region of Agder toward 2030. The cluster assists the companies with the marketing toward the transition to a sustainable blue economy by being present and by inviting various actors to suitable arrangements for this transition, both internationally and nationally. At the same time, the cluster helps companies with policy instruments, for example, writing applications.

Further, the cluster collaborates well with the national incentive structure in Norway, which contributes to better political influence for the companies in Agder. The Agder County Municipality has also appointed the cluster project-based with the purpose of facilitating for the companies to thrive better in the region and to ensure that the region of Agder is an attractive region for new establishments. To ensure new establishments, an emphasis is laid on a clear structure that is rooted in the industry, and an understanding of how public administration functions is essential. As for the objective of the region of Agder to become a low-emission society in 2030, there is emphasized to a greater extent a need for key performance indicators with explicit goals to ensure what the companies can contribute to achieving the objective. In this transition, the region of Agder also allocates regional research funds to projects that contribute to low emission technology, which turns out to be not enough to be able to cover the coverage rate for project development that is necessary for the companies.

6.1 Propositions for Further Research

This thesis has contributed to developing new relevant hypotheses and propositions for further research. This thesis only explores the policy instruments produced at the multinational (EU), national (Norway) and regional (Agder) levels that are currently the most important in supporting the transition from the oil and gas industry to a sustainable blue economy. A suggestion for further research can explore whether other types of policy instruments that are currently not used – such as instruments of organizations can actually play a role in this transition. As this thesis explores the policy instruments used as '*effectors*' in this transition, another suggestion for further research could be to shed light on the policy instruments that are introduced in this transition by using the government's tools for '*detectors*'.

Based on the interview with the informant in the GCE NODE to explore more on the region of Agder, a suggestion for further research could be to explore how the policy instruments explored in this thesis are associated with other policy instruments that are relevant for project development and finances in the transition to a sustainable blue economy.

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APPENDIX 1:

Interview Guide:

The thesis aims to examine the content and effects of the policy instruments introduced by public authorities at several levels - multinational, national and regional that push and pull the oil and gas industry towards new emerging markets, so called within a sustainable blue economy. Transferring expertise and technology to a sustainable blue economy can be both an important climate measure, as well as an important new source of income for Norway. Therefore, the ability for an efficient transition is not just a concern for the private sector or the companies in the oil and gas industry alone. Instead, public authorities at several levels - multinational, national and regional - are expected to play an active role. Several instruments have been introduced where impact and effectiveness have to a certain extent been little explored, especially at the regional level, Agder. It is therefore very important to examine which instruments have been introduced and what impact they have on the transition from traditional oil and gas activities to new emerging markets within a sustainable blue economy.

It is voluntary to participate in the project, and if you wish, you can withdraw your consent at any time without giving a reason for this. If you wish to withdraw, all personal information will be deleted. After the end of the project, which is planned to be completed on 3 June 2022, all personal data and any recordings will be deleted.

Research Questions:

- **Question 1:** According to the actors involved in the GCE NODE, which policy instruments produced at the EU, Norway and Agder, have been particularly important to promote the transfer of competence and technology from the traditional oil and gas markets to new emerging markets within a sustainable blue economy?
- **Question 2:** What types of policy instruments are they introducing - according to the "NATO - *nodality*, *authority*, *treasure*, and *organization*" Taxonomy (Hood and Margetts, 2007)?

Background:

- Would you like to start by telling a little bit about yourself and your role in GCE NODE?
- GCE NODE was established in 2006 and was awarded the status of Global Center of Expertise in 2014 (Bjugan, 2019). Do you want to tell a little about the origins of GCE NODE, and who have been the most important founders?
- Can you tell us a little about the development of GCE NODE over time, in relation to organizational structure, members and strategic focus (goals)?
- GCE NODE engages in projects aimed at increasing competition in the existing market and transferring expertise and technology to new emerging markets (GCE NODE, n.d.a). Can you tell us a little about which projects GCE NODE prioritizes and why?
- GCE NODE is funded by several actors, including the Norwegian policy instruments and municipalities. These are institutions at local, regional and state levels (GCE NODE, n.d.b). Can you tell us a little about what relationship GCE NODE has with the different levels? Possible influence at the various levels?
- Agder wants to become Norway's offshore wind region (Thomassen, 2021). Among other things, it is an important resource for a sustainable blue economy. How do you experience in GCE NODE that Agder facilitates the transition to a sustainable blue economy?
- Agder County Municipality's main goal is to develop Agder into an environmentally, socially, and economically sustainable region by 2030. The marine industry is pointed out, among other things, as having great development opportunities for creating jobs (Agder fylkeskommune, 2019, p. 5-7). Do you want to tell a little about what you in GCE NODE think can be done from the political perspective?

Documents:

- To investigate which policy instruments have been introduced by the EU, I have chosen to focus on the EU's Green Deal and 'Fit for 55' as key documents. Are there any other documents you think I need to investigate further?
- To investigate which policy instruments have been introduced by Norway, I have chosen to focus on the Government's Ocean Strategy - *Ny vekst, stolt historie*, the Stortingsmelding

13 - *klimaplan for 2021-2030,* and the Stortingsmelding 36 - *Energi til arbeid*. Are there any other documents you think I need to investigate further?

- To investigate which policy instruments have been introduced by the region of Agder, I have chosen to focus on the 'Regionplan Agder 2030' as a key document. Are there any other documents you think I need to investigate further?

Others:

- Do you have any suggestions for other people I should talk to?
- If possible, can I contact you again soon, if I need any clarifications?

APPENDIX 2:

Vurdering

Referansenummer
666546

Prosjekttittel
Offentlig politikk sin påvirkning på teknologi- og kompetanseoverføring fra tradisjonelle markeder til nye fremvoksende markeder, innenfor blå vekst?

Behandlingsansvarlig institusjon
Universitetet i Agder / Fakultet for samfunnsvitenskap / Institutt for statsvitenskap og ledelsesfag

Prosjektansvarlig
Marco Seeber

Student
Even Andreas Lie

Prosjektperiode
21.01.2022 - 01.06.2022

Meldeskjema

Dato
03.02.2022

Type
Standard

Kommentar
Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, og eventuelt i meldingsdialogen mellom innmelder og Personverntjenester. Behandlingen kan starte.

DEL PROSJEKTET MED PROSJEKTANSVARLIG
For studenter er det obligatorisk å dele prosjektet med prosjektansvarlig (veileder). Del ved å trykke på knappen «Del prosjekt» i menylinjen øverst i meldeskjemaet. Prosjektansvarlig bes akseptere invitasjonen innen en uke. Om invitasjonen utløper, må han/hun inviteres på nytt.

TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til den datoen som er oppgitt i meldeskjemaet.

LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake.

Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER
Personverntjenester vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen

formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og

ikke behandles til nye, uforenlige formål

dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet

lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER
Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), og dataportabilitet (art. 20).

Personverntjenester vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER
Personverntjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

Ved bruk av databehandler (spørreskjemaleverandør, skylagring eller videosamtale) må behandlingen oppfylle kravene til bruk av databehandler, jf. art 28 og 29. Bruk leverandører som din institusjon har avtale med.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde: https://www.nsd.no/personverntjenester/fylle-ut-meldeskjema-for-personopplysninger/melde-endringer-i-meldeskjema

Du må vente på svar fra oss før endringen gjennomføres.

OPPFØLGING AV PROSJEKTET
Personverntjenester vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!