Towards a Greener Tomorrow: Analyzing Transition Drivers in Norway's Petroleum Industry

Jørgen Heimsæter

Dissertation written under the supervision of Professor Peter V. Rajsingh.

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Abstract

This dissertation investigates the contribution of key drivers that are cited in the literature, to the green transition of the Norwegian petroleum industry. A qualitative methodology was used to combine information from twelve expert interviews with insights from a comprehensive literature review.

We examine how regulations and policies, such as global climate agreements and carbon taxes, have a significant impact on pushing the industry towards sustainability. Although cost and scale constraints are acknowledged as obstacles, technological advancements, particularly in carbon capture and storage (CCS) and renewable energy technologies, are seen as essential. Per now, the technology is not seen as a big driver itself, but technological advancements are very important to accelerate the green transition. Companies are being forced to adopt greener practices by market forces and to some degree investor demands, yet these efforts are frequently hampered by the infrastructures already in place and some skepticism from investors.

NGOs have little direct impact on the corporate strategies of the petroleum companies. According to the study's conclusion, while these factors are important in accelerating the green transition, their effects differ, with regulations having the greatest overall impact. To improve comprehension and generalizability of the findings addressing the long-term industry responses to these factors, the thesis recommends more study using a mixed-methods approach.

Keywords: Norwegian Petroleum Industry, Green Transition, Regulatory Impact, Technological Innovation, Market Forces, Investor Influence, Non-Governmental Organizations (NGOs), Sustainability Practices

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Author: Jørgen Heimsæter

Sumário

Esta dissertação investiga a contribuição de principais fatores que são citados na literatura, para a transição verde da indústria petrolífera norueguesa. Uma metodologia qualitativa foi utilizada para combinar informações de doze entrevistas com especialistas com insights de uma revisão de literatura abrangente.

Examinamos como regulamentações e políticas, como os acordos climáticos globais e impostos sobre carbono, têm um impacto significativo em direcionar a indústria rumo à sustentabilidade. Embora os custos e limitações de escala sejam reconhecidos como obstáculos, avanços tecnológicos, particularmente em captura e armazenamento de carbono (CCS) e tecnologias de energia renovável, são vistos como essenciais. Atualmente, a tecnologia não é vista como um grande motor por si só, mas os avanços tecnológicos são muito importantes para acelerar a transição verde. As empresas estão sendo forçadas a adotar práticas mais verdes por forças de mercado e, em certo grau, demandas de investidores, embora esses esforços sejam frequentemente prejudicados pelas infraestruturas já existentes e algum ceticismo por parte dos investidores.

ONGs têm pouco impacto direto nas estratégias corporativas das empresas petrolíferas. De acordo com a conclusão do estudo, embora esses fatores sejam importantes para acelerar a transição verde, seus efeitos variam, com as regulamentações tendo o maior impacto geral. Para melhorar a compreensão e generalização dos achados que abordam as respostas de longo prazo da indústria a esses fatores, a tese recomenda mais estudos utilizando uma abordagem de métodos mistos.

Palavras-chave: Indústria Petrolífera Norueguesa, Transição Verde, Impacto Regulatório, Inovação Tecnológica, Forças de Mercado, Influência dos Investidores, Organizações Não Governamentais (ONGs), Práticas de Sustentabilidade

Título: Rumo a um Amanhã Mais Verde: Analisando os Impulsionadores da Transição na Indústria Petrolífera da Noruega

Autor: Jørgen Heimsæter

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List of Abbreviations

CCS	Carbon Capture and Storage
CO2	Carbon dioxide
CPA	Corporate political activity
CSR	Corporate social responsibility
EPI	Environmental Performance Index
EU	European Union
EU ETS	European Union Emissions Trading System
EUR	Euro
ETS	Emissions Trading System
GDP	Gross domestic product
GW	Gigawatt
NGO	Non-governmental organization
NOK	Norwegian krone
NCS	Norwegian continental shelf
SDFI	State's Direct Financial Interest

1. Introduction

For many years, the Norwegian Petroleum Industry has been a pillar of the country's economic resilience, helping Norway reach previously unheard-of levels of prosperity and social welfare. Examining the industry's development reveals a complex story that spans more than 50 years of technological advancement, strategic exploration, and growing awareness of environmental obligations (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

It was in December 1969, close to Christmas eve, when Philips Petroleum came with an early Christmas present to Norwegian society when they told the Norwegian government about a discovery of oil on the Ekofisk field. The idea that Norway should use its newfound wealth to harness nature's abundance for the benefit of all was the cornerstone of its strategy. The State's Direct Financial Interest and organizations like Statoil, which is now called Equinor, demonstrated a commitment to manage resources for future generations as well as to profit from the present (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). This vision was exemplified in 1990 with the establishment of the Government Pension Fund Global, which acts as a safeguard against market fluctuations and as evidence of the country's long-term economic planning (Norges Bank Investment Management, 2019).

However, as the twenty-first century progresses, the industry that has formed the backbone of Norway's success must confront a hitherto unheard-of global challenge: mitigating climate change. Norway has committed to the Paris Agreement, which requires countries to halt the increase in global temperatures (Norwegian Ministry of Climate and Environment, 2021). This cannot be done without tackling emissions caused by the burning of fossil fuels (IEA, 2023). Due to this, the petroleum industry is now at a crossroads where it must strike a balance between pursuing sustainability and making ongoing economic contributions.

The petroleum sector contributes significantly to the world's energy-related emissions, indicating the industry's strong environmental effect (IEA, 2023). This translates to around a quarter of Norway's greenhouse gas emissions (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b), highlighting the sector's impact on the country's environmental imprint. The history of Norway's petroleum industry is far from over, as just

half of the projected recoverable reserves have been used (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a).

Norwegian petroleum companies have started the green transition for example by investing in CCS and other technologies to become more sustainable (Equinor, 2024a; Northern Lights , 2024a). On the other hand, there are many who cast doubt on the idea that the industry is going in the direction of true sustainability and that the companies should do more to become greener (ClientEarth, 2021; Li, Trencher, & Asuka, 2022; Greenpeace, 2023). That is why, in an era when companies must transition into more sustainable practices, it is important to further investigate the drivers behind the green transition within Norway's biggest industry.

1.1 Background and Research Objective

In these transformative times, this research aims to dissect the complex landscape in which the Norwegian petroleum industry operates, identifying if the drivers cited by scholars are facilitating the green transition within the Norwegian petroleum industry. It does this by examining the historical background, the socio-economic effect, and the environmental imperatives faced by the industry. Moreover, it aims to critically examine stakeholder- and nonmarket theory in order to determine if they represent true transformation or are only facades of greenwashing.

The study aims to provide insight into the ways in which a sector that is firmly ingrained in the country's economy might adapt to the urgent needs of climate action. Through a comprehensive literature review as a baseline for the research which is subsequently assessed through a qualitative study relying upon expert interviews.

The research question is:

Are key drivers cited by scholars facilitating the green transition within the Norwegian Petroleum Industry?

The research question aims to uncover how well theoretical frameworks perform in practical situations. By knowing if scholarly viewpoints are representative of business practices, and for the Norwegian petroleum industry especially, we can be further to close a knowledge gap between academic research and real-world application. Assessing the role of these drivers can

also improve policy-making and strategic decision-making for the industry and policy makers.

2. Literature Review

2.1 Norwegian petroleum history

Norway's petroleum history started over 50 years ago. There are not many people that could imagine the colossal impact the industry had and still has on the Norwegian economy and society. In the 1950s, few individuals envisaged that there were rich stores of oil and gas on Norwegian territory. But the disclosure of the Groningen gas field within the Netherlands in 1959 made people aware of the possibility that there might be oil and gas resources beneath the North Sea (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). Now we know that the total resources are estimated to about 15.6 Sm^3 billion (GSm^3) of oil equivalents (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024b).

The Norwegian authorities declared jurisdiction over the Norwegian continental shelf in 1963. A new law was passed stating that all natural resources on the plateau belonged to Norway and only the king (in reality the government) had the right to grant exploration and production licences (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). The first round of licences came in April 1965. A total of 22 licences for production were given. Licences gave companies rights to explore, drill and extract oil and gas for the areas they were given (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

Exploration began in the following years without much success. It was in December 1969 close to Christmas eve that Philips Petroleum told the Norwegian government about a discovery on Ekofisk. It was one of the biggest offshore oil field that had been discovered (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). The field has produced more than three billion barrels of oil (ConocoPhillips, 2021). Production at Ekofisk started in June 1971, and several big discoveries came the following years (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). And then the Norwegian petroleum adventure started. Until 1979 petroleum activities were only happening south of 62 °N. After this they opened for areas north of 62 °N. The Norwegian and Barents Sea started in early 1980s and was expanded later. Production started in 1993 in

the Norwegian Sea and in the Barents Sea in 2007 (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

In the beginning of the exploration period, most of the companies that operated were foreign. With the involvement of Norsk Hydro, Norwegian participation also gradually increased. Saga Petroleum, a private Norwegian firm, was founded in 1972. Statoil (now Equinor) was also founded in 1972, with the state of Norway as its exclusive owner (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). Norway also introduced the principle that the country should hold 50% of the ownership of each production license (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

Effective from the 1st of January, 1985, Norway restructured its stake in the oil and gas sector. The state's equity was divided into two distinct entities: a share associated with Statoil and the other representing the State's Direct Financial Interest (SDFI) in petroleum activities (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

Under the SDFI arrangement, the state has ownership interests in various oil and gas fields, pipeline networks, and land-based infrastructure (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). The ownership share is decided during the issuance of production licences and can vary from one project to another. The state, as a co-owner, bears a portion of the investment and operational expenses in line with its ownership stake, and in turn, receives a proportional part of the revenues from the licences. The commercial management of the SDFI assets was entrusted to Statoil on the state's behalf (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

The Norwegian parliament decided in 2001 to sell 21.5 % of the SDFI Portfolio. Statoil bought 15 percent and 6.5% went to other companies. The sale to Statoil was seen as a step towards part-privatization of the firm. It also got registered on the stock market the same year (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a). Today it operates in the same way and methods as other commercial companies in Norway. Statoil merged with Norsk Hydro’s petroleum department in 2007 and changed the name to “Equinor” in 2018 (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2024a).

In 2023 there were 27 different companies that had activities on the Norwegian continental shelf (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, n.d.b) To date, approximately only 50 % of the projected recoverable reserves in Norway's offshore areas have been extracted and marketed (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a).

2.2 Economic impact

In 1990 the Norwegian parliament created what is now known as the Government Pension Fund Global (Norges Bank Investment Management, 2019). The fund was created to protect the economy from fluctuations in oil revenues and to diversify returns by investing in other sectors. It also functions as a financial buffer and a long-term saving plan in order to let current and future generations in Norway benefit from the oil and gas revenues (Norges Bank Investment Management, 2019). Oil revenues are important to Norway, but someday the oil will run out. The fund aims to protect the Norwegian economy in the future (Norges Bank Investment Management, 2019) and avoid so-called Dutch disease (Frankel, 2010). The Norwegian government can spend, on average, an amount equal to the fund's real revenues, estimated to be around 3% per year. In this way, oil revenues flow into the economy only gradually. But this is still almost 20% of the state's budget (Norges Bank Investment Management, 2019). At 16.02.2024 the current market value of the fund was around 16 600 billion NOK (EUR 1422.91 billion) (Norges Bank Investment Management, 2024).

To develop Norway’s welfare system, the petroleum industry has had a major role to create income for the state. In 2024 the net cash flow to the government from petroleum activities is estimated to be 832.2 billion NOK (EUR 71.334 billion) (Norwegian Ministry of Finance, 2023). The petroleum industry is without doubt the largest sector in Norway if you measure in value added, revenues to the government, export, and investments. Activities related to oil and gas have in total from the 1970s contributed more than NOK 22 000 billion (EUR 1885.79 billion) to the GDP in Norway, measured in current NOK (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a).

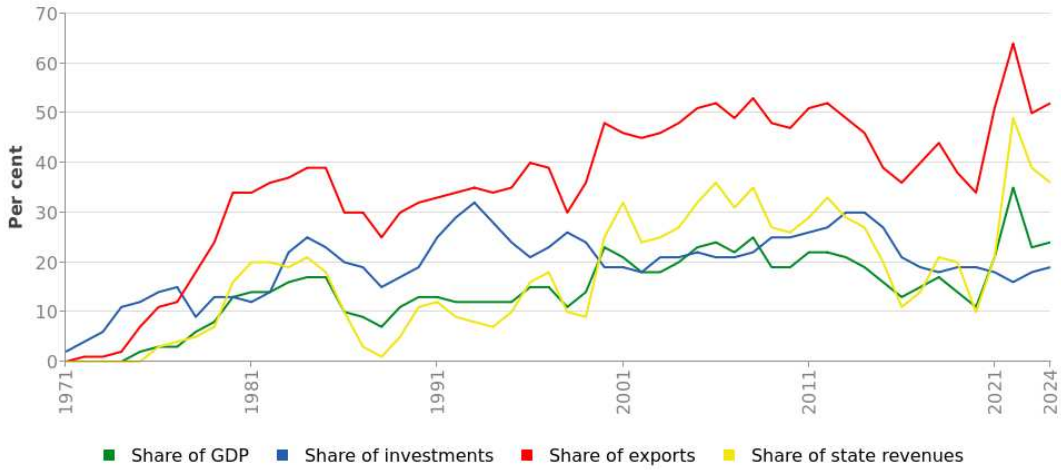

Figure 1: Norwegian Petroleum Industry's Macroeconomic impact: 1971-2024

Source: (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a) (Norwegian Ministry of Finance, 2023).

The guiding philosophy in Norwegian petroleum resource management is that all activities, from exploration and development to production, should create the maximum possible value for the common good. Furthermore, the income from these activities must benefit the state and ensure the benefit for the entire Norwegian society (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a).

2.3 Environmental impact and goals

The world is encountering more seriously extraordinary climate events. Temperatures are rising, snow and ice are dissolving, ocean levels are rising, seawater is getting to be more acidic and rapidly spreading fires are getting more normal (Norwegian Ministry of Climate and Environment, 2021). Helpless species and biological systems are vanishing. Climate change will escalate in the coming years. Avoiding disastrous natural debasement is significant to safeguarding the well-being of the next generations. Climate change may be a worldwide issue, but emissions are caused by activities and processes at a nearby level (Norwegian Ministry of Climate and Environment, 2021).

As part of the Paris Agreement, Norway, like many other countries in the world, is committed to reducing greenhouse gas emissions (Norwegian Ministry of Climate and Environment,

2021). The purpose of the Paris Agreement is to limit the rise in global average temperatures to less than 2°C above pre-industrial levels, and to strive to limit the rise in temperature to 1.5°C (Norwegian Ministry of Climate and Environment, 2021). To do so, the emissions from the petroleum industry must decrease. The greenhouse gas emissions from oil and gas operations contribute approximately for 15% of total energy-related emissions worldwide. Use of it stands for another 40% of the emissions (IEA, 2023). To limit the rise of global average temperature to 1.5 °C and achieve net zero emissions by 2050, it is necessary to cut emissions from the petroleum industry (IEA, 2023). Achieving the net zero goal also requires that the demand for oil and gas will fall. These two factors could cut emissions from oil and gas operations by 60% by the year 2030 (IEA, 2023).

The green transition in Norway refers to Norway's plan to achieve an emissions-free nation by 2050. To do this, it is necessary to change into a society in which advancement occurs within the bounds of what nature can tolerate (The Norwegian Governement, 2021). It involves a reorganisation of the economy. The current capacity for producing goods with high emissions must be replaced with less polluting methods (Statistics Norway, n.d.).

Now the Norwegian petroleum companies are facing a big challenge to reduce their emissions. Norway has committed to reduce their emissions by 55% within 2030 and become a low emissions society by 2050 (Norwegian Ministry of Climate and Environment, 2021; Office of the Prime Minister, 2022) The total emissions in Norway is around 48.9 million tonnes CO2 equivalent (Environment Norway, 2022). Emissions from oil and gas have increased by 48% from 1990 until today, but most of the increase happened before 2000, after that the emissions have been more stable (Environment Norway, 2022).

In 2022, Norway's oil and gas industry generated approximately 11.9 million tonnes of CO2 equivalent greenhouse gas emissions. Emissions related to the construction and installation phase, maritime support services and helicopter transport are divided into «others» (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b). This figure represents around a quarter of the country's total greenhouse gas emissions and highlights the significant environmental impact of the oil sector in Norway's overall emissions profile (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b). This is a large share of Norway's total emissions. Projections for the coming years is that the emissions

will continue and be relatively stable (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b).

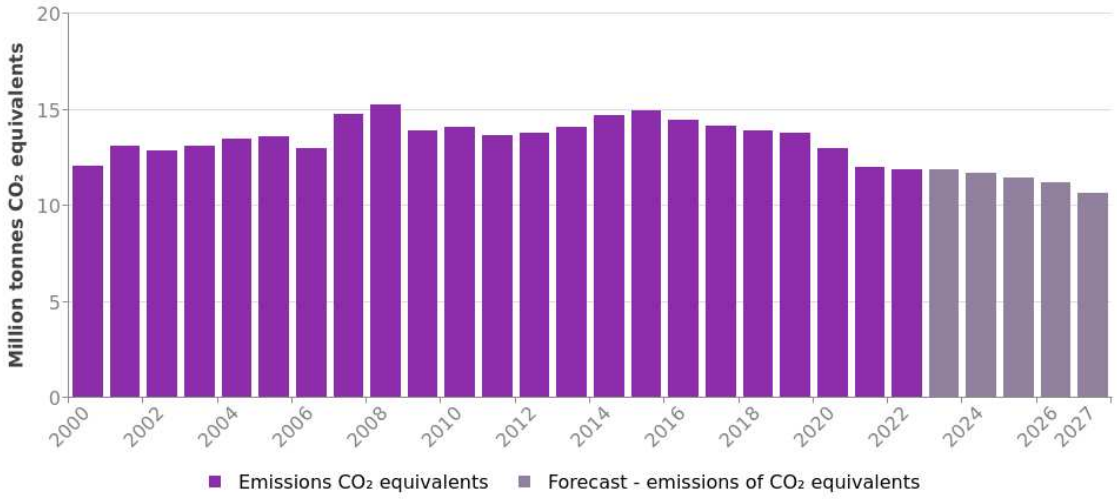

Figure 2: CO2 emissions for 2000-2022 and projections for 2023-2027

Source: (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b)

2.4 Management theory

2.4.1 Stakeholder theory

One reason for the growing interest in companies' actions for the green transition, and a reason petroleum companies are transforming their businesses, is due to increasing pressure from different stakeholders. A stakeholder is defined as "any group or individual who can affect or is affected by the achievement of an organization's purpose" (Freeman, 1984). This is a broad definition that only excludes actors that can not affect the company and those who are not being affected (Mitchell, Agle, & Wood, 1997)**.** In other words, it is a broad range of actors that can be seen as a stakeholder.

Stakeholder theory posits that corporations should consider not only their shareholders but also others impacted by the corporation (Freeman, 1984). Some researchers also distinguish between primary and secondary stakeholders. Primary refers to the groups with which the company has a close (and formal) connection with and which the company may have special duties that are similar to the obligations owed to shareholders (Parmar, Freeman, Harrison, & and al., 2010). Secondary stakeholders have no formal rights over the company and

management has no special obligations to them; However, companies may have regular moral obligations, such as not to harm them (Parmar, Freeman, Harrison, & and al., 2010). Non governmental organisations, governments, and workers are examples of stakeholders that have different opinions about how companies should act. Stakeholders have a big impact on firms and influencing them to become more socially responsible (Park, Chidlow, & Choi, 2014) .They do not necessarily have an economical interest in the company, but they might still care about the different firms' environmental profiles.

A company within the Norwegian petroleum industry has several stakeholders. That might for example be: local communities, the government, NGOs, workers, suppliers, customers, shareholders, media, competitors, local human rights defenders, trade unions, industry peers, business partners and others (OECD, 2017). All the stakeholders have different impact on the companies.

Some key stakeholders for the petroleum industry are:

The government: The government sets regulations, makes policies and gives production licences to companies operating on the Norwegian continental shelf (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, n.d.a). Norway's government can, in theory, change the taxes, requirements and regulations dramatically for the companies. To achieve climate targets by decreasing greenhouse gas emissions, authorities can limit the issuance of unused oil extraction licences, altogether affecting the operational strategies of companies. Another method is to increase the fundings for renewable projects in order to change investments into greener technologies (EY, 2022). They also get income from taxes that the petroleum companies pay.

Shareholders and investors: Shareholders provide the necessary capital for exploration, production, and expansion activities. Their investment and confidence in the company's strategic direction and financial health has a significant impact on the company's decisions and policies. Additionally, investors and shareholders are increasingly focusing on sustainability and environmental responsibility, demanding greener practices and transparency from the industry in addressing the effects of climate change (Eccles & Klimenko, 2019). For Norway's biggest petroleum company, Equinor, the government owns 67 percent of the shares in the company (Equinor, 2023). In this case the government itself is

a stakeholder both from a traditional government perspective and a shareholder.

NGOs: Through advocacy and public campaigns, NGOs raise awareness of environmental issues and promote greater industry responsibility and adherence to sustainable practices, thereby influencing regulatory changes and public perception (Lieutenant & Louis, 2023). Greenpeace is an example of an NGO taking actions against the Norwegian oil industry and their operations in an attempt to make them change their actions (Shipping Telegraph, 2023).

Workers: Workers are key stakeholders in the oil and gas industry because they directly contribute to operational efficiency, safety, and innovation (Lieutenant & Louis, 2023). Their skills, health, and morale have a huge impact on the firm's productivity and ability to meet legal standards. Furthermore, their well-being and job satisfaction can influence public perceptions and society's permission to act, making their involvement and advocacy important for sustainable business practices.

Communities: Local communities are affected by the companies in terms of work opportunities, emissions, buildings, plants and other impacts the firms have on the locals. Protests from local communities may harm the firms (Lieutenant & Louis, 2023).

Customers: Their consumer behavior directly impacts economic performance and the strategic direction of the industry. By choosing petroleum-based products, customers influence demand and drive the industry's focus on production, innovation, and potential environmental strategies (Lieutenant & Louis, 2023). Their preferences and willingness to shift to alternative energy sources may also lead to investments in sustainable practices and technologies in the oil industry.

Suppliers: Suppliers are important stakeholders for companies in the petroleum sector because they directly impact supply chain efficiency, cost control, and access to the industry's innovative technologies and materials. Its reliability and quality standards are critical to maintaining operational continuity, security and competitiveness in a highly regulated and competitive market (Lieutenant & Louis, 2023).

All these different stakeholders have various impacts on the companies in the petroleum industry and influence decisions within the firms with different levels of relative power and

efficacy. That is why it is important to address them and be aware of the threats and opportunities from various stakeholders.

2.4.2 NonMarket strategy

A nonmarket strategy is a planned set of activities intended to address social, political, and cultural concerns in a non-market setting. The ultimate goal of a non-market strategy is to enhance the business's performance, operational capabilities, and overall perceptions in order to generate additional value (Baron, 1995). Nonmarket strategy research has branched into two main areas that have mostly developed separately. One area explores how companies engage in activities that benefit society, known as Corporate Social Responsibility (CSR). The other area looks at how companies interact with government and politics to their advantage, referred to as Corporate Political Activity (CPA) (Mellahi, Frynas, Sun, & Siegel, 2016).

In order to maintain operational stability and promote industry growth, the Norwegian petroleum corporations may endeavour to influence energy policy and use CPA and CSR to improve their company's social license to operate and position itself favorably within regulatory frameworks. A strategy corporations can use is about protecting themselves against unwelcome political interventions, get access to political players and institutions, and win their support (Mellahi, Frynas, Sun, & Siegel, 2016). Some argues that the Norwegian oil and gas lobby has too much influence on the politicians and claims that it leads to the fact that Norwegian people take climate change less seriously than they should (Jakobsen, 2023).

One major organization in Norway is Offshore Norge with more than 100 member companies that has activities at the Norwegian Continental Shelf (Offshore Norge, n.d.). They are often lobbying for the industry, for example during Covid so companies could get financial support (Marshall, 2020). Another example is that they wanted the government to take more risks in oil and gas exploration (Valeur, 2022). If a company engage in lobbying and different campaigns, they can achieve higher economic value (Lux, Crook, & Woehr, 2011). By using nonmarket strategies as strategic CSR and CPA the Norwegian petroleum companies have the possibility to foster goodwill and strengthening their stakeholder relationships. It is also an opportunity to get support for the green transition or make the transition more favorable for themselves.

2.5 Drivers cited in the literature for the green transition

2.5.1 Regulations and Policies

As mentioned, one important stakeholder is the government. The government plays a significant role in determining taxes, regulations, rules, frameworks, and other factors that affect the petroleum industry. In many ways, they can determine the pace and efforts for the green transition within a country. Companies reduce their carbon emissions in their home countries when they are faced with stricter environmental laws (Ben-David, Jang, Kleimeier, & Viehs, 2020). Regulative pressure is also influencing management's decisions to increase their investments in renewables within traditional petroleum companies globally (Hartmann, Inkpen, & Ramaswamy, 2020). Policies and regulations from the Norwegian government are therefore an important driver for the green transition.

On the other hand, firms that operate in countries that have less stringent environmental regulation have more emissions in those places compared to their emissions in the home countries with more strict rules (Ben-David, Jang, Kleimeier, & Viehs, 2020). So, if a company has low emissions in Norway might this not necessarily mean they have low emissions in all countries they operate. That can be a problem from a global perspective.

An important policy that impacts the petroleum companies in Norway is the Norwegian carbon tax. Already in 1991 Norway introduced carbon tax as a pioneer among countries (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a) The tax applies to all gas, oil, and diesel burned in petroleum activities on the continental shelf (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a), in addition to CO2 and natural gas emissions under the Petroleum Activities Carbon Tax Act. In 2023, the tax rate were around NOK 1.78 (EUR 0.153) per cubic meter of standard gas and NOK 2.03 (EUR 0.174) per liter of oil or condensate (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a) The tax on the combustion of natural gas is NOK 761 (EUR 65.23) per tonne of CO2, and the tax rate on natural gas emissions is NOK 13.67 (EUR 1.17) per standard cubic meter (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a). The expected total tax revenue in 2024 is expected to reach NOK 7.8 billion (EUR 0.669 billion) (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a). If the Norwegian authorities raise the CO2 tax, it will increase

the incentives for petroleum companies to reduce their emissions.

The industry is also subject to emissions trading. As part of Norway's participation in the EU ETS, approximately 85% of GHG emissions in Norway are subject to tax or governed through the Emissions Trading System (Energy Facts Norway, 2023). Businesses holding licences to operate in the Norwegian Shelf must therefore buy emission allowances if their greenhouse gas emissions exceed their quota for the year (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023a). Recently, the cost of emission permits issued by the EU ETS has increased. In 2022, the price of a certificate allowing the emission of one tonne of CO2 was approximately 81.24 euros, or approximately NOK 820 (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b).

The combined effect of a carbon tax and the emissions trading system means that companies operating on the Norwegian continental shelf will be subject to a carbon emission cost of approximately NOK 1,500 (EUR 128.58) per tonne (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b). This charge is significantly higher than the rates applicable to most other Norwegian companies and far exceeds rates in other countries engaged in oil and gas operations (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b) In 2022, the national carbon tax amounted to NOK 7 billion (EUR 0.60 billion). Petroleum sector emissions under the EU ETS amount to approximately 10.6 million tonnes per year, which corresponds to a carbon credit cost of approximately NOK 8.7 billion (EUR 0.75 billion) based on average EU ETS prices and exchange rates in 2022 (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b). Overall, the amount paid by the companies was approximately NOK 16 billion (EUR 1.37 billion), although the actual amount paid may have been lower as emissions credits were allocated free of charge (Norwegian Ministry of Energy and the Norwegian Offshore Directorate, 2023b).

In the Environmental Performance Index (EPI), Norway is ranked as the 20th best country worldwide with a score of 59.3 (EPI, n.d.a). It makes sense that countries like Norway have a good score on the index because regulatory pressure to invest in renewable energy is strongest in developed countries, creating a "no choice" situation for companies (Hartmann, Inkpen, & Ramaswamy, 2020). The EPI Index is a data-driven summary of the state of sustainability around the world. EPI assesses 180 countries on climate change performance, environmental

health, and ecosystem vitality using 40 performance indicators across 11 thematic categories (EPI, n.d.a). At the national level, these indicators provide information on how close countries are to meeting established environmental targets (EPI, n.d.b).

Regulations and policies from the government are a major driver for the green transition. Not responding to regulatory pressure is rarely a good option for the firms. This is because penalties and loss of regulatory incentives can result in legal sanctions and significant financial costs (Hartmann, Inkpen, & Ramaswamy, 2020)**.** Even if Norway has good environmental policies in a global perspective, there are only a few countries that are stated to become net zero in 2050 (EPI, n.d.b). In order to reach the climate goals, companies in the petroleum industry can expect stricter regulations in the years to come.

2.5.2 Pressure from NGOs and increased Societal Awareness

Another driver for the green transition is the growing pressure from different environmental groups and the society in general. NGOs play a crucial role in pressuring multinational enterprises to consistently run their subsidiaries in a socially responsible manner and act morally in local marketplaces (Park, Chidlow, & Choi, 2014).

Firms, notably those in the petroleum business, may find their strategic responses greatly influenced by normative influences such as social pressure and environmental groups. As an example, climate activists from around the world gathered in 2023 outside Equinor´s annual general meeting to stop the plans for the Rosenbank field (Taylor, 2023). The plans are not stopped, but it is an example on how groups try to influence firms. These influences can change a firm's propensity to adapt by drawing attention to environmental issues and increasing the costs and benefits of following or defying these norms (Durand, Hawn, & Ioannou, 2019). Depending on their internal resources and the strength of the external demands for environmental responsibility, corporations may choose to pursue different degrees of substantive action or symbolic compliance as they weigh the costs and benefits of responding to these normative constraints (Durand, Hawn, & Ioannou, 2019).

Businesses today must show that they can contribute to climate solutions while still being economically viable in order to meet strategic challenges. This might be possible if the industry makes the required changes and works with a larger coalition to address climate change (IEA, 2020). NGOs have for example through their support of environmental laws

and management initiatives, accelerated the development of sustainability accounting and reporting standards (Sisaye, 2021). The Global Reporting Initiative (GRI) and integrated reporting (IR) frameworks, which are examples of how this campaign has standardised environmental and social reporting, are starting to influence how businesses communicate and share their sustainability performance (Sisaye, 2021). Incorporating sustainability into the corporate fabric, legislative changes and reporting rules that prioritise openness and societal benefit have resulted from the collaboration between NGOs and businesses (Sisaye, 2021).

In order to satisfy societal demands for both energy services and emission reductions, the oil and gas industry must strike a balance between short-term profits and long-term sustainable operations (IEA, 2020). NGOs is seen as a driver for the transition into greener practices. Businesses balance the benefits and drawbacks of granting or rejecting requests from NGOs when making strategic decisions (Spar & La Mure, 2003). These choices are frequently made even in situations when the company is unable to fully forecast how their actions will turn out, suggesting a change in corporate behavior that incorporates cultural values and a wider range of stakeholder interests in addition to traditional financial measurements (Spar & La Mure, 2003). In a future where several forces, including societal pressure, are accelerating energy transitions, maintaining the balance between profits and sustainability is critical to have a "license to operate" (IEA, 2020). That is one of the reasons why pressure or collaborations from environmental groups and society might be seen as a key driver for the green transition.

2.5.3 Market dynamics and Investors

The interplay of market forces, multinational enterprises, and investors becomes important in driving the green transition as global markets shift towards more environmentally friendly practices. As earlier mentioned, investors and shareholders are increasingly focusing on sustainability and environmental responsibility, demanding greener practices and transparency from the industry in addressing the effects of climate change (Eccles & Klimenko, 2019). Big funds like the Norwegian Government Pension Fund Global has detailed climate action plans and aims to drive their portfolio of companies towards net zero within 2050 (Norges Bank Investment Management, 2022). They also set clear expectations and requirements for what they expect from companies they invest in (Norges Bank Investment Management, 2022). Investors are in that way also a contributor to the green transition.

The market forces, or economical aspect, also drives the transition and takes basis in supply and demand (Erin Bass & Grøgaard, 2021). An estimated 507 GW of additional renewable energy capacity were added in 2023 (IEA, 2024). Beyond a century after the first commercial renewable energy power plant was constructed, the globe is expected to add more renewable capacity in the next five years than has been deployed to date. This is because, in most countries, their generating costs are lower than those of both fossil and non-fossil alternatives, and policies continue to promote them (IEA, 2024). By 2028, more than 42% of the world's electricity will come from renewable sources (IEA, 2024). With the increase in renewables, it can be argued that the market drives the industry towards a green transition.

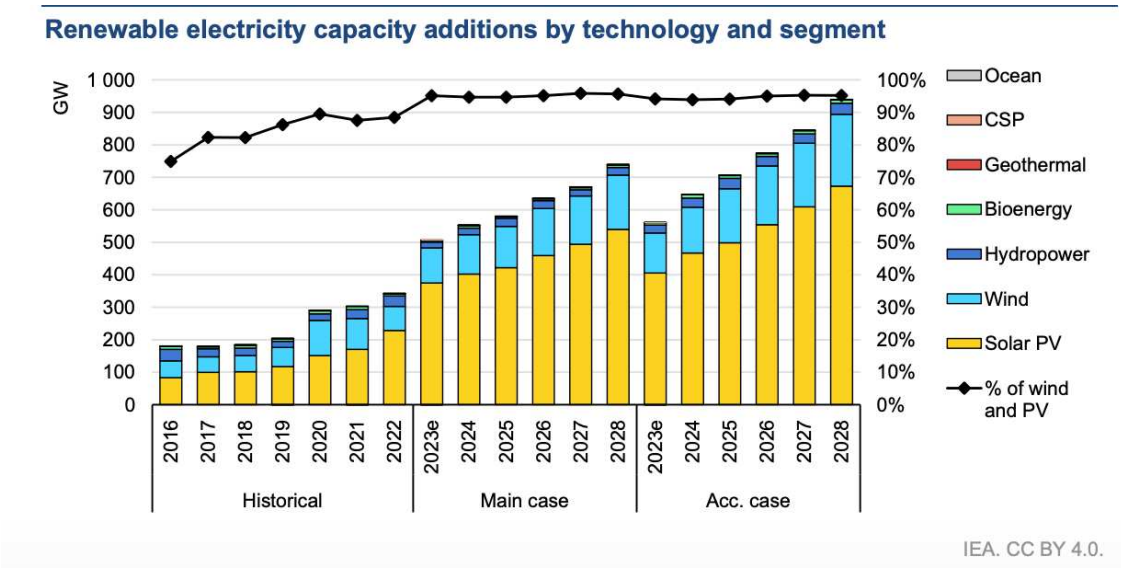

Figure 3: Renewable Electricity capacity additions Source: (IEA, 2024)

2.5.4 Technology

Technology is another driver for the energy transition (Erin Bass & Grøgaard, 2021). New technology and better solutions have reduced the costs for renewable energy. For example, the cost of producing renewable energy from solar and wind power has been declining for the past 13 to 15 years (IRENA, 2023). Even in the absence of financial assistance, solar and wind power became cost-competitive with fossil fuels between 2010 and 2022 (IRENA, 2023). When renewable energy sources get cheaper, more actors might take part in the technology and want to invest in it.

Norway is building the first open-source infrastructure for CO2 transportation and storage (Northern Lights , 2024a). Equinor, Shell, and TotalEnergies are the owners of Northern Lights JV DA. It is a formally registered and established general partnership with joint liability (Northern Lights , 2024a; Northern Lights, 2024b). It's setting the standard for large-scale carbon management solutions by establishing the first-ever open-source CO2 transit and storage network. This endeavor fosters further research in carbon capture and storage technology in addition to offering industrial polluters an efficient means of managing their carbon emissions (Northern Lights, 2024b). The Northern Lights project will have the capacity to store 1.5 million tonnes CO2 per annum (Equinor, 2024a). Norway's biggest energy company, Equinor, has been working and developing technologies for CCS since 1996 (Equinor, 2024a). If the Norwegian oil companies are in front on technologies that reduces the CO2 emissions, they might get a competitive advantage within the industry.

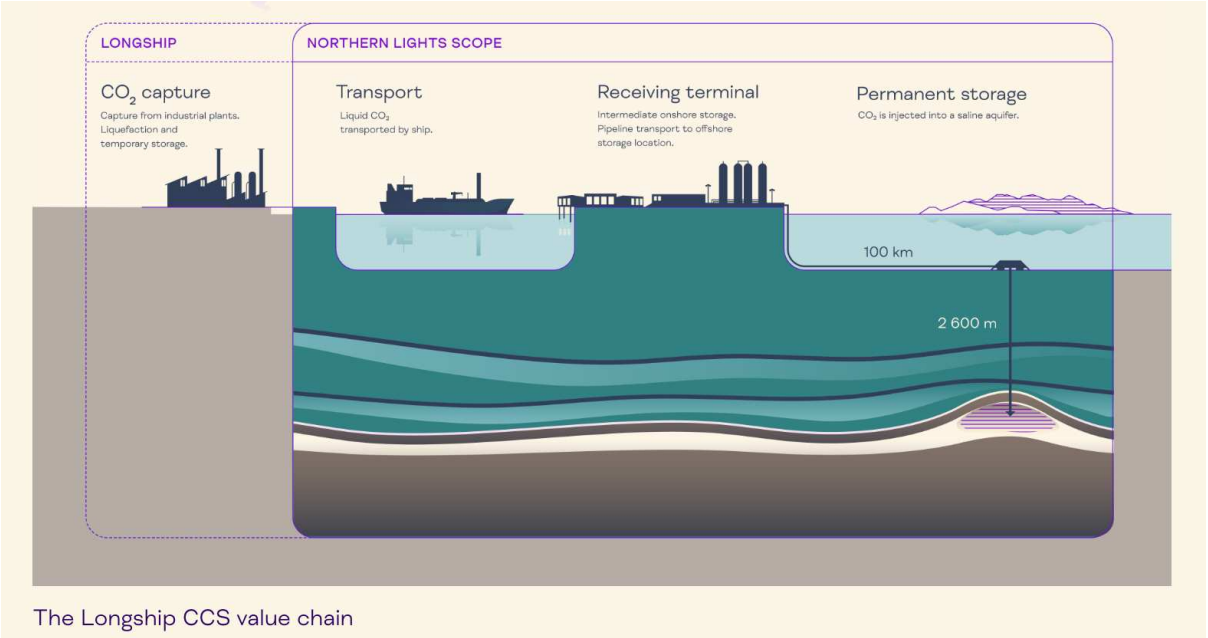

Figure 4: Northern Lights project. Source: (Northern Lights, 2024b)

Through improving energy efficiency, streamlining operations, and utilizing new technology, participants on the NCS are actively attempting to lower emissions from their operations (KonKraft, 2022). One concept the petroleum companies use to reduce their emissions is electrification of platforms. Electrification entails switching from fossil fuels to renewable energy, which lowers greenhouse gas emissions (Equinor, 2024b). By 2030, electrification using electricity from shore could decrease 9% of Norway's current total emissions and is seen as an important measure to reduce the emissions (KonKraft, 2022). Companies like Aker

BP and Equinor have several platforms that are electrified and continues to expand their electrification plans (Aker BP, 2024; Equinor, 2024b). The Johan Sverdrup field are electrified and has CO2 emissions of 0.67 kilograms per barrel, as opposed to an average of about 9 kg on the continental shelf of Norway and 15 kg worldwide (Equinor, 2024b). These methods used by Norwegian petroleum companies leads to decreased emissions.

2.6 Hindrances for the Green Transition

2.6.1 Market forces

On the other hand, there is also skepticism about some of the drivers cited in the literature (Christophers, 2024). In *The Price Is Wrong*, Brett Christophers argues that depending on market forces is ineffective to support the shift to renewable energy. He examines the dependence on the private sector for the advancement of renewable energy, dispelling the myth that the market can propel environmental advancement on its own. According to Christophers, private investment in renewable energy is inadequate and lacks sufficient profitability, meaning that state investment and intervention must play a major role. According to his research, a break from conventional market reliance is necessary to accomplish the necessary rate of change, highlighting the need of government involvement in promoting the move towards sustainable energy (Christophers, 2024).

It is also highly costly for companies to invest in new technologies and change their businesses. In the net-zero transition between 2021 and 2050, capital expenditures on physical assets for energy and land-use systems are estimated to come over $275 trillion (McKinsey, 2022). Cutting emissions intensity from oil and gas activities around the world in half by 2030 will require a total of $600 billion in upfront investment (IEA, 2023). That is a lot of investments in a short time period and might be seen as a big risk for companies and a hindrance for becoming more sustainable.

2.6.2 Greenwashing

Greenwashing may be interpreted as an intentional action by corporations that involves elements of deceit, aimed at misleading stakeholders (de Freitas Netto, Sobral, Ribeiro, & al., 2020). The petroleum industry is often accused of greenwashing and actors claims that a true transition to clean energy business models has not yet taken place within most of the major

companies in the industry (Li, Trencher, & Asuka, 2022; ClientEarth, 2021). An argument is that the firms' primary business strategies still largely rely on petroleum, with very small investments made in renewable energy sources (Hartmann, Inkpen, & Ramaswamy, 2020). There appears to be a fundamental disconnect between the growing conversation around green issues and the steady growth of fossil fuel reserves and production, which leads one to believe that none of the key players are actually making the switch to clean energy (Li, Trencher, & Asuka, 2022). One tactic used by energy utilities and petrol companies is to promote the advantages of new energy sources while some are drilling for oil in uncharted territory, damaging natural ecosystems and reducing biodiversity in the process, masking the underlying secret trade of (Baum & M., 2012).

Greenpeace, a well-known NGO, claims Norwegian petroleum companies like Equinor are greenwashing and not doing enough for the environment (Greenpeace, 2023). Others also assert that by making investments in cutting-edge technologies, example carbon capture and storage, Norway and its petroleum industry are greenwashing and legitimating industry instead of taking measures to decrease production (Lyngseth, 2023). Essentially, they argue that Norway's approach is a climate paradox, supporting an industry at the center of the global catastrophe while simultaneously advocating for environmental responsibility. They call into questioning Equinor positioning itself as a climate ally, labeling it instead as a significant contributor to global climate issues (Greenpeace, 2023).

3.0 Methodology

The dissertation's methodology is described below.

3.1 Research design

This thesis used a qualitative approach which was the appropriate methodology to investigate the RQ: **"Are key drivers cited by scholars facilitating the green transition within the Norwegian Petroleum Industry"**.

The aim of our qualitative approach was to generate comprehensive and illustrative data to comprehend the diverse aspects of the subject being examined (Queiros, Faria, & Almeida, 2017). A comprehensive collection of primary and secondary data was incorporated into the research design, along with a semi-structured interview process to obtain firsthand knowledge

from industry professionals. Interviews with experts are a recognized method for obtaining knowledge and understanding within the field (Saunders, Lewis, & Thornhill, 2019). This was supplemented by a thorough analysis of the current existing literature. Simultaneously, an extensive analysis of academic journals, industry papers, and governmental documents provides a wider context for the subject, which strengthens the validity of the research findings (Ridley, 2012).

3.2 Primary Data Collection

The expert interviews, which use pre-planned open-ended questions, enabled in-depth analysis while also giving participants the freedom to provide fresh ideas and viewpoints. It is a method where they have the chance to really express themselves (Galletta, 2013).

In total 12 interviews were conducted. The persons interviewed were a broad range of experts and included people with leading positions within existing petroleum companies in Norway, both among the biggest and smaller companies. Companies that both had oil and gas activities and renewables in their portfolio were also included. Suppliers to the petroleum industry got interviewed to get insights from others in the value chain. Members and deputy members of the Norwegian Parliament were interviewed to get policy makers perspectives. Politicians also have deep insights in Norway's industries and the green transition. The policy makers were from different political parties, to make sure to get different viewpoints and avoiding insights from only “one side” in the political landscape. Ranging from political parties often referred to as “green” and “less green”. People with a long experience in the field (20 years+) and people with less experience that were younger were included. This was to avoid any biases.

All the interviews were conducted through the video chat service Teams either in English or Norwegian, depending on the preferred language for the other person. The duration of each session, which ranged from thirty minutes to an hour, allowed for thorough examination of the perspectives and experiences of the participants. The specified period was designed to ensure that participants stayed attentive and involved during the talk, while also providing ample time for a full expression without inducing exhaustion.

#	Industry/field	Role	Country
A	Petroleum company	Senior advisor within Renewables	Norway
B	Petroleum company	Analyst	Norway
C	Petroleum company	Coordinator	Norway
D	Petroleum company	Works with Strategy	Norway
E	Petroleum company	Director	Norway
F	Major supplier in the petroleum industry	Vice President Sustainability	The US. Big operations in Norway.
G	Major supplier in the petroleum industry	Supply Chain	Norway
H	Politician	Policy Maker	Norway
I	Politician	Policy Maker	Norway
J	Politician	Policy Maker	Norway
K	Politician	Policy Maker	Norway
L	Politician	Policy Maker	Norway

Table 1: Overview of experts being interviewed

3.3 Secondary Data Collection

The secondary data collection was obtained by examining peer-reviewed academic articles, industry reports, government publications, and official Norwegian websites with historical data archives related to the Norwegian Petroleum Industry. These resources provided valuable historical perspectives, trend evaluations, and standards by which to evaluate the state of the art. The secondary data provided the foundation for creating the context for the original research findings.

Methodology overview	
Primary data	**Secondary data**
12 Expert Interviews	Academic articles Government publications Industry- and consultant reports Historical data archives related to Norwegian petroleum

Table 2: Overview of Methodology

4. Analysis and Discussion

As the literature review showed, there has been significant research conducted about the green transition, drivers and other factors that influence firms being more sustainable. There is also research about why certain oil and gas companies are dedicated to renewable energy, while others keep a clear focus on petroleum activities and only make small investments in renewables (Hartmann, Inkpen, & Ramaswamy, 2020). However, there is a paucity of empirical studies evaluating whether the key drivers identified by scholars are effectively advancing the green transition within the Norwegian Petroleum Industry.

An inductive approach to qualitative content analysis was employed, using the theoretical underpinnings outlined by Mayring (2014). This method is particularly suited to exploring the rich, textual data derived from expert interviews, policy documents, and industry communications within the Norwegian Petroleum Industry. It allowed us to extract themes and categories directly from the raw data, rather than imposing preconceived notions or frameworks (Mayring, 2014). This ground-up approach to analysis ensured that the study remained open to emergent ideas and thus provided a robust and nuanced understanding of how key drivers are perceived to be influencing the industry's green transition (Mayring, 2014).

All the interviewees were identified as A - L. Short summaries of each interview, the categorization and an overview of the interview questions can be found in the appendix.

4.1 Key drivers for the green transition within Norway's petroleum industry

Several drivers were mentioned during the interviews. In this section I will analyze and discuss the different drivers that the interviewees claimed that affected the Norwegian petroleum industry towards a greener direction.

Regulations and Policies

The main force behind the green transition in the Norwegian petroleum sector are frequently cited as regulatory pressures (Interview A-J & L). All the persons being interviewed, except one politician (Interview K), mentioned that regulations and policies either from Norwegian government, political parties, or international requirements from the EU and international climate agreements are one of the most important drivers for the green transition within the industry. Together with international agreements, the Norwegian government implements laws requiring lower carbon emissions and increased energy efficiency (Interview A & B).

Certain regulatory initiatives, such as the carbon tax, are useful in increasing the cost of pollution and encouraging businesses to switch to more environmentally friendly technology (Interview H - L). When it costs to pollute, and when the government are increasing the prices on pollution this will motivate the companies to become greener (Interview H). It is expected that the price of carbon emissions will increase in the coming years and the petroleum companies knows which direction the taxes are going. That is why they must cut emissions from their operations before the carbon taxes increase too much (Interview H). Another important regulatory initiative is the EU ETS (Interview J & L).

Both long-term strategic planning and operational expenditures are directly impacted by these budgetary approaches. Environmental licensing laws compel businesses to uphold specific standards to operate lawfully. Businesses are being pressured to surpass basic criteria as this "license to operate" is becoming more and more linked to environmental performance. If the businesses don’t cut their emissions, they probably won’t survive in the future because of the laws and regulations (Interview B & H). Norway is bound by international standards and expectations established by agreements such as the Paris agreement. These international commitments are implemented nationally, affecting business operations (Interviews C & G). These agreements have an impact on company strategy and investment decisions in addition to merely ensuring compliance since they create the perception and expectations surrounding the industry's environmental responsibility.

The last 2-3 years there has been a shift. Right now, because of the regulations, companies have started to look at the designs of their products to see how they can reduce the emissions from them (Interview F). Without the pressure from the governments, little would have happened, and it wouldn't have gone in the direction towards greener practices that it goes now (Interview F, G & L).

Even though regulations and policies are seen as a one of the biggest drivers, some of the politicians were more critical and said the policies are a driver but they are not good enough to facilitate the green transition as fast as necessary to reach the climate goals (Interview I & L). It was argued that we need a more concrete plan for phasing out the oil and gas. There are small steps in the correct direction, but it is too slow to achieve the goals we are committed to. CO2 tax is a helpful tool and driving the sector a bit in a greener direction (Interview I).

Pressure from NGOs and increased Societal Awareness

One politician claimed that the pressure from NGOs and environmental organizations are a key driver for the transition (Interview I). The others were more skeptical to their actual influence. Pressure from activists and NGOs might occur and the workers in the company can feel and see them, especially the bigger petroleum companies, but their impact on strategies and change is seen as insignificant (Interview A & D). Others don't perceive them in their daily work (Interview C & F), and they for example see safety as a much higher risk than pressure from the activists (Interview F). Suppliers in the petroleum industry face very little pressure from NGOs, because they are a bit more hidden (Interview F & G). In general, the NGOs are not seen as a key driver for the green transition within the Norwegian petroleum industry and don't influence the companies in a big way (Interview A-H & J-K).

This research does not investigate the relationship between for example how NGOs affect the general awareness in society. But the societal awareness might be seen as a bigger driver than the NGOs and activist (Interview A, B, D, E & F). To cite one of the persons being interviewed: "We are representative of the population. All of us are citizens in Norway and think about the future of our kids. I think our motivation to bring about a change is reflected in the population. We all want to achieve the climate goals because of our country's future (Interview A)." This statement can be interpreted as stating that general public opinion in the population might affect decisions of the companies.

Market Dynamics and Investors

Market dynamics are considered as a driver for the green transition among several interviewees (Interview E - H, J, K & L). It's a need for industry growth after the oil and gas even though it entails a longer-term perspective. The demand for oil will decrease and then it will be necessary to replace both the income and the creation of jobs with something else. That is why market demand and the falling demand for oil are driving the transition. There is a need for an energy substitute (Interview J). It was also argued that the market and companies are more concerned about the green transition and that is why they are leading it. Good ideas did not come from politicians but from the market and different companies (Interview K).

Suppliers in the industry have the petroleum companies as their customers. Now they see a bit of higher willingness to pay for more sustainable products. For just a few years ago, it was mostly about costs, but now the petroleum companies also care more about sustainability when buying different products (Interview F). Also, petroleum companies recognize that the market and customers demand more sustainable products (Interview E). Interview G is another supplier to petroleum companies and argued that the industry notice that the demand for oil and gas will decline and if they want a business in the future they must adapt to the market.

Investors can be both be seen as a driver and a hindrance for the green transition. Some feel that investors demand that the companies should take part in the green transition (Interview C, G & L). If we go towards a more sustainable future, the investors also want the firms to be more sustainable. Renewables is a big focus and can be seen as a new income source for investors (Interview G). On the other hand, others were more skeptical and argued that investors are resistant to investments in greener technology and renewables (Interview D & E). Some don’t like investing in the green transition because many of the investments are not profitable, at least in a short term (Interview D & E). The stock prices also can decrease when the companies present new investments in renewables because the market currently values oil and gas as more favorably (Interview D).

Technology

None of the experts mentioned technology as the biggest driver, but many people in the industry had strong opinions about the technologies role to accelerate the green transition. At the moment the technology is not ready (Interview C, D, E, F & G). For some services and products there are no good sustainable alternatives in the market that allows them to replace the products they deliver (Interview F & G). They must deliver what their customers want if they seek to have a business model (Interview F). Another problem is missing data and technology that doesn't yet exist (Interview A & C). As highlighted in Interview C, "It is not about willingness to do something but complexity. This is pretty new. We need more experts and people with good competence". This demonstrates a gap between the potential of innovations and the industry's capacity to adopt them successfully.

Besides the impediments, many mentioned that the technology is crucial to become more sustainable. Technological advancements targeted at lowering greenhouse gas emissions have a major role in the industry's drive towards sustainability. As stated in Interview E, "Technology is very important." This underscores the critical role that technology plays in accomplishing the industry's sustainability goals. To meet the objectives, the industry needs more affordable and advanced technologies (Interview E). This emphasizes how important it is for technology to continue developing to make sustainable practices both practical and competitive. The sector needs technology that is cheaper that can speed up the green transition. It is vital that technology becomes better and more affordable in the coming years (Interview D).

<u>Other drivers mentioned</u>

Big state-owned companies (the state owns more than 50% of the shares in the company) might also be a driver for the transition (Interview A). When the big firms change, others want to follow. Those firms have a different pressure from the shareholders. Many turn to the big companies for advice, but they don't necessarily have the solutions alone. In uncertain and challenging times, the petroleum companies can still follow their strategies and invest in the green transition with support from the government (Interview A).

4.2 Management Theory: Stakeholders and Lobbying

In the literature review, both stakeholder theory and non-market strategy were discussed. All the experts were asked questions about the most influential stakeholders affecting the petroleum industry. Additionally, the politicians were asked questions about the lobbying

efforts from the oil and gas companies. This was to see if they used lobbying as a strategy to either improve or hindrance the green transition.

Stakeholders

Pressure and demands from different stakeholders are also a driver for the shift. In the table underneath, there is a summary of the most influential stakeholders that are affecting the petroleum companies towards a greener direction according to the interviewees. The experts had the opportunity to choose more than one stakeholder.

Stakeholder	# Interview
Government/Regulators	A, C, D, E, F, G, H, I, J, K, L
EU	H, U, J, K, L
Society	A, B, E, H
Workers/Employees	A, B, D, E
Suppliers	B
Customers	C, D, E, F, G
Investors	C, G, J, L
NGOs	I
Workers Union/ Employee organizations	L, J

Table 3: Most Influential Stakeholders

As shown in the table, the government and regulators are the most influential stakeholders followed by the EU and their customers according to the experts. The regulators decide whether the petroleum companies will be granted a license to extract oil and gas. Alongside with EU they also decide different rules, regulations, and taxes for polluting (Interview K & L). If they want, they also can set an end date for Norwegian oil and gas business (Interview I & K). This is probably why most of the experts mentioned them as the biggest stakeholders to affect change in the industry. Customers were also identified several times as one of the most influential stakeholders since the firms need to adapt to their needs and demands to make profits. If they want more sustainable products, the firms will adapt (Interview C – G).

Non-market strategy: Lobbying

The petroleum sector has a big say in energy and environmental policy through lobbying, especially when it comes to drafting the laws that control how the business operates (Interview I, J, K & L). Only one politician said they had some impact (Interview H), the others meant that the petroleum industry has big impact on legislations and matters that affects the industry. According to Interview K, the petroleum industry has a great deal of influence over Norwegian politicians and authorities, mainly because of the industry's historical and economic importance. The corporations' involvement in the industry is portrayed as being vital, and their lobbying efforts are not just ordinary (Interview K). Because of their continued involvement, there have been times when it appears that industry interests have a significant influence on governmental decisions, which is indicative of the oil and gas firms' strong negotiating position (Interview L). This is seen by the manner in which the sector has succeeded in shaping laws that support its commercial interests even in the face of potential conflicts with more general environmental objectives (Interview I, K & L).

Interviewee J were part of the negotiations about oil packages during the Covid-19 pandemic. The Norwegian oil lobby had a big influence on both the Labor Party and the Conservative Party. They got exactly what they wanted, and the politicians just accepted their demands (Interview J). This is an example of how strong the industry stands in Norway and might be a hindrance for green transition (Interview I – L). It reveals a dynamic in which the petroleum industry continues to greatly influence the regulatory environment due to its existing relationships and economic clout, often at odds with the growing movement towards a green transition (Interview J).

4.3 Hindrances for the Green Transition

Greenwashing

All experts admitted that greenwashing happened to some extent within the industry, but there were differing opinions about how the degree of greenwashing that has occurred. Three of the experts were very critical and stated that it was a lot of greenwashing among petroleum companies (Interview G, I & K). One argument is that the firms want people to think that Norway produces petroleum with low emissions, but that is not the whole truth because most of the emissions happen when oil is burned (Interview I). As stated in the literature review, petroleum companies electrify their platforms to cut emissions from the production phase

(Equinor, 2024b). Electrification of platforms is controversial, and some see it as a method to achieve goodwill for the industry so the companies can drill for oil and gas longer (Interview I & K). But they both admitted that as long as there is a demand for petroleum, it is better that it is produced with as low emissions as possible (Interview I & K).

Interviewee K stated that the petroleum companies need to be more honest about what they actually are doing. Because the expert claimed that "bragging about doing green things when it's a small percentage of what they actually invest in" is not the way to go. Major firms within the industry are using advertisements targeting younger people that they should join them to help to pull the world in a better direction (Interview K). This message is not necessarily the truth (Interview K).

Other experts admitted that greenwashing existed but mentioned that it was small greenwashing generally speaking and most of firms want to implement real change (Interview A, C, H & F). Since they all are citizens in Norway and want a good future for their kids, it might be a sign that the industry really wants to take part in the transition (Interview A). It might also be easy to figure out which firms are not honest and transparent about what they do (Interview D).

Some of the interviewees mentioned measures to prevent greenwashing within the sector. The measures cited were: better assessment of consequences before extracting oil and gas (Interview I), the firms should be more honest about what they actually are doing (Interview K), more transparency about supply chains and public CO2 balance sheets (Interview G). These tools were proposed as helping to avoid problems with greenwashing while strengthening the green transition among petroleum companies.

Political Frameworks

As shown in the literature review and in this chapter, regulations and political frameworks are one of the key drivers for the transition. But several of the experts also claimed that it was not good enough and at the same time can be a hindrance for becoming more sustainable (Interview A, B, G & I). Interviewee A viewed the Norwegian government as too weak in creating the political frameworks needed and argued that climate is a global problem and some politicians saw it from a more local viewpoint. Norway also has to work more with the EU, and it is necessary to do some "painful" actions to reach the goals (Interview A).

As an example, if a petroleum company wants to build offshore wind, they need cables to other countries to sell the power and make profits. Some politicians don't want this because they are afraid of higher electricity prices (Interview A). Another example was mentioned by interviewee B. The expert cited challenges with regulations in Norway and saw the electrification of platforms as an issue. First the politicians wanted it and now some of them have second thoughts because of rising electricity prices. The companies invest for 20 years and more, but the government changes after 4 years which is an issue (Interview B). Nevertheless, Norway has, in general, a stable political landscape compared to other countries (Interview B).

Access to Power and Electricity

To reduce the emissions from the production phase, firms can electrify oil and gas platforms. A consequence of this is increasing demand for more power (Interview A, H & J). There are large challenges with electricity shortages because the electrification process needs a lot of power (Interview H & J). Conflicts of interest appear between people, the petroleum industry, other industries, and others who want access (Interview H). Interviewee A mentioned that a more sustainable petroleum industry in the next few years requires either accepting higher electricity prices or the government needs solutions to mitigate increasing prices. Technology might also help to set up easier and cheaper electrical infrastructure with, for example, mini power plants. Today the system is bureaucratic and everyone is connected to one system. Energy optimization is also a solution (Interview A).

Costs

Another barrier is cost (Interview B, D, E, G & H). The actual shift is very expensive and the technology required to make it possible is either nonexistent or very costly (Interview D). It is also difficult to find green solutions that are economically profitable (Interview B). Interviewee D also highlighted the socio-economic complexity of the green transition by expressing concerns about possible employment losses linked to a replacement away from conventional oil and gas production methods.

Additionally, interviewee H discussed the financial limitations from the viewpoint of the shareholders, who continue to place a high priority on profitability. Although they have the potential to reduce emissions, prospective alternatives like hydrogen and carbon capture and

storage (CCS) are highlighted as expensive endeavors that not all companies can afford. This points out a basic problem: green technology investments need to meet shareholder demands for returns, which can deter expensive, ground-breaking environmental projects (Interview H). There is a delicate balance that the Norwegian petroleum sector must strike between promoting environmental sustainability and guaranteeing economic sustainability, given the constraints imposed by both the need to maximize shareholder profit and becoming more sustainable.

Economic Reliance

Norway has benefited economically from incomes related to the petroleum industry (Norwegian Ministry of Finance, 2023). Despite this, economic reliance on the industry and all the jobs created are seen as another hindrance (Interview H, J, K & L). Norwegian petroleum companies are taxed almost 80% and it is an enormous part of the national budget (Interview J). The firms are used to very high profits and it is difficult to achieve such profits in other sectors and with renewable investments (Interview L). “As a benchmark it is said that if you take the job from one person who works in the oil and gas industry, you need eight people working in the travel agency” (Interview J). It is very difficult to balance the national budget without income from oil and gas. To drive the green transition, it is necessary to invest a great deal of money and that money needs to come from oil (Interview J).

Supply Chain

Lastly, as a barrier, the supply chain and especially scope 3 emissions were mentioned as a hindrance (Interview A & F). Emissions falling under scope 3 originate from sources that are not under the reporting organization's ownership or control but are nonetheless impacted by it indirectly through its value chain (United States Environmental Protection Agency, 2024). Products might be produced in countries with little support and weak governmental policies where the power comes from coal plants (Interview F). This makes it difficult to control the supply chain. It is also difficult to have fully control over the whole supply chain and their emissions (Interview A & F).

4.4 The future of the Norwegian Petroleum Industry

Short term (10 – 15 years)

The Norwegian petroleum industry is currently going through a crucial time of transition due

to stricter regulations requiring cuts in carbon emissions. All the persons from petroleum companies who were interviewed claimed that their company had goals to reduce emissions both in a short term and longer term. Interviews pointed out how important international agreements and governmental rules are in directing the industry's strategy towards more environmentally friendly methods. The future and changes in the industry will therefore depend on how the regulations and requirements evolve. The industry's immediate activities are shaped by fundamental forces such as regulatory restrictions and societal pressure for environmental accountability (Interview A & C).

To reduce carbon footprints, businesses are being entrusted with incorporating green technology like carbon capture and storage (CCS) and electrification of platforms (Interview A - E). But maintaining economic viability of these technologies is a constant struggle, made more difficult by shifting political support that affects long-term investment choices (Interview B). Reducing emissions per unit of oil produced is becoming more and more important, which is in line with both operational efficiency requirements and environmental aims (Interview B & C).

There were different views among the politicians about the industry's future, especially in a short-term perspective. Interviewee I and J expected little change over the next few years. Maybe there will be some closure of fields and more electrifications. People are in general skeptical about changes and this is a reason why the transition might take longer time (Interview I). Interviewee H expected dramatically fewer emissions from the production phase and many electrified fields. Major explorations of oil and gas might end (Interview L). But at the same time, if you are technology optimist, one can still use petroleum with lower emissions for example by using CCS (Interview J).

Long Term (20 + years)

Most of the experts were more uncertain about the industry in a longer term. The sector is anticipated to see a profound metamorphosis over the next several decades, characterised by a decisive shift away from reliance on petroleum and towards a diversified energy portfolio that includes sizeable contributions from renewable sources. The expectation is for further developments in green technology and the global transition to energy systems that place a premium on sustainability serve as the foundation for this long-term goal (Interview A, B, D,

E, F, G & L). Oil and gas will probably still exist in the future, but it might be a very small business. Renewables will take over the energy markets (Interview F).

There will likely be significant growth in renewable energy projects, particularly offshore wind, to establish Norway as a pioneer in green energy technology. While there are potential gains from the integration of these new energy sources, there are also significant obstacles, including scalability of technologies and security of investments in the face of volatile global economic conditions (Interviews A & D).

The politicians expected larger changes over a longer term perspective (Interview I, J & L). By 2050 the petroleum companies must become net zero if they want to operate and some of the fields might use CCS, hydrogen, and offshore wind to achieve this (Interview H). Investments in renewables will increase and the demand for oil and gas will decrease. Many big petroleum companies have started with greener branches and are changing their activities. These will most likely be their main sources of income (Interview J). There might still be people working in existing oil fields in 2050 but most companies will probably have a renewable portfolio as their main income (Interview K).

4.5 Discussion

According to the interviews, there is broad agreement that regulatory frameworks play a major role in bringing about environmental change, which is consistent with the literature's emphasis on the importance of key governmental policies. The impact of Norway's environmental regulations and carbon tax initiatives was consistently highlighted by interviewees, spanning from industry insiders to policymakers. This confirms the literature's findings that regulatory pressures are a primary catalyst for the green transition. These regulations act as causal independent variables, directly influencing the industry's environmental investments and strategies. This congruence points to a strong theoretical and empirical justification for the role that governments play in influencing business practices.

On the other hand, the interviews presented a more nuanced picture about technology as a key driver. Several experts highlighted constraints and the significant financial outlays need to get these advancements to a commercially sustainable stage. This disparity draws attention to a situation in which the real-world difficulties temper the optimism seen in the research. This calls for a more cautious assessment of technology's role in Norway's petroleum sector going

forward. But Technology advancements like carbon capture and storage (CCS) and renewable energy sources are critical to reaching sustainability goals and lowering carbon emissions. Technology can also be seen as a causal independent variable that act as a pillar that enable the green transition.

Furthermore, the integration of interviews and existing research clarifies the complex interplay between investor behaviors and market dynamics. The research points to a simple path where green practices are driven by investor needs for sustainability and market pressures. Interview data, however, showed a range of reactions. While some industry participants observed a clear change towards sustainability as a result of investor and market forces, others pointed out inertia and resistance as a result of risk and economic factors. These might act as mediators by translating regulatory pressures and technological possibilities into business practices.

While the academic literature saw NGOs as an important driver of environmental change through advocacy and public engagement, the interviewees provided a different view. Increased societal awareness was seen as a more important driver than NGOs. They acknowledged that NGOs have a significant impact on bringing about change and increasing public awareness, but they also said that their real influence on strategic choices is minimal when compared to market and regulatory factors. This finding raises the possibility that, despite their considerable contributions to discourse and policy advocacy, NGOs may not have as much of a direct impact on corporate strategies in the petroleum industry as expected. While they don't directly cause changes in corporate strategies, they might influence how effective other drivers like regulations and market forces can be. NGOs and increased societal awareness can be seen as moderators.

According to stakeholder theory reviews in the literature, a wide range of stakeholders, including consumers, civil society, and government regulators, may have an impact on a company's strategy. The experts acknowledged this diversity of impacts, but they also indicated a notable disparity in the strength of stakeholders, with governmental and regulatory agencies having the most impact on business practices. This practical focus on regulatory impact highlights the crucial role that policy plays in facilitating or impeding industrial change, which is consistent with the theoretical claims made by stakeholder theory.

The analysis of non-market strategies reveals a significant impact of corporate lobbying on policy-making. Both literature and interview findings reveal that corporate political activity (CPA) effectively protects industry interests and influences legislation, as seen during the COVID-19 pandemic. This strong influence, while beneficial for the industry, often conflicts with environmental priorities, highlighting a potential barrier to the green transition.

5. Conclusion

In this final chapter the answer to the research question is provided along with an acknowledgment of the study's limitations and recommendations for further research areas.

5.1 Conclusion

A qualitative methodology was used in this study to answer the research question. Whether key drivers cited by scholars are facilitating the green transition within the Norwegian Petroleum Industry was investigated looking at regulatory frameworks, technological advancements, investors and market forces, NGOs, and increased societal awareness.

Regulations and policies, especially those pertaining to carbon taxes and the EU ETS, have become powerful tools that force businesses to become more environmentally friendly. The green transition of the sector has started by the Norwegian government's approach to taxes, regulations, and adherence to international agreements such as the Paris Agreement. To speed up the process, these regulations can, and probably will, be increased in the coming years.

Innovation in technology is essential for the green transition, especially in the areas of carbon capture and storage (CCS) and renewable energy sources like offshore wind. Although technology offers the means to make the shift, its implementation is frequently impeded by costs and issues with scalability. Other drivers are the market forces and investors. Market forces have pushed petroleum corporations to diversify their energy portfolios as sustainability has become more and more favoured due to investor and consumer behaviour. However, the current infrastructure primarily dependent on fossil fuels and the hefty capital requirements make the change difficult. The industry's capacity to meet shareholder expectations and maintain its financial stability frequently act as a barrier to the significant investments required for a full green transition.

Furthermore, social pressure and different stakeholders has been important to push the firms into a greener direction. Lastly, while the direct influence of NGOs on corporate strategies may be very limited, they might play a role in shaping public discourse and, indirectly, the regulatory landscape that governs industry practices.

In conclusion, drivers stated in the literature are facilitating the green transition within the Norwegian Petroleum Industry. But there is divergence with respect to the impact for each of the drivers. Regulations and policies are the strongest driver and NGOs the weakest. The other drivers mentioned are facilitating the green transition to a certain degree. Regulations, policies, and technology can be seen as causal independent variables, while investors and market forces serve as mediators. NGOs and societal awareness act as moderators.

5.2 Limitations

This research has some drawbacks. Even though it included 12 focused interviews and a great deal of qualitative data, the small sample size and single method approach limit the applicability of our findings to the larger Norwegian Petroleum Industry. More interviewees could have been included to strengthen the validity of the research. Although a qualitative approach is useful for obtaining subtle insights, it is not as reliable as quantitative validation and may involve subjectivity from the researcher and participants. Furthermore, the lack of longitudinal analysis restricts the scope to a single point in time by failing to capture the industry's long-term patterns and dynamic changes.

5.3 Further Research

A mixed-methods approach could be used in future research to evaluate and improve the generalizability of the study's findings by adding quantitative data. Further studies should include a quantitative method to get specific figures on the effect of each driver and make it easier to distinguish between the different drivers. Also, studies with a longitudinal design could monitor how the drivers change over time and provide insights into how they affect change. Furthermore, comparative research involving other oil-producing nations may shed light on national approaches to the petroleum industry's green transition as well as global trends.

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The AI tool Chat GPT has been used to check for grammar spellings and change certain sentences in this thesis. https://chat.openai.com/

Appendices

The AI tool Chat GPT has been used to summarize the interview transcripts.
https://chat.openai.com/

Appendix A: Interview A
A: Senior Advisor Renewables, Petroleum Company

Key Drivers:

- Political frameworks and state-owned company initiatives lead the green transition. It's at the core of what we do. We must adapt to whatever the government tells us to do.
- Big players in the industry, like major state-owned companies, set a precedent for others.
- "We have to answer to the Norwegian citizens."

Motivations:

- Moral and social responsibility towards Norwegian citizens.
- Corporate strategy driven by political pressure and a duty to represent the population's environmental ethos.
- We are representative of the population. All of us are citizens in Norway and think about the future of our kids. I think our motivation to bring about a change is reflected in the population. We all want to achieve the climate goals because of our country's future.

Stakeholders:

- Government and society at large, including the workforce, exert significant influence.
- Governmental policies and international climate agreements play a critical role.

Transition Changes:

- A shift towards decentralized energy systems, such as mini power plants.
- Increased focus on energy optimization and diverse renewable energy sources.

Greenwashing:

- Little greenwashing.

Barriers:

- Scope 3 emissions control and overview pose significant challenges.
- Necessity for international cooperation in quantifying carbon emissions accurately.

- We need a better political framework.

Goals and Pace:

- Net zero in 2050, with detailed planning and renewable sectors aiming for 2040.
- The company is at the forefront of the transition, not succumbing to the market pressures that affect its peers.

Green Initiatives:

- Electrification of offshore platforms as a major sustainable initiative.
- Significant investments in energy efficiency measures.
- Participation in industry collaborations like the NLP project for better emission reporting.

Other comments or statements about drivers:

- «We feel activists a lot. We are often seen as the front figure of the industry in Norway. So we have to carefully watch what's happening around us. Activists often see one small thing, but we have to see the whole picture. Many aspects in a global world. If we stop our production today, others with higher emissions will just take our place. We see them and feel them a lot, but in general I feel they have little impact on our actual decisions."

Appendix B: Interview B

B: Analyst, Petroleum Company

Key Drivers:

- International environmental requirements and global warming mitigation efforts.
- Norway's commitment to the Paris Agreement and goal to achieve net-zero emissions. Norway and the Norwegian companies must adapt to the requirements.
- "License to operate" reflecting the need to adapt to continue production. The ones that can produce at a low cost and with the lowest possible emissions will survive. Norway has in a way the "greenest" oil in the world.
- General awareness

Motivations:

- Investment in long-term, sustainable practices that may not be immediately profitable.
- Commitment to exceeding current environmental requirements.

Stakeholders:

- Suppliers, employees, and the broader society impact and shape sustainability approaches.
- Government policies and international climate agreements are major influencers.

Transition Changes:

- Race to minimize emissions per barrel produced in the next 10-15 years.
- Diversification into new revenue streams such as carbon capture projected for the next 50+ years.

Greenwashing:

- There is some greenwashing in the industry.

Barriers:

- Economic viability of green solutions and the profitability of oil production.
- Fluctuating political frameworks and short-term governmental horizons compared to long-term investment needs.
- Global market volatilities and supply chain reliability concerns.

Goals and Pace:

- Aim for net-zero emissions with an interim goal of halving emissions by 2030.
- Ongoing cooperation with other companies on projects like carbon capture.
- Active adaptation to regulatory directives and measures, with a focus on maintaining a competitive advantage and attracting talent through a strong environmental profile.

Green Initiatives:

- Focus on CCS projects and platform electrification to reduce carbon footprint.
- Efforts to engage in renewable energy projects and diversify energy sources.
- A proactive stance on reducing emissions per oil barrel and investing in green technology.

Appendix C: Interview C

C: Coordinator, Petroleum Company

Key Drivers:

- Regulations as the primary driver for green initiatives.
- Social responsibility requirements influencing company policies.

- Investor demands for sustainable practices.

Motivations:

- Aim to lead in Environmental, Social, and Governance (ESG) aspects.
- Willingness to invest more in suppliers with sustainable operations.

Stakeholders:

- Government, customers, and investors are primary influencers.
- Direct involvement of top management in sustainability decisions.

Transition Changes:

- Focused on sustainable technologies like 3D printing and offshore platform electrification.
- Collaborations within the industry to standardize reporting and improve transparency.

Greenwashing:

- Little greenwashing

Barriers:

- Complexities and need for more expertise within the green transition.
- Challenges with Scope 3 emissions and data quality.

Goals and Pace:

- Target to reach net zero for scope 1 and 2 emissions by 2030.
- Maintaining pace with industry counterparts but acknowledging a need for accelerated progress.

Green Initiatives:

- Prioritizing research and development, particularly in 3D printing for sustainability.
- Electrification of offshore platforms and improvements in energy efficiency.
- Collaboration within the industry to standardize sustainability reporting and practices.

Other comments or statements about drivers:

- Not feeling activists and NGOs in daily work. Some might feel it more. But in general they have low influence.

Appendix D: Interview D

D: Works within strategy, Petroleum Company

Key Drivers:

- Regulatory and customer demands as primary motivators for the green transition.
- Market dynamics playing a significant role in driving sustainable changes.

Motivations:

- Compliance with regulatory and societal trends to ensure future business viability.
- Strategy to optimize traditional operations while expanding into low-carbon solutions.

Stakeholders:

- Customers, government, and employees exert the most influence.
- Investors hold significant weight but show skepticism about non-profitable green investments.

Transition Changes:

- Short-term: Modest adjustments expected, with a focus on reducing emissions and growing renewable investments.
- Long-term: Anticipation that oil and gas will become a lesser part of business operations, with renewables taking the lead.

Greenwashing:

- Acknowledgement of greenwashing within the industry, but a belief in the genuine intent to change among most. It is easy to see through firms that are not honest.

Barriers:

- High costs and current technology limitations.
- Potential job losses during the transition.

Goals and Pace:

- Commitment to net-zero targets aligned with national climate goals.
- Need for industry cooperation to meet climate targets and manage risks.

Green Initiatives:

- Initiatives such as carbon capture and storage (CCS) projects.
- Starting green projects in various sectors, including shipping.
- Striving for electrification of platforms and involvement in renewable energy advancements.

Other comments or statements about drivers:

- NGOs have very little impact. Feels like just “noise”.

Appendix E: Interview E

E: Director, Petroleum Company

Key Drivers:

- Regulatory frameworks and customer demand for sustainable products.
- Market dynamics influenced by both regulatory pressures and consumer expectations.

Motivations:

- Regulatory compliance and demand from customers and society.
- Necessity to adapt to market trends to ensure future business viability.

Stakeholders:

- Customers, government entities, employees, and the Norwegian society.
- Investors are crucial but show skepticism towards non-profitable green ventures.

Transition Changes:

- Short-term: Incremental changes with reductions in emissions and growth in renewable investments.
- Long-term: Potential significant shift towards renewable energy dominating the company's business.

Greenwashing:

- Acknowledgment of greenwashing within the industry.
- Emphasis on the importance of genuine sustainability efforts for future generations.

Barriers:

- High costs and the current state of technology pose significant challenges.
- Resistance within the organization to the changes required for the transition.

Goals and Pace:

- Set goals to reduce emissions and achieve net zero.
- Recognition that cooperation with other companies is essential to meet climate objectives.

Green Initiatives:

- Engagement in carbon capture and storage (CCS) projects as a part of green strategy implementation.

Other comments or statements about drivers:

- Skeptical to investors – they value oil and gas investments
- Technology – very important – needs to be cheaper and better

Appendix F: Interview F

F: Major supplier to petroleum companies, Vice president sustainability

Key Drivers:

- Regulatory pressures are seen as the primary drivers for the green transition within the industry. Without it, not much would have happened.
- It's been a shift in the last 2-3 years. Right now, because of the regulations, the company have started to look at the designs of our product. They try to see how their products can have less emissions.
- Customer demands (market dynamics) for more sustainable products.
- Increasing general awareness in society regarding environmental issues.

Motivations:

- Regulatory frameworks encourage the company to adopt more aggressive sustainability practices.
- Demand from customers for sustainable products.
- The need to improve the company's appeal to younger prospective employees who value sustainability.

Stakeholders:

- Customers and regulators are identified as the most important stakeholders.

Transition Changes:

- Notable shift in product design to reduce emissions over the last 2-3 years, influenced significantly by regulatory changes.
- Increased customer willingness to pay for products with lower emissions.

Greenwashing:

- Minimal greenwashing is perceived within the company's operations.

Barriers:

- Challenges include the sustainability of the supply chain and technological limitations in manufacturing.
- Geographical challenges related to the locations of manufacturing facilities, often in regions reliant on coal power.

Goals and Pace:

- The company aims to align with national climate commitments but recognizes a need for further progress.
- Adopts a cautious approach to transitioning, aiming to balance risk by not falling behind industry leaders but also not aiming to lead.

Green Initiatives:

- Collaboration with customers and supply chain partners to produce more efficient and sustainable products.
- Efforts to localize supply chains to reduce transportation emissions.

Other comments or statements about drivers:

- Comment about NGOs: We have never suffered much from it. Probably because we do mostly upstream and not downstream activities.We are one of the suppliers to the industry. It is not a decision making point. We see safety as a much higher risk.
- For some products there are no technology and alternatives in the market that allows them to replace things they need to still provide the products the customers want
- Oil and gas will be tiny business in the future

Appendix G: Interview G

G: Major supplier to petroleum companies, Supply Chain

Key Drivers:

- Regulatory requirements and consumer expectations drive the green transition. If the oil and gas companies could have chosen without any consequences, it wouldn't have been going in the direction it goes now.
- Increased stakeholder pressure on the industry to anticipate the eventual decline in oil and gas reliance.

Motivations:

- Diversifying business operations to include renewable energy technologies.
- Adapting to customer demands for reduced emissions and sustainable practices.

Stakeholders:

- Primary stakeholders include major customers (petroleum companies), shareholders, the government, and end consumers.

Transition Changes:

- The company is shifting towards supporting renewable energy initiatives and reducing emissions in traditional oil and gas operations.

- Technological advancements are crucial but currently insufficient for rapid progress.

Greenwashing:

- Acknowledges that greenwashing is prevalent within the industry, with many efforts more about perception than substantial environmental impact.

Barriers:

- Technological and regulatory challenges impede the swift transition to sustainable practices.
- Economic considerations often prioritize profitability over environmental goals.

Goals and Pace:

- The company has set goals to reduce its carbon footprint, including more efficient supply chain management.
- Recognizes the need for industry-wide cooperation to achieve climate targets.

Green Initiatives:

- Implementing more localized supply chains to reduce logistics emissions.
- Developing technologies such as power blades for energy reuse and systems to provide electricity to platforms, reducing dependency on non-renewable energy sources.

Other comments or statements about drivers:

- NGOs: I don't think they have a very big influence on us. We are a bit hidden. The companies that extract oil and gas directly get most of the “blame”.

Appendix H: Interview H

H: Politician, Policy Maker

Key drivers:

- Regulatory measures such as increasing the cost of emissions.
- License to operate
- Market dynamics driven by consumer demand for environmentally friendly products.

Stakeholders:

- Society and European expectations play significant roles alongside regulatory bodies.

Lobbying:

- Implied influence of petroleum industry lobbying in maintaining operations while gradually adapting to green standards.

Greenwashing:

- Perception of minimal greenwashing within the industry.

Barriers:

- Challenges in transitioning to emission-free production, highlighted by the high costs of alternatives like CCS and hydrogen.
- Conflicts over electricity access for operations such as platform electrification.
- Economic reliance – tax incomes

Transition changes:

- Increasing focus on emission reductions and alternative energy solutions.

Legislations:

- CO2 taxation and stringent regulatory frameworks guiding environmental actions.
- Emphasis on the effectiveness of the "carbon legislation" and the rigorous environmental assessments mandated before oil and gas field development.

Appendix I: Interview I

I: Politician, Policy Maker

Key drivers:

- Political parties and environmental organizations (NGOs) pushing for greener policies.
- Small extent market forces.

Stakeholders:

- Government, environmental NGOs, and the European Union exert significant influence.

Lobbying:

- Big influence, especially on the biggest political parties in Norway.

Greenwashing:

- Acknowledgment of prevalent greenwashing activities within the industry.

Barriers:

- Continuing oil and gas exploration and production seen as incompatible with climate goals.
- Better politicial frameworks are needed.

Transition changes:

- Slow transition progress with too much focus on new oil field explorations.

Legislations:

- CO2 tax noted as a positive driver, but overall government policies viewed as insufficiently effective.

Appendix J: Interview J

J: Politician, Policy Maker

Key drivers:

- Market demand and government regulations identified as primary motivators.
- Acknowledgement that falling oil demand is driving the need for new energy solutions.

Stakeholders:

- EU, Norwegian government, worker union and enterprise association, and investors cited as influential.

Lobbying:

- Significant impact of the oil lobby on governmental policies, particularly noted during COVID-related oil price drops.

Greenwashing:

- Concerns about the extent of greenwashing in the industry's portrayal of sustainability efforts.

Barriers:

- Economic reliance on oil poses a significant barrier to substantial green policy shifts.

Transition changes:

- Discussion on the need for a new industry to replace oil, with current efforts lagging.

Legislations:

- EU emission trading system and CO2 tax highlighted as effective measures.

Appendix K: Interview K

K: Politician, Policy Maker

Key drivers:

- Public sector initiatives seen as insufficient without market and corporate support. The government don’t do enough.
- Market is the biggest driver.

Stakeholders:

- Government and authorities are crucial, alongside strong influence from EU policies.

Lobbying:

- Extensive lobbying efforts by the industry, with significant impact on legislative outcomes.

Greenwashing:

- Acknowledgement of greenwashing practices, with a call for more genuine green initiatives.

Barriers:

- Economic interests and job concerns create a challenging environment for substantial green transitions.

Transition changes:

- Transition seen as dependent on market forces and enhanced regulations.
- Oil and gas fields will still continue but renewables will be main income in 2050.

Legislations:

- Strong regulatory measures like CO2 taxation and environmental assessments are emphasized.

Appendix L: Interview L

L: Politician, Policy Maker

Key drivers:

- Market demand and regulatory pressures from the government and the EU.

Stakeholders:

- The government, EU, Investors, and workers' unions play significant roles.

Lobbying:

- Petroleum industry's lobbying is highly influential, particularly noticeable in legislative negotiations.

Greenwashing:

- Concerns about greenwashing with a need for more transparency and honesty in industry practices.

Barriers:

- The profitability of oil compared to renewables presents a significant challenge.

Transition changes:

- Expectations of gradual changes in the industry with a more substantial shift over the next 50 years.

Legislations:

- Mention of effective taxation and the EU trade systems that promote sustainability but also recognition of the need for stronger actions to achieve real change.

Appendix M: Interview Categorization

Category	**Sub Category**	**# Interview**
Key drivers for the green transition within Norway's petroleum industry	Regulations and policies	A – J, L
	Market dynamics	E, F, G, H, J, K, L
	NGOs and activists	I
	Increased Societal Awareness	A, B, D, E & F
	Investors	C, G, L
	Technology	
Other drivers mentioned in interview	Big state-owned companies	A
Stakeholders	Government/regulators	A, C, D, E, F, G, H, I, J, K, L
	EU	H, U, J, K, L
	Society	A, B, E, H
	Workers/employees	A, B, D, E
	Customers	C, D, E, F, G
	Shareholders/ Investors	C, G, J, L
	Suppliers	B
	Investors	C, G, J, L
	Worker unions/employee organization	L, J
	NGOs	I
Lobbying	Big impact	I, J, K, L
	Some impact	H
	Low impact	
	No impact	
Hindrances for the green transition: Greenwashing	A lot of greenwashing	G, I, K
	Some greenwashing	B, D, E, J, L
	Little greenwashing	A, C, H, F
	No greenwashing	

Other hindrances for the green transition	Political Frameworks	A, B, G, I
	Access to power/electricity	A, H, J
	Costs	B, D, E, G, H
	Economic Reliance	H, J, K, L
	Supply Chain	A, F

Appendix N: Interview Questions to Petroleum Companies and Suppliers

1. From your perspective, what are the key drivers for the green transition in the Norwegian petroleum industry?

2. From your perspective, what are the key drivers for the green transition within your company?

3. What are your primary motivations for transitioning towards more sustainable energy practices?

4. What role do governmental policies and international climate agreements play in shaping your company's approach to sustainability?

5. In your view, how do the market and investor expectations shape your company’s approach to the green transition?

6. What role do you think technology plays in achieving the industry's sustainability goals?

7. Who do you see as your key stakeholders? And which stakeholders do you think influence you the most in becoming more sustainable?

8. How significant is the impact of NGOs and social and environmental activism on the strategic decisions of your company? And do you feel a lot of pressure from activist groups?

9. In what ways do you think the transition will change the sector? In both a short- and longtime perspective?

10. What challenges, barriers and opportunities does your company foresee for Norway's oil and gas industry in achieving carbon neutrality goals?

11. How does your company address the accusations or risks of greenwashing in its environmental efforts? And do you think there is a lot of greenwashing within the industry?

12. Can you discuss any long-term and short-term goals you have set to reduce your carbon footprint and how these align with Norway's national climate goals?

Appendix O: Interview Questions to Politicians

1. From your perspective, what are the key drivers behind the green transition in Norway's petroleum industry?

2. In your view, how effective are the existing government policies in driving the petroleum industry towards sustainable practices?

3. What do you see as the biggest challenges for the petroleum industry to become more sustainable?

4. Which stakeholders do you think influence the petroleum industry the most?

5. How do you evaluate the impact of the petroleum industry's lobbying efforts on environmental legislation? Do they have a big influence on governmental policies?

6. Can you discuss any specific legislation or initiatives that have been particularly effective in promoting sustainable practices in the oil and gas sector?

7. How do you address concerns about greenwashing within the petroleum industry? Do you think there is a lot of greenwashing within the industry?

8. How do you see the industry in the future? Both in a short- and long term perspective.