GLOBAL CLIMATE AGREEMENTS AND CORPORATE RESPONSIBILITY: A CASE STUDY OF SHELL'S ENVIRONMENTAL INTEGRATION

Lappeenranta–Lahti University of Technology LUT

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Examiner: Associate professor Mika Immonen

ABSTRACT

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Global warming causes major challenges for existing fossil fuel companies in terms of corporate responsibility actions and investment decisions. For decades, big oil companies have only increased fossil fuel production and thus been contributing to climate change by increasing greenhouse gas emissions in the atmosphere. Recent global agreements to limit these emissions made on the UN level have forced countries and companies to make targets to reduce their emissions and move towards renewable energy solution investments. The effect of this regulation is starting to show in increased lengths of sustainability reporting and ambitious greenhouse gas reduction targets from oil companies.

The integration of environmental sustainability in the corporate responsibility strategy of Shell in an environment of increased stakeholder pressure was the main interest for the study. A theoretical framework for CSR and CSR as well as triple-bottom line and stakeholder theory was created for the basis of the study. This bachelor's thesis focused on these challenges by evaluating the concrete efforts and actions made by Shell after the first major climate agreement, The Kyoto Protocol in 1997 until today. The sustainability reports from years following climate agreements Copenhagen accord, Paris agreement and the European Green deal were used to gather data for an archival study evaluating the development of environmental actions and greenhouse gas emissions of Shell during the time-period.

The findings indicated that the direct emissions of Shell have been steadily decreasing since 1997, but indirect emissions from sold products have increased. Investments in renewables have increased but very little, if all, for many years. The integration of environmental sustainability for Shell has increased and the targets are ambitious compared to competing oil companies. The challenge for the environmental sustainability of fossil fuel companies is the continuing demand for their products. Thus, more regulatory actions and disruptive technological solutions in the energy sector are needed to offer appropriate alternatives to gas and oil products.

TIIVISTELMÄ

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GLOBAALIT ILMASTOSOPIMUKSET JA YRITYSVASTUU: SHELLIN YMPÄRISTÖINTEGRAATION TAPAUSTUTKIMUS

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Ilmastonlämpeneminen aiheuttaa suuria haasteita olemassa oleville fossiilisten polttoaineiden yrityksille niiden vastuullisuustoimien ja investointipäätösten osalta. Vuosikymmenten ajan suuret öljy-yhtiöt ovat lisänneet fossiilisten polttoaineiden tuotantoa ja siten edistäneet ilmastonmuutosta kasvattamalla kasvihuonekaasupäästöjä ilmakehässä. YK-tasolla tehtyjen viimeaikaisten globaalien sopimusten tarkoituksena on ollut rajoittaa näitä päästöjä, mikä on pakottanut maat ja yritykset asettamaan tavoitteita päästöjen vähentämiseksi ja siirtymään kohti uusiutuvan energian ratkaisuinvestointeja. Tämän sääntelyn vaikutus näkyy kestävyysraportoinnin pituuden kasvuna, sekä suurten öljy-yhtiöiden kunnianhimoisten ilmastotavoitteiden lisääntymisenä.

Shellin ympäristökestävyyden integrointi yritysvastuustrategiaan lisääntyneessä sidosryhmäpaineessa oli tutkimuksen pääaihe. Teoreettinen viitekehys tutkimuksen perustaksi luotiin yrityksen yhteiskuntavastuusta, kolmoistilinpäätöksestä ja sidosryhmäteoriasta. Tämä kandidaatintyö keskittyi näihin haasteisiin arvioimalla konkreettisia ponnisteluja ja toimia, joita Shell on tehnyt ensimmäisen suuren ilmastosopimuksen, Kioton pöytäkirjan jälkeen vuodesta 1997 tähän päivään asti. Kestävyysraportit ilmastosopimuksia seuraavilta vuosilta Kööpenhaminan sopimuksesta, Pariisin sopimuksesta ja Euroopan vihreästä sopimuksesta käytettiin tiedon keräämiseen arkistotutkimusta varten arvioimaan Shellin ympäristötoimien kehitystä ja kasvihuonekaasupäästöjä ajanjaksolla.

Tutkimustulosten mukaan Shellin suorat päästöt ovat vähentyneet tasaisesti vuodesta 1997 lähtien, mutta myytyjen tuotteiden epäsuorat päästöt ovat puolestaan kasvaneet. Investoinnit uusiutuviin energialähteisiin ovat lisääntyneet, mutta hyvin vähän tai ei ollenkaan monien vuosien ajan. Ympäristökestävyyden integrointi Shellille on lisääntynyt ja tavoitteet ovat kunnianhimoisia verrattuna kilpaileviin öljy-yhtiöihin. Fossiilisten polttoaineiden ympäristökestävyyden haaste on niiden tuotteiden jatkuva kysyntä. Näin ollen tarvitaan enemmän sääntelytoimia ja häiritseviä teknologisia ratkaisuja energiasektorilla tarjotakseen asianmukaisia vaihtoehtoja kaasu- ja öljytuotteille.

ABBREVIATIONS

CR	Corporate Responsibility
CSR	Corporate Social Responsibility
LNG	Liquified Natural Gas
GHG	Greenhouse Gas

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1 INTRODUCTION

As the energy system of the world faces the biggest changes in modern history. The importance of developing quickly to make these changes is ever increasing. It is not only a matter of environmental damage, but also the financial losses being realized if global warming progresses as it has. As much as US$7 trillion of losses in financial assets under management can result from a warming of only 5 degrees Celsius. If global warming reaches 6 degrees Celsius, financial losses jump as high as US$13.8 trillion. (Pan, Sinha and Chen, 2021) Since GHG emissions from only the production segment of major oil companies Shell, BP and ExxonMobil amounted over 300 million of Co2, as much as half of total emissions in the United Kingdom (Sæverud and Skjærseth, 2007), they certainly have a significant possibility to reduce total global GHG emissions.

Shell was originally founded in 1833 by Marcues Samuel from London, and the business was first about antiques but also seashells imported from Far East. The oil exporting business was built on this importing business later by his two sons in the 1880s. The fastest growth and expansion for the company started after the merger between the British Shell and the Dutch Royal Dutch. (Shell, 2023a) The company has since grown to become one of the most significant oil companies to be the 4th largest oil and gas company worldwide in 2022 based on revenue (Financial Times, 2022).

The climate strategies chosen by various oil companies operating on a global scale do vary. As of the beginning of the 20th century the differences in strategy and the attitude of companies were drastically different. Companies like ExxonMobil fought publicly against climate legislation and sustainability goals. However, even then companies like Shell and BP were considered more proactive in the sense that they acknowledged the issue of climate change and set targets to reduce the GHG emissions caused by their operations. (Sæverud and Skjærseth, 2007).

1.1 Background

The biggest challenge for oil companies and strategies for sustainability is that direct emissions from their operations are not the majority of total emissions caused by their business. The majority of GHG emissions caused by the oil industry are emitted after the product is sold and used by the user. Emissions in the reports are divided into 3 scopes of emissions. Scope 1 is the GHG emissions directly from controlled and owned sources, scope 2 is GHG emissions from energy purchased and consumed and Scope 3 is GHG emissions from indirect sources, including emissions from the use of products and energy sold. (Shell, 2021, 21)

When it comes to reporting, Shell makes an extensive sustainability report, and has actively reported their emissions based on current requirements. According to the recent sustainability report of 2021 Shell reported scope 1 and 2 emissions to be around 100 million tonnes of Co2e, and they have clearly been on a downtrend since 2017. Total scope 3 emissions however were significantly higher at over 1000 million tonnes of Co2e. (Shell, 2021, 76-77) This kind of imbalance of emissions caused by industry poses serious challenges when transitioning to a carbon neutral energy system. It requires extensive investments from the oil industry in renewable energy production, while reducing the negative effects of the industry backbone, fossil fuel extraction and refining. (Kenner and Heede, 2021)

It is also possible that because of the separation of scope 1, 2 and 3 oil companies can focus and highlight the reduction of emissions from the first 2 scopes and downplay the significance of the 3rd one. This thesis will analyze the level of sustainability integration in corporate responsibility efforts. It will take into consideration the different areas of corporate social responsibility. And analyze the effects of decisions made within the industry.

1.13 Corporate social responsibility and triple-bottom line

Corporate social responsibility also known as CSR can be seen as actions from a company that focuses on advancing society and the environment beyond what is lawfully required. There are many theories and a lot of research made based on CSR and how it affects the performance and prospects for a company. Reputation Intelligence study in 2013 concluded that out of the 15 largest markets globally, as much as 73 % see companies delivering on CSR as ones to recommend. (Kang, Germann and Grewal, 2016)

Sustainability goals as part of corporate responsibility were treated only as ways mitigate the negative impacts for a very long time. Nowadays, the goal to be net-positive has been added to the definition. The expectation is now also about what can a company do to also help other actors to help reduce their emissions. The discussion has steered towards societal carbon handprint rather than a carbon footprint. (Koipijärvi and Kuvaja, 2020) This is where ecological innovations become a vital tool for companies to reduce their carbon foot and handprints. In the short-term, environmental innovations are an efficient way to reach sought after environmental benefits, but perhaps longer term can also be financially beneficial as well. (Pan, Sinha and Chen, 2021), 2021, 215)

One of the newer models to analyze corporate responsibility is the triple bottom line model created in 1994. According to the triple-bottom line model responsibility was divided into social, economic, and environmental responsibility. (Koipijärvi and Kuvaja, 2020) According to OECD the impacts of CSR are also disaggregated from these 3 main pillars of the triple-bottom line model. As business conduct is seen responsible when a company is making positive contributions to social, economic, and environmental progresses. (Pan, Sinha and Chen, 2021) In this thesis, the actions and strategic decisions from Shell will be analyzed and assessed using both of these fundamental corporate responsibility models, which will be further explained in the theory section.

1.14 Climate goals and regulation

Some of the most important global regulatory steps taken around the reduction of GHG emissions and reporting of them have been the Kyoto Protocol and Paris Climate Agreement. To establish the carbon market and the mechanism to measure and reduce GHG emissions through proper accounting, Kyoto protocol was created. It was the first step towards limiting the allowed emissions and it attempted to build a structure to trade emissions between countries and companies. It however resulted in many issues, and inconsistencies in accounting, and thus also faced some criticism in its infancy. (He, Luo, Shamsuddin and Tang, 2022)

The Kyoto Protocol includes requirements, commitments and rules for different parties established in the agreement. The main objective of the United Nations Kyoto Protocol adopted in 1997 and fully adopted in the Marrakesh Accords in 2005, was to limit the emissions of certain annexed countries, and make targets for the reduction of GHG emissions. Countries or Parties included in Annex 1 were also allowed to change their allowance of emissions over this 5-year commitment period in 2008-2012 by acquiring and transferring emission allowances. These AAUs (Assigned amount units) that the annexed parties could trade with, were the ones causing challenges in accounting and accountability. Also, the assigned emission targets varied significantly (He, Luo, Shamsuddin and Tang, 2022), (United Nations, 2008)

The Paris Climate agreement made in 2015 aims to limit the rise in global warming to less than 2 degrees Celsius. Like the Kyoto Protocol, the agreement is also under the UN Framework Convention on Climate Change, also known as UNFCCC. In the agreement countries have made their own INDCs “Nationally Determined Contributions”, where they outline their own post-2020 actions on climate. (Rogelj et al., 2016) Similar to the Kyoto Protocol, The Paris Agreement faces stark criticism for the lack of mechanisms, bindings to promises and the overall vagueness of the agreement. It is said to be not ambitious enough and the relationship between what is promised and what is done is significant. (Mahapatra and Ratha, 2017)

Also, the EU has their own regulation that puts strict goals on the reduction of GHG emissions from fossil fuels. The EU has pledged to be climate-neutral by 2050 and reduce emissions by at least 55 % by 2030. (European Council, 2021) Since the UK is no longer part of the EU, they have made their own emission reduction goals. They pledge to cut emissions by 78 % by 2035 compared to the 1990 levels and be three-quarters from net-zero by 2050. (gov.uk, 2021) All of these governmental goals to reduce emissions and the increased reporting poses challenges to oil companies. Compared to many other big oil companies however, Shell has been looking for opportunities to reduce its emissions and has been an exemplary company when it comes to GHG reporting (Sæverud and Skjærseth, 2007).

1.2 Research objectives

The objective of this thesis is to analyze the concrete actions and the integration of sustainability in the CSR strategy within a European oil giant Shell. Most importantly the objective is to evaluate the changes in how sustainability is talked about in the company reporting. And how the biggest environmental regulatory changes and global agreements have affected the company's take on sustainable development and investments.

This main research question is relevant in the modern-day context of a challenging energy transition we are facing as a society. Oil companies are approaching and communicating about sustainability very differently, and their goals vary significantly also. Shell has the potential to become the leading oil company when it comes to investments in renewable energy sources. However, even though Shell has promised to reduce their emissions drastically, their investors and other stakeholders have criticized the activities of the company to be greenwashing and lacking concrete and achievable plans to reach its goals. (Parafiniuk and Smith, 2019)

Figure 1. Different phases of disruption – from (Kenner and Heede, 2021)

As seen from figure *1* on different phases for a company to react to disruption on the industry. The figure is also representative of the phases the oil industry has had to go through since the 1970s. During the first two phases the pressure externally was weak, and companies focused more on suppressing all findings concerning climate change. After the 1990s it became increasingly challenging for the big oil companies to fully ignore the science pointed at by a growing number of stakeholders. This pressure resulted in the Kyoto Protocol, through which the governments were forced to make emission reduction goals. Even through this phase of "incremental response" oil companies as well as governments still ended up funding climate change denial research to ease the pressures towards concrete actions towards change. (Kenner and Heede, 2021) The main research question in this thesis is:

Q1: How has the integration of environmental sustainability into the Corporate Social Responsibility strategy of Shell changed in its sustainability reporting

Until the 2010s this kind of strategy to treat climate change risks in a neglected way worked broadly in the industry. Starting from 2010s however, the awareness of public and the increasing scientific evidence on the crisis of climate called for increased action towards decarbonization efforts. This change in the pressure from various stakeholders forced Shell and BP to move to the third phase of figure 1, and further diversify their business and prove their ambitions to decrease their effects on climate change. (Kenner and Heede, 2021) Because Shell as a company is one of the leading green investment oil companies, but they still have increased their oil production, and see it increasing in the future until 2030, it is a prime example of the challenges oil companies are and will be facing amongst the turmoil of emission reduction goals and actions. (Parafiniuk and Smith, 2019)

There are three sub-questions supporting the main question limiting the research into certain areas of interest, when researching the development of sustainability strategies in Shell and the possible reasons for it. Because international negotiations on climate and global policies do play a crucial part in making any progress on reducing GHG emissions (Kenner and Heede, 2021), it is important to consider how those align with the strategic decisions made by Shell. Which is why the first sub-question is:

SQ1: How has UN legislation and other climate agreements influenced Shell's approach to sustainability and corporate responsibility?

Greenhouse gases are in the core of the oil business, and they are produced in several steps of the chain that the companies manage. As mentioned previously, not only does the production cause significant emissions, but also the usage of the end-product as well causes substantial GHG emissions. This is why investments towards new technologies through acquisitions and in-company financial allocations into more renewable sources of energy are in the essence of the pathway for Shell to reduce their GHG emissions. This is why the third supporting sub-question will evaluate the investments in new technology and sources of energy.

SQ2: How have the investments into renewable energy and GHG emission reduction technologies developed, and what has been the impact of these investments on the company's sustainability and corporate responsibility efforts?

This sub question is relevant because it allows the researcher to investigate how Shell has invested in renewable energy and GHG emission reduction technologies, which are considered as key indicators of sustainability and CSR performance by various stakeholders and regulators. By analyzing the data from Shell's sustainability reports, how Shell's investments have changed over time, how they have been influenced by the UN, UK and EU regulation and stakeholder pressure, and how they have impacted Shell's sustainability and CSR efforts can be studied.

This sub question is supported by the literature on environmental disclosures by financial intermediaries (FIs), which shows that FIs have different levels of quality and quantity of disclosures on environmental policy, depending on their attributes and the characteristics of their home country (Alberici and Querci, 2016). The literature also suggests that FIs' environmental disclosures are influenced by various factors, such as market pressure, stakeholder expectations, regulatory frameworks, and institutional norms (Berrone et al., 2016; Doda et al., 2016; Hahn, Figge, Pinkse and Preuss, 2010; Kolk, Levy and Pinkse, 2008) Therefore, it is relevant to explore and evaluate Shell's sustainability and CSR strategy in relation to its investments in renewable energy and GHG emission reduction technologies.

Shell has just very recently as well been criticized in the media for their failed and even misrepresented strategy to tackle climate change. According to an environmental law charity called ClientEarth, that produced an investor briefing last in March of 2022, which concluded that Shell has failed in preparing for their intended net zero emission transition. The claim of this organization and report goes as far as them filing a lawsuit against the board of the company in the High Court of England. They argument that the climate risk is mismanaged by the board, and they ought to implement a strategy aligned with the Paris Agreement goals. (ClientEarth, 2022) focused on these possible backlashes from investors, the third supporting sub-question is:

SQ3: How have Shell's stakeholders responded to the company's sustainability and corporate responsibility efforts and investments in GHG emission reduction technologies, or lack of them?

1.3 Limitations and structure

This thesis will analyze these four questions through qualitative research case study. The study will be built mainly on a deductive basis as the main theoretical framework is steering the direction of data collection from several sources. However, in the content analysis part of the paper, some conclusions are possibly drawn inductively also. Important theories and strategic implementation models will be used, which will be more closely presented in the theoretical framework part of the paper. The timeframe for sources, since many of the research questions require evaluation throughout change of time, will be the last 3 decades. The research will start from 2000 and reach the most recent reports and legislative decisions.

Since the case company is in Europe, and used to be under EU legislation as well, the geographical limitation of the study will be Europe. Influential climate legislation is also done globally, but the goal of this study is to study the relationship of Shell and its closest stakeholders in the reduction of their GHG emissions. The effects of big climate legislation like the Paris Climate Accord and the Kyoto Protocol will be the central focus of this thesis.

An archival study research is done to examine Shell's sustainability and investments and innovations towards it. Archival study is a type of secondary data analysis that involves collecting and analyzing existing data from historical or contemporary sources. This approach is chosen because it allows access a large amount of data that is relevant, reliable, and valid for the study, without the need to collect primary data from the field. (Dwyer, Gill and Seetaram, 2012)

The data sources are also supplemented by some sources and documents that imply the pressures from stakeholders towards climate change action, investments, and innovation towards Shell. These could include stakeholder reports, media articles, academic papers, and NGO publications. These sources are used to provide additional insights and perspectives on Shell's sustainability performance and strategy from various stakeholder groups, such as customers, employees, investors, suppliers, communities, and NGOs

The structure will follow the standard academic research structure. In this introduction part, the goals of the research are presented, as well as the foundation and specific research questions on which this thesis will be built upon. The theoretical framework will more closely go through the relevant topics and theories used, which will build a basis for the research. After the theoretical framework, the methods being used for the research will be presented. The findings and results part will include the empirical evidence. The discussion part after that will evaluate the theory part of the research with the evidence gathered. And in the last part of the paper based on all these previous sections, conclusions are drawn on the topics in discussion and the connections on the research objectives and questions.

2 Theoretical framework

In this chapter the theoretical framework of this study is presented. Previous literature on CSR, CR, Triple-bottom-line, and sustainable business strategy is introduced. Based on these literature reviews a framework on which the study of this paper will be conducted is built. It is essential to build a coherent structure for the study, so that the methods used, and

the results found can be compared to previous literature and commonly used concepts and models in business management. These frameworks are very broad, so some adjustments are made to reduce the complexity of them and make them fit the goals of this study.

The focus of this study and the data being gathered is the path to sustainability of Shell. So, innovations, investments and the disruption of the industry are the basis of this study and with the help of finding answers to those categories, the research questions can be answered. CSR, Triple-bottom line, stakeholder theory and innovation theories combined with literature on disruption of an industry are presented in this theoretical framework section of the work. The purpose is to synthesize all these that influence the decision making a company makes when it comes to sustainable practices. And based on the framework, the study can be conducted on.

2.1 Triple-bottom line

The Triple Bottom line concept and framework is one of the fundamental building blocks on which the term Corporate Social Responsibility has been built on (Pan, Sinha and Chen, 2021). The Triple bottom line developed by John Elkington in 1994 was the first approach on corporate responsibility. The structure implies the company to focus on social, environmental, and economic implications of the decisions in their business practices. According to Triple bottom line all these considerable factors together create the corporate responsibility of the company. (Koipijärvi and Kuvaja, 2020)

The economic or financial dimension of the triple bottom line and CSR concept consists of the fundamental responsibilities for a company to remain profitable, efficient, focused on information and cash flows, and keep innovation and development at a required level. The main purpose for companies is to be profitable and be responsible with their business practices. This part of triple bottom line structure only includes fundamental financial conditions and performance of the company. (Koipijärvi and Kuvaja, 2020; Pan, Sinha and Chen, 2021)

Social responsibility as a broad concept aims to focus on increasing the levels of well-being for all people involved with the company. This includes people working for the company as well as other stakeholders of the company. (Frolova and Lapina, 2014) Human rights, actions towards increasing the common good, product responsibility and consumer protection actions, combined with acceptably good operative actions within the company networks and societal surroundings form a socially responsible ground for a company (Koipijärvi and Kuvaja, 2020).

The last aspect of the triple bottom line structure, environmental responsibility, measures what effects does the company have on the nature around it and the broader climate. The measurement of environmental dimension in triple bottom line corporate responsibility consists of investments into the protection of the environment, environmental certificates, energy sources and emissions produced by the company. (Pan, Sinha and Chen, 2021) Often also the use of water, energy, transport, products environmental quality and waste are also used as indicators/aspects of environmental responsibility. (Kuisma, 2017)

In a modern-day CSR framework built on the triple bottom line concept, these considerations all affect each other. It was previously believed that the company profit seeking is separate from corporate responsibility efforts, however considering other responsibility aspects of the triple bottom line concept offers significant competitive advantages to companies. (Frolova and Lapina, 2014) The triple bottom line as a concept itself is missing this relevant point that social and environmental responsibility are not separate from financial sustainability (Koipijärvi and Kuvaja, 2020). This is why it is important to consider the further developed CSR and CR models based on the triple bottom line, which further includes the interconnectedness nature of all these 3 aspects.

2.2 Corporate social responsibility

CSR as a concept has multiple dimensions, but some of the most common ways to define CSR is by seeing it as a combination of 4 main aspects to take into consideration. Ethical, economic, discretionary, and legal responsibilities are the dimensions from Carroll's (1979)

research paper and are the ones most used. Despite the lack of consensus on the structure of CSR the main principle behind the concept is straightforward. According to the OECD or The Organisation for Economic Co-operation and Development, responsible business conduct is “making a positive contribution to economic, environmental and social progress.” This clearly depicts a similar 3-dimensional structure as in the triple bottom line concept. (Pan, Sinha and Chen, 2021)

2.3 Organizational corporate responsibility

CR or CSR are often invested into by companies because of governmental, consumer, investor, and public pressure. The objectives of high CSR integrated companies include increased transparency, societal value creation, contribution to development in the region and globally and addressing the concerns of closest stakeholders. According to the survey by KPMG in 2005 only 53 percent of motivations to increase corporate responsibility were based on ethical reasons. 74 percent were purely based on economics. (Gupta, 2012) Reportedly the motivations for these kinds of discourses also include profits, leadership demonstration, showing characteristic virtuosity, and showing legitimacy and trust as a company part of society (Heikkurinen, 2018)

Initiatives in integrating CSR as part of organizational strategy may include adaptations of actions that intend to either promote value in the social construct or decrease negative impacts (Lin, Liu and Lin, 2022). The strategy shift from reactive actions and strategies towards more proactive ones implies that the level of integration of responsibility strategies in an organization must be further increased. (Heikkurinen, 2018) Shareholder value creation now includes sustainability as a core part of it and the discussion has changed to “how” to implement CSR into the organizational corporate strategy from the previous “whether” to do it at all. (Epstein, Buhovac, Elkington and Leonard, 2014)

The role of employees is also a significant part of organizational CSR, since they play the role of beneficiaries and drivers of a well-executed CSR strategy (Lin, Liu and Lin, 2022). The integration of employee related CSR practices into the fundamental operations and

strategy also increases employee loyalty and the quality and performance of processes they participate in (Frolova and Lapina, 2014). Research also implies that the authenticity of the managerial CSR strategy is important when involving employees to work better to achieve the goals put in place. It is also necessary for employees to feel engaged in the authentic strategy, and that way they do not feel that the organization sacrifices financial ambitions to reach social or environmental goals. (McShane and Cunningham, 2012)

To build a corporate reputation that shows its focus on CSR, reporting and communication is vital with all stakeholders in and outside of the company. Different reports on company websites and increased dialogue with various types of interaction increases the credibility and legitimacy of the company. This focus on company reputation is from the intangible assets for a corporation one of the most valuable and relevant. Out of the Fortune 500 companies, 80 percent present CSR reporting on their websites. (Perez, 2015) Companies have also noticed that because of the challenges of CSR implementation and integration, communication with company insider and outsiders must be direct and it must represent the actual situation within the company to prevent mistrust and other negative implications. (Gupta, 2012)

2.4 Innovations and investments as part of corporate responsibility

The creation of new goods, services, procedures, or business models that solve social or environmental problems and offer value for the organization and its stakeholders is seen as CSR-driven innovation (Roszkowska-Menkes 2018). Innovation is a key aspect of achieving CSR goals for companies. Eco-innovations can be divided into two different sub-categories: pollution prevention innovation and sustainable environmental innovation, see figure 1. (Pan, Sinha and Chen, 2021) Technological innovation in companies requires solutions to difficult challenges in the modern world. Companies must affordably provide products and services to the world population and ever-growing demand, while still making sure environmental impacts are reduced (Seiler-Hausmann, Liedtke and Weizsacker, 2017). One way sustainability is also defined is as a representation of development and growth while it

“meets the needs of the present without compromising the ability of future generations to meet their own needs” (Mithani, 2017).

As seen in Figure 1. The CSR consists of these three dimensions originally based on the triple bottom line model. This figure depicts how in addition to a direct relationship with environmental dimensions in CSR, eco-innovations are in moderating relationship with social and financial dimensions also. (Pan, Sinha and Chen, 2021) Eco-innovations refer to advances in technology with an aim to decrease environmental footprint of a company by creating new systems, products, processes and techniques. The importance of eco-innovation is greater for the environment in the short term, but in the longer term they can lead to a situation where the environmental benefits are combined with economic ones. (Horbach, 2008)

The effects of Innovation towards and investments into CSR related activities and technologies are arguably the most efficient types of strategical sustainable transition decisions a company can do. The research on the R&D contributions and the relation and connection to ecological and social aspects of the company is limited. But CSR investments are commonly acknowledged to be based on the potential advantages they bring competitively as well as the social and environmental value they create jointly also. This close relationship between environmental, social, and financial aspects for a company are well known and especially through a successful integration of CSR practices the performance of the company can be greatly increased. (Rettab et al., 2021)

The integration of CSR innovation has increased and has become a relevant part of the core business model for several companies. However, many companies still see CSR as a risk reduction tool as well to reduce operational costs and not as an innovation factor. (LouchE, Idowu and Filho, 2017). This understanding of CSR as a risk management tool and a cost-cutting strategy is frequently linked to a defensive and reactive rather than a proactive and strategic approach to social and environmental challenges. However, some academics and executives contend that CSR may also generate innovation and a competitive edge for organizations that take a more forward-thinking and opportunity-seeking approach (Porter and Kramer 2011).

In this thesis to reduce the complexity and broadness of the study aspects, the framework of CSR is from now on presented in the term of corporate responsibility, also known as CR. As these terms are commonly used in close contact with each other, there is confusion and difficulty to separate which terms include which responsibilities (Kuisma, 2017). According to the Commission on Corporate Responsibility and Anti-Corruption or previously known as ICC, Corporate Responsibility or CR should be used as a common term to depict the responsibility of the company's actions towards the society (Kuisma, 2017). Because this study will focus on environmental responsibility and business strategies towards achieving those goals, the societal responsibility aspects of Corporate Social Responsibility are reasonable to cut out.

As mentioned in the section of defining the research questions for the study, the level of reaction to disruption is a key metric of how eco-innovation and investments are integrated into the company and how the change is viewed inside the organization. The oil and gas industry has increased its significance throughout history, and it is thus very slow to change in an environment of disruption. The economic challenges and possible effects on other industries also slow down the perspective oil companies take on the disruption in the energy sector. Because so many other sectors rely on the fossil fuel industry right now, the changes within all those sectors are big and take time to change. (Sindhwani, Chakraborty, Behl and Pereira, 2022)

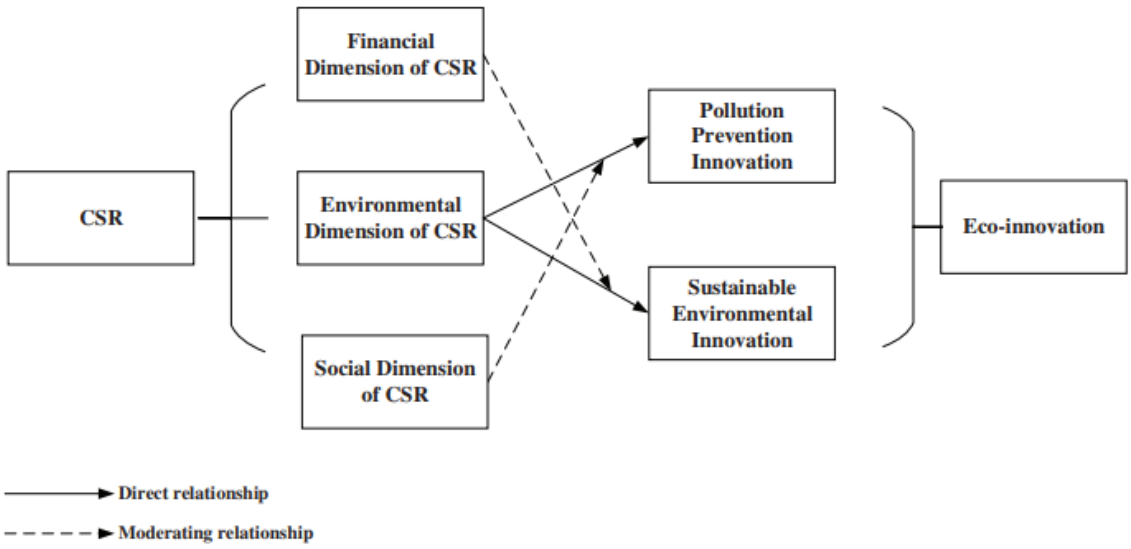

Figure 1. CSR theoretical framework from (Pan, Sinha and Chen, 2021)

2.5 Stakeholder theory

Stakeholder theory sees business as a complicated network of ties between various groups and people who are invested in the organization's results. These stakeholders also include communities, creditors, employees, customers, suppliers, and others who may have an impact on the organization's operations in addition to shareholders. According to the stakeholder theory, managers should focus less on maximizing shareholder value and more on considering the requirements and interests of all stakeholders when making decisions and formulating strategies. According to the stakeholder view, business also has moral and social responsibility in addition to its financial ones. (Phillips, 2003)

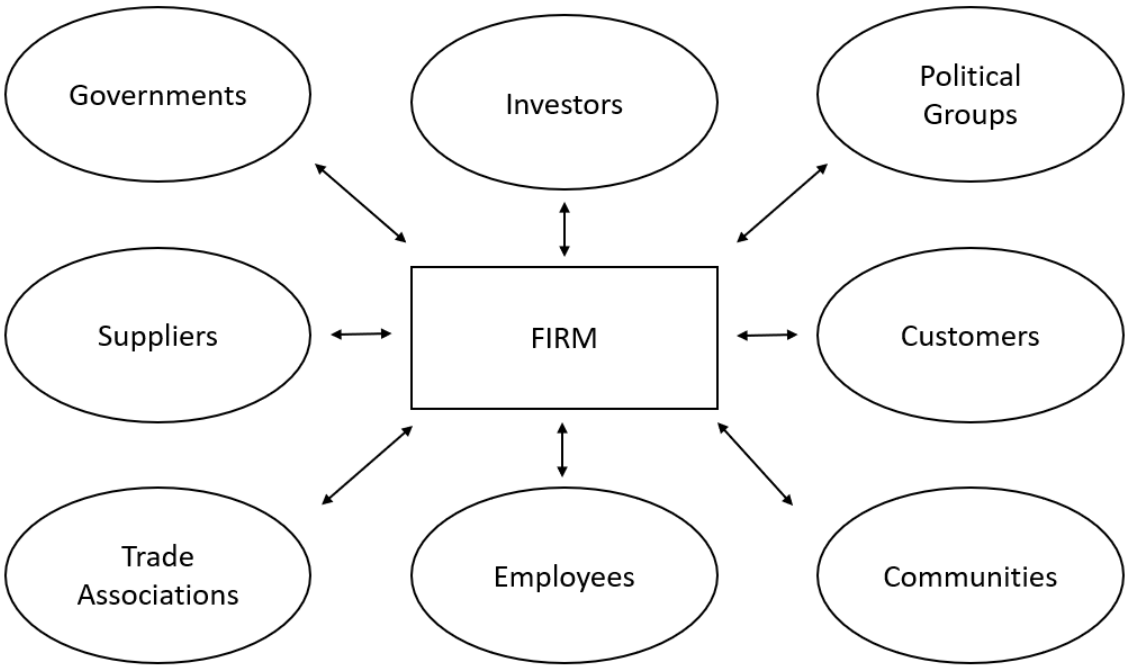

Figure 2. *Contrasting models of the Corporation: The Stakeholder Model* from (Donaldson and Preston, 1995)

As seen in Figure 2. The various stakeholders of the company are very broad, and they all have different interests. According to this type of stakeholder model all stakeholders that participate in the activities of an enterprise, or a company have their own benefits and interests in mind. This type of model contrasts with a different type of input-output model that some stakeholders benefit or pay more than others and emphasizes the thought that for

any input from a stakeholder a similar output is received also. (Donaldson and Preston, 1995) A type of meritocratic view of receiving benefits based on contributions from stakeholders is another way to also balance stakeholder inputs and outputs. The benefits of activities should be distributed as fairly and equitably for shareholders as possible. This type of activity is prevalent and very valuable in financing for example. An egalitarian strategy and interpretation of stakeholder management is arguably a challenging view to take for an organization when financing is required. A financier often requires the possible benefits and assurances for the risks of their capital given. (Phillips, 2003)

For this thesis the different effects of stakeholders will be analyzed and the pressures from governments, customers, communities, investors, and other NGOs will play a role in the empirical part of the study. In addition to the data for this study being mostly gathered from CSR reporting from Shell, and the connections between the data and goals presented there are compared to stakeholder pressure and especially the regulatory framework, the reports are an efficient way to understand how the communication towards Shell has changed during the time of interest. Stakeholder communication through environmental reporting does however have its downsides and challenges. Oil companies have a long history of reporting on environmental issues, and in this way changing the perception of stakeholders to believe in cautiousness and carefulness by the company despite possible lack of actions taken. (Fernandez-Feijoo, Romero and Ruiz, 2014)

3 Methodology

This section includes the fundamental structure of the study and the way the research is conducted. The type of analysis used and the data collection methods, as well as the sampling methods for the data being gathered to make sure the data is comparable and will result in a coherent conclusion which is replicable for future research. This research will be conducted using a qualitative method since the actions, reactions, goals, and investment decisions are challenging to link to the change in the operational environment of an oil company by just using numerical values. Qualitative methods can give a deep and rich pool of knowledge

combining several perspectives and thus providing valuable answers for questions of how and why. (Dwyer, Gill and Seetaram, 2012)

3.1 Data and data collection methods

As mentioned in the structure and limitations part of the study, this thesis will be conducted by an archival research method. More accurately the actual analysis is conducted from the gathered data from defined sources relevant to the study, and it includes mostly content analysis that is mirrored on to a timeline of changes in the operational environmental for the case company of Shell. Archival research is in its fundamentals mean the process of gathering information and data from existing direct or indirect sources and analyze that information and draw conclusions and findings directed by the intention and research questions present in the study. (Dwyer, Gill and Seetaram, 2012)
environmental goals set in place by the company.

Various reports and regulatory texts will be used to conclude a proper timeline of the biggest regulatory changes during the past 30 years from the year 1997. These include finding out the turning points of the biggest changes in regulation within the EU, UN, and UK. Data will be collected from articles from LUT Primo, Google Scholar, EU, Shell's reports, and other international climate agreement documents. See Annex 1 for all used reports. Previous peer-reviewed articles will play a big role in creating a solid background for the thesis and to lean on with the assessments and conclusions made based on data gathered.

The questions to look answers for from the documents. How did the most significant regulatory changes affect the climate goals made by Shell? How have investments into environmental technologies grown or changed during the past 30 years? How did regulation and possible changes in perspectives towards climate change in Shell's own reporting affect investments into renewable energy solutions? How the reported direct and indirect Co2 emissions have developed? These questions are compared qualitatively between Shell's sustainability reporting and investment decisions and goals made as regulatory environment have changed and the data is gathered around these pressures and changes in the regulatory

and stakeholder environment. From the sustainability reports from Shell, the data in focus will be only environmental investments, innovations and the language used, and the environmental goals set in place by the company.

To limit the scope of the study, only the effects of the most significant climate legislation steps will be used for the study, such as the Kyoto Protocol, Copenhagen accord, Paris Climate accord and the beginning of emission trading in Europe. Those changes in the regulatory environment are compared to actions taken by Shell or their promises and goals made. First, all these significant changes in governmental regulation and global climate agreements will be put into a timeline. The broader timeline of the study reaches from 1997 to 2021, where the last sustainability reporting is done, but the years before and after the biggest legislative changes are in focus. After this timeline is formed, the data collection from sustainability reporting from Shell and other official documents of the sustainability of Shell will be looked at. The study will be limited to GHG emission reduction actions and targets.

This data gathered will be collected in a table, where a correlation between the sustainability of Shell and stakeholder pressures is attempted to be formed and visualized. Because the research is based on a qualitative archival method, the correlations between decisions made and reported in the reports of Shell are interpreted without using quantitative numerical data dependent analysis. To create a coherent and replicable result from the data, the content for content analysis needs to be informative as well as comparable. (Dwyer, Gill and Seetaram, 2012)

Sustainability reporting for Shell started in 1997, but the earliest public sustainability report found online is from 2000. So that will be used on the starting ground of sustainability reporting data collection from Shell. That report does, however, include data and graphs from 1997, when the reporting and measurement of emissions started. (Shell, 2000) The data and content in the report of 2000 will be compared with possible earlier reporting from 3rd parties to make possible findings on the effects of the implementation of the Kyoto Protocol in 1997, which started the reporting of Shell. (United Nations, 2008)

3.2 Analysis

From the reports, based on the questions presented previously, information on eco-innovation, GHG emission reduction initiatives, reaction to possible disruption and long-term climate goals are the main points of interest for this study. A table of the most important changes in the operation of Shell is made in addition to a timeline of the most significant regulatory and 3rd party pressures. From the archives gathered for the study reaching from the first sustainability reports from 1997 to the one from 2022, the data will be analyzed using the content analysis method and deductively approaching the research questions and the answers for them.

First in the findings section a timeline is formed visualizing the important milestones in Europe in terms of climate legislation. Then a table combining significant changes, investments, and decisions in sustainable practices inside Shell is brought together. These changes in the sustainability reports are divided in the table based on time periods of decades, but more closely analyzed deductively later in the findings and discussion section of the study and closely compared to the research questions and the goals of the study. Verbal ques, as well as data from measured and projected emissions are used as the basis data values for the analysis in the study.

A deductive approach for analysis can be used in qualitative and quantitative research. When previous knowledge is used as a starting point for the analysis, a deductive content analysis is used. A deductive approach is also good for this study because the aim generally for it is to test through different periods of time a situation or a category of theories and compare them with each other. (Elo and Kyngäs, 2008) A qualitative and deductive approach using data from existing archives to analyze the interdependences of the oil industry and the regulatory and stakeholder framework changes is how the best quality of data can be gathered and based on it the most comprehensive conclusions can be drawn.

4 Findings

In this section of the study the material for the research is gathered and evaluated in the form presented above. First the study material will be divided into three different categories based on the subject and characteristic of the data. The foundation for the study is first built on the legislative background, highlighting the biggest changes after 1990 that could've affected Shell's investments, innovations, and reactions towards sustainable practices and climate change. After creating this timeline, a table of the most influential strategical changes and the environmental discourse in the sustainability reports of Shell will be created. This table will include the most significant steps, investments and goals set by Shell regarding climate legislation. After these two timelines of legislation and Shells reaction to them have been brought in together. To limit the broadness of the study the findings on innovation will concentrate on renewable energy investments, such as wind and solar energy. These have since the first sustainability report been seen as part of the renewable energy mix for Shell. LNG or liquified natural gas and biofuels are also brought up as illustrations for some years, since they are seen as more climate friendly alternatives for energy production during the 2010s (Shell, 2015).

4.1 Regulatory changes

To limit the study, these five changes in the regulatory environment were chosen to be assessed and compared with actions from Shell, see Table 1. Kyoto Protocol was chosen, since it is the starting point of sustainable reporting from Shell and concrete plans written down on reports presented by Shell start from 1997. The Kyoto Protocol was the first of its kind setting GHG emission reduction goals for several countries worldwide. The targets set varied between party categories, but for example for Great Britain and the Netherlands, which are countries of interest for this study, the reduction target was -8% in GHG emissions between 2008-2012 compared to the base year of 1990. The protocol also included mechanisms for example for emissions trading and joint implementation to reduce AAUs or assigned amount units, which is one metric ton of carbon dioxide equivalent. (United Nations, 2008)

The Copenhagen Accord was built as an extension and replacement to continue global GHG emission reduction goals after the 2008-2012 window of the Kyoto Protocol ends. Unlike the Kyoto Protocol, which was binding, the Copenhagen Accord was not able to attain a binding status. The accord provided the freedom for countries to present their own targets for 2020 and mitigate climate change on a voluntary basis. (den Elzen et al., 2011) (Protocol, 1997) (United Nations, 2008) The Copenhagen Accord is thus seen as less ambitious, but in its way a first of its kind global deal with large developing countries and the US involved. In the Copenhagen Accord the goal to limit global warming to 2 degrees Celsius was pledged and it made space for future legislation with tougher binding contracts and standardized accounting. (Lau, Lee and Mohamed, 2012)

The Paris Climate Agreement of 2015 is a legally binding treaty, that includes 196 parties with a goal like the Copenhagen treaty to keep global warming under 2 degrees of Celsius when compared to pre-industrial levels. It also includes a pursuit to limit it to 1.5. It can be seen as one of the most significant global treaties to combat climate change because of its binding nature. The agreement consists of "nationally determined contributions (NDCs), in which each country establishes their own actions and goals to reach GHG emission reduction goals. Long-term strategies by countries can also be submitted for better clarity on actions taken. Starting from 2024 reports on progress will be put into an enhanced transparency framework (ETF), which will increase the visibility and tracking of actions taken. (UNFCCC, 2023)

The European Green Deal is an agreement and a deal towards the reduction of GHG emissions, but also a recovery plan from the COVID-19 Pandemic. The goal of the deal is to make the EU climate neutral by 2050 and reduce emissions by at least 55 % by 2030. It also includes a significant goal for Shell, that the emissions from new cars should be 0 by 2035, which puts an end to gas powered car sales. The deal also includes goals towards biodiversity and nature restoration efforts. (European Comission, 2023b) The lawsuit from ClientEarth, also supported by other investors is against all 11 board members of Shell. The lawsuit is first of its kind in arguing that the 11 directors of Shell have "breached their legal duties under the Companies Act by failing to implement an energy transition strategy that aligns with the Paris Agreement." (ClientEarth, 2023)

Table 1. Table of significant Regulatory changes

1997 Kyoto Protocol	The first legislation that requires the companies from 40 most industrialized countries to reduce emissions by at least 5 % between 2008-2012 compared to 1990 levels" (Protocol, 1997)
2009 The Copenhagen Accord	First of its kind international agreement between most countries in the world to hold global warming below 2 degrees Celsius. A replacement of the Kyoto Protocol which expires in 2012. (den Elzen et al., 2011)
2015 Paris Climate Accord	An agreement between UN Nations to "substantially reduce global greenhouse gas emissions" and limit the global temperature increase in this century to 2 degrees Celsius while attempting to limit it to 1.5. (United Nations, 2023)
2020 European Green Deal	Reduction of greenhouse gas emissions of at least 55 % by 2030, net GHG emissions of zero by 2050. Investments into green recovery investments from COVID-19 economic issues. (European Comission, 2023a)
2023 Lawsuit against directors of Shell	The directors of Shell are sued over the inadequate climate strategy of the company. Activist shareholder in a first-of-its-kind action claim that the directors of Shell are "failing to devise a strategy in line with the Paris Agreement" (ClientEarth, 2023)

4.2 Actions taken after the Kyoto Protocol

As mentioned previously, Shell started gathering data and producing sustainability reports because of the Kyoto Protocol in 1997. The first sustainability report by Shell, found on their website, is from 2000, and it includes data from 1997. The environmental sustainability section of the report of 2000 is 6 pages long and when it comes to global GHG emissions it only has a few chapters and graphs including emissions of the main Kyoto Protocol required GHG emissions and a bar chart on the development and projection of their global warming potential. Total emissions of Co2 reported at that time was 90 million tonnes in 1999. (Shell, 2000)

A chapter on the progress on climate change is also included in the report, where a target is set to reduce operative emissions by 10 % by 2002 compared to Kyoto 1990 levels. A

separate section towards the end of the report called “Renewables” includes a description of Shell’s five-year $500 million plan focusing on making wind and solar energy production profitable. Shell also reports on a production plant of solar panels in the Netherlands and Germany. Wind and solar are seen as fast-growing potential business sectors for Shell. In this section the importance of government incentives and the high cost of renewable energy is emphasized. (Shell, 2000)

4.3 Report after Copenhagen Accord

After nine years in 2009, the sustainability report includes different types of goals and larger sections on the efforts against climate change and future pathways for Shell. An increased emphasis on LNG, or liquified natural gas as an environmental alternative energy solution is more prevalent in the 2009 report. Where just the word LNG appears 53 times in the 2009 report compared to 10 times in the 2000 one. In the 2000 report, LNG is not reported as an environmental solution for Shell. Instead of wind and solar energy investments in the 2000 report, in 2009 the Co2 reduction pathways include efficiency improvements, Co2 capture and storage, solutions and biofuel and LNG investments. Also, hydrogen is presented as an option to reduce emissions in transport. There is mentioned that the wind power activities of Shell are maintained and share of Shell in installed capacity is 548MW. There are no mentions about projects on building solar plants or panels. (Shell, 2009)

An effort to work with governments on tougher regulations to make is one of the pathways for CO2 reduction for Shell. The Copenhagen UN Climate change conference is referred to in the report as a correct step towards climate change policy commitments. Shell welcomes the Copenhagen Accord and marks that despite the agreement not being binding, it is a “call to action” and thus very valuable. From 2004 to 2009 Shell has been able to decrease their own GHG emissions from 96 million tonnes of Co2 equivalent to 67. However, these emissions in scale are small compared to the assessed emissions from the products made by Shell of “just over 600 million tonnes of Co2 equivalent”. (Shell, 2009)

4.4 Paris Climate Agreement

The report of 2015 continues the emphasis on natural gas, hydrogen, biofuels, and carbon capture as the main tools to reach GHG emission reduction goals. 9.5 billion liters of biofuel was used as a mix by Shell in their petrol and diesel products in 2015, compared to 9 billion in 2009. The share of natural gas from total energy production was 49 % which already contributed 47 % in 2009. This increase is not as predicted in 2009 where natural gas was estimated to become above half of total energy output by around 2012. (Shell, 2009) (Shell, 2015) The total direct emissions for Shell stayed relatively flat from 2009 to 2015 and ended up increasing from 69 to 72 million tonnes of Co2 equivalent. Also 560 million tonnes of emissions were estimated to be released from the use of sold refinery and natural gas products (Shell, 2015)

Solar and wind as R&D investments for Shell are assembled in a graph in the report, and investments in alternative low-carbon solutions have reportedly been about $1.1 billion over the past 6 years. A total of 500MW of commercially operated wind capacity is offered by Shell in 2015. This operating capacity was 450MW in 2009 (Shell, 2009). The solar energy used by Shell in 2015 is to only decrease GHG emissions from energy used in its own operations. A technological innovation invested by Shell in photovoltaic systems is used to create steam which is used for enhancement in the oil recovery process. (Shell, 2015)

The Paris Agreement in the report is seen as a significant step and commitment to limit climate change. An emphasis is once again, however, put on the government's policy making. Shell advocates a pathway for switching from coal to natural gas and from regular fuels to biofuels and hydrogen combined with future carbon capture technologies as their contribution to reduce GHG emissions. Solar and wind for example are included in the future of energy but not as ways for Shell to best contribute to decarbonization of the energy system. (Shell, 2015)

4.5 Shell in the 2020s

In the most recent 2022 sustainability report of Shell there are 91 pages compared to 60 pages in 2015 (Shell, 2015). In addition to the sustainability report, there is also an added

energy transition progress report, which they have separately been producing since 2020 (Shell, 2023b). This energy transition progress report is 36 pages long (Shell, 2023c). According to the Greenhouse Gas Protocol corporate accounting and reporting standards revised in 2015, emissions can and have to be divided into three scopes. This division was previously presented in the background section of this thesis. Scope 1 includes "direct greenhouse gas emissions from sources under Shell's operational control". Scope 2 is emissions from indirect energy purchased and consumed by Shell, and Scope 3 is all other indirect GHG emissions, for example from the use of products made by Shell. (Shell, 2023d)

In the section of achieving net-zero emissions in their sustainability report, Shell re-instates their goal "to become a net-zero emissions energy business by 2050". Investments towards energy products with low carbon footprint, or products unrelated to energy products in 2022 amounted to $8.2 billion and a third of total capital expenditure of Shell. (Shell, 2023d) LNG investments amounted to $4.2 billion and thus is close to all other low-carbon energy solution investments combined of $4.3 billion. Oil and oil production related activities including fuels marketing, refining, trading, and other upstream business-related investments amounted to a total of $12.5 billion in 2022 and an increase of 30 % from last year. (Shell, 2023c)

Shell's share of wind power generated at the end of 2022 was 307MW, which is down 160MW from 2021 because of a temporary shutdown and generating capacity increase in one of the onshore wind farms in Texas. There are only 2 fully Shell-operated wind projects in operation, and they are both in India, the rest of the wind farms are either JV-Operated or by someone else with divided ownership. There are however 789MW of Shell share wind power under construction. Shell's share of solar power capacity in 2022 however was as high as 1914MW and 340MW under construction. 6 Shell-operated solar farms with the biggest also in India with 1192MW capacity. Shell has also made investments towards CCS or carbon capture throughout the years, however, because of the limitations of the study, and the limited effects on total Co2 emissions for now, it will be ignored in this study. (Shell, 2023d)

Other key numbers include for example the total biofuel quantity of 9.5 billion liters, which shows no change to the amount in 2015. Direct GHG emissions (Scope 1) in 2022 were

reportedly 51 million tonnes of Co2e, scope 2 was 7, so overall this is a decrease to 2015 levels of 72. Total Co2 emissions from use of sold products in 2022 was 910 million tonnes of Co2e, when in 2015 it was estimated to be around 560 million. (Shell, 2015) (Shell, 2023d) This shows either an underestimation of emissions from products sold previously, or it is a sign of increased fossil fuel sales and thus a significant increase in GHG emissions caused by the operations of Shell

In the Energy Transition Progress Report 2022 of Shell, there is a separate section called "Litigation and Activism". This section includes a comment on the lawsuit from ClientEarth claimed in the England high court against the board of directors. The statement sites that Shell agrees that the energy transition is urgent and that emphasizes how determined Shell is to be playing a role in changing this system. The role of governments and policy making is brought up also as the determinant on how the consumption of energy changes in the global society. In terms of scope 3 emissions, or emissions from sold products, Shell notes that it would require for them to decrease their oil product sales, which would in turn help the competition and hurt the value generation ability for Shell. (Shell, 2023c)

	Reported share of solar capacity	Share of wind capacity	Million Tonnes of direct Co2 eq.	Million Tonnes of Co2 eq. from sold products	Biofuels in liters
2000	-	-	90	-	-
2009	-	548MW	67	600	9 billion
2015	100kW	500MW	72	560	9.5 billion
2022	1914MW	307MW	58	910	9.5 billion

Table 2. Table of the development of emission and more climate friendly innovations

5 Discussion

This chapter will combine the finding section presented previously in chapter 4 with the theories presented in the theoretical framework chapter 2. This chapter is divided into subchapters based on the sub questions of this thesis. This way the different questions are attempted to be answered based on the findings and theoretical frameworks. This discussion

will evaluate the corporate responsibility practices of the case company Shell but will also include discussion on industry specific challenges concerning disruptions, regulatory changes, and climate change. The discussion will begin with sub questions and finally end up evaluating the main research question.

5.1 Stakeholder pressures for sustainability

The first sub question for this thesis is about how the stakeholders of the company have responded to the sustainable practices of Shell, their GHG emission reduction efforts and technological investments. As presented in the theory section, according to the stakeholder theory, the networks of different stakeholders for a company are very broad and a company has responsibilities towards all of them. Reporting, from which the data for this study is gathered, is a form of stakeholder communication and is thus a valuable part of convincing stakeholders that their expectations and demands are fulfilled. (Fernandez-Feijoo, Romero and Ruiz, 2014) The third sub question is:

SQ3: How have Shell's stakeholders responded to the company's sustainability and corporate responsibility efforts and investments in GHG emission reduction technologies, or lack of them?

Before the 1990s, oil companies like Shell managed to stay out of the spotlight in climate science and climate change questions, but towards the second half of the 1990s an increased number of stakeholders demanded change, the Kyoto Protocol was created, and sustainability reporting was started. Even at this point climate change denial was funded and only small investments towards renewable energy solutions were made. In the 2010s pressure increased from stakeholders, and more was said to be done for decarbonization, and this is also where midcentury aim for net zero emissions were pledged. (Kenner and Heede, 2021)

During the 2010s as the binding Paris Climate Agreement was signed, the pressure for increased and more rapid change towards decarbonization grew. Shell has also made more

aggressive pledges to cut down their emissions compared to other oil companies, but Shell has still seen activist pressure them to an even more aggressive strategy (Parafiniuk and Smith, 2019) In 2023 a non-profit organization that is also a stakeholder of Shell filed a lawsuit against the board of directors "for failing to manage the material and foreseeable risks posed to the company by climate change". This lawsuit has received support from several institutional shareholders ending up with 12 million total shares of Shell. (ClientEarth, 2023)

5.2 Climate friendly technological developments

The second sub question was on how concrete investments and innovations towards renewable energy and other GHG emission reduction methods have changed. Eco-innovation is a valuable tool for companies to manage through disruption and big changes in the industry. The different phases of disruption and pressure a company phases directs them to invest, innovate and implement alternative solutions out of the current activities. (Sindhwani, Chakraborty, Behl and Pereira, 2022) Eco-innovation leads to environmental benefits on the shorter term, but also often combined with economic ones in the environment of increased focus on climate change. (Horbach, 2008) The second sub question is:

SQ2: How have the investments into renewable energy and GHG emission reduction technologies developed, and what has been the impact of these investments on the company's sustainability and corporate responsibility efforts?

Based on the data gathered from chosen sustainability reports, and the table formed on the changes in renewable energy production, biofuel and their relationship with emissions, an uneven development can be seen, see table 2. In the reports many aspirations were made for increased focus and investments towards renewables. In the 2000 report some solar panel production was started and already $500 million investments into making solar and wind profitable was made, there wasn't however any mention of current solar or wind production. (Shell, 2000) In 2009, Shell's share of wind capacity had increased to 548MW, which

according to their report helps the company avoid 1.5 million tonnes of Co2e a year compared to a coal-fired power station (Shell, 2009) 2009 is for these sustainability reports the first one with a mention of emissions from sold products and the number of biofuels produced, see table 2.

It is challenging to draw a solid correlation between these chosen renewable energy investments and the effects of the company's sustainability. Wind and solar were chosen because they had been part of the renewable energy plan since the first report (Shell, 2000). Biofuels were included to illustrate the development of petrol alternative solutions, which Shell has also seen as a renewable source for fuel at least since 2009 (Shell, 2009).

For some of the findings some developments on LNG or liquified natural gas were presented, but in the study, it is not considered as a sustainable alternative because there are still various challenges in its life-cycle emissions. So, it is reasonable to separate it from completely renewable energy options like wind and solar. (Arteconi, Brandoni, Evangelista and Polonara, 2010)

The data gathered in table 2 shows that the development of direct Co2 emissions has been decreasing from levels in the year 2000, even though they rose between 2009 and 2015. Emissions from used products have on the other hand increased significantly from the levels in 2000 to 2022 despite total increase in renewable energy and biofuels. This illustrates the challenge that even though Shell was the first big oil company to pledge a strategy in 2017 to reduce GHG emissions caused by the energy products sold (scope 3), there has not been found any evidence of actions supporting this pledge. (Li, Trencher and Asuka, 2022)

5.3 Effects of climate agreements

The last sub question supporting the main research question is about how regulatory changes and climate agreements affected Shell. All other climate agreements analyzed in this thesis were made at the UN level, except the European Green Deal which included investments into green innovations within the EU and concrete ambitious goals for GHG emission

reductions by 2030 and 2050. (European Comission, 2023a) Therefore the last sub question before combining all analysis into answering the main research question is the following:

SQ1: How has UN legislation and other climate agreements influenced Shell's approach to sustainability and corporate responsibility?

The Kyoto Protocol shows the most significant change in the sustainability reporting of Shell since it is the first year where some environmental data was gathered from. For the companies in countries, it was written by it meant for the first time setting up emission reduction targets. (Protocol, 1997) Shell has taken these efforts openhandedly and promised in their 2000 sustainability report to reduce emissions in-line and even ahead of the required Kyoto Protocol targets. (Shell, 2000)

The Copenhagen Accord, despite not being legally binding, it was the first one to also include the US, and thus was a significant step to communicate the importance of climate change and GHG emission reduction to more countries and companies (den Elzen et al., 2011). Shell also noted this development in their report and as of 2009 they reported concrete renewable energy production capabilities, as well as actual direct Co2 emission reductions from the levels of 2000. Shell noted in the 2009 report, that they have been working with governments to implement policies that allow technological development in companies to reach CO2 emission reduction targets. (Shell, 2009)

The Paris Agreement arguably had the biggest single effect on the reporting and promises of Shell. Even though emissions increased from 2009 to 2015, and reported solar and wind capacity decreased, the language used in the 2015 implied again that the strategies are inline with the Paris agreement. In the ERC opinion at the end of the report, where an external review committee share's its opinion on the report, there is a critical comment on how it is unclear if the shift in Shell's operations to reach Paris Agreement targets is urgent and clear enough. (Shell, 2015) So, despite the language in the report to be committed to the Paris Agreement, actions taken at this point are according to their own review committee insufficient to reach the targets set.

The European Green Deal as a single deal didn't affect Shell significantly, since the Paris Agreement included many of the goals set for future emission reductions. Overall, all climate agreements affected the countries in which Shell operated, so indirectly they increased pressure towards Shell. This can be seen as pressure from Shell also to make climate change activities more profitable to them by governmental policy and regulation making. Shell doesn't want to disrupt themselves and reduce their own growth and value making to shareholders if they are not completely required and incentivized in doing so

5.4 Integration of environmental sustainability in CSR

The main research question for this thesis was to analyze the level of integration of environmental sustainability in the corporate activities of Shell. During the timeline set for the study, from the first sustainability reporting to the most recent one, some development of environmental sustainability can be seen, and some still require some work. Because of some limitations made during this study, the level of integration can be evaluated only by assessing the investments, language and emission reductions present in the reports under evaluation. The main research question is the following:

Q1: How has the integration of environmental sustainability into the Corporate Social Responsibility strategy of Shell changed in its sustainability reporting

As previously mentioned in the theory section of the thesis, according to the main principles of the triple-bottom line, which the CSR framework is built and developed on, the social and environmental responsibilities for a company are not separate from profit seeking efforts. (Koipijärvi and Kuvaja, 2020) Stakeholder pressures are often the main objectives for higher integration of CSR in the company's activities, and thus made mostly for economical motivations since according to the stakeholder theory, the main purpose for a company is to maximize value creation to stakeholders, the interest of whom varies from economical to social and environmental ones, depending on their position as stakeholders of the company. (Phillips, 2003) (Gupta, 2012)

For Shell, the integration of environmental sustainability, which the study was limited to in terms of CSR activities for the company, varied throughout the years and was clearly affected by stakeholder pressures, most importantly regulatory changes and global climate agreements. Based on data gathered to *table 2*, the development of environmental sustainability was not linear, and in many years emission reduction, investments, and even other activities were slow despite clear goals towards climate goals presented in the reports.

The length and depth of environmental reporting in the sustainability reports has increased from the levels of 2000. In the report of 2000, the environment and renewables sections of the report were a total of 8 pages (Shell, 2000). And the 2022 report includes over 50 pages of data and reporting towards achieving net-zero emissions and transitioning the energy system to a more climate friendly one. (Shell, 2023d) (Shell, 2023c)

Shell is seen as having the most ambitious strategy for any oil company when it comes to openly communicating on the risks of climate change, and even the link between fossil fuels and climate change. Compared to American oil companies, the integration and acceptance of change in the energy sector is more accepted, and they have been involved with policy making and renewable investments for longer. (Li, Trencher and Asuka, 2022)

6 Conclusions

The effects of Co2 emissions on global warming were discovered decades ago, but the change in the energy sector has been slow and it has faced a lot of pushbacks from the current industry leaders. There is evidence of climate change denial funding from oil companies to slow down the pressures to change their business model and disrupt themselves by taking

concrete actions to change their business strategy, through innovation and diverse investments. However, during the past 30 years or so there has been global climate agreements where countries have agreed to reduce emissions drastically by 2030 and 2050 to limit global warming to 2 degrees Celsius. These types of pressures have also slowly

forced big fossil fuel companies to acknowledge their effects on climate change, and act on them as well.

This type of activity resembles the actions presented and analyzed by previous literature on actions and lack of them taken by industries that are facing dire circumstances with massive disruption. As mentioned in the chapter about the main and sub- research questions of this paper, disruption happens in different phases. The phase which the oil industry is now is somewhere between 3 and 4 perhaps. The diversification has started, even though arguably later than intended, and the importance of adapting is starting to be more prevalent inside the leadership of these companies. (Kenner, Heede 2021)

As the actions taken by Shell compares to the basic principles of the Triple-Bottom line and CSR theories, an argument can be made that the concentration on the economical aspects of the company has received more attention than the environmental efforts included in responsibility efforts a company should vouch for. (Heikkurinen, 2018) It is quite depictive what the executive of the board said about environmentally friendly solutions and especially scope 3 emission reduction. Those efforts hurt the bottom line of the company and hurt the short-term capability for the company to turn a profit. And it really illustrates what the most important purpose for Shell is, and how difficult it is for a big public company to take the right actions when facing radical disruption in their industry

6.1 Contributions and implications

This paper has discussed the reaction to climate change from a large fossil fuel producer, and thus GHG emitter and contributor, an oil company called Shell. Big oil companies such as BP, Shell and ExxonMobil contribute a significant amount of greenhouse gas emissions directly, but more importantly the emissions from the products sold and used by the consumer, (scope 3 emissions), are a substantial part of total global GHG emissions. The possible damages caused by global warming following the current trend, are not only substantial for the lives and livelihoods of regular people but estimated global financial losses following it reach trillions of dollars.

Shell has been able to reduce their scope 1 and scope 2 emissions quite significantly during the period of interest in this study, 1997-2022, when they were reported. This has been for example done by making the processes of oil extraction and refining, as well as natural gas processes, more energy efficient, capturing Co2, and using some energy from renewable sources. However, the challenge is that despite the decrease of direct emissions from 90 in 2000 to 58 in 2022, the emissions from sold products have increased from 600 in 2009 to 910 million tonnes of Co2 eq. in 2022. Total Co2 emissions directly and indirectly caused by the operations of Shell have thus grown significantly, rather than decreased as they'd rather communicate through their reporting. Their goal is to decrease direct emissions first, and only through changing demand will they be able to reduce scope 3 emissions.

Reducing scope 3 emissions for Shell and any other oil company requires significantly more investments into renewable energy technologies that they also sell to their customers. At the same time fossil fuel extraction, refining and selling should be decreased, which is a financial challenge for Shell as a company. Shell has said in their recent energy transition progress report that if there is demand for oil and gas products, reducing their sales would only hurt the value creation ability of Shell and help their competitors. (Shell, 2023c)

In conclusion, according to all the data gathered and analysis made in this study, there is a clear reason why Shell has in its history been advocating for tougher global governmental policies on climate and emissions. Because of their historically significant position in the oil and gas market they are reluctant to change their business model in a way that makes them lose customers and value creation abilities to competitors even in the short term. This is why it is reasonable to assume that, as long as there is demand for gas and oil products, the scope 3 emissions will grow through increased output of fossil fuel-based products. Direct scope 1 and 2 emissions have been successfully reduced, but whether it is, as a contribution to limit global warming, enough from Shell is up to the various stakeholders of the company to decide.

6.2 Limitations and reliability

The study is only on one company and the data gathered is from the reports from that company. No 3rd party data or verification for the data used was done. Only 4 reports were used as basis of the study, which were from or right after the years major climate agreements under evaluation were signed. This limited amount of data was sufficient for this thesis, but it didn't necessarily offer the best kind of scientifically solid background for all the conclusions made. The conclusions drawn are not applicable to the industry field itself. The conclusions were based on what was said in the chosen reports of the company, as well as in 3rd party articles and NGOs reports.

Also, because of the limitations made in this study to only include data of wind solar and biofuels when assessing renewable energy investments, no evaluation of the effects and development of CCS, or carbon capture and storage or hydrogen for example on greenhouse gases was made. The Co2 reduction capacities and the energy efficiencies on a big scale of these technologies however are considered according to some sources as of now insignificant, but this study didn't reach far enough to reach conclusions on all alternative solutions to curb the global warming effects of Shell.

Overall, this paper gives a decent understanding of the actions taken historically by the case company on global warming. The goal was to limit all unnecessary promises and targets made and focus on concrete actions made and the results from them. The changes in reporting standards were visible especially between 2015 and 2022, and thus these differences in emission reporting standards affected the broadness of values, the effect of which wasn't specifically assessed in this paper. The division into different scopes for example, made indirect emission reporting more regulated compared to old reports where emissions from sold products were mentioned shortly in a text rather than a comprehensive table

6.3 Future Research

Future research on this topic could focus more on a broad scale of solutions presented by Shell to reduce emissions. The study could be more limited to just direct emissions and the

possibilities for those to reach net zero emissions by 2050 for example could be evaluated. Also, further focus on regulatory changes in reporting could be included in future research. How did reporting standards change the way emissions are reported, and do newer standards increase or decrease the numbers from older ones.

As study in the future made on these topics could also focus solely on renewable energy solutions and more closely on the lifecycle emissions and energy efficiencies for example of different technologies, like hydrogen, wind, solar and biofuels. Carbon capture and storage as a technology to reduce emissions could also be assessed. Separate studies can be made from each of these single technologies as potential future energy solutions. The industry is changing rapidly, and thus technological development is also quicker than ever before. This poses challenges for research as well since the 3rd party data on these technologies is still limited.

A more business-related study can also be conducted based more on the economical side of investing in renewables while intentionally damaging the current fossil fuel-based business activities. In this type of study, the payback times of a more aggressive renewable energy strategy can be estimated. It would be relevant to evaluate what the benefits of early-bird investment and adoption would be compared to waiting until the environment is suitable for competitors as well. Overall, the relevant challenge to overcome in future research topics is the limitation of the study. This paper was just scratching the surface of the broad challenges and disruption faced by the energy sector.

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Annex 1. The reports used for data

Reports used	**Availability**
Shell Sustainability Report 2000-1999	Annual reports download centre & archive | Shell Global
Shell Sustainability Report 2009	Annual reports download centre & archive | Shell Global
Shell Sustainability Report 2015	Annual reports download centre & archive | Shell Global
Shell Sustainability Report 2022	Annual reports download centre & archive | Shell Global
Shell Energy Transition Report	Annual reports download centre & archive | Shell Global
UN Paris Agreement	https://unfccc.int/process-and-meetings/the-paris-agreement.
Kyoto Protocol Reference Manual	https://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf