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Leadership practices for sustainable success: The case of the Norwegian energy sector.

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I would like to especially thank my supervisor Rune Todnem By that provided me with much needed guidance and helped me stay on track throughout the work with this thesis. The feedback that he gave provided me with the information that I needed to make this thesis into what it became.

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I also want to thank my family for supporting me through the work with this thesis, I couldn't have done it without you.

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Executive summary

This EMBA thesis set out to find ways to change the mindset of the energy sector trough exploring relevant literature that could provide the energy sector with the leadership practices it needs to be successful while also being part of the solution to the climate change. It was to show that taking social responsibility could be and opportunity and not a threat.

The research question was: *What leadership practices is required for the energy sector to gain success through the green shift?*

Based on the data collection, some leadership practices were found. First, it's suggested that leadership should be viewed as something that is done in a collective towards a shared purpose, it's not done by a single individual. Second, the organisations should establish a higher purpose to ensure that the organisation creates value for the greater good while also producing profits. Third, organisations within the sector needs to realise their social responsibility for its stakeholders and that taking this responsibility increase the company's profits and ensure long term success. Fourth, design thinking paradigm can provide the tools to ensure good strategic decision making and create engagement around innovation and change efforts.

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"*The world we have made as a result of the level of thinking we have done thus far creates problems we cannot solve at the same level of thinking at which we created them.*"

- Albert Einstein

1 Introduction

1.1 Background

Leadership practices within the energy sector may be too traditional and outdated to fit into the modern business world. To change successfully and be a part of the solution to the climate change requires a new way of thinking. It requires a change of mindsets towards how business is conducted, and leadership processes is executed. The purpose of this thesis is to find leadership practices that can provide the energy sector with the ability to change successfully and adapt to the modern society.

With the climate crisis, the way we do our work is in dire need of change. This is especially true for the energy sector (Miljødirektoratet, 2022). In a competitive market there has always been a pressure on profit maximization. Since the oil crisis in 2014 this pressure has increased and has forced the businesses to invest in improvement changes and digitalisation to increase their efficiency and lower their cost. The climate change has increased the pressure even more. It is not enough to find ways to join the digital transformation; it is now also required that the companies find ways to meet what is required of the Paris agreement and the 17 UN Sustainable development goals (SDG).

The EU taxonomy requires organisations to operate more holistically and be transparent trough the legislated reporting requirement to disclose how they manage social and environmental challenges (European_Union, 2020). It will then be easier to monitor the energy company's progress on the issues related to the society and environment. If the companies fail to meet the goals, they will be subject to negative attention and lack of trust from the society. This may be pouring more fuel on the fire, as the energy sector has been under a lot of scrutiny the latest years, as its main source of energy contribution is petroleum. Many environmental organisations and political parties are lobbying against oil exploration and recovery. One of the most important cases of the 2021 Norwegian parliament elections was the climate crisis and oil debate, where the environmental parties' agenda was to stop all oil exploration in the country (Øvrebekk, 2021). This negative attention is increasing a sense of uncertainty with the industry towards its future and potential. As a result, applications to

petroleum related studies are dropping. From 2014 to 2017 the number of applications dropped with 82% (Johansen, 2017). Some political parties even suggest shutting down the petroleum related studies in schools and universities (NTB, 2021). Further increasing the uncertainty in the petroleum industry is the unstable market, that does not promise a stable job for its participants. During the oil crisis, 47 000 employees lost their jobs due to lack of work in the industry and the cost cutting that took place (Bjørnestad, 2017). From numbers given by Tekna and Nace, one can see that work applications to the industry have gone down the latest years, where only 1% of the workforce consists of people below 25 years of age (Eriksen, 2021b). Numbers from the government stating that 60% of all oil related jobs may be gone within 10 years (Eriksen, 2021a), is definitely not helping the recruitment to the energy sectors businesses. The uncertainty and lack of faith in the industry is something that is not beneficial to meet the climate changes from the industry's standpoint.

The innovation required is not something that can be done with a few selected people, it needs to be an organisational and interorganisational effort (Tushman & Nadler, 1986). To meet the climate changes there is a need for innovation and change that is larger than what has been seen before. Unfortunately, when faced with these types of challenges many companies fail to do the necessary changes. Probably not due to a lack of actions taken from the company side, it's more likely to be due to taking the wrong actions (Sull, 1999).Knowing this, we simply cannot continue to try to do innovation and change the same way we have done previously.

1.2 Research paradigm

This thesis follows a pragmatism paradigm. Where it's utilising a case study inquiry approach that aims to find viable leadership practices through a pragmatic approach. It will explore various sources of data that may provide a better understanding of what the issues are and what tools that could be best suited. There is both internal and external forces that may affect the sectors' ability to change. Through a case study with a pragmatic approach, one might be able to provide ways to change the mindset of the sector and show that taking a social and environmental responsibility can be beneficial to the organisations. The goal is not to provide definite answers but to rather provide viable solutions that may be tested and evaluated. The solutions also need to be something that can be accepted by the sector as potential tools hence being practical and useful.

1.3 Definitions to key terminology

For the discussion in this thesis, the following definition to key terminology is given:

Leadership is defined as :"… *"... a process whereby an individual influences a group of individuals to achieve a common goal*." (Northouse, 2019, p. 5).

Purpose is defined as:*"... the pursuit of a worthy idea and activity, the outcome of which goes beyond the individual and the individual organization"(*By, 2021, p. 34*).*

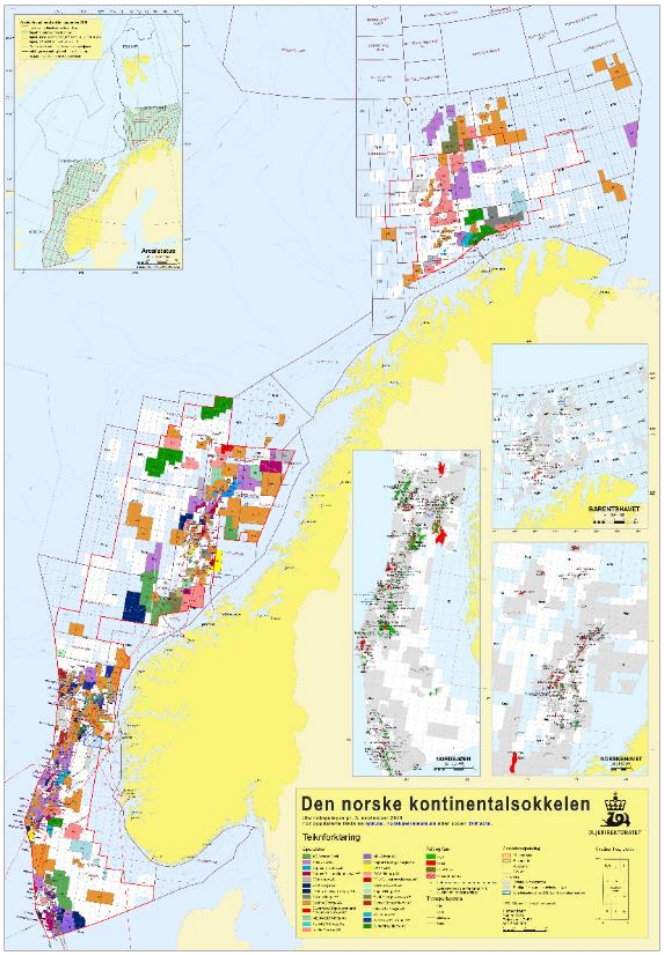
Innovation is defined as: *"…the implementation of new ideas or changes, big or small, that have the potential to contribute to organizational (business) objectives*" (Schroeder, Scudder, & Elm, 1989, p. 6)

Strategic design is defined as: *"...an approach to problem setting and solving and thus to design decisions in turbulent and uncertain contexts"* (Meroni, 2008, p. 37)

Success is defined as:" *...to produce profitable solutions to the problems of people and planet and not to profit from producing problems for people or planet*" (Mayer, 2021, p. 889).

Stakeholder is defined as: *""any group or individual who is affected by or can affect the achievement of an organization's objectives"* (Freeman & McVea, 2001).

1.4 Norway's energy sector – The case



Picture 1 The Norwegian continental shelf by the Norwegian Petroleum Directorate (NPD, 2022)

While Norway's energy sector is compiled of different energy industries like hydropower and lesser sized industries like wind power, solar power and similar, the largest industry is petroleum when measured in income and export value (Norsk_Petroleum, 2022c). The energy sector discussed within this thesis, is limited to the petroleum industry and its transition to green energy producing technologies.

Norway's history of petroleum exploration and production spans decades. From the first field developed in 1971(Oljemuseum, 2022), to now including 94 active fields (Norsk_Petroleum, 2022a) as can be seen in Picture 1. The sector has contributed substantially to the Norwegian economy, through governmental income, investments, and export value. The petroleum industry is of major importance for both the financial market and the Norwegian welfare state. With For 2022 the government`s expected net cash flow from the industry is 933 billion amounting to 42% of the government`s income. The industry is expected to provide 58% of Norway's total export value in 2022 (Norsk_Petroleum, 2022c).

From Appendix 4 – Stakeholder's impact on the energy sector`s organizationsThe petroleum industry also has a large impact on the employment numbers in Norway. In 2019 there was around 57 700 directly employed and a total of approximately 200 000 indirectly or directly employed (Norsk_Petroleum, 2022a). This show that there is a big part of the sector that is consisting of service and supply providers. There is also petroleum industry induced activity in other segments that is not included in the statistics (Norsk_Petroleum, 2022a). These segments are illustrated as the orange circles in the figure below. The light blue circles are the service and supply providers, and the dark blue is the operating company (Norsk_Petroleum, 2022b).

Figure 1 Direct and indirect petroleum activity (Norsk_Petroleum, 2022b).

The impact the sector has on the Norwegian society is clear and is also what makes the sectors ability to change so immensely important for future generations.

Norway has committed to the UN`s sustainable development goals (Regjeringen, 2020) and has together with EU committed to reducing greenhouse gas emissions by a minimum of 50% by 2030 and a minimum of 90% by 2050 compared to the 1990 numbers (Regjeringen, 2021). This is clearly a challenging task for the energy sector, which also is the largest contributor to Norway`s greenhouse gas emissions (Miljødirektoratet, 2022). In addition to this challenge there is other indicators that show a need to change. Trough the analysis presented in

Appendix 4 – Stakeholder's impact on the energy sector`s organizations, one can see that less and less people, are interested in working within the energy sector. The sector is losing their much-needed competence and expertise. Politicians are arguing about the future of the oil business, where more and more parties want to shut down the petroleum exploration. Service providers and suppliers are looking for other industries. Investors are looking more and more into sustainable investment. Authorities are pushing for change through new legislations and regulation. The oil price will drop as green energy production increases.

All these points should be a wakeup call for the Energy sector. The organisations within the sector needs competent employees. They need service providers and suppliers. They need their investors. They need to be able to work with the government and they need their income. The energy sector must change its ways. To have long-term success it needs a new mindset.

1.5 Purpose of study

The purpose of this EMBA master thesis is to provide the organisations with leadership practices that may provide the energy sector with a new mindset. This is to be found through exploring viable leadership practices, that not only can be viable for innovation and change, but that can help the companies to do the correct innovation and change initiatives to produce long-term success through the green shift. The leadership literature landscape is vast and there is no agreed definition to what leadership is (Barker, 1997). This may be counterproductive for the organisations willingness to change their leadership practices. Organisations may need suggestions to leadership practices that is practical and something that can be seen to work for the challenges they are facing. Something that can be presented in a board room or to a business' management team. The study is done with the idea that the energy sector can be part of the solution to the climate changes. With providing ways to change the mindset of the industry and showing that taking a social and environmental responsibility can be beneficial to the organisations, it may result in an even more profitable (new) industry. To show that "going green" is an opportunity, not a threat.

1.6 Research question

The research question is broad in its nature with the belief that to pinpoint the solution one must start broad and narrow it down to find the good solutions. The research question is as follows:

- What leadership practices is required for the energy sector to gain success through the green shift?

Where success is defined to "*…produce profitable solutions to the problems of people and planet and not to profit from producing problems for people or planet*" (Mayer, 2021, p. 889).

1.7 Thesis layout

The thesis will start with definitions to key terminology in chapter 0. It will then move to the critical review of relevant literature in chapter 2, where relevant literature is discussed, and relevant framework is selected. Then it will describe the method used for this study in chapter 3, with explanations to why the methods are selected, how data is collected, how data is analysed. It will then move to present the research findings in chapter 4, interpretation of the collected data, application of literature and discussion. Lastly the thesis will finish with a conclusion in chapter 5, and a reflection and considerations in chapter 0.

2 Literature review

2.1 Chapter Introduction

The purpose of this thesis is to change the mindset of the energy sector to enable it to successfully change trough the green shift. For this, leadership practises are essential. The aim of this literature review is to explore relevant literature to find leadership practices that can answer the problem statement; "What leadership practices is required for the energy sector to gain success through the green shift?".

The review starts with looking into the challenges with the leadership paradigms. The leadership as practice model is presented as an approach to leadership to replace the industrial paradigm view. The importance of purpose is presented trough the PAC and telos leadership lens (TLL), where it's shown that purpose is perhaps the most important part of a leadership processes as purpose is something that motivates and provides meaning. It's shown that purpose is to be about internal goods. As such, the stakeholder theory is introduced as it shares the same view on purpose and provides support to the importance of purpose and the leadership approach. It's also shown to be relevant to that of the sustainability and development challenges of the energy sector. Further the strategic design discipline is presented as a possible solution to the challenges of the energy sector, its shown that it can be used in support to the leadership approach and the stakeholder theory as it contains these elements. Lastly the chapter is concluded with PAC selected as the theoretical framework.

2.2 Leadership

From the introduction to this thesis one can see that it is all about trying to find how one can transform the energy sector to be able to gain success through the green shift. Like Barker (2001, p. 491) says;"*...leadership is all about change*" and additionally Rost (1997) says that leadership is the intention of doing changes that are transforming and significant. With this, it seems only fitting to start this review off with looking into leadership theory.

Throughout history, one will find that leadership is mostly linked to peripheral elements, where studies have been focused on the study of individuals who has been appointed the "leader" position, with the belief that leadership is conducted by one person that oversees the team, organisation or similar (Rost, 1997). Peripheral elements is defined as: "*... traits, personality characteristics, "born or made" issues, greatness, group facilitation, goal attainment, effectiveness, contngencies, situations, goodness, style, and above all, the*

management of organisations – public or private" (p. 3). This view and approach to leadership studies is what Rost (1997) calls "*The industrial paradigm of leadership*"(p. 3). To elaborate what the industrial paradigm of leadership is, Rost (Rost, 1993, p. 180 in Rost, 1997) gives this quote: "*Leadership is great men and women with certain preferred traits influencing followers to do what the leaders wish in order to achieve group/organizational goals that reflect excellence defined as some kind of higher-order effectiveness*" (Rost, 1997, p. 180). This way of looking at leadership is arguably unproductive for leadership development and not fitting modern organizations that strives to meet new market demands. With this approach, the organization limits it-self to one or a selected few individuals' knowledge and ideas. Additionally, this view on leadership does not contribute to understanding leadership like how people are, motivated, contribute, collaborate and similar (Raelin, 2011). Even though the industrial paradigm of leadership may be illogical and unproductive to achieve change, it's still residing as a belief in our society and is still what is being researched and thought by many scholars. In examples given by By (2021), one can see that the October 2020 issue of the top academic journal The Leadership Quarterly contained mostly articles that focused on peripheral elements. This can be seen in the articles presented in the October 2021 issue as well. It can be assumed from this, that this is also a belief that exists in most of the companies residing in the energy sector as well.

This belief might be impacting the energy sector's ability to change and contribute to the green shift. In addition to this approach to leadership, there is also a lack of definition of the word leadership. As said by Bass and Stogdill (1990): " *There is almost as many different definitions of leadership as there are persons who have attempted to define the concept*" (p. 11). This problem is something that Drath et al. (2008). believes is connected to the fields underlying ontology, of which they call the tripod ontology. The tripod ontology consists of "… leaders, followers, and their shared goals" (p. 636).

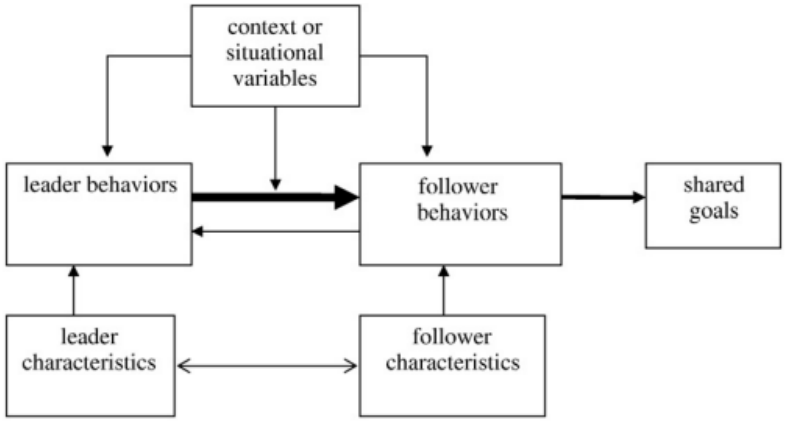


Figure 2 Tripod ontology framework (Drath et al., 2008, p. 641Fig 1.A)

Drath et al. (2008) argue that this view is limiting leadership practice and theory, and suggest to instead to use an ontology that consists of 3 elements:

> "(1) direction: widespread agreement in a collective on overall goals, aims, and mission; (2) alignment: the organization and coordination of knowledge and work in a collective; and (3) commitment: the willingness of members of a collective to subsume their own interests and benefit within the collective interest and benefit"(p. 636).

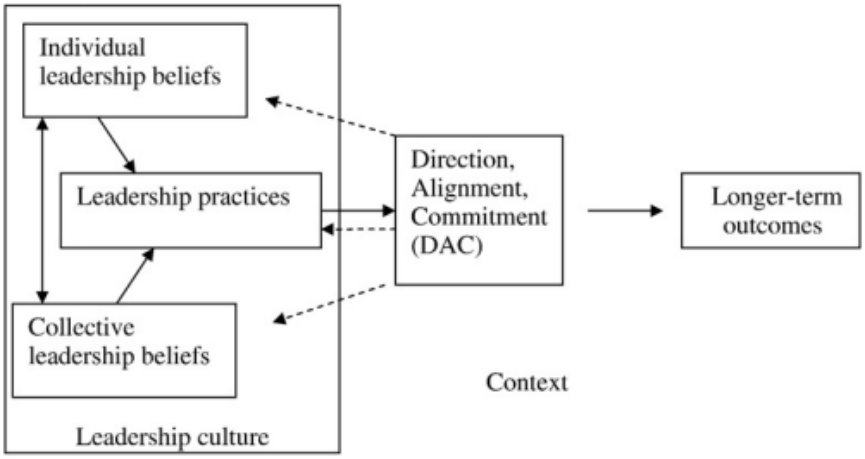


Figure 3 DAC ontology framework (Drath et al., 2008, p. 642, Fig. 2. A)

This ontology changes the perspective for discussions of leadership as it doesn't necessarily have to be about discussing leaders, followers, and common goals. It gives the opportunity to discuss the goals of leadership which is direction, alignment, and commitment without the need to be about leaders and followers. The ontology opens the research field and gives the possibility to include many different types of leadership models that does not fit into the tripod ontology or agrees with the industrial paradigm. Like explained by Drath et al. (2008), the tripod models sets the focus on the leaders and how they operate to achieve their goals, the

DAC ontology shifts the perspective away from this, to instead seeking to understand how direction, alignment and commitment is achieved.

This may be linked to what many other scholars argue, that instead of being concerned with "who" it is far more beneficial to start looking at "how", "where" and "why" leadership is accomplished (Raelin, 2011). This take on leadership is known as the Leadership-As-Practice movement or LAP for short. Instead of viewing leadership as something one selected great individual do, it can be viewed as a practice. Leadership being a practice releases it from being bound to theory. Practice is something that people do, it involves improvisation, it's a collaborative effort between individuals, and its distinctives is mostly learned through active engagement by the practitioners, it's something that is done in a collective (Raelin, 2011, 2016).

As change needs that leadership is done in a collaboration, so does an innovation process. It's rare that single individuals can produce sufficient ideas for complex innovation. Innovation is and intergroup phenomenon that requires multiple disciplines and expertise (Tushman & Nadler, 1986). Adapting a new ontology that isn't binding leadership to be about what a leader do, but instead focusing on how, why, and when people are motivated and work towards a common goal, could contribute to achieving a higher amount of knowledge sharing and collaboration between the practitioners. The DAC ontology fits into this very well as it, at least from personal inference, would be something that managers in the energy sector could accept. As it's hard to speak against the goals of leadership as involving direction, alignment, and commitment. Additionally, this may be true for the LAP movement, as it's not a big step from agreeing with DAC to understand that leadership is a practice, it's not something that a single selected individual does based on their traits and characteristics.

2.3 Providing Purpose

From the examples from above like the tripod ontology, the industrial paradigm and the others, there is one thing they all have in common. All of them state that leadership is about some common vision, mission, or goal which all focuses on what the goal is. Purpose changes the perspective as it's not only what the process is to achieve, its why it is to achieve it (Kempster, Jackson, & Conroy, 2011). One can see that purpose is important for a leadership process as people don't want to walk blindly in a direction, they need to understand why they are walking in that direction. It's about achieving meaning from the work that is done (Smith, 2017). The importance of purpose can then be understood to be of major importance if

leadership is the process of achieving it. Kempster et al. (2011) argues that there is too little attention given to purpose and its importance in leadership. Additionally, they argue that while being related to the words like vision, mission and goal, purpose has a higher meaning. It's something meaningful and significant, it's at a higher level of societal morality. Purpose is what guides people and provides them a direction. A purpose is not something that can be forced on someone, they either choose to accept it or not (Kempster et al., 2011). A lot of support for purpose being important can be found (Anthony, 2012; Freeman & Ginena, 2015; Law, 2018; Rey, Velasco, & Almandoz, 2019; Zu, 2019). Purpose is something that provides personal meaning, increases satisfaction, increases mental and physical health and it provides a meaning trough pursuit of goals and attainment (McKnight & Kashdan, 2009).

By (2021) has introduced the Purpose-Alignment-Commitment model and the telos lens. The former is a development from the DAC ontology, where instead of using the word *direction*, in support to the DAC ontology, By proposes to use the word *purpose* instead.

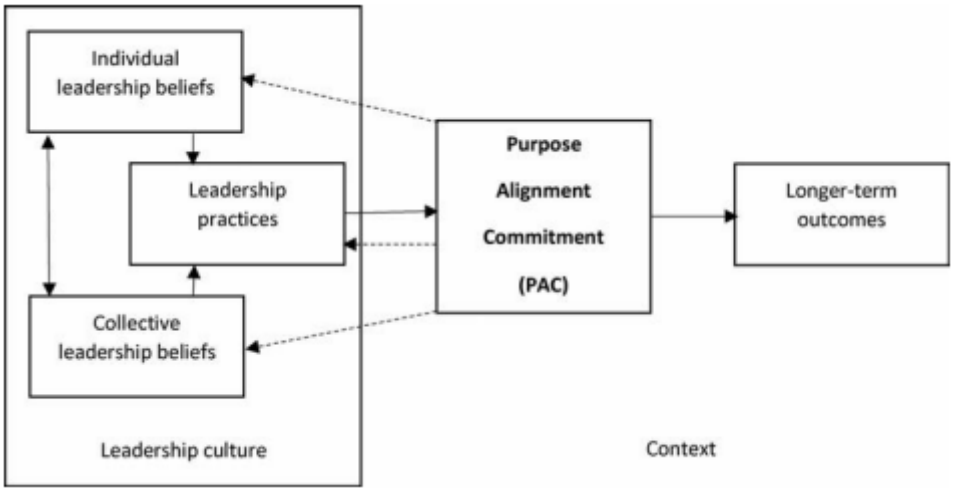


Figure 4 The PAC ontology framework (By, 2021, p. 39, Figure 3)

In addition to the PAC ontology, By (2021) also introduces the Telos Leadership Lens (TLL). The telos lens as described by By (2021), consists of 3 principles, the first is:".. *leadership is a responsibility of the many, not a privilege of the few"*(p. 34). The second is: "..*leadership is the collective pursuit of delivering on purpose*"(p. 35). The third is: "*…leadership purpose is to be guided by internal goods"* (p. 35). The term Internal goods is grabbed from the realm of virtue ethics, that splits between external and internal goods. External goods are goals of obtaining profits, wealth, prestige and similar for oneself. While internal goods are very different, obtaining internal goods can only be done by acting,

meaning it's something one acquire only when doing something, it's the activity that is the reward itself. Examples of this is, volunteer work, enjoying time spent with a friend and so on (Richardson, 2012).

While external goods can be affected by competition, internal goods are not necessarily subject to this as its providing a richer life for any that can get a benefit from it (Richardson, 2012). Further emphasizing the focus on internal goods is the name of the model itself, Telos. Where its meaning is adopted from the "…*Aristotelian definition of telos as an overarching and goal of contributing to the good of humankind*"

By (2021) shows trough combining the Telos lens and PAC, a new emerging model:

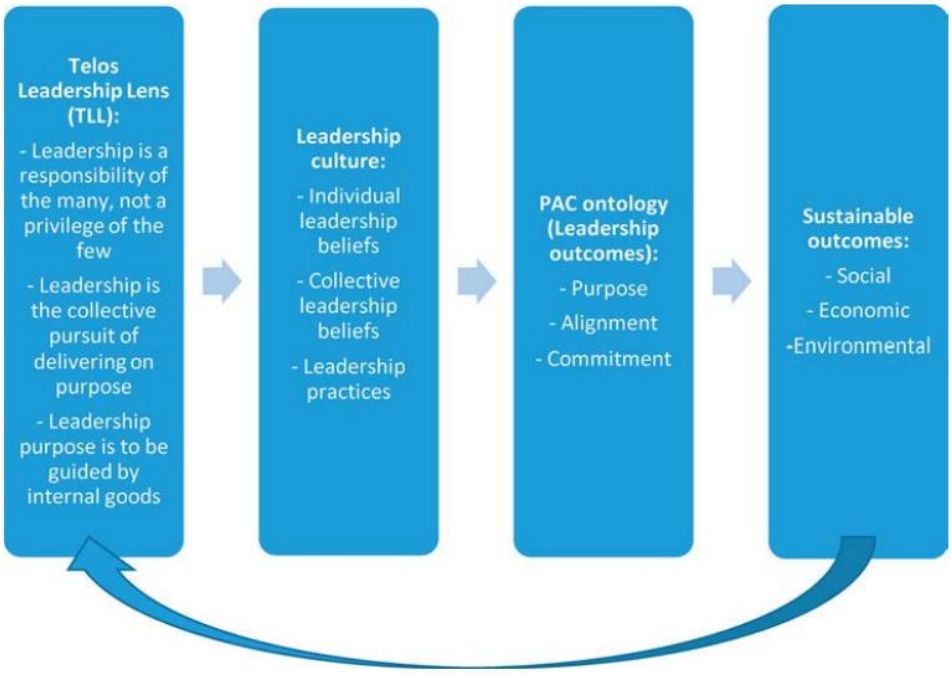


Figure 5 The PAC and TLL leadership, An emerging leadership model (By, 2021, p. 40, Figure 4.)

A purpose that is guided by internal goods may seem hard for the organisations to establish, as not all changes can be about some grand higher purpose like saving lives or similar. Arguably it can still be about internal goods. A change can be seen to always create value for someone, in addition to producing profits or reducing cost, like making a task less tedious for someone, making something faster and/or easier to complete and in turn make their workday better. It may still be something that can provide meaning, when employees see that their work is contributing positively to others they may find meaning from it (Hansen & Keltner, 2012).

A company that have established such a purpose within the energy sector is Equinor; "*Our purpose is turning natural resources into energy for people and progress for society" (https://www.equinor.com/about-us/corporate-governance)*. Being the largest energy company in Norway, this may influence other organisations within the sector to follow.

One can see from By (2021), that the PAC and telos lens is not restricted to be within an organisation, it does not differentiate from this being internal or external. It's for leadership processes no matter what level of the business or sector they are conducted.

An organization with a purpose in line with By's (2021) emerging model, is what some would call a purpose driven organization. As Freeman and Ginena (2015) explains, the purpose in a purpose-driven organization is the reason to why the organization exists, it's not about what products or services it offers, it's the very reason to why it was created. It's a goal that its members are passionate to pursue, something that is bigger than them self that they can align with. It's a collective approach of doing something good for the society. Profit for a company is what allows the company to keep going, it's not the goal of the company. Just like food or water or oxygen isn't a life goal, it's something we need to stay alive (Freeman & Ginena, 2015).

As one can see, profit for a company is important but it should not be the main reason to its existence. This understanding may be challenging for companies to comprehend as it seems unprecise and may be misunderstood (Mayer, 2021). Like Mayer and Roche (2021) explains, there is nothing wrong with achieving profits, its doing it at the expense of stakeholders that is a mistake. It`s a misconception that profits are the only thing that matters for a company. According to Mayer (2021), the purpose should neither be mundane nor unrealistic. It should be attainable trough effort, the purpose should be something that allows companies to "*…produce profitable solutions to the problems of people and planet and not to profit from producing problems for people or planet*" (p. 889).

There are a multitude of organizations that has thrived on the basis of focusing on creating value for others. Ghoshal, Bartlett, and Moran (1999), gives examples such as ABB, 3M, GE, Kao Yoshio Maruta, McKenzie and Company, Unipart, and more. All these companies have embraced the notion that a company exists to create value for the society. 3M CEO Michael Roman, in an interview with the magazine Chief Executive, gave an answer to their purpose-driven approach:

> "Our vision—technology advancing every company, products enhancing every home, innovation improving every life – is central to what we do day-in and day-out. Our

> values around inclusion and diversity, along with sustainability – where we've been leading for 40 years – also shape a big part of our purpose. And finally, I look to our brand promise—3M Science. Applied to Life— which reflects how we use science to help our customers and to change the world for the better. All of this creates a strong sense of purpose for us."(Kuehner-Hebert, 2019)

While more and more companies are realizing that a purpose-driven approach is beneficial to the business. Many companies are still sticking to the old principles of a business's purpose is about creating profit. This view on businesses can be related to what is known as the Friedman doctrine (Mayer, 2021). Friedman's approach to a business purpose was as his title to his New York Times magazine article "*The Social Responsibility of Business is to Increase its Profits*" (Friedman, 1970, p. 1). The time of the release of this article is probably a big reason to the acceptance that it got. Today information is literally available at the fingertips, when companies do something bad, the people of the world will know about it. It can be suggested that this view on business is not a good approach for modern times.

2.4 Stakeholder approach

Based on the above, one can see that the purpose-driven approach to doing business is something that requires stakeholder management, it's important to understand who the stakeholders are and how the business objectives may affect them. Insight to this can be seen in the stakeholder theory. The stakeholder theory can be explained as a framework to give the understanding that a business has a responsibility to all stakeholders, where stakeholders is anyone and anything that can impact or be impacted by the organisation's achievement of its purpose. Taking this responsibility shouldn't be viewed as a threat, but rather an opportunity, as it can produce substantially positive effects for the business. It's something a business needs to do in order to be successful in the current and future market (Freeman, 1984).

Freeman et al.(2020) provides 5 main elements for the stakeholder theory:

> *"….(1) the importance of purpose, values, and ethics, as well as business: (2) the centrality of creating value for stakeholders, as well as shareholders; (3) seeing business as embedded both in societal institutions and in markets; (4) recognizing the full humanity of people, as well as their economic interest; (5) integrating "business" and ethics into more holistic models."*(pp. 3-4p.134).

This theory provides another layer to the earlier mentioned theories and creates a broader view on change leadership. While the PAC and Telos Lens shows a model for leadership processes at any level, the stakeholder theory may emphasise the importance of understanding and knowing the stakeholders of the organization. It may lift the view from that of being about employees, customers and shareholders, to instead seeing that the business is part of an

ecosystem (Mayer & Roche, 2021). As mentioned in the introduction chapter, there could be external forces that is also affecting the sectors' ability to change. The stakeholder theory provides and understanding to what these forces may be and shows the importance of not only looking at the organisation on its own, but it also shows the importance of evaluating anything that it is affecting and can be affected by. If one summarize what a business is from Freeman and Ginena (2015) one can see that: Business is, like leadership, a practice. It`s humans interacting with other humans in an institution that is a living member of a society of which it impacts in multiple ways. As Freeman (2010) says, stakeholder interests are inherently tied together. It's important for organisations to understand the need to create as much value as it can for its stakeholders. There is no contradiction between creating stakeholder value and creating shareholder value. If the stakeholder value is created, then naturally the value for the shareholder will increase as well, as this focus will create long term benefits and growth. Focusing on the shareholders alone will create short term profits at best(Freeman et al., 2020)

The need for organisations to embrace the stakeholder approach may be seen from the ESG requirements that has been implemented by the European Union. Where ESG is Environmental, Sustainability and Governance. The sustainable finance disclosure regulation-REGULATION (EU) 2019/2088 (European_Union, 2020) was implemented in 2020. Which is a requirement that participants in the financial market report on their approach to risk and adverse impacts on sustainability. Additionally, EU implemented a law that requires public-interest companies to disclose information about how they operate and how they manage social and environmental challenges. The law includes audit requirements and detailed reporting(European_Commission, 2022a). The ESG reporting was implemented as a as part of the EU`s promise to UN`s Sustainability and development goals where ESG is the requirement of governance and reporting, and the SDG is what is governed and reported on (EC, 2020).

Figure 6 UN`s sustainable development goals and the EC (EC, 2020)

References to the stakeholder approach and theory, can be found multiple places within the European commission's webpages, perhaps the most prominent connection is with one of the contributors to the EC "evidence-based policymaking", the World Economic Forum "WEF" (European_commission, 2022b). WEF is founded on the stakeholder theory, where its states that all organizations are accountable to all parts of society (European_Commission, 2022c) . Further connection to the stakeholder approach can be exemplified by the Oslo Stock Exchange and Euronext guidelines for ESG reporting, where both guidelines highlight the importance of stakeholder interest.

Figure 7 Euronext - Stakeholders illustrated(Euronext, 2020)

The ESG is a way for investors to invest into something that is meaningful, something that contributes to society instead of taking away from it (Freeman et al., 2020).

Based on the above one can see that businesses may be wise to embrace a purpose-driven stakeholder approach as it will also ensure that they are operating within the legislations and expectations of the Norwegian government and EU.

2.5 Strategic design & Design thinking

From the above, one can see that leadership is something that is done in a collective, it's a collaboration to deliver on purpose. Where purpose is something that motivates and gives meaning to the participants in a leadership process. Additionally, that organizations are simply part of a bigger system of stakeholders to which it has a responsibility to deliver value. An approach that fully supports these views and provides practical tools to innovate and execute change processes can be seen in the field of strategic design and design thinking.

Strategic design is not a common name in academic journals. There is very limited information about it. However, there is some common ground to what strategic design is. Meroni (2008) has found it to be *"…an approach to problem setting and solving and thus to design decisions in turbulent and uncertain context*"(Meroni, 2008, p. 37). Further one can understand strategic design to be*" … about conferring to social and market bodies a system of rules, beliefs, values, and tools to deal with the external environment, thus being able to evolve (and so survive successfully) as well as maintaining and developing one`s own identity. And, in doing so, influencing and changing the environment too*" (Meroni, 2008, p. 31).

While no direct academic explanation to strategic design has been found, it is understood to be an approach where collaborative design principles, such as design thinking, is leveraged within an organisation to establish a collaborative and innovative culture, that enables decision making and solution production for the organisations objectives (Meroni, 2008; Scaletsky & da Costa, 2019). Strategic design is a way to find understanding in situations where there are open and undefined problems. Knowledge is gained gradually with the collaboration of all participants working together to create value in the interest of the collective. It gives its users the insight to see that creating value for the society can create value for the organization. The approach allows for an organization to work with the environment and society to create value, instead of going against it (Meroni, 2008). One can see that this is relevant for the energy sectors challenges and may be something that can help with the situation. As explained design thinking is what is used by strategic design it's also

the focus of the thesis moving on in relation to strategic design as it is the paradigm that provides the tools used.

Design thinking is perhaps the most known paradigms for design, especially in the context of problem solving at business and organization level (Dorst, 2011). From Linke (2017), one can see that design thinking is an innovative process for solving problems that is founded on various skills. The design thinking process can be broken down to the following: "*..first, fully understand the problem; second, explore a wide range of possible solutions; third, iterate extensively through prototyping and testing; and finally, implement through the customary deployment mechanisms*" (p. 1).

A typical model used in the design approach is the double diamond. It consists of the following stages: "*discover insight into the problem, define the area to focus upon, develop potential solutions and deliver solutions that work" (*Rossi, 2021, p. 398*).*

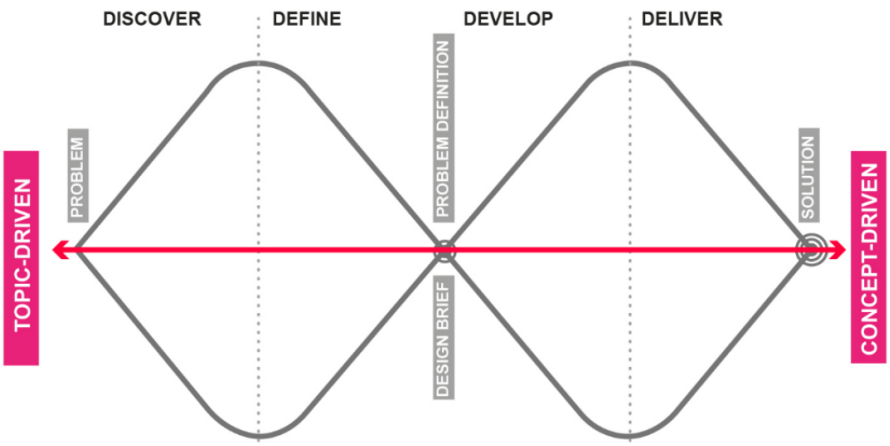


Figure 8 The double diamond model (Rossi, 2021, p. 398)

The Double diamond model illustrates a design thinking process, where one can see that the process is about convergence and divergence for both the problem setting and for the solution development. The design approach provides a process of reasoning when the problem is open and complex. It's a process to find both 'what' is to be solved and 'how' to solve it. It allows for abductive reasoning to complex and highly unclear situations, where standard reasoning approaches like inductive and deductive reasoning, falls short (Dorst, 2011). Design practices is all about collaboration and creating value, not only internally in the organization. Design practices emphasizes more and more on collaboration for its processes. It's all about including the client and stakeholders into the process to ensure a value creation in the interest of the collective *(*Rossi, 2021*)*. The process involves the consideration of the interest and values of the collective (Meroni, 2008).

Design thinking consists of maybe hundreds of various tools and methods. It may be best to look at the design thinking in a framework to better understand the use of these methods and tools (Luchs, 2015).

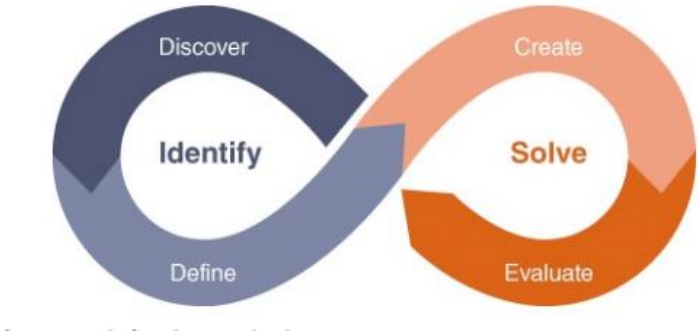


Figure 9 Design thinking framework (Luchs, 2015)

The framework is iterative and is something that is gone through, perhaps many times before a final solution is set. First is the discover stage, where it's all about understanding the users to empathize with them. It's about understanding their behaviour, experiences and needs. Its to understand how they think, behave, and feel. The define stage is about identifying the most important data to pursue in the next stage. This is normally done by framing said data into problem statements. The create stage aims to develop concepts that may be used for feedback from the users and be improved upon through iteration. The evaluation stage is the final stage and is about receiving feedback and using it to improve the solution (Luchs, 2015). One can see that design thinking is not about looking at existing solutions and trying to see what they can be used for. It's about understanding the situation and identifying real problems that then is solved through iteration and testing.

Meinel, Eismann, Baccarella, Fixson, and Voigt (2020) show that the design thinking approach outperform traditional innovation approaches. Where traditional innovation approaches are utilising assumption based pre-defined needs and with that assume that this information is reliable. Instead of the design thinking approach that rigorously works to figure out what the needs are trough empathy, understanding and problem identification.

The design approach, as mentioned, is an approach that can produce answers when the situation is unclear and problems are poorly defined (Buhl et al., 2019). Like the situation that the energy sector is in right now. Design thinking may provide the solutions that the energy

sector needs to achieve success in the green shift, be it either to produce new digital solutions or to set new strategies like how to approach a new market.

2.5.1 Selected framework

Based on the literature revied in this chapter, one can see that the PAC ontology does not set any limitations to the presented theories. The presented theories can be summed up to be that leadership is a practice and something that is done in a collective. It's not something that is done by a selected individual alone. Purpose motivates and gives meaning, it provides direction. It's what the leadership process is to achieve, it can produce alignment and commitment. A purpose that is set based on the Telos lens is something that can create alignment and commitment from the participants. These points are key to what strategic design is about. It's a collaborative way of setting and solving problems. Its working together to achieve a common goal that creates a value for all stakeholders. As such, PAC is the selected theoretical framework.

3 Research method

3.1 Chapter introduction

The purpose of this EMBA thesis is to provide the organisations with leadership practices that may enable the energy sector the ability to successfully change trough the green shift. This is done through exploring viable leadership practices, that not only can be viable for innovation and change, but that can help the companies do the correct innovation and change to produce long-term success through the green shift. It's to answer the research question: "*What leadership practices is required for the energy sector to gain success through the green shift?".*

The chapter starts with explaining that the data collection for the thesis has been anonymous according to the NSD guideline. It continues into the research paradigm explanation where it discusses the reasons to why the pragmatism paradigm is chosen for the research. Then the research approach and reasoning are discussed, where it's shown that the research study is qualitative and inductive. The inquiry approach is then identified explained to be a case study. The discussion continues to explain the sampling approach which is shown to be purposive approach for the interviews, and convenience approach for the observation of the workshop. The data collection for the research study is shown to be semi-structured interviews, workshop observations, literature review and from other sources such as media and publicly available quantitative data. Then the data analysis approach is explained. The chapter finishes with an explanation of the research limitations.

3.2 Personal data collection and research ethics

This study has been done in accordance with NSD`s anonymous data collection guideline (NSD, 2022). Where no personal data was gathered from the participants. The interviews and observations were done with note taking only, no sound recorder, video recordings or similar was used. The participants were selected from my own network within the energy sector. NSD was also contacted through a phone call, where it was ensured that the anonymous approach was correct and within the anonymous data collection requirements.

See Appendix 1.1 – NSD – Anonymous data collection guideline and Appendix 1.2 – NSD – Personal data form

This study follows the guideline provided by the Norwegian National Research Ethics Committees (Norwegian_National_Research_Committees, 2022).

3.3 Pragmatism paradigm

The research paradigm that has been used for this research study is pragmatism. This paradigm was chosen as the study will focus on what is practical and useful. It`s to provide useful and actionable knowledge (Kelly & Cordeiro, 2020).

To be able to find good practical answers there is a need to choose the most appropriate data for answering the research questions. The research was based on the belief that to solve the research question there is no "one" set of data that can be used. The research questions are broad and open within a complex field and vast field of study. The focus is on "what works now" (Creswell & Poth, 2016), as the world is always changing.

While data collection within the study is qualitative, meaning utilizing semi-structured interviews and observations, it is also utilizing some publicly available quantitative data.

Below is a modified outtake from a table presented by Creswell and Poth (2016) that summarizes the pragmatism paradigm:

Interpretive frameworks	**Possible researcher goals**	**Potential researcher influences**	**Example of researcher practices**
Pragmatism	To find solutions to real world problems	Appreciation for diverse approaches to collecting and analysing and the context in which the research takes place.	Uses the most appropriate methods for addressing the research question.

Table 1Modified outtake from Table 2.2 Comparing Major Interpretive Frameworks (Creswell & Poth, 2016, p. 34 Table 2.2)

As can be seen in the table above, in pragmatism, the researcher aims to find solutions to real world problems through the usage of diverse methods of data collection based on what is considered most appropriate (Creswell & Poth, 2016). For this study the pragmatism paradigm allowed for selecting the methods based on what was viewed to be most useful and appropriate to answer the research question based on personal inference from experience and observations throughout the study (Mertens, 2012).

The table below is a modified table from Creswell and Poth (2016) that show the philosophical beliefs that is associated with pragmatism:

Interpretive frameworks	Ontological Beliefs	Epistemological Beliefs	Axiological Beliefs	Methodological Beliefs
Pragmatism	Reality is what is useful, is practical, and "works".	Reality is known through using many tools of research that reflect both deductive(objective)and inductive (subjective) evidence.	Values are discussed because of the way that knowledge reflects both the researchers' and the participants views.	The research process involves both quantitative and qualitative approaches to data collection and analysis.

Table 2 Modified outtake from Table 2.3 Interpretive Frameworks and Associated Philosophical Beliefs (Creswell & Poth, 2016, p. 35 Table 2.3)

3.4 Qualitative research approach and reasoning

To set the research approach for the thesis, reviewing the selected question and its purpose is essential. The purpose of the thesis is in short to find leadership practices and tools that can contribute to success while also becoming sustainable. Proper tools and practices are something, if found, that could enhance the company or organization`s effectiveness and success with change, improvement, and innervational work, regardless of it being related to the green shift, digitalization or similar. It's the practices that can contribute to the organization`s necessary change in any situation. As this is the purpose of the thesis, it's clear that this is a broad study of which there is no clear outcome or theory that can provide a definite answer, rather it's to seek out potential theories that could be suggested and that can contribute to further research and evaluation. The research reasoning is inductive where the aim is to end up with a theory that is based on the research findings.

Change leadership really is about understanding human behaviours and as such is a complex area to study. The field of change leadership is vast with many relative and contradicting theories where there is no clear answer to what approach is the best for leadership practices. There is no defined agreed definition to what leadership is (Barker, 1997). Meaning that the field is not set to give a definitive guide to how one should conduct a change leadership process. As the problem statement is broad, there is a need for flexibility in the research

approach and a need to understand individual views on what the problem with change efforts is for an organization. Finding answers to the problem statement requires exploration and a complex detailed understanding.

It will be challenging to conduct a quantitative study that takes the complexity of individual differences and variations of human behaviour into account to answer such an open research question. A ‘qualitative’ approach gives more room for flexibility. It’s the method that can be used when the problem needs to be explored and there is no easily measured identified variables (Creswell & Poth, 2016).

3.5 Case Study Inquiry approach

The case study inquiry approach was used for this study. As the aim was to find viable leadership practices, the researched was confined within the limits of the case of which was selected to be the energy sector and its challenges with change. The research question for this thesis may not be viewed as a typical case study question, but it was kept this way to keep the focus on the main goal for the thesis and viewed to be the best fit for the pragmatism approach. The energy sector was selected as the Case for the study as this is an area where I could draw from my personal experiences and observations from working within it. It was also selected to lift the view from not only looking into leadership practices done in a team, but to view the sector as a whole and in context to what is happening at the individuals level.

As the case study approach employed the usage of data collection from multiple sources of information (Creswell & Poth, 2016), it was also within the boundaries of the pragmatism framework to utilize the data collection methods that is most appropriate. Within the study there was however some elements of phenomenology, where observations of how some participants experienced a workshop. The assumption of the study was that it’s important to understand what key representatives in the sector see as problems during change initiatives

and what they consider the reasons to these problems are. Further, it was viewed to be important to understand what was considered to be viable solutions, in order to make assumptions about the viability of the suggested solutions that was provided by this study.

Below is a modified table from (Creswell & Poth, 2016) that shows a summary of the case study approach and what is followed in this thesis:

Foundational Considerations	**Case study**
Research focus of approach:	Developing an in-depth description and analysis of a case or multiple cases.
Unit of analysis:	Studying an event, a program, an activity, or more than one individual.
Type of research problem best suited for the approach:	Providing an in-depth understanding of a case or cases.

Table 3 Modified outtake of table 4.1 Contrasting Foundational Considerations of Five Qualitative Approaches(Creswell & Poth, 2016, p. 105 Table 4.1)

3.6 Data collection

The approach to finding the solutions in this thesis was based in the belief that the solutions not only needed to be something that would help the situation, it's also something that needed to be believed to help the situation of the individuals that are in it. It needed to be acceptable as a solution and make sense for the people that is to be utilizing it/them. Data collection did therefore include identification of the struggles that organizations have with change and collecting data that can provide new solutions for leadership practices. The goal was not only to provide tools to change, it was also to provide reasons to change from a business perspective.

Data collection for the thesis consisted of:

- Semi-structured Interviews
- Observations
- Analysis of literature
- Utilizing data from other sources
    - Publicly available quantitative data

- Media and news

3.6.1 Sampling Approach

For the interviews, the sampling approach used was purposive, where the participants were selected based on their positions within the energy sector and their experience and field of work that relates to change leadership. The participants selected was people in key positions that are decision-makers for the organization's change processes and selection. Their positions varied based on the organization they are employed in. However, what they all share is that they have several years of experience with change and innovation processes. The participants were to be either within the organisation's executive management team, or in positions that reported directly to it. The organizations of which the participants were employed, were within the energy sector and included individuals from three operating companies and one service providing company within the sector. The change they had to have been involved in was either sustainability initiatives, digitalization, larger organizational changes, or a mix of the previous mentioned. The participants were to be representatives of the individuals who would decide if the company should utilize the solutions that this thesis aims to contribute with.

The workshop observation was selected mostly based on convenience as it was an opportunity that was provided during this study at the point when design thinking literature was being reviewed.

3.6.2 Semi-structured Interviews

There were 4 interviews conducted that lasted around 60-90 minutes. The interviews were done by taking notes, no audio recording or similar was done during the interviews. A general introduction was given to the participant. There was no mention to the participant about any of the selected literature, as this is something that could lead the answers. Change as its described in the questions was explained to be change initiatives, larger transformations, digitalisation initiatives, innovation processes and similar.

The main goal of doing the interviews was to try to understand what the real issue with change is in the energy sector. To understand how they experience doing change within an organization or network (including suppliers, clients and similar). It was also to learn what they see as potential solutions for the problems they are facing, as these participants all had several years of experience, they could provide valuable contributions of knowledge. This knowledge could be helpful for identifying potential leadership practices. Additionally

understanding how they experienced change efforts and what they look at as good solutions to their problems, could provide an understanding to see what potential solutions the energy sector could accept. The gathered data was utilized to both find and to validate selected theories if possible.

The interviews where semi-structured, giving the opportunity to explore on answers given by the participant. To see the questions that is asked in the interviews, please refer to Appendix 2 – Interview Guide.

During the interviews all answers that was noted down was read back to the participant to ensure that the answer was transcribed and understood correctly.

3.6.3 Workshop Observation

During this study its was found that a tool that can be a potential solution for the organizations could be design thinking, see chapter 2.5.

The main goal of observing the workshop was to get an understanding of how people experience them and to see what they may provide to this study in terms of leadership practices. Observing design thinking workshops may provide some validation to the potential of the discipline and give better understanding of its possible use for innovation within organizations. Observation were done as a participant.

The observation was done in a strategy workshop where design thinking tools were utilized to understand how to best approach a new market and what solutions can be created and provided for said market.

The workshop that was observed had 6 participants including the workshop facilitator. The workshop was held in a large meeting room and lasted 97 minutes. 5 participants joined physically in the meeting room. 1 participant joined by calling in.

The participants consisted of a managers, designers, and technical experts.

The observational protocol provided by Creswell and Poth (2016) was utilized for the observation notes. For the observational protocol please refer to Attachment 3.

3.6.4 Analysis of literature

The literature analysis can be found in chapter 3. Literature review.

The initially selected theories were based on personal experience of what was initially understood as needed both from experience from working in the field and from what was

learned from the leadership studies. As this is a inductive research, the literature review was expanded on as the research was conducted, when new information provided a new understanding of what theory was needed.

3.6.5 Utilizing other sources of data

As the approach to inquiry was a case study, the approach was to evaluate and utilize a variation of other data sources to provide an in-depth overview of the case and the situation that is being researched. News from media, political statements, quantitative data from other publicly available studies was used to provide details to the case.

3.7 Data analysis

The steps for the data analysis is shown more in detail in Appendix 4 – Analysing interview data.

The data analysis of the interviews and the observations of the workshops was done in accordance with Creswell and Poth (2016) guide on coding . Where the data was categorised and reduced into themes utilised in the discussion.

As this was qualitative case study the findings were presented directly into the discussion chapter. The purpose of the coding was done to decrease the possibility of introducing biased opinions to the interpretation. The approach that was used for coding was both deductive and inductive. Where a certain set of themes was selected and set based on the contents of the literature review. The list was then changed inductively as the data was being coded. The combination of inductive and deductive coding was selected to ensure that a focus was kept on the literature that was selected, and to also ensure that the data was not forced to be relevant for the selected theories and literature.

The first part of the coding was to summarize (and translate) the interview answers into three different categories. As the questions are based on what why and how, the answers from the participants were summarized and connected to; `challenge` (what), `reason` (why), and `solution` (how). This was to differentiate how the data could be used throughout the discussion.

Second part was to connect these summaries to the following subthemes:

Involvement & Commitment

- Purpose

- Unpredictability
- Value creation
- Alignment
- Problem & Solution identification
- Communication and collaboration
- Resistance to change
- Competence

These where then connected to the main themes of the discussion that was set to be inline with the literature review chapters layout.

3.8 Research limitations

A case study requires time to enable a fully detailed overview over the case that is studied (Creswell & Poth, 2016). This being a master thesis puts limitation to the time available and what areas is studied in-depth. There was a limited amount of how many interviews it was possible to do during the research period. The plan was to conduct 6 interviews but due to corona restrictions and having to postpone the interviews due to their work schedule, it was only possible to get 4 interviews done within the limited time. The same goes for the observations. There were 2 workshops that was observed, due to being a participant with additional tasks in one of them, the information gathered was not deemed to be good enough for to include as findings. While it would be preferable to do many observations, with various participants, different workshop goals, different design methods used and similar, to get a full insight in how participants experience the different phases. There is unfortunately a limit to how many observations that was available to observe and even be allowed to observe within the time frame and due to corona restrictions. It was also found during the observation of the first workshop that being a participant in that type of workshop and to also note observations was challenging. The workshop makes for active contribution, the time provided for notetaking is limited.

4 Findings & Discussion

4.1 Chapter Introduction

The purpose of this EMBA master thesis is to provide the organisations with leadership practices that may provide the energy sector with a new mindset. This is to be found through exploring viable leadership practices, that not only can be viable for innovation and change, but that can help the companies to do the correct innovation and change initiatives to produce long-term success through the green shift. The aim of this chapter is to evaluate the identified relevant literature together with the findings to answer the problem statement; "What leadership practices is required for the energy sector to gain success through the green shift?".

In this chapter the theories that was found within the literature review, and the relevant findings from observations and interviews, is discussed with the aim to deliver on this purpose and to provide answers to the research question. The chapter starts with a discussion on the leadership beliefs where a collective leadership approach is suggested to be embraced. It continues to discuss internal and internal goods, where it's found that the energy sectors organisations focus on cost and profits may be limiting the energy sector's ability to change. The importance of purpose is then introduced, where it's discussed that the purpose should be guided by internal goods instead, and that this is something that can provide commitment from stakeholders. Then findings related to how the energy sector manage their stakeholders is discussed, where the stakeholder approach is introduced to ensure that all stakeholders is considered, and that value creation needs to be done together with the stakeholders. That business is within an ecosystem of value production. The discussion continues with findings related to the change process within the sector where design thinking paradigm is suggested as an approach to innovation and change effort. Where the design thinking paradigm involves the principles of all the other chapters combining these principles with tools that can empower the energy sector's ability to change.

To ensure clarity in the discussion below, whenever the interviewed participants is mentioned, it will be shown as *participant* or *participants* written in cursive.

4.2 Leadership beliefs

The findings and discussion within this subchapter are connected to the leadership beliefs that exist in the energy sector, and what limitations and benefits the leadership beliefs may have on the participants within a leadership process.

Relevant Findings

1. From the interviews it was observed that the leadership belief that may be within the energy sector is that leadership is something that a selected individual does. This could be seen where:
    a. One said, "*When the CEO says jump, everyone jumps*". And "*No matter who is involved in the process, it is important that the person at the top sets the direction and that this is the same through all the leadership teams. If one group goes south, then the other can't west or north".*
    b. Another said, "*People who don't join the changes don't because they don't have to.",* and "*It* (Change effort) *It should be a combination of whip and carrot*.".
    c. A third said: "*There will be some bell sheep and some that don't want to change. Don't spend time on those who don't want to change*".
    d. A fourth said: "*Everyone must be convinced. It is challenging to make them understand that this is the right way to go*."
2. It's found from the interviews that getting stakeholders committed to the change was challenging. The challenge with getting stakeholders committed was mentioned multiple times throughout the interviews. Where:
    a. One said, "*Getting suppliers, employees etc. in on the change is difficult*".
    b. Second said:" *It's challenging to make sure you catch people. That they don't defect if they face challenges*".
    c. Third said, "*The big challenge is the inherent opposition to change*."
    d. Fourth said; "*Perhaps the most demanding is supply chain transformation, where more people also must join the change. Where the goal is to get suppliers to change. This isn't easy!"*
2. One of the *participants* had experienced that a good solution to have people committed was to allow stakeholders to be part of the decision making, as the *participant* stated:
    a. " What I see works, where we've had good processes of change. 1 this happens.2. It's good because this and that. 3. Ask within the framework how they want it to be. The cabinet should be there, but you can decide the contents".

Discussion

This leadership belief may be connected to the "industrial paradigm of leadership" (Rost, 1997, p. 180), where some view leadership to be about some great individual that is influencing followers to do what they wish them to do (Rost, 1997). This view might limit the Energy

sector's ability to change. From personal inference, to simply tell someone why something should be done is not going to ensure commitment. Having this belief, might be making the change processes more challenging for the sector. If getting true commitment from stakeholders was only to tell them what to do, leadership would arguably be a very simple field to study.

One can see that the energy sector has challenges with getting commitment from stakeholders and, based on how many times its mentioned, it can be viewed as a challenge of particular importance. The leadership belief that resides in the sector might be a reason to this challenge, as it may limit the organisations possibility to find why this is an issue and how it can be solved. A different approach could be found with the leadership as practice approach, where leadership is collaborative effort between individuals and its distinctives is mostly learned through active engagement by the practitioners, it's something that is done in a collective (Raelin, 2011, 2016). The suggested solution from the *participant,* can be related to this view.

From the PAC ontology, its seen that a leadership process involves a purpose that the collective can align with and commit to. And when collecting the telos lens, leadership is something that is done in a collective towards a shared purpose, it's not done by a single individual (By, 2021). From Kempster et al. (2011), one can see that that organisations can't dictate stakeholders to agree with the purpose of a leadership process, this type of purpose-giving is not going to ensure true commitment, the purpose is either accepted or not. The challenge the energy sector has with commitment may be partly due to management or some selected individual trying to tell people what to do and accept.

4.3 Guided by internal or external goods

Relevant Findings

The findings and discussion within this subchapter are related to the organisations purpose, both on the organisations level and at the leadership processes at any level. It's related to why the organisations exist and how that affect the stakeholders of the organisations.

1. One *participant* stated that the industry had the wrong mindset as*:*
    a. The participant stated:*"* Wrong mindset. Costs and lack of ability to see the potential of transitioning to greener solutions *"*
2. Its observed, from working with change leadership within the sector, that the energy sectors leadership processes are mostly focused on some cost reduction, time reduction, progress reporting or other profit related KPI`s.
3. Some of the participants discussed issues related to political framework such as:

    a. One *participant* said: *"the political framework is important. If one does not have predictability in framework conditions, it is difficult to know where to go"*
    b. Another participant said: *"On the other hand, the Government must also set guidelines. Why aren't there fees on Scope 3? Can we also reduce other consumption by changing legislation and regulations?"*
    c. A third *participant* said: *"This uncertainty can be partly blamed on uncertain political framework conditions - as an example, hydrogen production has been decided that is going into the country but there is nothing to suggest that this could yield a win, what is the incentive? It must be made understandable and clear to the organizations. For example, CO2 fee is easy to understand.?"*

4. All *participants* highlighted the importance of involving stakeholders in the process and challenges related to this involvement and to keeping them engaged in the change process to follow through with the change. With examples given in subchapter 0.
5. One *participant* noted that the management also needs to get involved in the change process, they need to show with action and not just words. As:
    a. one *participant* said: *"Display with action and not just words. Vision is adhered to"*
6. One *participant* mentioned that values that could be gained from a change process, should not be presented to internal stakeholders as to be about profit for the company, as:
    a. the *participant* said: "*Return on employed capital motivates very few*"
7. One *participant* mentioned that the cost and price is a driver and is what is stopping the organisations to invest in sustainable solutions. As:
    a. one *participant* stated: *"Carbon capture is one of the important activities, but this costs a lot of money. Energy from wind power, for example, is hard to store. Restructuring has a lot to do with it, but this is a huge challenge for the industry. The price will often be driving. If it's cheaper with coal, it's bought."*
8. Two *participants* emphasised the importance of ensuring that stakeholder had incentives to do the change, and if not, they wouldn't commit.
    a. one participant stated: "*If we invite another company to change in a way, they lose work or similar. Then that company says, if we do this, we lose money, they lack the incentives to do so."*
    b. another said*: "Incentives are needed for them to accept these solutions. Otherwise, it won't work"*

Discussion

From the findings one can see that the energy sectors organisations focuses on their shareholders and profits. This might not be beneficial for the energies sector's ability to change. This focus can be linked to the Friedman doctrine, that states that the purpose of a business is to create profits for its shareholders (Friedman, 1970). The focus on profit maximisation may be seen to be a part of the reason to why stakeholders won't commit to the leadership processes.

Like suggested by one of the *participants*, the value that a stakeholder gets out of the change shouldn't be about the profits someone else gets out of it. If that is the approach, it's probably not going to produce motivation and commitment.

From the PAC ontology, purpose is what the participants align and commit to in a leadership process (By, 2021). If the Energy sectors organisation's purpose is about the shareholders profits this is not something that can be assumed to motivate other stakeholders. One can see that it could be beneficial for the energy sectors organisations purpose and with that their leadership processes to be guided by internal goods, as the purpose is guided by the internal goods the activity is the reward itself (By, 2021; Richardson, 2012). As, two of the *participants* emphasised the need for incentives for stakeholders to commit, a shared purpose may be something that can provide them that.

As it's found from the *participants*, getting stakeholders in on the change is a challenge, additionally it was also mentioned that management should commit themselves to the change as well. The management is also stakeholders of the business, it can be suggested that they need to commit to the change, if they want the other stakeholders to commit. This is where the organisations' purpose may provide a guidance for all the stakeholders and increase commitment.

If the organisation has a higher purpose that the stakeholders can commit to, this purpose may guide the leadership processes where it's ensured that they are in line with the organisation`s purpose. As one *participant* believed that cost and price was the reason to why the organisations didn't invest in sustainable solutions, one can see that a purpose that is guided by internal goods may change this mindset. Organisations that has a purpose that is guided by internal goods can produce profit increasing benefits such as; support from the society, engagement and commitment from employees, loyal suppliers and more (Mayer, 2021).

The energy sector may have to work for this trust from their stakeholders, as one *participant* said, the management need to show with action and not just words. Additionally, The KPI`s that is being used in the sector is cost and profit focused, hence it may be hard for some to believe that the organisation is not just focusing on profits and shareholders. The purposes might be seen as marketing plots and not something that is truly followed by the organisations. "Talk is cheap" (p. 64), it's not enough for an organisation to state the purpose, the purpose must be lived, if not people may lose trust in the organisations (Freeman et al., 2020).

When viewing it the other way around, when the organisations are focusing too much on costs and profits, they may miss the big picture. As there is a worry about the loss of profits due to authority legislations related to sustainability goals, hence focus will be on trying to look good on the ESG reports for their shareholders, instead of trying to do what they can towards the UN`s sustainable development goals. Based on this one can also suggest that a higher purpose for an organisation may ensure that its always keeping a focus on doing something for the greater good while also producing profits (Mayer & Roche, 2021). Whit this approach to business one can see that the need for political framework conditions may not be as big of a problem. If the organisations truly commit to their responsibilities, that this is part of their purpose, they may have a higher chance to be ahead of the authorities' legislations instead of behind it.

4.4 Stakeholder view

The findings and discussion within this subchapter follow the discussion in chapter 4.3. where in this discussion it's related to how the organisations view their stakeholders, the understanding of who they are and how they affect the business.

Findings

1. Two *participants* mentioned that some stakeholders have resistance to change. That stakeholders simply didn't want anything to change. Such as:
    a. One participant stated: *"The big challenge is the inherent opposition to change"*
    b. Another said: *"I think a lot of people have an urge to have it the way they`ve always had it".*
2. As mentioned in chapter 4.3, incentives were something that was mentioned as necessary for the stakeholders to commit.
3. One participant mentioned that the external stakeholders may feel threatened by the change, due to fear of losing sales or similar.
4. An observation of fear of change was done during the last oil crisis where many people lost their jobs in the sector and at the same time the companies started to work on becoming more efficient, implementing LEAN and setting up improvements projects, all with the goal of cutting cost and increase efficiency. At this point there was many that viewed the improvement work as a threat as they were already worried about their job due to lack of work for the organisation.
5. One participant said that a problem for the future of the energy sector could be lack of resources if everyone was doing the same changes.
    a. As the participant said: *"Another challenge is that everyone is doing the same thing that can lead to insufficient resources at the national and global level. If*

everyone is going to buy a type of car, there can be long queues, resource scarcity. Human resources but also getting enough material. Having the facilities to take the work. Resources from a broad perspective"

6. One participant discussed the importance of creating value together with the stakeholders. To ensure that there are incentives for all. To emphasise this importance the *participant* stated:
    a. "We can't do good business if our supplier goes bankrupt".

Discussion

People may not have a resistance to the change it self, it's more likely that they might fear losing something else from the change in question, such as job status, comfort, control and similar (Dent & Goldberg, 1999). In the energy sector this is probably truer than in some other sectors. As can be seen from the observation that was done during the last oil crisis, where the employees experienced the improvements as something that would reduce their own value for the company and in turn lose their job. There may be a good reason to this resistance within the sector.

Perhaps a better approach is to make sure that the stakeholder gain something from the process. Additionally, if they lose something from the process, they may accept it if they see they get something of higher value back (Kahneman, 2011).

This may also be a reason for the company to change their focus from profits and shareholders alone to instead focus on value creation for its stakeholders, including the shareholders. One can see that if the focus is on shareholders, the value creation for the stakeholders may not be part of the objective (Freeman (2010).

As one *participant* explained that spending time on the ones that was resistant to the change is not worth it. It may be suggested that this is not a good strategy, as all stakeholders are connected one way or another, stakeholders is not only impacted by the organisation, they may also impact the organisation Freeman et al. (2020). One can see then that stakeholders that are resisting the change, or not aligned with the business, may affect it negatively. This is also something that is exemplified for the energy sector in Appendix 4 – Stakeholder's impact on the energy sector`s organizations.

Together with the ESG regulations and other authority legislations one can see that there is a push for the companies to become socially responsible. One can argue that organisations within the sector should accept its responsibility for its stakeholders including the environment. To do this, one may suggest that instead of looking at the business as an organisation and its stakeholders, or management and its stakeholders, it will be better to view the business as part

of an ecosystem. This may in turn set a focus on value creation for everyone within this ecosystem that is beneficial for long term success (Mayer & Roche, 2021). Further, as mentioned earlier, purpose can't be dictated, perhaps then the company instead of trying to force its purpose on its stakeholder it can view itself as an orchestrator of the purpose (Mayer & Roche, 2021).

4.5 Change approach and strategy

The findings in this subchapter relates to the discussion regarding the approach the organisations has to their change processes why they may be challenging and how they could be successful. This subchapter also include findings from the design thinking workshops that was observed.

Relevant Findings

From the interviews

1. Selecting the correct solution for a change was mentioned as an issue by all *participants*. Where:
    a. One stated: "*the resistance is that the technology is not correct or desirable"*
    b. Another said: *"The choice of technology is challenging, a solution that can be purchased can be almost ready for use or one can program a solution even that is tailored to the task of not having limitations".*
2. Three participants believed that organisations biggest issues related to change was that the organisations underestimated the complexity of changing and lack of having an overview of the organisation and its processes. When asked what they believed the biggest mistake organisations do with change processes the following was said:
    a. One *participant* stated: *"That you don't understand what it looks like. that one does not have one defined worldview. that you don't know your organization".*
    b. Another said:*" I think companies are taking the process of change too lightly, change processes are choking time. Lack of respect for how challenging it is and how long it takes is something I think is common."*
    c. A third said: *"Taking it too lightly."*
3. One *participant* stated that involving stakeholders into the solution creation can produce a sense of ownership to the solution from the stakeholders.
    a. One *participant* said*: "Bringing people along also helps them to have one ownership of the product"*
4. One *participant* mentioned the importance of having diversity in the people that is to be involved in the leadership process.
    a. The participant said: *"Diversity is the key word here. It may not be the quickest way to the goal, but it gives one much prettier goal. Diversity, what makes this important is that with it you get a lot of views that otherwise wouldn't."*

5. One *participant* highlighted the importance of creating a culture for change.
    a. As one *participant* said*: "Typically, if the change doesn't work, managers must go out and tell them that this is wrong. This is part of creating a culture. There should be a desire to change."*

Observations from the design thinking workshop

6. An observation from the design thinking workshops was that the participants was engaged in the task at hand. One could see that the energy was high and that the participants seemed to enjoy it.
7. The design thinking workshop seemed to need a lot of planning to be completed successfully.
8. The participants liked the design thinking approach.
9. Calling into the meeting did not seem to work very well.
10. One liked it so much that it was clearly accepted as a tool to be used in the future as well as the participant stated: *"I want to do this more, we have a workshop with a new client next week, this type of workshop is what we should use there".*

Discussion

The issues that the Energy sector may have related to the solution selection, can be related to the process of decision making for that solution. The approach to finding new solutions for the organisations might be done with a traditional approach to ideation, where the decisions is based on predefined needs that is assumed to be reliable (Meinel et al., 2020).

This is probably a common approach within the organisations, most people don't spend time exploring the problem space before they jump on to the solutions space. Meaning that they are connecting the stated problems to their own experiences with the assumption that the overview of the situation is known, when it actually is more complex and nuanced than what can be initially seen (Linke, 2017). The problem with this approach is that it's very hard to have full overview of what is needed and how it will affect the organisation of business until its implemented and taken into use.

As some of the *participants* discussed, the biggest mistake that companies did was to not have an overview and understanding of the organisations processes. Like one participant said: *"That you don't understand what it looks like. that one does not have one defined worldview. that you don't know your organization".* One can see that lacking understanding but assuming that the pre-defined needs are reliable, may produce solutions that is not meeting the needs for all. It may even be contradicting and provide the stakeholders with more problems than solutions.

Where if the individuals that is deciding this doesn't have the necessary overview of the stakeholders and processes, how could they be able to produce good solutions?

From personal inference the approach for change that is observed in the energy sector is not considering the stakeholders enough for the change that is to be implemented. This produce noise and unsatisfaction within the organisations.

The organisations should find a way to get overview of the processes and figure out who may be affected by the change to ensure that it produces value and not problems. For instance, Equinor had18 823 employees in 2020 (Proff, 2022). At this size for some individual to have a full understanding over the processes and stakeholders can be challenging or near impossible. One can see how having an overivew of processes and stakeholders would be hard. Its clear that there is a need for tools for the organisations to be able to do successful changes that produces value for everyone it impacts.

This is what can be solved with the design thinking paradigm. Where the processes is about involving stakeholders, understanding and empathising with the users, identifying problems and then looking into how they may be solved through iteration and experimentation (Buhl et al., 2019).

With this approach to innovation and change efforts, people responsible within the organisations can ensure value creation for stakeholders. The decisions will then be based on the organisation's needs. It's about getting an overview of what is needed within a given "frame", trough many different perspectives to ensure that the needs are met. It's to create value for the stakeholders through involvement of stakeholders and collaboration in a collective leadership approach (Luchs, 2015).

Organisations within the energy sector may find involving stakeholders challenging. Design thinking tools may provide answers for this. For instance, to find the stakeholders and to understand how they affect each other, the stakeholder map may be used. This is a tool that may provide the organisations with ways to get overview of who the stakeholders are, how they are connected and how they impact each other(Lewrick, Link, & Leifer, 2020). Involvement of stakeholders does not mean that these leadership collectives are large. The design thinking approach is all about being small and flexible it's all about adding the correct people to the process and bringing in more to the process when its ready (Brown, 2019; Lewrick, Link, & Leifer, 2018).

As one *participant* mentioned: "*Diversity is the key word here. It may not be the quickest way to the goal, but it gives one much prettier goal. Diversity, what makes this important is that with it you get a lot of views that otherwise wouldn't."* This is something that is supported by the design thinking approach where diversity and expertise is key to produce the best solutions, where interdisciplinary teams are utilised for the change process. However, to achieve this takes patience, but this patience is needed, it's not something that should be overlooked (Brown, 2019).

Regarding the issue that one *participant* mentioned about ready-made solutions versus internally developed. Seeing that design thinking focuses on involving the stakeholders and understanding the user needs. From a design thinking process one can get an understanding of the problems that is to be solved and how they could be best solved. It could be easier to decide between a ready-made solution or if it should be internally developed to meet the needs. One can also see how this type of problem solving can be used for other strategi setting as well. As exemplified by Liedtka (2014), its been used for creating a companywide alignment on the strategy and vision, to reimagine the sales processes and seven a industry wide innovation group. One can see how these tools may provide the energy sector the ability to change and do successful change efforts.

As one participant higlited change culture within the organisation, one can see that the approach to innovation that can be found within the paradigm is to have a collaborative and collective leadership approach, its to create a culture within the organisation, a culture where its better to ask forgiveness than permission, success is rewarded and failure is allowed (Brown, 2019).

From the workshop observations it was clear that the tool created engagement from the participants. *"Bringing people along also helps them to have one ownership of the product",* this may be the effect the workshop gave. However, one can also see that it may feel daunting to impliment something like design thinking paradigm into the organisation as it takes a lot of knowledge. As one of the observations from the workshop was that it seemed to have taken a lot of planning. From personal experience, it may take planning, but its not hard to learn. The tools are easily learned, not to perfection but for practical use. This could be seen with one of the *participant* that seemed confident enough with the tool to want to use it with a new client as stated: *"I want to do this more, we have a workshop with a new client next week, this type of workshop is what we should use there".*

4.6 Limitations of the findings

It was planned to have 6 interviews during this study. Only 4 interviews held during the research study due to some not able to provide time for the interviews and because of the corona restrictions.

There were two workshops that was observed, but the findings are only given for one of them Workshop findings from one of workshop was very limited due to having to participate more actively as a presenter of the frame that was to be worked within. Its therefor not included in the findings. For the other workshop the confidentiality was limiting the findings, only how the members experienced the workshops could be written down, the content that was discussed had to be left out.

5 Conclusion

This research study set out to find ways to change the mindset of the energy sector trough exploring relevant literature that could provide the energy sector with the practices and tools it needs to be successful. It was to show that taking social responsibility could be and opportunity and not a threat. The research question was: *What leadership practices is required for the energy sector to gain success through the green shift?*

Through the findings its seen that the energy sector has challenges that may be related to leadership beliefs, how they view the organisations' purpose, how they view and handle stakeholders, and the way innovation and change efforts is approached.

The belief that leadership is something that is done by some selected few individuals, was found to reside within the sector. This view is limiting the energy sector ability to change. It's suggested that the energy sector should embrace a collective approach to leadership instead. Where leadership should be a collaborative effort towards a shared purpose where "l*eadership is the responsibility of the many not a privilege of the few*" (By, 2021, p. 40).

Further, the energy sectors focus on shareholders and profits alone should be a mindset of the past. To create commitment from the stakeholders it's found that organizations should establish a purpose that is guided by internal goods, a "meta-goal" (Kempster et al., 2011). A purpose that has a higher meaning. This may in turn ensure that the company is focusing on value creation for its stakeholders and taking social responsibility. It was also found that purpose guided by internal goods would provide a guidance for the company if its followed and not just used as a marketing tool. Leadership processes may then be guided by this purpose and provide meaning for its stakeholders. Additionally, organisations should understand that they have a social responsibility, a responsibility to create value for all its stakeholders. Embracing this responsibility is important for the company's long-term success. Organizations should realize that creating value for their stakeholders will also increase its own value, including its profits. Embracing a social responsibility is an opportunity.

Organizations should be about co-creation and collaboration, tools that is in line with this view is found for this in the design thinking paradigm. These tools may provide the organizations with the ability to increase its collaboration and cocreational ability. The paradigm also changes the mindset of how innovation may be done within an organisation. It focuses on involving stakeholders, understanding the users and problem defining before the trying to find the solution. This may move the organizations away from jumping on solutions, and in turn reduce

the chances to make the wrong decisions that may impact the stakeholders negatively. Design thinking allows organizations to “fail fast and fail cheap” with the use of prototypes and its iterative process. A design thinking process is guided by internal goods on its own rights, it’s all about solving problems for users and stakeholders.

6 Recommendations

In response to the urgency of the energy sector to change due to the climate crisis. This was a study that aimed to find new leadership practices to answer the research question *"What leadership practices is required for the energy sector to gain success through the green shift?"*. Through answering this the aim was to find leadership practices that can provide the energy sector to become sustainable while also increasing its profits. The research study was done with a pragmatism paradigm with a case study inquiry approach that utilised findings from interviews, workshop observations and other data to find answers to the research question. The purpose of this chapter is to provide recommendations for future research and practices.

Recommendations for Master thesis students

As this research study aimed to provide answers to a broad research question within the limits of a master thesis the amount of reading and work was demanding. For future master students its recommended to not go this broad but rather try to limit the research to a smaller area. Examples of research can be:

- How the organisations within the energy sector are doing stakeholder management. What their view is on stakeholders and social responsibility.
- leadership beliefs and how they are affecting the change effort.
- Purpose for the organisations and how they live up to it.
- Design thinking, in use, how it can be utilised for different challenges and so on.

Further its recommended to be well prepared for the interviews, ensure that the participants have time to join the meetings and that proper time is set for it. If the interviews are done anonymously like in this thesis, beware that noting down the replies takes time. Continuously reading back the answer to the participants is required. However, this gives the participants the opportunity to think and ponder about the question and provide better answers if the answer they gave wasn't clear. Participants that were interviewed for this thesis was very patient and understanding. Not all may be like this, inform them beforehand that only notes will be taken, and that it will take some time to get through the questions.

For observations, if planning to observe a design thinking workshop, its recommended to not be a participant. The design workshops are brainstorming activities that engages the participants to be active. It's hard to do a proper observational protocol while also being active in the discussion.

Recommendations for researchers

As this was a pragmatism qualitative case study that utilised observations and interviews for data collection done in a EMBA master thesis, the following recommend the following for future research:

- Quantitative research, where the energy sector or individual organisations are surveyed about leadership beliefs and how much they can contribute to change and similar.
- Qualitative research where Design thinking is studied more in depth, preferably in the field within the energy sector. It could be phenomenological, where participants can be followed up with interviews where they can talk about how they experienced it and what their impressions where.
- Qualitative and/or quantitative research where organisations can be researched. Where purpose-driven companies can be studied versus companies that is not purpose-driven, to evaluate the effect of being purpose driven.
- Quantitative and/or qualitative research of Employees and stakeholders of purpose-driven organisations, how their work satisfaction is and how the turnover is within these organisations.
- Qualitative research where it's done an in-depth evaluation of stakeholders within the energy sector, how they may be affecting each other.

Recommendations for practitioners

Recommendations for practitioners:

- Ensure that leadership processes are collective leadership. Don't try to have selected individual do the decision making for change efforts alone. Utilise the people within the organisation and outside it. Let them contribute. Diversity is key to producing good ideas. See literature review subchapter 2.2 and 2.3.
- Ensure that a higher purpose is established for the organisation. Find the reason to why the organisation exists. The purpose is to guide the organisations work for sustainable outcome. Ensure that the purpose is guided by internal goods and that it's a purpose that shows that the organisation is taking social responsibility. See literature review subchapter 2.3 & 2.4.
- Be aware of who your stakeholders are. The organisations stakeholders are not just suppliers, clients, and shareholders. See how the organisation is part of an ecosystem of stakeholders. Try to understand how various stakeholders may be impacted and impact the organisation. Do necessary actions to ensure that the organisations are living up to its social responsibility and create value for stakeholders it impacts. See literature review subchapter 2.4.
- To ensure collective leadership approaches and to create engagement around innovation and change efforts, utilise design thinking tools. Ensure that the design thinking processes includes people that has expertise and a breadth of knowledge. Diversity and multidiscipline teams can provide great new strategies and innovative solutions for the company. Solutions that impact its stakeholders in a positive way. Allow for time to

plan the workshops, try to have them done in person if possible. It may be less engaging in a conference call. See literature review subchapter 2.5.

7 List of references

Anthony, S. D. (2012). The new corporate garage. *Harvard Business Review, 90*(9), 44-53.

Barker, R. A. (1997). How can we train leaders if we do not know what leadership is? *Human relations, 50*(4), 343-362.

Bass, B. M., & Stogdill, R. M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications*: Simon and Schuster.

Bjørnestad, S. (2017). 47.000 jobber rammet av oljenedturen. Men ledigheten økte bare med 15.000. *Aftenposten*. Retrieved from https://www.aftenposten.no/okonomi/i/M0aBR/47000-jobber-rammet-av-oljenedturen-men-ledigheten-oekte-bare-med-15

Brown, T. (2019). *Change by design* (Kindle ed. Vol. 2019): HarperCollins. .

Buhl, A., Schmidt-Keilich, M., Muster, V., Blazejewski, S., Schrader, U., Harrach, C., . . . Süßbauer, E. (2019). Design thinking for sustainability: Why and how design thinking can foster sustainability-oriented innovation development. *Journal of cleaner production, 231*, 1248-1257.

By, R. T. (2021). Leadership: In pursuit of purpose. *Journal of Change Management, 21*(1), 30-44.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*: Sage publications, Kindle Edition.

Dent, E. B., & Goldberg, S. G. (1999). Challenging “resistance to change”. *The Journal of applied behavioral science, 35*(1), 25-41.

Dorst, K. (2011). The core of ‘design thinking’and its application. *Design studies, 32*(6), 521-532.

Drath, W. H., McCauley, C. D., Palus, C. J., Van Velsor, E., O'Connor, P. M., & McGuire, J. B. (2008). Direction, alignment, commitment: Toward a more integrative ontology of leadership. *The leadership quarterly, 19*(6), 635-653.

EC, E. C. (2020). *Delivering on the UN's Sustainable Development Goals – A comprehensive approach*. Retrieved from The European Commission webpage: https://ec.europa.eu/info/sites/default/files/delivering_on_uns_sustainable_development_goals_staff_working_document_en.pdf

Eriksen, K. F. (2021a). Med lav oljepris kan 90.000 oljejobber forsvinne innen 2030. *Teknisk Ukeblad*. Retrieved from https://www.tu.no/artikler/med-lav-oljepris-kan-90-000-oljejobber-forsvinne-innen-2030/506751

Eriksen, K. F. (2021b). Tekna-presidenten: Frykter forgubbing i oljebransjen. *Teknisk Ukeblad*. Retrieved from https://www.tu.no/artikler/tekna-presidenten-frykter-forgubbing-i-oljebransjen/512903?p=13495e30

Euronext. (2020). Guidelines to issuers for ESG reporting. *Euronext Guidelines*. Retrieved from https://www.euronext.com/en/news/esg-guidelines-for-listed-companies

European_Commission. (2022a). Corporate sustainability reporting. *2013/34/EU*. Retrieved from https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

European_commission. (2022b). Supporting policy with scientific evidence. Retrieved from https://knowledge4policy.ec.europa.eu/home_en

European_Commission. (2022c). WEF - World Economic Forum. Retrieved from https://knowledge4policy.ec.europa.eu/organisation/wef-world-economic-forum_en

REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - n the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, (2020).

Freeman, R. E. (1984). Stakeholder management: a strategic approach. *New York: Pitman*, *46*.

Freeman, R. E. (2010). Managing for stakeholders: Trade-offs or value creation. *Journal of business ethics*, *96*, 7-9.

Freeman, R. E., & Ginena, K. (2015). Rethinking the purpose of the corporation: Challenges from stakeholder theory. *Notizie di Politeia*, *31*(117), 9-18.

Freeman, R. E., & McVea, J. (2001). A stakeholder approach to strategic management. *Available at SSRN 263511*.

Freeman, R. E., Parmar, B. L., & Martin, K. (2020). *The Power of And* (Kindle Edition ed.): Columbia University Press.

Friedman, M. (1970, September 13). The Social Responsibility of Business is to Increase its Profits. *The New York Times Magazine*.

Ghoshal, S., Bartlett, C. A., & Moran, P. (1999). A new manifesto for management. *MIT Sloan Management Review*, *40*(3), 9.

Hansen, M., & Keltner, D. (2012). Finding meaning at work, even when your job is dull. *Harvard Business Review*(December 20).

Johansen, G. R. (Producer). (2017). Unge velger vekk oljen – helt naturlig mener Miljøpartiet. *NRK Nyheter*. Retrieved from https://www.nrk.no/rogaland/unge-velger-vekk-oljen-_-helt-naturlig-mener-miljopartiet-1.13608610

Kahneman, D. (2011). Thinking, fast and slow. In (Kindle ed.): Farrar, Straus and Giroux.

Kelly, L. M., & Cordeiro, M. (2020). Three principles of pragmatism for research on organizational processes. *Methodological innovations, 13*(2), 2059799120937242.

Kempster, S., Jackson, B., & Conroy, M. (2011). Leadership as purpose: Exploring the role of purpose in leadership practice. *Leadership, 7*(3), 317-334.

Kuehner-Hebert, K. (2019). 3M Is A "Purpose-Driven" Company, Says CEO Michael Roman. *Chief Excectutive* Retrieved from https://chiefexecutive.net/3m-is-a-purpose-driven-company-says-ceo-michael-roman/

Law, B. M. (2018). What Matters To You Is What Makes You: A sense of purpose drives us personally and, more broadly, fuels any organization's success, says convention keynoter Roy Spence. *The ASHA Leader, 23*(9), 42-46.

Lewrick, M., Link, P., & Leifer, L. (2018). *The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems*: John Wiley & Sons.

Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*: John Wiley & Sons.

Liedtka, J. (2014). Innovative ways companies are using design thinking. *Strategy & Leadership*.

Linke, R. (2017). Design Thinking, Explained. *Ideas Made to Matter, MIT Sloan*.

Luchs, M. G. (2015). A brief introduction to design thinking. *Design thinking: New product development essentials from the PDMA*, 1-12.

Mayer, C. (2021). The Future of the Corporation and the Economics of Purpose. *Journal of Management Studies, 58*(3), 887-901.

Mayer, C., & Roche, B. (2021). *Putting purpose into practice: The economics of mutuality*: Oxford University Press.

McKnight, P. E., & Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology, 13*(3), 242-251.

Meinel, M., Eismann, T. T., Baccarella, C. V., Fixson, S. K., & Voigt, K.-I. (2020). Does applying design thinking result in better new product concepts than a traditional innovation approach? An experimental comparison study. *European Management Journal, 38*(4), 661-671.

Meroni, A. (2008). Strategic design: where are we now? Reflection around the foundations of a recent discipline. *Strategic Design Research Journal*, 31-38.

Mertens, D. M. (2012). What comes first? The paradigm or the approach? In (Vol. 6, pp. 255-257): SAGE Publications Sage CA: Los Angeles, CA.

Miljødirektoratet. (2022). Status og utvikling i utslipp av klimagasser fordelt på sektorer. Retrieved from https://miljostatus.miljodirektoratet.no/miljomal/klima/miljomal-5.4/miljoindikator-5.4.1/

Norsk_Petroleum. (2022a). Arbeidsplasser. Retrieved from https://www.norskpetroleum.no/okonomi/arbeidsplasser/

Norsk_Petroleum. (2022b). The service and supply industry. Retrieved from https://www.norskpetroleum.no/en/developments-and-operations/service-and-supply-industry/

Norsk_Petroleum. (2022c). Statens inntekter. Retrieved from https://www.norskpetroleum.no/okonomi/statens-inntekter/

Northouse, P. G. (2019). *Leadership: Theory and practice Eight Edition* (Kindle ed.): Sage publications.

Norwegian_National_Research_Committees. (2022). Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology. Retrieved from Guidelines for Research Ethics in the Social Sciences, Humanities, Law and Theology

NPD. (2022). Sokkelkartet. Retrieved from https://www.npd.no/globalassets/1-npd/publikasjoner/sokkelkartet-2020-200ppi.png

NSD. (2022). Norwegian Centre for Research Data. Retrieved from https://www.nsd.no/

NTB. (2021). MDG vil legge ned all oljeutdanning i Norge. *Stavanger Aftenblad*. Retrieved from https://www.aftenbladet.no/innenriks/i/66Pvm3/mdg-vil-legge-ned-all-oljeutdanning-i-norge

Oljemuseum, N. (2022). Oil facts.

Proff. (2022). Equinor ASA. Retrieved from (https://www.proff.no/selskap/equinor-asa/stavanger/olje-og-gass/IF9W5A00VFQ/).

Raelin, J. (2011). From leadership-as-practice to leaderful practice. *Leadership*, *7*(2), 195-211.

Raelin, J. (2016). Imagine there are no leaders: Reframing leadership as collaborative agency. *Leadership*, *12*(2).

Regjeringen. (2020). FNs bærekraftsmål. Retrieved from https://www.regjeringen.no/no/tema/utenrikssaker/utviklingssamarbeid/sdg_oversikt/id2505654/

Regjeringen. (2021). Klimaendringer og norsk klimapolitikk. Retrieved from https://www.regjeringen.no/no/tema/klima-og-miljo/innsiktsartikler-klima-miljo/klimaendringer-og-norsk-klimapolitikk/id2636812/

Rey, C., Velasco, J. S. C., & Almandoz, J. (2019). The new logic of purpose within the organization. In *Purpose-driven Organizations* (pp. 3-15): Springer.

Richardson, F. C. (2012). On psychology and virtue ethics. *Journal of Theoretical and Philosophical Psychology, 32*(1), 24.

Rossi, M. (2021). A Compass to Drive Collaborative Design Practices within Private Organisations. *Strategic Design Research Journal, 14*(2), 396-406.

Rost, J. C. (1997). Moving from individual to relationship: A postindustrial paradigm of leadership. *Journal of Leadership Studies, 4*(4), 3-16.

Scaletsky, C. C., & da Costa, F. C. X. (2019). Design Management & Strategic Design: Cross Perspectives. *Strategic Design Research Journal, 12*(1), 27-42.

Schroeder, R. G., Scudder, G. D., & Elm, D. R. (1989). Innovation in manufacturing. *Journal of Operations Management, 8*(1), 1-15.

Smith, E. E. (2017). How to Find Meaning in a Job That Isn't Your True Calling. *Harvard Business Review, 4*.

Sull, D. (1999). Why Good Companies Go Bad. *Harvard Business Review, 77*.

Tushman, M., & Nadler, D. (1986). Organizing for innovation. *California management review, 28*(3), 74-92.

Zu, L. (2019). Purpose-driven leadership for sustainable business: From the Perspective of Taoism. *International Journal of Corporate Social Responsibility, 4*(1), 1-31.

Øvrebekk, H. (2021). Jo, det var et klimavalg. *Stavanger Aftenblad*. Retrieved from https://www.aftenbladet.no/meninger/kommentar/i/a7jq52/jo-det-var-et-klimavalg

8 Appendices

Appendix 1–Anonymous data collection

Appendix 1.1 – NSD – Anonymous data collection guideline

From the NSD web page (NSD, 2022), the following is instructed for anonymous data gathering.

- When interviewing and observation, data is recorded only in the form of notes (not audio recordings).
- Ensure that no name or personally identifying background information is recorded in the data material.
- Questionnaires are collected in paper form, without names and indirectly identifying information.
- Online questionnaires must use anonymous solution (e.g. that the respondent's email/IP address is not linked to the questionnaire at any time), and that the questionnaire itself does not contain questions about identifying information. NB! Most online questionnaires involve registering an email/IP address, and the processing will then have to be reported, even if only the service provider has access to this information.
- Register data (aggregated statistics at the group level) can be used without reporting the project if the dates are anonymous. The information must not be revertible to individuals in any way. There are several anonymous register data available online, including at Statistics Norway and NSD

Appendix 1.2 **– NSD – Personal data form**

Which personal data will be processed?

What are personal data?

What is processing?

Name (also with signature/written consent)

Yes | No

National ID number or other personal identification number

Yes | No

Date of birth

Yes | No

Address or telephone number

Yes | No

Email address, IP address or other online identifier

Yes | No

Photographs or video recordings of people

Yes | No

Sound recordings of people

Yes | No

GPS data or other geolocation data (electronic communications)

Yes | No

Background data that can identify a person

Yes | No

Genetic data

Yes | No

Biometric data

Yes | No

Other data that can identify a person

Yes | No

You have indicated that no personal data will be processed in the project.
If you will only be processing anonymous data you should not notify your project. Anonymous data are data where individual persons are not/no longer identifiable; not directly, indirectly or via email/IP address or scrambling key.

Note that this is not a formal assessment but is guidance based on the answers you have given above.

Appendix 2 – Interview Guide

Intervjuguide		SVAR
Oppgave tittel:		Intervju A
SPØRSMÅL 1	Hva anser du som den største utfordringen med endringsarbeid (digitalisering, forbedring osv)? **Oppfølgingsspørsmål:** - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:
SPØRSMÅL 2	Hvilke andre problemstillinger møter du i endringsarbeidet? Oppfølgingsspørsmål: - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:
SPØRSMÅL 3	Hvordan føler du at det er å få med seg ansatte, kunder, leverandører og andre på det å gjøre endringer? Oppfølgingsspørsmål: - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:

SPØRSMÅL 4	Hva mener du er den største feilen firmaene gjør I forhold til dette med endringsarbeid? - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:
SPØRSMÅL 5	Hva tror du blir den største utfordringen videre freomover med endringsarbeid i industrien? - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:
SPØRSMÅL 6	Hvordan føler du at energisektoren er klar for å håndtere utfordningene med det grønne skiftet? - Hvorfor tror du det er slik? - Hvordan tenker du at dette kunne vært løst?	Svar:

Appendix 3 – Observational Protocol

Observational Protocol	
Activity:	**Number of participants:**
Activity length:	**Location:**
Workshop goal:	
Descriptive notes	**Reflective notes**

Descriptive notes	Reflective notes

Appendix 4 – Stakeholder's impact on the energy sector`s organizations

The purpose of this document is to explore how the stakeholders may impact the energy sector and give an overview of the urgency that exists for the energy sector to change.

Employees

The organisations need people with high competence, expertise, and the ability to do the work. This need is obvious. To operate the process equipment, ensuring safety regulations, ensuring safe barriers on the process system, making sure its functional, ensuring maintenance and so on. All these activities are not something that can be done without a high competence in place. It is key to the operating company to ensure a safe and optimal operation, as is their responsibility according to the Norwegian petroleum regulations. The operating company is solely responsible for the operation of the field, meaning they are responsible for any accident that may be related to the field production, including the consequences from the accident and the cost related to erecting it, this even includes being liable for the financial losses to the fishing industry (Olje-_og_energidepartementet, 2021). PSA (Petroleum Safety Authority in Norway) is emphasising the importance of having the right competence and capacity. As this is something they have seen is a nonconformity in many audits. The PSA utters their concerned that the availability of well-qualified personnel is a challenge, especially for the suppliers. Competence and capacity is the PSA`s main focus of 2022 (Ptil, 2022). Petroleum production is complex and involves a lot of various disciplines and complex technologies, high level of competence or expertise in the personnel is key for an operating company and its service suppliers. Expertise is one of the main factors for innovation and creativity , it includes knowledge, technical proficiency and special talents within the field. (Amabile, 1997). One can argue then that the petroleum sector needs highly competent personnel, not only for the work they are doing today, but for innovating and doing the work that they will do tomorrow.

Job applications to the sector has gone down the recent years (Eriksen, 2021). One example is the one given in the introduction to this thesis that shows that less than 1% of the employees in the petroleum sector is younger than 25 years old. 36% is older than 50 years old. Comparing this to the employed at a national level, there was 15,98 % employed at the age between 15-24 year in the same period (SSB, 2022). Numbers from The Norwegian Universities and Colleges Admission Service, show that there was only 135 people that had petroleum related studies as their first choice in 2021(Eriksen, 2021), looking at 2014 there was 850 applicant with petroleum as a first choice (Johansen, 2017).

Investors

More and more investors invest according to ESG. They look for companies that scores high on the ESG ratings that show that they are considering the SDG in their business (Freeman, Parmar, & Martin, 2020). From a study conducted by the company Deloitte, one can see that ESG investment has increased substantially in the US. In 2018 the ESG investing had increased to 26% of all professionally managed assets, from 11% in 2012. In 2025 the ESG investment is expected to be as high as 50%(Collins & Sullivan, 2020).

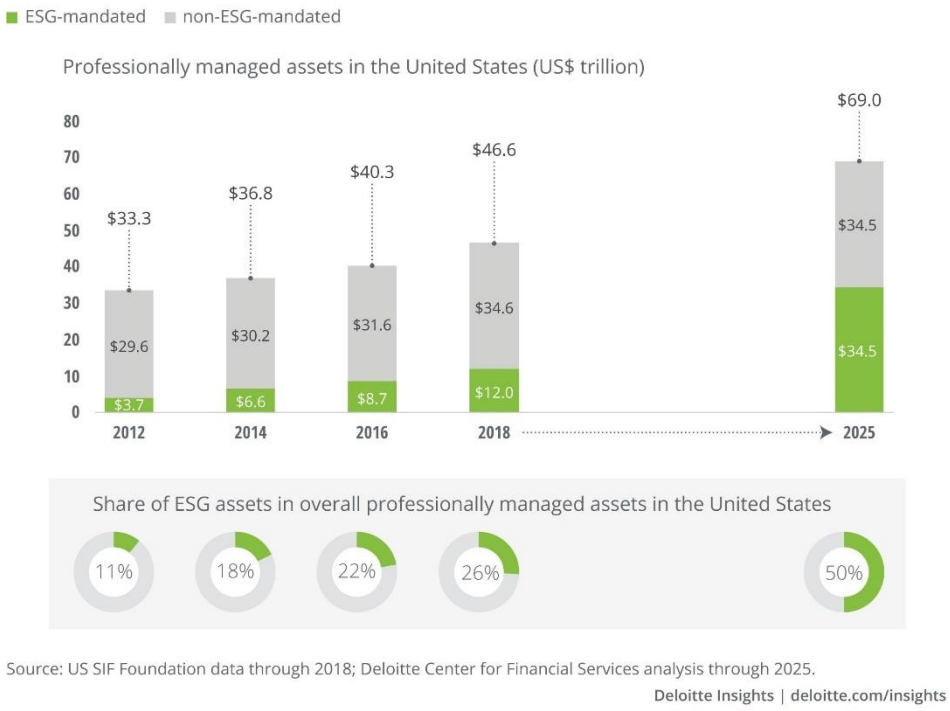


Figure 10 ESG mandated assets in the US (Collins & Sullivan, 2020)

The ESG invested assets in Europe in percentage was 41,6%. Showing the increase or decrease from previous years is not easy as there has been changes to the changes in legislation related to standards for sustainable finance products. It is also not possible to compare the % between the regions due to this (GSIR, 2022). However, if one look at the global invested assets one can see clear indications to the increase of ESG investment. In 2016 the total sustainable investments was 27,9% of global assets under management (AUM), in 2020 the sustainable investments was at 35% (GSIR, 2022). It's clear that the ESG investment is increasing in the world, for organisations that is not embracing sustainable development goals and ensuring they contribute to society, they will have an increasingly harder time to get investors to invest into their company.

Authorities

Politicians may have a heavy impact on the sector. This is also something that was mentioned as a concerned by some of the participants in the interviews. Where unpredictability, complex or lacking political framework conditions related to the sector, is giving incentives to change for the sector. One of the main debates in the 2021 governmental selection was the petroleum sectors production, where some parties are arguing that the petroleum exploration should be stopped and some even argued that the production of petroleum should be stopped (Øvrebekk, 2021). These politicians are still working to stop oil production through many means. One of them was a call for the universities to remove the petroleum related field of studies as they mean it's not needed anymore as the petroleum is going away, and that continuing to get students into the studies is giving the false promise and hope for their future(NTB, 2021).

Suppliers

From Norsk_Petroleum (2022) one can see that about 70% of all work related to the petroleum industry is done by a service provider or supplier. The importance of suppliers for the petroleum industry is huge. It is then interesting to view how the suppliers are moving away from the petroleum industry into other industries like fishing, renewables and so on. On an assignment for the Norwegian Oil and Gas organisation (NOROG), Menon Economics found, that the service industry revenue from other sectors has gone up from 14% in 2014 to 25% in 2018(Menon_economics, 2020). Companies need money to survive it's the oxygen. If the oil companies continue to pressure on prices the suppliers move their resources to where they will earn the most. If this is not the oil industry on can predict that the market will stabilize around this idea and see that the oil companies will struggle to get vendors to do their work.

Customers

The customers can be linked to the oil price. Where if the world now invests in greener technology, there will be less and less need for oil. If the 2050 goal of close to zero emissions is successful, the petroleum industry will not exist anymore if it is expecting to produce oil and gas in the same way it is today. Although the prise is high today, this is short-term considering the EU taxonomy and UN SDGs.

Civil Society

The energy sector can impact the civil society in many ways. Perhaps the most impactful way is trough gas and oil spill. That happens too often (Hagmansen, 2022) (NTB, 2019) (Sønsteby, 2011)

There have also been cases where some organisations have been accused with corruption, which gets a lot of media attention.(Øvrebekk, 2020).

Negative impacts such as these generates negative media attention which again makes the society view the energy sector negatively.

Refrences

Amabile, T. M. (1997). Motivating creativity in organizations: On doing what you love and loving what you do. *California management review*, *40*(1), 39-58.

Collins, S., & Sullivan, K. (2020). *Advancing environmental, social, and governance investing - A holistic approach for investment management firms*. Retrieved from https://www2.deloitte.com/content/dam/insights/us/articles/:

Eriksen, K. F. (2021). Tekna-presidenten: Frykter forgubbing i oljebransjen. *Teknisk Ukeblad*. Retrieved from https://www.tu.no/artikler/tekna-presidenten-frykter-forgubbing-i-oljebransjen/512903?p=13495e30

Freeman, R. E., Parmar, B. L., & Martin, K. (2020). *The Power of And* (Kindle Edition ed.): Columbia University Press.

GSIR. (2022). *GLOBAL SUSTAINABLE INVESTMENT REVIEW 2020*. Retrieved from http://www.gsi-alliance.org/:

Hagmansen, J. (2022). Krever at næringen reduserer gasslekkasjene. Retrieved from https://e24.no/olje-og-energi/i/lVjEoM/krever-at-naeringen-reduserer-gasslekkasjene

Johansen, G. R. (Producer). (2017). Unge velger vekk oljen – helt naturlig mener Miljøpartiet. *NRK Nyheter*. Retrieved from https://www.nrk.no/rogaland/unge-velger-vekk-oljen-_-helt-naturlig-mener-miljopartiet-1.13608610

Menon_economics. (2020). *Omstilling i petroleums næringen*. Retrieved from https://www.norskoljeoggass.no/: https://www.norskoljeoggass.no/globalassets/dokumenter/naringspolitikk/rapporter/omstilling-i-petroleumsnaringen-2020.pdf

Norsk_Petroleum. (2022). Arbeidsplasser. Retrieved from https://www.norskpetroleum.no/okonomi/arbeidsplasser/

NTB. (2019). Petroleumstilsynet gransker lekkasje fra oljeplattformen Statfjord A. Retrieved from https://e24.no/olje-og-energi/i/zGwwX4/petroleumstilsynet-gransker-lekkasje-fra-oljeplattformen-statfjord-a

NTB. (2021). MDG vil legge ned all oljeutdanning i Norge. *Stavanger Aftenblad*. Retrieved from https://www.aftenbladet.no/innenriks/i/66Pvm3/mdg-vil-legge-ned-all-oljeutdanning-i-norge

Olje-_og_energidepartementet. (2021). Lov om petroleumsvirksomhet [petroleumsloven].

Ptil. (2022). Capacity and competence – the key to safety. Retrieved from https://www.ptil.no/en/technical-competence/main-issue-2022/

SSB. (2022). Arbeidskraftundersøkelsen. Retrieved from https://www.ssb.no/statbank/table/05110/

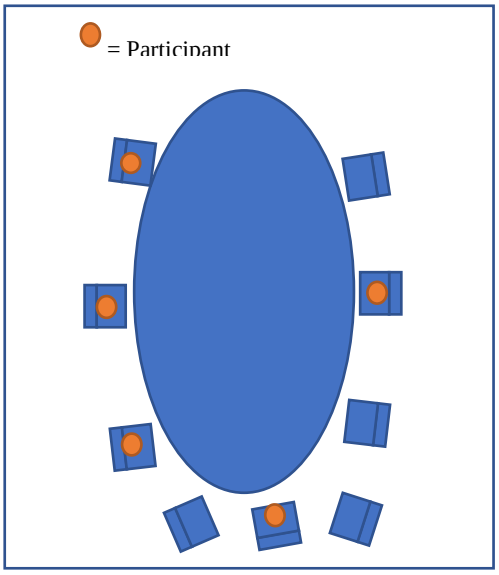
Sønsteby, C. (2011). Lekkasje ved oljeplattform i Nordsjøen. Retrieved from https://www.tv2.no/a/13128538/

Øvrebekk, H. (2020). https://e24.no/boers-og-finans/i/zgL97v/equinors-tvilsomme-pengebruk Retrieved from https://e24.no/boers-og-finans/i/zgL97v/equinors-tvilsomme-pengebruk

Øvrebekk, H. (2021). Jo, det var et klimavalg. *Stavanger Aftenblad*. Retrieved from https://www.aftenbladet.no/meninger/kommentar/i/a7jq52/jo-det-var-et-klimavalg

Appendix 5 – Observational protocol – Design Thinking workshop

Observational Protocol			
Activity:	Design Thinking Workshop	**Number of participants:**	6 (incl. facilitator)
Activity length:	97 minutes	**Location:**	Meeting room

External observations	Internal observations
Meeting starts at 1300. Everyone chooses a chair around the meeting room table and starts spreading out to ensure safe corona distance. Room is large, there is no issue meeting the required distance. Meeting room layout: 	Everyone is friendly and smiling to each other. Seems like everyone is having a good day. Most design thinking tools specifies that people should stand up in these meetings. Will everyone sitting down affect the outcome?
The meeting facilitator starts the introduction: “Are you guys feeling innovative today?”. “Yes”, says one. “I’m not an innovative person” says another while jokingly smiling. The Facilitator smiles while throwing out post-it stacks and pens to all participants. The facilitator then asks if anyone has done a design thinking workshop before. Two says yes, two says no. The facilitator explains that we will now try to warm up our innovative muscles trough a game called “circles”. Everyone will draw something that is in the shape of a circle. The “game’s” timer is set to 5 minutes. The facilitator sits back down and starts the timer.	Some of the participants know each other well. Some have met at least one time before this workshop. How would the atmosphere in the room be if no one knew each other or at least a larger amount didn’t know each other? Would it be less positive? Everyone is eager at drawing their circles, some are clearly thinking hard to try to find some smart examples of something that is in the shape of a circle. The room is quiet with people focusing on their task at hand.

When the time is up, everyone is told to put the pen down. Then each individual presents what circle shapes they drew. Examples of what is drawn: football, the sun, the moon, smiley, a coffee cup from above, a wheel and others.	Lots of laughter in the room, most are jokingly presenting their drawings. Everyone is smiling. Seems like everyone has loosened up a bit. Many similar use cases for the circle.
One participant joins in late through a MS Teams call, was late due to some issues with the meeting call, the participants in the meeting room can't see him/her, only hear the voice. Some back and forth to fix the sound on teams and ensuring that the MS Teams participant can hear the others well. The time is now 13.20.	Corona restrictions make it hard to have workshops in meeting rooms. Seems like Teams or zoom calls is not ideal for this type of workshops.
The facilitator explains more in depth what will happen next and why. One of the participants in the workshop was tasked before the workshop to prepare a presentation to talk about the industry that is in question. First that participant will tell the story/presentation of the industry with as much details as possible. Then everyone will write down as many problems they identify as possible. It's allowed to ask questions during the presentation.	
The participant starts telling the story. Everyone leans in to listen closely. Some participants are asking questions to get better insight into what they are considering a problem.	People are focused. Feels like it's a roleplay and everyone is a detective and the person telling the story is the chief commissioner explaining a new case. Everyone seems into it.
When the presentation is over the facilitator takes the word and says that now everyone will write down all the problems that they identified from the story that was told. The timer is set to 10 minutes. The time is now 14.00.	Everyone seems eager to add their identified problems. Very little talking between the participants is going on.
When the timer stops, everyone puts down the pencil. The facilitator says that now everyone will present their identified problems and then it will be discussed what problems that might be relevant to resolve utilising the company's expertise.	

Each member presents their identified problems. Participants are baffled from how many similar issues there is.	A lot of nodding and agreement from the room. A lot of similar issues was identified.
Discussion on what problems that should be focused on starts. There is a unified decision on what problems should be selected.	Everyone is agreeing. It's pretty clear for everyone what the focus should be.
Facilitator thanks everyone. The time is now 14.37. The participants thank the facilitator. Everyone is agreeing that it was a good workshop. One participant is extra enthusiastic and says: «I want to do this more, we have a workshop with a new client next week, this type of workshop is what we should use there".	

Appendix 4 – Analysing interview data

Appendix 4.1 Transcribed and translated interviews

Transcribed interviews

Question 1: What do you consider to be the biggest challenge with change effort (digitalization, improvement, etc.)?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A:

A: The big challenge is the inherent opposition to change. Next is how to remove this setting. What is important for this not to be dominant. If one can explain why, if the people can see how this is good for themselves. Rational. It's about being close. There will be some bell sheep and some that don't want to change. Don't spend time on those who don't want to change. Those sitting on the fence, you must take it with you. If someone falls outside and can't get it right away. What I see works, where we've had good processes of change. 1 this happens.2. It's good because this and that. 3. Ask within the framework how they want it to be. The cabinet should be there, but you can decide the contents. Clarity is very important. The goal must be determined and be clear. Gains must be able to be shown at the end. Return on employed capital motivates very few. You must show the value of what was done for the employees/stakeholders what this gives of value to them. Must be able to pass this on. If you prove that this can go well, they'll be their next time.

Participant B:

A: Change management and especially major changes are very demanding. Perhaps the most demanding is supply chain transformation, where more people also must join the change. Where the goal is to get suppliers to change. This isn't easy! I think a lot of people have an urge to have it the way they`ve always had it. Everyone must be convinced. It is challenging to make them understand that this is the right way to go. Incentives are needed for them to accept these solutions. Otherwise, it won't work. It is important to have a vision to communicate this out. It must be sold out to those concerned, must bring up other properties that can show that they will get a value for them. The message must be adapted to those who listen. You must understand how to make a good message. It's about Storytelling, you must tell a story that the listener is

willing to listen to. Everyone must benefit from the change it must be clear to those who listen what benefits this is. You must show that everyone gets something out of it. It must be explained in a simple way that can be understood by several people. Elevator speech is one expression I like to use. the speech should no longer than an elevator ride. It should be short and concise Getting the message across in a short time. Instead, uses images to present, not lots of text. If the supplier understands the value of the change and that this can result in an increase in value, they join it.

Participant C:

A: Tone from the top, when the CEO says jump, everyone jumps. Bringing in a mindset that now we're going to make it work. If we say we have strategic objectives, then there is no need to get there. What we see is that when the CEO says that we are going to do this and to get the people to turn this around. to find solutions that can replace and remediate existing ones. Getting suppliers, employees etc. in on the change is difficult. Non-compliance is not acceptable. Somebody's got to point in the direction you're going. If, for example, the board is clear about this is something to be carried out, then a direction has been given to the CEO. What is challenging is that it is time-consuming to be able to reverse something that has been done for several years. Being able to be coordinated to change this. In relation to project management, It doesn't help that one gear wheel is fresh and shiny if it doesn't fit with the other gears. It is important that someone has an overview of this. A well-planned change process is important especially if there are major restructurings that are required. It is also important to consider that one can make major changes with small grips. The changes may be able to provide other initiatives. It can also be challenging to think how easily this can be done. From a management perspective, it is important to accept from the employees or suppliers, etc., that one airs the issue in several forums to bring in ideas on how to simplify this. No matter who is involved in the process, it is important that the person at the top sets the direction and that this is the same through all the leadership teams. If one group goes south, then the other can't west or north.

Participant D:

A: Implementation is challenging from experience from various initiatives. It’s challenging to make sure you catch people. That they don't defect if they face challenges. Change In technology, more and more opportunities, more functions that make people more part of it. Having drivers who help run the improvements through your projects. Everyone must help drive the solution. There is a need for ambassadors, people who stand on and have a desire to

succeed. I believe that, for example, people who are negatively opposed to change are picked up and focus on how to bring them on to change. For example, a solution that often had 7 different screens and cut down to 2. makes it easier for users, this can help sell the solutions to the users. We need to make use of the solutions that are being introduced. Teams are interesting, it was forced through as one good tool, this was successful because it was an external driver. Now almost all teams use even though they may not need to. People who don't join the changes don't because they don't have to. If there are alternatives to the task that can now be done with an app, many will choose the option that they have used the longest because they know this solution. The solutions must be better than the one they already have. It should be a combination of whip and carrot.

Question 2: What other issues do you encounter in the change efforts?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A:

A: For some, the change may be perceived or negative. to make these work again, you must spend a lot of energy on them. Being close is also important here. If you don't, it works. Other challenges may be that the choice of the change is wrong, incorrect analysis in advance. Proactive hindsight. The most important thing is this in saying why, be sure that people have understood it. Take care of those who are equal. Realize the value gain (not return). Getting continuous improvement work. The biggest mistake I've made as a leader is not to tell you about what we didn't do. This must also be told about. Typically, if the change doesn't work, managers must go out and tell them that this is wrong. This is part of creating a culture. There should be a desire to change. As a leader in small changes, I want the leaders to stay far away, that one accepts that one is not completely in control and that it does not happen as one would like. The more you call this the better.

Participant B:

A: Very similar to the other answer before but internally, the resistance is that the technology is not correct or desirable. They do not understand why this is important or do not see the potential of it. If the message given about the solution is perhaps incorrectly adapted for the various employees. They may not see what value it can give them. It is important that they see how this can be good for them, why this is a good solution.

Participant C:

A: The political framework is important. If one does not have predictability in framework conditions, it is difficult to know where to go. That you don't go too far one way or the other. If one assumes that the total CO2 cost is 2000 per ton total tax and quota. If you can take a percentage if you increase that number, you have one basis for calculating what is profitable. But if policy makers say they're 9,000 after a few years, this isn't predictable. Then this did not match the calculations one made of €200. This has an impact on where investments are made and in turn an impact on how to achieve the SDGs and Norwegian value creation. Solving this is not easy, one must be on in relation to dialogue both nationally and internationally. Large

international companies and organizations such as NOROG and the like can do this, they can work on making sure that there is predictability. What is difficult to manage is the geopolitical picture of how this can also affect. Norwegian companies with predictable frameworks can manage to keep people working. Ripple effects on how many we manage to employ in the country, what technology we manage to develop.

Participant D:

A: Technological challenges. Choice and maturity of the solutions. Combining customer applications and their own, authentication, domain and the like creates challenges. The application world is not adapted to work for both internal use and against customers at once. There are some solutions for this, but there is one piece left before this is finished. Sometimes we are too early before what is needed before is established. Example: a login solution should have been possible to do more seamlessly. The applications are created before this is in place which makes it somewhat more cumbersome to use the solutions. Tablet users are one particularly big problem in terms of login. Despite these issues, there is very little noise around them, but there may be some people dropping the solutions because of it. The choice of technology is challenging, a solution that can be purchased can be almost ready for use or one can program a solution even that is tailored to the task of not having limitations. The diet is somewhat more unpredictable if one is to program oneself. How to choose a rigorous solution? If there is more and more development, this will become more and more. Ready-made solutions we have more opportunities and to develop internally will be easier. If you have not set up a specification or converse where you want to go with the solution, you can quickly get errors in the development because errors will occur that were not foreseen. Functional goals of the application must be clear from the start. Stakeholders need to be reconciled at an early stage, what are the requirements for the solution? It is not a given that one of them has the same requirements as the other.

Question 3: How do you feel about bringing in employees, customers, suppliers, and others to make changes?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A

A: It's challenging to get everyone into change and to get them to make changes. Doing an interesting analysis is important. Find out who's being affected by the changes. When it's internal, you don't care much, this must be done here as well. It may not be so important to bring everyone along, that everyone agrees is not so important but alle must understand why this is important. No one likes a change to happen without being explained why.

Participant B

A: For example, when changing deliveries or the like, many suppliers will experience changes as a threat. they may be afraid of losing sales in the future if they are unsure that this is really the future. But changing and not holding on how we do business in relation to the green shift is something that needs to be done. There are no choices there, everyone must change. Then it must be looked at how one runs the business. For example, it is perhaps better to change the fan on an engine than to change the entire pump. This may lose those who sell the engines on, but CO2 emissions will be reduced if one avoids buying a brand-new pump. This is not easy for the organizations to change their view of their job is to make sure that the company is going to make money. It's hard to shift that focus. For example, I think that Electric Car became popular in Norway because of price not because it was green. It was the incentives to buy an electric car that made e one desirable choice to make.

Participant C:

A: Begins with employees. If we don't bring the employees with us, it will be complaining, if we bring them along, only those who are interested will join us. There must be someone who has interest and expertise. If there is anyone who cannot contribute knowledge and good input, this does not add any value. If employees are given the opportunity to join but they don't include someone who can contribute, it doesn't help. There are often those who know the most about something that can be difficult to turn around. When we are going to bring someone with us, we go to the safety committee or the club depending on what is going to happen, then these are the ones who tell us who is going to contribute, if the people who get involved do not contribute they become an alibi to be involved, if the attitude is that nothing is going to change, then there will be no change either. What we have achieved now is that the employee representative has understood that it is important to provide people who are interested in the work of change. it has produced very good effect. It is also important not to underestimate those who do not want to make the change, they may have good arguments as to why it should not be done that one

would not otherwise have caught up with. Diversity is the key word here. It may not be the quickest way to the goal, but it gives one much prettier goal. Diversity, what makes this important is that with it you get a lot of views that otherwise wouldn't. Bringing people along also helps them to have one ownership of the product. They get one whose pride attached to it. The reason people don't want to contribute is that they may be happy with the current situation. If we invite another company to change in a way, they lose work or similar. Then that company says, if we do this, we lose money, they lack the incentives to do so. If the thinking is that you can find new ways to create these incentives together, you might find better opportunities than you had today. Alliance thinking, together find opportunities. Another value is that other suppliers come to us saying that we can do this better. We can't do good business if our supplier goes bankrupt.

Participant D

Digitalization. There is a greater openness to how important we interact digitally from the various players in the value chain. Willingness to digitalize is much greater than in recent years. There's still a lot that needs to get better for us to get where we want to go. For example, the customer, there is much more willingness for us to be able to both send and receive data, now there are much more adapted solutions. Several of the suppliers take little initiative for change. It’s mostly business as usual. It is strange, it is about 20 years since E-commerce and such solutions began to come into focus, we do not yet see many people who have this available at the suppliers. Is perhaps something much more prevalent in the onshore industry versus the oil and gas industry. A lot of it is about standardization. Interaction, there are many different types of component names and types in the industry that are not well enough standardized. Party number and similar. There have been several projects on this, but no one can do it. It ends with everything having to be mapped for the electronic commerce flow to work. There have been too few intensifications to address this. Suppliers don't get any pleasure from standardizing party numbers and the like, if someone doesn't have it in stock then you can see that another place is available if electronic trading is up and running. Of course, the supplier doesn't want this, they want us to buy from them. For example, mount shows what they have in stock with live data, it does not pipe suppliers or the like. The electrical industry has achieved standardization on EL number.

Question 4: What do you think is the biggest mistake companies make in relation to doing change?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A:

A: That you don't understand what it looks like. that one does not have one defined worldview. that you don't know your organization. Often one knows where one wants but one does not know where one comes from, the analysis on the gap is not carried out until the organization is done. What is the vision? The goal must be in place If you don't have a direction, the result won't be good. Many have problems down in the organization so try they must fix this. One must descend into the thirst for value, understand the processes. Not everyone does or understands this. Now you're done doing this, it's about people that this is important and why one does, everyone must understand what's going on, Keep track of the next deliveries and what's behind you. Do value stream mapping and understand who is dependent on it this. Good dialogue is extremely important. The biggest mistake is that most people don't know the current process. It's hard to do anything about it then. Nothing is more motivating is that everyone has one common goal.

Participant B:

A: I think companies are taking the process of change too lightly, change processes are choking time. Lack of respect for how challenging it is and how long it takes is something I think is common. When companies start with change efforts, they must start by looking at what they are doing. Look at competence, look at the need for an increase in competence. These are several steps in this process that need to be taken. but they tend to focus only on the last part of the process that is the change itself. This with competence and having an understanding is very important. Sometimes it takes years to get where you want to go. Who's going to control the robot? who's going to fix it? who checks it's done right?

Participant C:

A: Taking it too lightly. They turn out that if one does not set that now this should be prioritized, the result will not be good. To go out and say that now is going to change and then not put

resources to it then has one lost. Resources can be money people and time. Underestimating the task and not putting in enough resources I think is the biggest mistake. Do not go wider than what one has resources to follow up on. The reason more people do this is that there are a lot of things that might look easy on paper that underestimate the complexity of. then it suddenly turns out that there were several things that were overlooked. To avoid that, it is important not to take the task too lightly. One must understand what one wants to initiate, it is about bringing in those who are good at what one thinks and do that can explain this. understanding what to do and the scope of it before getting started is the key to success. It is important that management has an overview of the organization and sees the full picture in the decision it is also important to look them down into the organization which may come up with other proposals that would like to give a better effect. This goes on the communication between everyone regardless of location. An idea can be good in isolation, but perhaps not for totality.

Participant D:

A: It is difficult to understand the consequences of not understanding the importance of focusing on digitalization. For example, improvement work is often put on hold as soon as there is a downturn in the company. There may also be some jumps and bounces in the importance of digitalization. The focus changes at times, one loses some along the way in terms of understanding digitalization and interaction. You lose power in the improvement work. pressure is expending. When more people cherish their areas in management, a total loss and digitization incentives drown in other operational problems. If it hadn't been for the director, it would have happened less than what it has done with digitalization initiatives. It is important that those at the top take part and set the direction.

Question 5: What do you think will be the biggest challenge going forward with change efforts in the industry?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A:

A: I believe that for some companies that are well established, the change can be so great that one can lose a lot of speed on changes, ability to change and create a lot. 2 things. Is easy to measure existing store, difficult to measure anything new. the second is to be able to apply

existing expertise to new things. It requires a lot of willingness to change. this contrasts with those who start up new ones that avoid this disadvantage of already being established. Now the established player chooses to go for something new then they start a new company. this is about creating one focus and giving one dedicated responsibility and people working on this. This is expensive, but the danger is that you get outperformed, if you don't, you get eaten. What's hard about starting something new is the timing. There will be a lot of enlistment of it than already has, too much focus on it than already has, it means that one does not see new opportunities. New ones are moving fast.

Participant B:

A: The companies may have one wrong view of changing. Wrong mindset. Focused on costs and lack the ability to see the potential of transitioning to greener solutions. To achieve the climate goals, we must purify CO2. The industry needs to change to meet its climate goals. Carbon capture is one of the important activities, but this costs a lot of money. Energy from wind power, for example, is hard to store. Restructuring has a lot to do with it, but this is a huge challenge for the industry. The price will often be driving. If it's cheaper with coal, it's bought. On the other hand, the Government must also set guidelines. Why aren't there fees on Scope 3? Can we also reduce other consumption by changing legislation and regulations? This requires major changes from the government - the government can do a lot. Why VAT on repetition? why should it be cheaper with use to throw? The entire chain needs to be restructured, can't just change a part. The mindset of those involved needs to change.

Participant C:

A: In the case of framework conditions the problem, stable framework conditions are important. Another challenge is that everyone is doing the same thing that can lead to insufficient resources at the national and global level. If everyone is going to buy a type of car, there can be long queues, resource scarcity. Human resources but also getting enough material. Having the facilities to take the work. Resources from a broad perspective. It's funny to say how this can be solved. I'm sure it'll be solved. Preferably by identifying alternative solutions. Either way, the biggest challenge is unstable framework conditions, this removes part of the drive. The geopolitical situation is going to increase the pressure on the green shift if the war passes, then the focus goes back to the Paris agreement.

Participant D:

Restructuring and the green shift. There is some generic in change work. That understanding of the need for change is not on the spot. That it's not taken seriously enough. Could be overtaken. As with Nokia and Kodak, the world doesn't change and stick to the old. There's a lot of old fun that's left behind that's not given that is something we're going to benefit from in the future. We need to think again. If we don't understand this, we could be left behind. It depends on everyone in the chain. efforts must be made to understand this. You must change your perspective, lift your eyes.

Question 6: How do you feel that the energy sector is ready to deal with the challenge of the green shift?

Follow-up questions

- Why do you think it's like that?

- How do you think this could have been solved?

Participant A:

A: In Norway, the energy sector is well brewed considering the change will not be as large as in other parts of the world. The downside is that we don't have to have as much change. For The Norwegian business sector, one can wait longer, but then one loses the battle because other actors have come a lot further. From a business perspective, solar cars do not pay off with low electricity prices, it does not pay off with offshore wind, we do not need hydrogen to reach the capacity of the power consumption, there is no need for circular economy to get needed material. Everything challenges the desire for change. Yet, everything is set in place for us to be able to do something. We have high IT expertise and technology in general and we are well equipped to change. The other side of the problem that is extremely difficult, is that you must make investments on things that are not profitable today but can bring gains in the future. This uncertainty can be partly blamed on uncertain political framework conditions - as an example, hydrogen production has been decided that is going into the country but there is nothing to suggest that this could yield a win, what is the incentive? It must be made understandable and clear to the organizations. For example, CO2 fee is easy to understand.

Participant B:

Companies need to see that many new niches can be created within these changes. They need to see that there is tremendous potential for new niches in the market. methods such as additive

manufacturing, reduce consumption, etc. this can reduce costs. The fact that more people are changing can often breed that more people change their mindset when they see the potential and what others get out of it. They need to find ways to demonize that the changes can work. Prove the usefulness is there. Display with action and not just words. Vision is adhered to. The mindset needs to change. Fail fast fail cheap. The green shift creates new jobs. New technology is also bringing new jobs. 30% of the jobs that the children will work on today do not exist today. It's positive to change.

Participant C

A: I think if you'd asked me this three years ago, I'd have told you we had a lot of work to do to even get started. There are major changes to be made, this is clearly challenging. But now today we have it on the radar and have set out plans to make this happen. We are seeing greater investment in green energy. If you look at Oil and Gas as a world championship, Norwegian production is far ahead of others. Such as capturing carbon dioxide, solutions with ammoniac, methods for using hydrocarbons for green energy, decarbonization and so on. I would say that the industry has made quantum leaps towards the green shift. We realize that we are part of the problem but also part of the solution. We are developing technology that can be used in other industries that in turn allows CO2 to be captured and stored. It is typically Norwegian to be the best. When the EU makes a new claim, Norway is the first to implement it. There is a Norwegian attitude to this, we want to be at the top of the podium, this we see in the O&G industry as well.

Participant D:

A: The energy sector has a tremendous amount of expertise in project management and similar. There are many parallels that can be brought into the green shift. If you work in one company that initiates digitalization and is looking for the way into other markets, you are very lucky. A good number of companies will be able to take the expertise further (into the green shift).

Appendix 4.2 First step – summarizing and arranging into categories

Question 1 – What do you consider to be the biggest challenge with change leadership and doing change.

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Interview	**Challenges (what)**	**Reason (why)**	**Proposed Solution (how)**
A	Convincing the stakeholders that the solution gives them value.	The value of the solution is not promoted well enough. Some people are just difficult.	Working with everyone closely. Openness. Allow stakeholders to contribute to the change. Show the value (not financial) that the change may give to the different stakeholders.
B	Getting everyone onboard. Convincing the stakeholders that the solution gives them value.	The value of the solution is not promoted well enough. Value isn't established for everyone.	Providing/ ensuring incentives to do the change and to use it.
C	Getting everyone on-board to change. Setting a direction that everyone follows. Ensuring that the solution is a good solution for all affected parts of the chain. Simplifying the solutions, ensuring that it's not overly complicated.	Not setting a direction for people to follow. Selecting wrong solutions. Overcomplicating the problems and solutions. Bad planning.	Bring stakeholders in on the change. Ensure that everyone is working in the same direction. Management needs to be involved.
D	Resistance to change. Getting everyone onboard. Getting everyone to use the new implemented solution. Getting people in on the change that is passionate and wants to succeed.	Lack of commitment, lack of reasons to do the change and to utilise it.	A mix of the stick and carrot. Establish a commitment to the solutions. Make it mandatory to use the solution.

Question 2 – What other issues do you encounter with change leadership and doing change?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Interview	**Challenges (what)**	**Reason (why)**	**Proposed Solution (how)**
A	Resistance to change. Time consuming and challenging to convince them that change is good. Wrong solution selected. Realisation of the value.	Lack of realising the value. Bad communication.	Creating a change culture in the organisation. Find the value the change can provide and communicate it out to the stakeholders. Be open about what didn't work as well. Openness is important.
B	Resistance to change.	Wrong solution, it's not wanted or not right. Bad Communication. Value has not been realised for the users. Why it's a good solution or why it needs to be changed.	Provide everyone with the reason to the change. Why it's good.
C	Unpredictable/unstable or lack of Political framework conditions.	Unpredictability in the government's framework conditions. Unclear what will be added or changed in the future.	Hard to solve by one company alone. Initiatives like NOROG (Norwegian oil and gas organisation) helps to keep communication with the politicians.
D	Selecting the correct solutions. Complex IT and software issues that is unclear for organisations. Setting a strategy for the selection of solutions.	Unclear what solution to select.	Find out who is the stakeholders as early as possible. Find out what their needs are.

Question 3 – How do you feel it is to bring in employees, customers, suppliers, and others to make changes?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Interview	**Challenges (what)**	**Reason (why)**	**Proposed Solution (how)**
A	Mapping out who will be affected by the change.	Not easy to find everyone that may be affected. Not explaining why.	Stakeholder analysis needs to be done. Explaining why it is important.
B	Affected people and organisations might fear losing their job or business opportunities.	Fear of being replaced by technology. Fear of losing business.	Communication. Explain why. Show the value of the solutions. Show opportunities and how the business can benefit from it.
C	Not everyone wants to contribute. The ones that contribute need to have both competence and passion to do so. Often, it's the ones that has the highest competence that is least interested in contributing.	Not communicating why, the change is needed. People are happy with the way things are.	Bring in the ones that have a resistance to the change, might be more challenging but it can pay off. It will create a sense of ownership and pride. Alliance thinking, doing it together. Ensure incentives, establish incentives together. Good business can't be done if the vendors go bankrupt.
D	Vendors take little initiative themselves to come up with new and better solutions.	Lack of incentives. Increase of cost.	Cocreation and standardization.

Question 4 – What do you think is the biggest mistake companies make in relation to change?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Interview	**Challenges (what)**	**Reason (why)**	**Proposed Solution (how)**
A	Seeing what the organisation needs.	Lack of understanding the business and its processes at the lower levels. Lack of vision.	Value stream analysis. Get overview over what current deliveries are and what is coming. Work on getting to know the various value streams in the company.
B	Underestimating the change process.	Wrong focus. Focusing on the change alone and not doing all the required steps.	Understand that change processes often take time. Ensure the competence is in place. Look at the need of increasing the competence.
C	Underestimating the change process. Staying committed. Ensuring enough resources.	Not ensuring enough resources. (Resources is money, people, and time). Not seeing the full picture. Lack of understanding of what is needed.	Management needs to get an overview of the company and see the whole picture. Understand what the change is to achieve. Involve people from different levels that may contribute with ideas. Ensure good communication with everyone.
D	Not truly committed/dedicated to changing.	Not seeing the importance of digitalization. Not staying committed. Different views on what is important within the management makes it so that the total overview. The improvement initiatives get eaten by other operational issues.	Management needs to be committed and set the direction.

Question 5 – What do you think will be the biggest challenge going forward with change in the industry?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

Interview	**Challenges (what)**	**Reason (why)**	**Proposed Solution (how)**
A	Changing to slowly. Using existing competence for new types of activities.	Companies may be too large and well established to change fast enough. Not able to measure the potential of the change. Too much exploitation of existing business.	Establish new (daughter) companies to ensure dedicated ownership to the responsibilities and dedicated people. New companies are faster.
B	Wrong mindset. Price and cost are a driver.	It may seem cheaper to not change. The benefit of the change is not clear. Lack of/ wrong governmental framework conditions.	Opportunities that the green shift provides needs to be identified. The benefits need to be shown in action and not just in words. The mindset needs to be changed. Fail fast fail cheap.
C	Lack of resources on national and global level.	Resource shortage in a broad term, including human, material and facilities. Organisations might be doing the same, there may not be enough for all.	Might be solved by finding alternative solutions.
D	Lack of a sense of urgency. The need to change is not taken serious enough.	Lack of understanding the value chain. Holding on to old technology.	Change the perspective. Understand that the world is changing.

Question 6 – How do you feel that the energy sector is ready to deal with the challenge of the green shift?

Follow-up questions:

- Why do you think it's like that?

- How do you think this could have been solved?

This is a bit of a different type of question. Choosing to translate the answer only as it's not easy to split into the 3 categories.

Interview	Answer
A	In Norway, the energy sector is well brewed considering the change will not be as large as in other parts of the world. The downside is that we don't have to have as much change. For The Norwegian business sector, one can wait longer, but then one loses the battle because other actors have come a lot further. From a business perspective, solar cars do not pay off with low electricity prices, it does not pay off with offshore wind, we do not need hydrogen to reach the capacity of the power consumption, there is no need for circular economy to get needed material. Everything challenges the desire for change. Yet, everything is set in place for us to be able to do something. We have high IT expertise and technology in general and we are well equipped to change. The other side of the problem that is extremely difficult, is that you must make investments on things that are not profitable today but can bring gains in the future. This uncertainty can be partly blamed on uncertain political framework conditions - as an example, hydrogen production has been decided that is going into the country but there is nothing to suggest that this could yield a win, what is the incentive? It must be made understandable and clear to the organizations. For example, CO2 fee is easy to understand.
B	

Companies need to see that many new niches can be created within these changes. They need to see that there is tremendous potential for new niches in the market. methods such as additive manufacturing, reduce consumption, etc. this can reduce costs. The fact that more people are changing can often breed that more people change their mindset when they see the potential and what others get out of it. They need to find ways to demonize that the changes can work. Prove the usefulness is there. Display with action and not just words. Vision is adhered to. The mindset needs to change. Fail fast fail cheap. The green shift creates new jobs. New technology is also bringing new jobs. 30% of the jobs that the children will work on today do not exist today. It's positive to change.

C	I think if you'd asked me this three years ago, I'd have told you we had a lot of work to do to even get started. There are major changes to be made, this is clearly challenging. But now today we have it on the radar and have set out plans to make this happen. We are seeing greater investment in green energy. If you look at Oil and Gas as a world championship, Norwegian production is far ahead of others. Such as capturing carbon dioxide, solutions with ammoniac, methods for using hydrocarbons for green energy, decarbonization and so on. I would say that the industry has made quantum leaps towards the green shift. We realize that we are part of the problem but also part of the solution. We are developing technology that can be used in other industries that in turn allows CO2 to be captured and stored. It is typically Norwegian to be the best. When the EU makes a new claim, Norway is the first to implement it. There is a Norwegian attitude to this, we want to be at the top of the podium, this we see in the O&G industry as well.
D	The energy sector has a tremendous amount of expertise in project management and similar. There are many parallels that can be brought into the green shift. If you work in one company that initiates digitalization and is looking for the way into other markets, you are very lucky. A good number of companies will be able to take the expertise further (into the green shift).

Appendix 4.3 Second step – Setting and allocating key words

Interview	Challenges	Reason	Proposed Solution	Themes
A	Resistance to change. Convincing the stakeholders that the solution gives them value.	The value of the solution is not promoted well enough. Some people are just difficult.	Working with everyone closely. Openness. Allow stakeholders to contribute to the change. Show the value (not financial) that the change may give to the different stakeholders.	- Resistance to change. - incentives - Openness/Honesty - Communication - Collaboration - Involvement - Unpredictability
B	Resistance to change. Getting everyone onboard. Convincing the stakeholders that the solution gives them value.	The value of the solution is not promoted well enough. Value isn't established for everyone.	Providing/ ensuring incentives to do the change and to use it. Creating value.	- Resistance to change - Collaboration - Incentives - Establish value - Communication - Alignment
C	Getting everyone on-board to change. Setting a direction that everyone must follow. Ensuring that the solution is a good solution for all affected parts of the chain. Simplifying the solutions, ensuring that it's not overly complicated.	Not setting a direction for people to follow. Selecting wrong solutions. Overcomplicating the problems and solutions. Bad planning.	Bring stakeholders in on the change. Ensure that everyone is working in the same direction. Top down. Management needs to be involved.	- Collaboration - Direction - Problem and solution identification - Involvement - Involuntary - Alignment
D	Resistance to change. Getting everyone onboard. Getting everyone to use the new implemented solution. Getting people in on the change that is passionate and wants to succeed.	Lack of commitment, lack of reasons to do the change and to utilise it.	A mix of the stick and carrot. Establish a commitment to the solutions. Make it mandatory to use the solution.	- Resistance to change - Commitment - Purpose - Incentives

				- Involuntary - Alignment

Question 1

Question 2

Interview	**Challenges**	**Reason**	**Proposed Solution**	**Themes**
A	Changing the resistance to change. Time consuming and challenging to convince them that change is good. Wrong solution selected. Realisation of the value.	Lack of realisation of the value. Bad communication.	Creating a change culture in the organisation. Find the value the change can provide and communicate it out to the stakeholders. Be open about what didn't work as well. Openness is important.	- Resistance to change - Establishing value - Problem and solution identification - Communication - Openness/Honesty - Unpredictability - Alignment
B	Resistance to change.	Wrong solution, it's not wanted or not right. Bad Communication. Value has not been realised for the users. Why it's a good solution or why it needs to be changed.	Provide everyone with the reason to the change. Why it's good.	- Resistance to change - Problem and solution identification - Establishing value - Purpose - Unpredictability

C	Unpredictable/unstable or lack of Political framework conditions.	Unpredictability in the government's framework conditions. Unclear what will be added or changed in the future.	Hard to solve by one company alone. Initiatives like NOROG (Norwegian oil and gas organisation) helps to keep communication with the politicians.	- Political framework conditions - Unpredictability - Communication - involvement
D	Selecting the correct solutions. Complex IT and software issues that is unclear for organisations. Setting a strategy for the selection of solutions.	Unclear what solution to select.	Find out who is the stakeholders as early as possible. Find out what their needs are.	- Problem and solution identification - Unpredictability - Stakeholder identification

Question 3

Interview	Challenges	Reason	Solution	Themes
A	Mapping out who will be affected by the change.	Not easy to find everyone that may be affected. Not explaining why.	Stakeholder analysis needs to be done. Explaining why it is important.	- Stakeholder identification - Purpose - Communication
B	Affected people and organisations might fear losing their job or business opportunities.	Fear of being replaced by technology. Fear of losing business.	Communication. Explain why. Show the value of the solutions. Show opportunities and how the business can benefit from it.	- Resistance to change - Incentives - Purpose - Communication - Establish value
C	Not everyone wants to contribute. The ones that contribute need to have both competence and passion to do so. Often, it's the ones that has the highest competence that is least interested in contributing.	Not communicating why, the change is needed. People are happy with the way things are.	Bring in the ones that have a resistance to the change, might be more challenging but it can pay off. It will create a sense of ownership and pride. Alliance thinking, doing it together. Ensure incentives, establish incentives together. Good business can't be done if the vendors go bankrupt.	- Resistance to change - Competence - Communication - Involvement - Collaboration - Incentives - Establish value
D	Vendors take little initiative themselves to come up with new and better solutions.	Lack of incentives. Increase of cost.	Collaboration and standardization.	- Involvement - Incentives - Collaboration

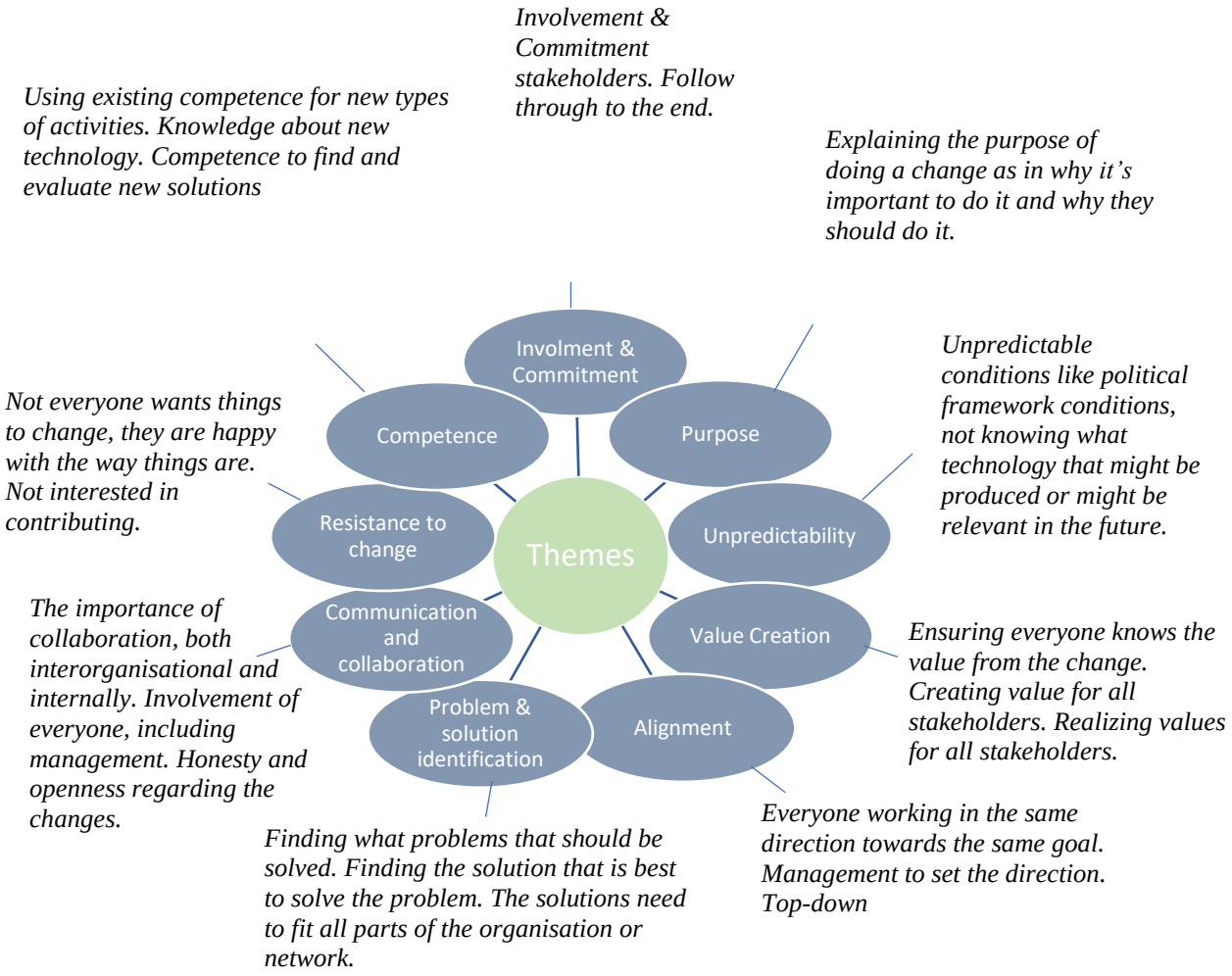
Question 4

Interview	Challenges (what)	Reason (why)	Proposed Solution (how)	Themes
A	Seeing what the organisation needs.	Lack of understanding the business and its processes at the lower levels. Lack of vision.	Value stream analysis. Get overview over what current deliveries are and what is coming. Work on getting to now the various value streams in the company.	- Problem and solution identification - Involvement - Collaboration
B	Underestimating the change process.	Wrong focus. Focusing on the change alone and not doing all the required steps.	Understand that change processes often take time. Ensure the competence is in place. Look at the need of increasing the competence.	- Commitment - Competence - involvement
C	Underestimating the change process. Staying committed. Ensuring enough resources.	Not ensuring enough resources. (Resources is money, people, and time). Not seeing the full picture. Lack of understanding of what is needed.	Management needs to get an overview of the company and see the whole picture. Understand what the change is to achieve. Involve people from different levels that may contribute with ideas. Ensure good communication with everyone.	- Planning - Involvement - Purpose - Collaboration - Communication
D	Not truly committed/dedicated to changing.	Not seeing the importance of digitalization. Not staying committed. Different views on what is important within the management makes it so that the total overview non-existent. The improvement initiatives get eaten by other operational issues.	Management needs to be committed and set the direction.	- Resistance to change - Commitment - Problem and solution identification - Direction - Alignment

Question 5

Interview	Challenges	Reason	Proposed Solution	Themes
A	Changing to slowly. Using existing competence for new types of activities.	Companies may be too large and well established to change fast enough. Not able to measure the potential of the change. Too much exploitation of existing business.	Establish new (daughter) companies to ensure dedicated ownership to the responsibilities and dedicated people. New companies are faster.	- Competence - Commitment
B	Wrong mindset. Price and cost are a driver.	It may seem cheaper to not change. The benefit of the change is not clear. Lack of/ wrong governmental framework conditions.	Opportunities that the green shift provides needs to be identified. The benefits need to be shown in action and not just in words. The mindset needs to be changed. Fail fast fail cheap.	- Incentives - Establishing value - Commitment
C	Lack of resources on national and global level.	Resource shortage in a broad term, including human, material and facilities. Organisations might be doing the same, there may not be enough for all.	Might be solved by finding alternative solutions.	- Alignment - Problem and solution identification
D	Lack of a sense of urgency. The need to change is not taken serious enough.	Lack of understanding the value chain. Holding on to old technology.	Change the perspective. Understand that the world is changing.	- Involvement - Commitment

Appendix 4.3 Third step – creating the themes



Summarized findings from the interviews

These themes were then changed/ summarized to ensure that they would follow the thesis layout.

The main themes ended up being:

- **Leadership beliefs**
- **Guided by internal and external goods**
- **Stakeholder view**
- **Change approach and strategy**