Recharging for the future:

Batteries as Norway's green industrial adventure?

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Abstract

In Norway, a green industrial shift is underway, and batteries are framed by some as a key technology to enable the "green transition". In this domain, a story of the Norwegian battery industry as a new industrial adventure is emerging across different platforms. This story is made up of discourse, statements, and metaphors, which are important to unpack, because they create acceptance and legitimacy for batteries as a solution for a greener society. Research on discourse from the downstream part of the battery industry is lacking from the social sciences, and there is little to no research on the discourses on the battery industry in Norway.

In this research project, I have critically analysed what discourses and actors are present in debates on the emerging Norwegian battery value chain, to dissect what might influence and shape green policies, and assess tensions concerning the role of Norwegian battery industry in the "green transition". I collected data from a variety of secondary sources, supplemented with non-participant observation in webinars and semi-structured interviews with selected informants. I used thematic and discourse analysis, through a conceptual framework analysing statements, metaphors, and actors using storylines about a Norwegian battery industry. I found that the battery industry in Norway is chiefly framed as a green industrial adventure that seeks to unite concerns for climate and profit. There is a suggested common understanding that a battery industry is "necessary" in Norway, even if actors disagree on a political level and use discourse in diverse ways. This indicates that urgency of the climate crisis can catapult change in green policy, especially when combined with promises of profit, jobs, and cheap and renewable energy. There are counter narratives voicing concerns of greenwashing and economic infeasibility, but these are largely eclipsed by the dominant discourse. The side-lining of counter narratives could lead to a hasty development of a battery industry that is framed as sustainable, but which lacks the checks and balances to ensure a just energy shift.

My findings draw attention to the use of metaphors, statements and storylines, and how actors in and outside the battery industry frame the green transition. The findings of my thesis contribute to understanding the complexities of accelerations and tensions of energy transitions within interdisciplinary fields of social sciences. Research on this topic is far from complete, but this thesis is part of a dynamically developing field of studies.

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Acronyms and abbreviations

BattKOMP: Project led by business interest organisation Norsk Industri, with LO and Prosess21, to map and analyse competency needs of a large scale battery industry in Norway.

CDA: Critical discourse analysis

CO2: Carbon dioxide

CQP: Costumer Qualification Plant

EBA: European Battery Alliance

Eksfin: Export Finance Norway

ESS: Energy Storage Systems

EU: European Union

EuBatIn: European Battery Innovation

EVs: Electric vehicles

FrP: The Progress Party

GWh: Gigawatt hour

IEA: International Energy Association

IPCEI: Important Projects of Common European Interest

IRA: Inflation Reduction Act

KWh: Kilowatt hours

LFP: Lithium Iron Phosphate

LIB: Lithium-ion battery

LMNO: Lithium Manganese Nickel Oxide

LO: *Landsorganisasjonen i Norge* (LO Norway, trade union)

NHO: *Næringslivets Hovedorganisasjon* (Confederation of Norwegian Enterprise)

NOU: *Norges offentlige utredninger* (Norwegian official investigations)

NMBU: Norwegian University of Life Sciences

NMC: Nickel Manganese Cobalt

NRK: *Norsk rikskringkasting* (Public broadcaster)

SINTEF: Independent research organisation working on technology.

SIVA: The Industrial Development Corporation of Norway

SV: Socialist Left Party

TWh: Terrawatt hours

V: Liberal Party

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Chapter 1: Introduction

1.1 Setting the scene: why this research project?

> As a society, we must substantially accelerate our efforts to reduce CO_2 emissions at scale over the next ten years. Electrification and batteries are instrumental parts of the solution, representing one of the most exciting and sustainable growth vectors in the market (FREYR, 2022a).

Storytelling is a crucial tool for change, and how we story solutions is key for change to happen. In several official governmental documents, reports, talks, webinars and podcasts, an emerging Norwegian battery industry is being debated, discussed, and promoted as a green industrial adventure[1]. Within this context, there are different discourses, narratives, statements and metaphors that are important to unpack, because they can be vital in creating acceptance and legitimacy for batteries as solutions for a greener society. By defining and analysing these different discourses, we can identify "how discourses […] provide agents with reasons for action" (Fairclough & Fairclough, 2012, p. 1). Furthermore, discourse and discourse analysis can be useful tools to investigate, describe and explain the societal sides of energy technology. Different actors, who employ various discourses, have fundamentally different ideas about the nature of the problem that batteries might solve. This means that the way that green industrial projects in Norway are framed could have a definitive power in the future societies we create.

But why focus on batteries and the battery manufacturing industry in Norway as a case to explore discourse and tensions in the green transition? The most recent reports from UN Climate Change inform us yet again that the current plans to limit the global temperature rise to 1.5 degrees are insufficient, and that more radical action is urgently needed (UN Climate UN Climate Change, 2022). One of the key narratives here is that to combat the most severe effects from climate change, an acceleration of electrification of society is essential. To make that happen, we arguably need more batteries and lithium-

[1] The industrial adventure is a very Norwegian-specific metaphor that will be assessed and analysed in chapter six, referring to the development of industries such as hydropower plants and the petroleum and gas industry, symbolising competency in processing industry, wealth, and the heritage of Norwegian local communities as industrial societies.

ion battery technology, and we need it now. As a response to this, Norway, which since the 1970s has crafted its national wealth on oil and gas, has great ambitions of becoming a green industrial nation, with lithium-ion batteries emerging as one of tomorrow's main industries. With renewable energy in abundance, as well as a population obsessed with Teslas, Norway might just be the perfect place for this to happen. Developing a sustainable battery industry and value chain is already a clear priority from Norwegian state officials, evident in strategic documents such as the Green Industrial Initiative Roadmap (Ministry of Trade, Industry and Fisheries, 2022f), as well as recent investments of hundreds of millions of kroners into the construction of first giga factories producing battery cells in Norway.

However, this is happening in a challenging geopolitical situation, with Russia and the war in Ukraine intensifying, and volatile electricity prices. Furthermore, current projections dictate that China will continue to dominate global battery manufacturing capacity with 70 per cent up until 2030 (International Energy Agency, 2022, p. 3). Critical voices ridicule the idea that Norway might become a real player in this field, and that official state funds are wasted on green industrial ventures such as battery production. To complicate matters even further for the proponents of the industrial adventure, other critics are pointing out that despite the framing of lithium-ion batteries and the renewable energy technologies they enable as green and sustainable, they are more mineral-intensive than current energy sources (Valero et al., 2018). As of today, the technology depends on non-renewable minerals such as lithium and cobalt being extracted from areas such as the Congo and Chile, with issues relating to conflict, environment, indigenous and human rights. This has raised concerns over certain geographical areas becoming sacrificial zones for the green transition in our haste to accelerate "green" solutions (Mills, 2020, p. 4).

1.2 Aims, objectives, and research questions

The main concern of this research project is to critically analyse what discourses are used and which actors have been engaged in debates on the emerging Norwegian battery value chain, to dissect what might influence and shape green policies. I used thematic analysis and discourse analysis to identify how Norwegian battery production was framed by key actors in 2022. Discourse analysis is a useful tool to assess the rationale of policy actions,

and to assess whether or not there is a common framing of an issue or a solution in policymaking (Hajer, 2006, p. 66).

The ambition with this research project was also to study tensions concerning the role of Norwegian battery industry in supporting the "green transition", and to examine how metaphors and statements are used to create legitimacy in these discourses. In doing so I wish to dissect what might influence and shape green policies, and to assess the actors behind these discourses. The thesis analyses their points of agreement, conflict, or negotiation. It does so by engaging with theories and methodologies of discourse analysis and thematic analysis. I pose the following over-arching research question:

To what extent is Norwegian battery production successfully framed as a green industrial adventure?

Firstly, I seek to identify the main discourses advocating for or against the emerging battery industry. I do this by asking:

- *How is the emerging Norwegian battery industry framed in argumentative discourse?*

Secondly, I want my analysis to go beyond a mere definition of discourses. I therefore also ask:

- *Who are the key actors behind these discourses, and what strategies and agendas do they represent and legitimise?*

Thirdly, I want to shed light on how these discourses interact:

- *To what extent is there controversy concerning the role of the Norwegian battery industry in supporting the "green transition"?*

This research project seeks to contribute to what is an emerging, but still limited field of research on Norway's battery industry. Although there is some emerging and soon-to-be published literature on the battery industry in Norway, and many master theses in the works, there is little to no research on the discourses and discussions on the battery industry in Norway. In general, there seems to be little research on discourses from the downstream part of the battery value chain. In particular, there is a lack of studies on the Norwegian battery industry from the social sciences perspective. If we are to accelerate

solutions for a green transition, we also need to accelerate research that critically examines the solutions inherent to the green transition**.**

1.3 Scope of analysis and limitations

This thesis cannot, and does not intend to, provide an analysis of all existing discourse concerning batteries in Norway. The discourse presented by actors who publicly engage in communication and debate, or argumentative discourse, are therefore the primary subject of analysis for this thesis. Having said that, when analysing debate and controversy concerning the energy transition and solutions to climate change, there is a tendency to present disagreement or controversy as an absolutist, two-sided debate. I seek to contribute with a thorough analysis that displays a broader set of storylines and counter narratives, in analysing lines of agreement, as well as their points of disagreement between. In this I also hope to provide a counterpoint to one of the main criticisms towards critical discourse analysis, in that it often tends to favour an analysis of how power discourses impact everyday lives (Souto-Manning, 2014, p. 160). Rather than to dichotomise, I am advancing a more nuanced approach. This research might also say something about discourses and debates concerning the green transition more broadly in Norway, and of tensions in energy transitions. Implicit in the utterances I am analysing are power relations that have an impact on discourse, which will not be studied in detail.

It is further important to note that this thesis focuses primarily on the discussions concerning the emerging battery industry with the establishment of the battery cell producers FREYR, Morrow and Beyonder, as well as the launch of the political battery strategy from Norwegian officials. Whilst acknowledging that parts of the battery value chain has already been operating in Norway for many years, the focus will therefore be on analysing argumentative discourse of recent developments. Furthermore, given that the battery cell factories are going to be located in different areas of Norway, there are some local variations to discourse that will not be present and analysed.

The rationale for choosing 2022 as the time of interest is primarily because the battery cell factories in Norway has gained traction in this time period, as was presented in the Norwegian battery strategy of 2022, “Battery cell factories are the link that can ensure growth in the entire value chain” (Ministry of Trade, Industry and Fisheries, 2022c, p. 16). In other words, for other parts of the value chain to thrive in Norway and the Nordic

countries, the actual building and running of battery cell factories in Norway is a necessity. Finally, as research, technology, and policy changes fast, going a lot further back in time would not necessarily give an accurate image of current debates, and therefore fall outside the aims.

1.4 Thesis outline: roadmap for the reader

The chapters of the thesis are structured as follows. The subsequent second chapter lays out the empirical background and context of the thesis by stating some key facts about the battery value chain and the status quo of the battery industry in Norway. In chapter three, relevant literature and research on the battery industry in Norway is discussed. I then assess and present the theoretical and conceptual framework used for analysis, before presenting and discussing the methodology in chapter five. In chapter six, I present findings on how the Norwegian battery industry is framed in argumentative discourse and what actors produce this discourse. By identifying and analysing statements, metaphors, and the actors as a discourse coalition, I also discuss the extent to which these factors contribute to an overall storyline of the industry as a green industrial adventure. In chapter seven, I discuss the tensions and conflict present in the discourses on batteries in Norway by presenting two counter narratives, one on greenwashing, and a second on economic infeasibility. These both show the legitimacy of the dominant storyline and speak to the challenges of this 'adventure'. This seventh chapter also discusses the consequences of these narratives being excluded from the dominant discourse on batteries in Norway. In the eighth and last chapter, I conclude by summing up the main findings, discussing the thesis and suggesting ways forward with other research.

Chapter 2: The manifold contexts of LIB value chains

Lithium-ion batteries (LIBs) are presented as a key enabler in the process of electrification, and thus also at the heart of the green transition discourse. They enable EVs that replace fossil fuel powered vehicles, reducing carbon emissions for the transport sector. Furthermore, LIBs enable energy storage systems, so that we more efficiently can store renewable energy from wind, solar and tide power plants. These are some of the key reasons as to why there is a push to establish a battery manufacturing industry in Norway. This chapter gives a background to the thesis and puts it into multiple contexts, from the geopolitical to the national. Firstly, by giving a very brief presentation of the LIB value chain (2.2), the Norwegian political context and strategy for batteries (2.3), and a brief status report on the Norwegian battery manufacturing industry (2.4).

2.1 The LIB value chain

Although research and development on new battery technologies is changing quickly, most analyses indicate that LIBs will be the dominating technology in the short term (Azevedo et al., 2018, p. 3). This also goes for the Norwegian battery manufacturing industry, as both FREYR in Mo i Rana and Morrow in Arendal, will produce li-ion battery cells. Therefore, these battery chemistries will be the focus of both this chapter and my thesis. The LIB battery value chain as a concept describes the entire journey of extracting, producing, using, and recycling lithium-based batteries, capturing its components as well as challenges. Mapping the whole chain is an exhaustive task, and it also varies depending on the battery chemistry and the end use of the battery cell. However, it is possible to simplify to a certain extent, as illustrated in figure 1. In this chapter, only parts of the value chain will be drawn out and explained, also to show how various kinds of value are captured and different costs and benefits are distributed throughout the value chain. Firstly, I describe the upstream part of the value chain; the extraction and processing of raw materials and the associated challenges (2.1.1), secondly, the downstream portion; how battery cells are produced (2.1.2), and thirdly, the use as well as demand of LIBs in the green transition (2.1.3).

2.1.1 Upstream: extraction and processing of raw materials

The first part of the LIB value chain consists of mining and extracting, as well as processing the raw materials used in the battery cells. The key battery minerals are cobalt, lithium, nickel, graphite and manganese, depending on specific battery chemistry (Prosess21, 2021). Due to the booming demand for LIBs in the energy transition, the demand and supply of raw materials are a key challenge. The share of mineral demand driven by clean energy technology is anticipated to rise substantially in the coming two decades. The demand is expected to rise to 40 per cent for copper and rare earth minerals, 60-70 per cent for nickel and cobalt, as well as nearly 90 per cent for lithium (International Energy International Energy Agency, 2021). This illustrates how a switch to renewable energy sources and transitioning away from fossil fuels implies reliance on other non-renewable minerals (Valero et al., 2018).

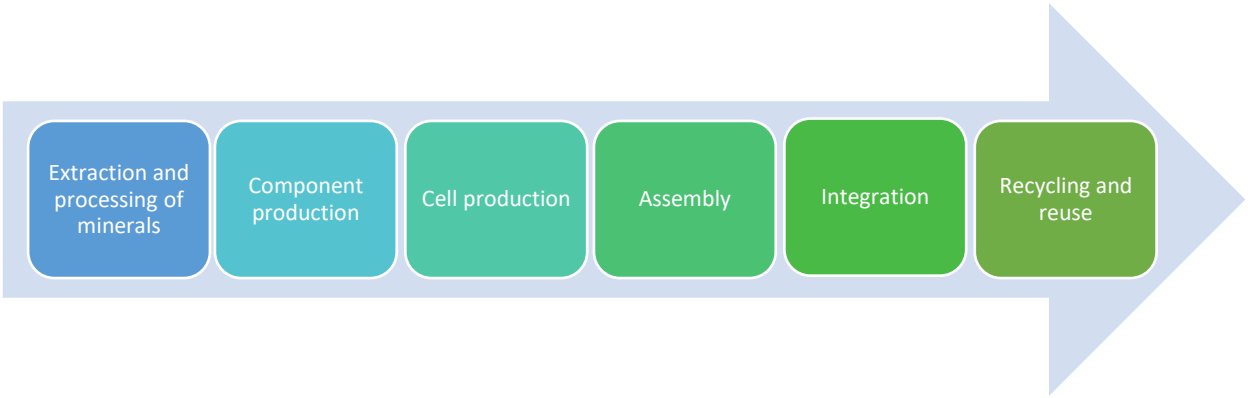

Figure 1: Illustration of the LIB value chain for automotive end use. Adapted from European Commission et al. (2018, p. 6).

Although these minerals are found in different parts of the world, there is a concentration of essential battery materials in specific geographic locations. Let us identify a few of them. Cobalt in the Democratic Republic of Congo is one example, with 74 per cent of cobalt used in battery cell production being mined there in 2021 despite continuing human rights abuses (Cobalt Institute, 2022). The largest cobalt mining companies are Glencore (Switzerland), followed by the Jinchuan Group (China). A second geographic area that is key to the upstream part of the value chain are the lithium brines situated in Chile, Bolivia and Argentina, with Chile as one of the biggest lithium producers globally (International Energy Agency, 2022, p. 21). In terms of hard-rock lithium mining, Australia dominates as the largest lithium-producer, as well as being a top producer of nickel (ibid, p. 41).

Russia is the third largest producer. but produces 20 per cent of global Class 1 battery-grade nickel. The Russian invasion into Ukraine has led to concerns for sourcing and caused an increase in price (International Energy Agency, 2022, p. 16).

A key challenge when discussing the upstream LIB value chain are questions of indigenous and human rights, as well as socio-environmental impacts of mining. Taking lithium as an example, the ratio between lithium supply and demand is expected to be 5:3 by 2030 (Prosess21, 2021, p. 6). This is considering that the quantity of lithium necessary to produce a battery is predicted to decrease in the future with new battery chemistries requiring less lithium becoming commercialized, as well as the new lithium deposits being discovered and readied for mining. There is a lot of ongoing, and some published, research looking at these consequences, from perspectives including climate justice and political ecology. As one example, recent research from the Climate and Community Project and University of California, Davis, warns that the amounts of lithium necessary could cause "damaging expansions of mining", with "water shortages, indigenous land grabs, and ecosystem destruction" as possible consequences, unless there is a greater focus on recycling and a reduction in consumption and personal EV use (Lakhani, 2023). Because of these impacts, protests and lawsuits against mining companies are increasing (ibid). I will go into more depth on some of these issues that have been addressed in the scientific literature to date in chapter 3.

2.1.2 Downstream: producing battery cells

Following from the first parts of the LIB value chain, the raw materials extracted and processed are then used to produce battery cells which are then assembled into battery packs. One LIB consists of several smaller battery cells. A LIB cell is made up of an anode and a cathode, "an electrolyte liquid, a separator, and a positive and a negative current collector" (Riofrancos et al., 2023, p. 16). The battery cell produces electricity through a chemical reaction where electrons travel between the anode and the cathode (Prosess21, 2021, p. 4). Very simply explained, in the process of charging, negative lithium ions journey from the cathode to the anode, passing through a separator and the electrolyte liquid. The opposite happens when the battery is in use. The name lithium-ion battery comes from the lithium ions that all LIBs use to transport the charge between the anode and the cathode. The cathode is typically the most expensive part of the battery

cell. The most common lithium-based cathode chemistries consist of raw materials such as manganese, nickel, cobalt, as well as lithium (Azevedo et al., 2018, p. 6). To summarize, while battery chemistries vary and depend on different materials, all lithium-ion battery chemistries depend on lithium, and many on cobalt, and they all depend on the very specific properties of specific critical raw materials described under the upstream factors.

Battery cell and pack production of LIBs happen in large scale production facilities, often called giga factories. The term giga factory refers both to the large scale of the production happening, but also because they provide giga watt hours (GWh) of battery output. A giga factory creates capacity of 30 to 40 GWh, which is roughly batteries enough to power half a million EVs (The Research Council of Norway, n.d.). Production of battery cells requires a lot of energy as well as capital, and it is also highly concentrated geographically, with 65 per cent of production worldwide being the Chinese company CATL, Korean company LG Energy Solution and Japanese Panasonic (International Energy Agency, 2022, p. 25).

When it comes to key players in the downstream supply chain, China is the dominating actor, and especially when it comes to cell components and battery cell manufacturing (Silver, 2019). Current projections do not suggest anything else than China continuing this trajectory. In BloombergNEF's latest Global Lithium-Ion Battery Supply Chain Ranking, China continues to hold the throne and is expected to retain a 69 per cent share of global manufacturing capacity in 2025, from 74 per cent in 2022 (BloombergNEF, 2022). In comparison, the EU's share of capacity is at 7 per cent (International Energy Agency, 2022, p. 35).

2.1.3 LIB use and demand in the green transition

One of the key reasons that LIBs are argued to be a key component of the green transition is their role in enabling EVs in replacing fossil-fuelled cars and transport units. As opposed to the fossil fuels in engines running on gasoline and diesel which are combustible, and thereby consumed creating greenhouse gases as a by-product, LIBs (and other rechargeable battery cells) contains energy within its cells which then can be recharged (Kawamura et al., 2021, p. 1). This in turn is a very effective way to reduce carbon emissions for the transport sector (Zubi et al., 2018). The top EV manufacturers

are American Tesla, German VW Group and Chinese BYD, together making up a third of global production in 2021 (International Energy Agency, 2022, p. 25). In addition to powering electric vehicles and other electric appliances, LIBs can enable energy storage systems, so that we more efficiently can store excess renewable energy from wind, solar and tide power plants (Nguyen & Yang, 2018).

However, just because they enable renewable energies does not mean that they are produced in a sustainable way. For instance, China as the key player in producing lithium-ion batteries depends on using coal as its source of energy (Crawford et al., 2022). Therefore, there is an increasing focus upon the fact that also the solutions enabling the green transition must be produced sustainably and not just displace environmental costs to other places. Furthermore, there is an increased focus on reuse and recycling, which this thesis will not get into.

Because of this, the extensive access to hydroelectricity in Norway and historically cheap electricity is one of the major selling points when constructing a battery manufacturing industry in the country. This is because the production of li-ion batteries in giga factories is a very power intensive industry with constant consumption. A recent market analysis created by Statnett estimates that it takes 100 Kwh electricity to produce one KWh li-ion battery. In total, a giga battery factory will consume 0.3 – 1.5 TWh of electricity each year, depending on their size and quantity in production (Christiansen et al., 2023). However, as I will argue further in several chapters, the carbon footprint is not the only footprint of concern regarding social and environmental sustainability.

2.2 Batteries as a political strategy: The Norwegian value chain

There is a general tendency globally where countries create industrial strategies aiming to become key actors in battery supply chains (International Energy Agency, 2022, p. 33). Establishing and facilitating the Norwegian battery industry has been a priority for the incumbent Norwegian government since creating its political platform in 2021 (Regjeringen, 2021), and was already in the works with the preceding government. Norway's Climate Action Plan 2021-2030, clearly points out that "development and production of batteries is necessary for a further electrification of transport industries nationally and internationally", and that this presents opportunities for Norway as "the world will be electrified, and Norway is aiming to develop a sustainable battery business"

(Meld. St. 13 (2020-2021), p. 18, author's translation). The Norwegian government has a clear strategy to establish a fully-fledged, large-scale battery production in Norway, and for Norway to become "a leading battery nation", as its one of its seven priority areas in its green industrial initiative (Ministry of Trade, Industry and Fisheries, 2022f, p. 76). In June of 2022, the Minister for Trade and Industry launched the government's *Battery Strategy* (Ministry of Trade, Industry and Fisheries, 2022c). The strategy is one pillar out of several, which seeks to operationalise the Norwegian government's green industrial transition. To ensure that this happens, Norwegian state funds have been invested through different channels to Morrow, FREYR and Beyonder, as the three most promising battery initiatives. This includes an indicated 4 billion NOK to FREYR from Norway's Export Credit Agency, Eksfin (Export Finance Norway), to help finance the construction of Giga Arctic (FREYR, 2022d). The Industrial Development Corporation of Norway (SIVA), has signed a joint venture with Morrow to secure 67 per cent of the total amount of 480 million NOK (Morrow Batteries, 2022a). Furthermore, all three companies have gotten support from Innovation Norway, most recently Beyonder and Morrow as part of the newly launched Green Growth Loan initiative (Innovation Norway, 2022).

There are several factors that could make the Norwegian value chain a success. The newly published report mapping the Nordic Battery Value Chain highlights the high per capita share of EVs, a strong backing from the government, fast-growing battery cell and recycling initiatives, the supply of renewable energy and the collaboration between the industry and research facilities (Innovation Norway et al., 2023). Furthermore, the fact that Norwegian industry and Norwegian scientific communities already have competencies within material technology and in process automation (Valstad et al., 2020). In Norway, 85 per cent of the total market share of new cars sold were electric vehicles in 2022 (Norsk Elbilforening, 2023), and the goal set by the Parliament is to reach 100 per cent by 2025 (Ministry of Transport, 2021). Norway has the most EVs per citizen globally (Ministry of Trade, Industry and Fisheries, 2022c, p. 6). When it comes to value creation, it is estimated that turnover in the Norwegian battery value chain could reach 90 billion NOK by 2030 (Valstad et al., 2020, p. 52). Menon Economics estimated that the export from battery cell production in 2030 could reach 78 billion NOK, which would make it the fifth largest export industry (Basso et al., 2022, p. 30).

The European context is key for the Norwegian battery industry because it will most likely be the primary market for trade and investment, as well as the space for getting funding and collaborations. The European Union (EU) has an ambitious plan for the green shift through initiatives such as the European Green Deal, and the European Commission initiated European Battery Alliance (EBA). The EU aims to establish a strong and circular European battery value chain, in which Norway (despite not being part of the EU), plays an integral part (Prosess21, 2021, p. 3). A crucial part of this is increasing the self-sufficiency in batteries for the European market, to compete with key players such as China, and avoid dependency on Russia (International Energy Agency, 2022). Despite these efforts, it should be underscored that Norway, Europe, as well as the United States (US), are all playing 'catch-up' with China. As mentioned in the previous section, China is expected to dominate the value chain for the foreseeable future, despite the initiatives and giga factories cropping up all across Europe and Norway.

To ensure efforts to secure sustainable value chains, new EU regulation sets requirements for batteries which will be ranked according to their CO2 emissions, recycling and reuse of materials (especially copper, cobalt, lithium, nickel and lead), and in terms of how long they last (European Commission, 2022). Several Norwegian projects are part of the European IPCEI EuBatIn[2] battery initiative, to further collaboration as a European trading bloc, increase access to funding and new markets (Ministry of Trade, Industry and Fisheries, 2023). In addition to being integrated into European initiatives, the Nordic countries have created strategic partnerships to collaborate on different arenas on batteries. This includes Nordic Battery Collaboration, which hosts webinars, events. Furthermore, they have created collective strategic goals for the Nordic region to be "Europe's leading sustainable, competitive, and innovative battery ecosystem by 2026" (Innovation Norway et al., 2023, p. 82).

2.3 Current state of the industry in Norway

In Norway, there is a large part of a battery value chain already in play. This spans from companies processing raw materials, a scientific community with chief expertise on battery technology, companies producing battery packs for boats and ships, as well as

[2] IPCEI stands for "Important Projects of Common European Interest".

recycling. Companies such as Rolls-Royce and Corvus, both in Bergen, and Siemens, in Trondheim, have already opened smaller factories producing maritime batteries in Norway the last couple years, and Norway is already marked-leading in battery production for this niche market (Lekve, 2023). When it comes to battery cell production, there are as of today two leading initiatives that have started the construction of giga factories, FREYR and Morrow Batteries. FREYR is currently constructing its first giga factory Giga Arctic in Mo i Rana. Morrow is constructing the Eyde Giga factory in Arendal, which is set to be completed in 2028. In addition to these initiatives, the company Beyonder is looking to construct in the Stavanger area. The newly established Elinor Batteries recently announced it would construct a giga factory in Orkland in Trøndelag. All these initiatives aim to produce battery cells using slightly different battery technology, which will be discussed more in depth in the subsequent analysis. Here, I will only briefly explain the differences between the companies and the technologies.

Morrow Batteries is a cell manufacturing company founded in 2020 after an idea developed by the non-profit foundation Bellona. The ownership of Morrow Batteries is a mix of public and private funds, with main investors Agder Energi Venture and NOAH, a subsidiary of Gjelsten Holding (Morrow Batteries, 2023a). Agder Energi Venture is a subsidiary of Å Energi (previously Agder Energi, owned by local municipalities and Statkraft), making the Norwegian state an indirect owner. Furthermore, the Norwegian state's climate investment company Nysnø also holds ownership (Dokument 15:11 S (2022-2023) spørsmål nr. 1641). Put differently, the Norwegian state is subsidising private capital through more ways than just giving loans and subsidies as mentioned above. The company aims to open its first battery cell factory in Arendal, ready for production by 2024, and to have 43 gigawatt hour (GWh) capacity by 2028. They have set up a Customer Qualification Plant in South Korea, set to be relocated to Norway (Morrow Batteries, 2023b). To begin with, they will use Nickel Manganese Cobalt (NMC) technology to create batteries for the EVs market, and Lithium Iron Phosphate (LFP) technology for use in Energy Storage Systems (ESS). By 2025, they will produce what they refer to as second generation batteries, using Lithium Manganese Nickel Oxide (LMNO) technology (Morrow Batteries, 2023c).

FREYR Battery was founded in 2018. FREYR have a pilot line for customer qualification and have started constructing a giga factory in Mo i Rana. They aim for 50

GWh annual capacity by 2025, 100 GWh capacity by 2028 and 200 by 2030. They are further aiming to have battery cell production facilities in Vaasa, Finland, and the United States through a joint venture with Koch Industries. Out of the three companies, they are the only company listed on the New York Stock Exchange. This was made possible by the business merge with the Cayman Island registered Alussa Energy Acquisition (FREYR, 2021b). FREYR uses industrial partnerships across its supply chain as a business strategy. For instance, they are licensed to produce the company 24M's battery cell production process, which is a compressed process with fewer steps, therefore also needing fewer raw materials and less energy consumption. They plan to pair this technology with several battery chemistries, including Lithium Iron Phosphate (LFP) (FREYR, 2022b, p. 18).

Beyonder is a battery technology company and is the only out of the three companies assessed developing their own technology. They are using carbon from sawdust, leftovers from Norwegian forestry. This replaces the need for cobalt and nickel. They are not creating LIBs for the EV industry, but aiming for more powerful batteries that are suited for heavy vehicles driving shorter distances, as well as industry. They have chosen Rogaland County, Norway as their base. Currently their battery centre consists of an "innovation line" to test and research battery solutions, which do not yet generate income. This process happens simultaneously as the scaling up, and planning for production from 2025 (Siemens, 2023). Equinor Ventures AS, previously known as Statoil, is the largest shareholder in Beyonder, with 20.19 % (Equinor, 2020).

2.4 Summary

This contextual chapter has given some background information about the LIB value chains and situated their rising demand in the green transition discourse. Situating Norway in this global and European context is an important backdrop for assessing the discourse present on establishing a manufacturing industry. There are some further key takeaways that will be revisited when discussing the alternative storylines identified in chapter six, for instance the extensive amounts of raw materials needed to create batteries, and China's pivotal role in the downstream value chains globally.

Chapter 3: Literature review

In this thesis, I am primarily concerned with analysing how the Norwegian battery industry is framed in argumentative discourse, what actors use it, and the extent to which there is controversy concerning the role of Norwegian battery industry in supporting the "green transition". To do so in a satisfactory manner, I will in this chapter review the existing literature, and in this way highlight the gap in the literature that I seek to address. Where chapter 2 situated the thesis in a general context of economic production and politics, this chapter situates the issue within a social scientific context. In this chapter, I will firstly review social scientific literature on LIBs and LIB value chains (3.1), as well as relevant literature on LIBs, lithium and batteries using perspectives looking at discourse and narratives, more specifically (3.2). From there on, I summarize the limited existing literature on the battery manufacturing industry in Norway (3.3) and highlight the gap in the literature that I am keen to contribute to through this thesis. Finally, I conclude by summing up the main takeaways from the literature that I will build upon in the analysis (3.4).

3.1. The big picture: Relevant research on the LIB value chain

As mentioned in the previous chapter, the focus on sustainability and carbon emissions dominate a lot of the research on batteries from more positivist and natural sciences (Kawamura et al., 2021; Nguyen & Yang, 2018; Zubi et al., 2018). However, despite the unanimity in research on how batteries would enable a reduction of carbon emissions, the literature also points to challenges in upscaling the use of li-ion batteries. To improve sustainability of LIBs, recycling of both materials and excess energy needs to improve (Yang et al., 2021). Furthermore, there is currently no clear cut solution to the low availability of critical minerals such as lithium (Nate et al., 2021), despite the fact that there is a lot of exploration into unconventional lithium sources from areas such as subsea mining, industrial waste and extra-terrestrial matters (Tabelin et al. (2021). The question of critical mineral supply could lead to increasing costs, highlighted by researchers from independent research institutes on technology such as Norwegian SINTEF, as well as analysts from consultancy firms such as McKinsey & Company (Azevedo et al., 2022; Azevedo et al., 2018; Campagnol et al., 2022; Eddy et al., 2019; Fleischmann et al., 2021) and Rystad Energy (Batteries Batteries News, 2022). This focus on supply of minerals

and increasing demand in raw materials highlights a fact that Valero et al. (2018) point to in their research; that renewable energy technologies are more mineral intensive than current energy sources. They further conclude that transitioning away from fossil fuels will imply accepting the reliance on other non-renewable raw materials.

Although the above-mentioned analyses address the importance of lithium as a key mineral in the energy transition towards a low-carbon future, they are well complemented by other literature pointing to environmental, social, and political issues. Some researchers critique the overpowering focus on accelerating large-scale mining to ensure sufficient supply of critical minerals for LIBs. Instead, they argue, there needs to be a larger focus on what sort of society that we are transitioning towards in this green shift. A scenario created by the Climate and Community project at the University of California, Davis found that "lithium demand can be reduced by up to 92 percent in 2050" if we increase mobility and decrease the use of personal EVs, limit EV battery size, as well as improving systems for recycling (Riofrancos et al., 2023). Increasing the quantity and quality of public transport as the key way to reduce our "material footprint" and ensure an actual just transition is also emphasized by others (González et al., 2023).

Scholars from various disciplinary backgrounds have raised concerns over the risk of battery value chains reinforcing extractivist relations between developing and developed countries. This is because many mining sites for minerals necessary for lithium-ion batteries are historically located in indigenous and rural communities in the Global South (Jerez et al., 2021). Several authors use lithium as a point of departure for analysis, with Latin America as an example. Heredia et al. (2020) provide an overview of the biggest technical, geopolitical and legal challenges faced by the countries in the Lithium Triangle; Chile, Bolivia and Argentina. Lorca et al. (2022) analyse struggles and resistance in Chile's Salar de Atacama – site of the largest producer of lithium globally, SQM, and argue that ways of life there are at risk, or perhaps sacrificed, not to combat climate change, but to save a "particular, privileged way of life in another part of the globe" (p. 9). Another key research project, led by Hufty (2022) at the Geneva Graduate Institute, is addressing the normative sustainability focus of the EU energy transition and the weak spot of the lithium value chain with challenges of reinforcing extractivist relations between Latin America and Europe. In this regard I also wish to mention Eduardo Gudynas, and his influence on theorizing extractivism in Latin America, together with

scholars such as Acosta, about how extractivism has become interchangeable with development even under the progressive governments in Latin America (Gudynas, 2011, pp. 75-90).

Scholars focusing on lithium and the risk of areas in Latin America becoming sacrificial zones, are supplemented by authors analysing cobalt. They argue that despite the promises from the battery industry there is no such thing as sustainable cobalt from the Democratic Republic of the Congo (Kara, 2022), because of risks of environmental harm (Banza Lubaba Nkulu et al., 2018), as well as the risk of slavery and child labour in artisanal Congolese cobalt mining (Sovacool, 2021). Other literature analysing these issues frame them as disruption risks to supply chains and recommend a diversification of the cobalt market as a possible solution (Althaf & Babbitt, 2021; van den Brink et al., 2020). Several policy initiatives from the EU and other instances in Europe and the Nordics are aiming for an ethical sourcing of battery raw materials, and look to deposits in Europe (Gourcerol et al., 2019), and are strategically looking to increase self-sufficiency in extraction of critical minerals[3]. However, there is also literature pointing to the fact that simply moving mining closer to home does not solve all issues. There are scholars looking at the challenges in the Czech Republic, the United Kingdom, Serbia as well as Sweden (Müller, 2020). Furthermore, scholars frame plans for the Barroso mine in Portugal to become the largest open-pit lithium mine of Western Europe as "green extractivism" (Dunlap & Riquito, 2023), similarly to the way that lithium mining in Latin America has been framed.

This literature on the possible impacts and risks of LIBs value chain is relevant to understand the alternative storylines that will be discussed in chapter seven, as well as to be able to critically analyse the main storyline and the actors using it. However, the majority of the literature reviewed above does not assess discourse, nor the role of discourse in the downstream part of the value chain which we are interested in; and more specifically the production and packing of battery cells in giga factories.

[3] At the beginning of 2023, LKAB announced findings of rare earth minerals in Kiruna, Sweden, which spurred a lot of optimism concerning the ability of European countries to self-suffice in raw materials needed for high technology products such as LIBs (LKAB, 2023).

3.2 Batteries and discourse, and narrative

Having looked a bit at some general literature discussing the LIB value chain, I now wish to assess scholars who have used methodologies and theories of discourse and narrative, when analysing LIBs. The raw material lithium has gained attention as a point of departure for analysis in the narrative field. As a contrast to 'lithium narratives', there are no hits in academic databases on 'cobalt narratives'. When it comes to lithium narratives, the aforementioned Geneva Graduate Institute is especially relevant. One of the research projects hosted there uses the concept "green dealings", to shed light on how actors along the lithium battery chain in Europe and South America are shaped by "green" norms and standards. This project is co-hosted by the Department of Global Development and Planning at University of Agder (SNIS, 2021). Although much of this research is ongoing, and therefore not yet published, some of the researchers have published several related and relevant studies meanwhile. As an example, Scoville-Simonds (2018) highlights the role of marginalized peoples and places in narratives of climate and energy transition, using a case of narratives of cultural and climate change in Peru. Master theses or other research writing about batteries and narratives in the future might provide more relevant insights when published.

Other research on lithium narratives specifically includes that of Stepanović (2022), who presents an interesting, but somewhat simplified analysis of 'lithium mining narratives' from lithium extraction in Serbia. Stepanović defines two opposing groups using contrasting narratives, one of political actors in favour of lithium mining, and another of "citizens, activists, ecological organisations, and members of the scientific community" who are against (Stepanović, 2022, p. 29). Stepanović presents interesting concepts such as double extractivism to understand the extraction of minerals necessary for technology to extract data, as well as the intertwined extraction of minerals in the global South. However, the analysis lacks a discussion and definition of narrative as a concept, although it would be fair to suggest that she understands narrative as a story or frame that is used by her two actor-groups. She suggests that "political actors in Serbia are imposing narratives about the financial benefits of lithium mining" (Stepanović, 2022, p. 29), and that the opposing group is "using different narratives" (ibid).

Despite not using narratives explicitly in the case of lithium or lithium-ion batteries, I feel it is again timely to bring up Gudynas (2019) and in his use of narratives as an analytical concept when discussing the "defence of extractivisms" (p. 16). Like several of the authors discussed in this literature review, he defines narratives as stories that describe situations and arguments, and that more than serving to construct and uphold policies that support extractivist activities, narratives importantly provide ideas that legitimise these activities (ibid). Without explicitly saying so, Gudynas could comfortably be placed within a tradition of critical discourse analysis, in the sense that he is connecting the use of language to power structures. Gudynas differentiates between the ones using or expressing a narrative, and the groups consuming or receiving it. Despite focusing his analysis on power discourses, he highlights that in the groups receiving these narratives, there are also people who reproduce the extractivism that is produced by the ones using it. Therefore, the narratives should not be interpreted as a minority narrative being imposed upon a passive majority, but rather a relational structure which changes over time, he argues. This dynamic is necessary for the creation of what he calls a common-sense narrative (Gudynas, 2019, p. 26), a narrative that is by and large accepted by the population.

This section of the literature review has briefly assessed some key literature on batteries from perspectives analysing language in use, where it is apparent that narratives is chiefly employed as a lens. However, this literature does not assess the role of discourse in the downstream part of the value chain which we are interested in; and more specifically the production and packing of battery cells in giga factories. Therefore, I will now move on to review what exists of literature on battery manufacturing, and focus in on Norway specifically.

3.3 Research on the battery manufacturing industry in Norway

Much of the existing relevant research on Norway and batteries is not related to batteries per se, but to battery-driven electric cars and other electric vehicles due to the popularity of electric cars in Norway (Aarstad & Kvitastein, 2020), as well as incentives such as purchase taxes in the promotion of battery electric vehicles (Bjerkan et al., 2016). This also reflects the average consumer's perspective as EVs are very common, but battery production is still a relatively small industry. When narrowing down the scope to the

Norwegian battery manufacturing industry and battery factories, there is as of today, little peer-reviewed, published research within the social sciences. The fact that there is little research should be noted with a caveat, as there are several recent masters' theses both in progress and already completed, including Depledge and Steen (2022) on regional green path creation in the battery manufacturing industry, Rykalova (2019) on drivers and barriers for industry on reuse and recycling of li-ion batteries in Norway, and Rygh (2022) modelling the electricity demand of a large-scale battery industry. There are also ongoing PhD projects and other research projects, including the interdisciplinary group EMPOWER at the University of Oslo (doing research 2022-2026), with the goal of establishing a long-term strategy towards sustainable electric vehicles (EV) batteries. Another project that should be highlighted is the Battery Coast project hosted at the University of Agder, where the team most relevant for this thesis are investigating circular battery value chains. The articles published so far by the associated scholars includes looking at stakeholders, barriers and drivers for circular business models for lithium-ion batteries (Wrålsen et al., 2021), the measuring of viability of investment in battery energy storage systems (Wrålsen & Faessler, 2022) and a study of the proposed battery regulation policy of the European Commission (Birkeland & Trondal, 2022).

Several of the researchers mentioned above have also been involved in previous studies on batteries, and have authored commissioned reports and strategies that have served as a basis for important strategic documents such as the Norwegian battery strategy (Ministry of Trade, Industry and Fisheries, 2022c). Indeed, outside of academia and peer-review field, there are a wealth of commissioned reports and strategies for new green industries, from both public and private entities. They all point to batteries as one of the critical areas for Norway to focus on within the green transition, to become a new green industrial giant. Kattel et al. (2021) in their report for Manifest think tank, state that Norway should be "well positioned to capture a large share of" the growing battery market (p. 16). Almås et al. (2019) at the research institute SINTEF, in a report commissioned by the NHO (The Confederation of Norwegian Enterprise), conclude that the raw materials needed to produce lithium-ion batteries could be sourced in Norway and other Nordic countries. Lund et al. (2022) at McKinsey highlight batteries as one of ten of tomorrow's industries for Norway in the green energy transition, and they pinpoint that "the battery adventure is now or never" (p. 28). The majority of these reports build

upon Swedish official enquiries on the feasibility of a Nordic battery value chain (Business Business Sweden, 2021), and mining for batteries in the Nordic countries (Eilu et al., 2021). These reports are relevant for this thesis, as Norwegian policy makers rely upon them for their strategies and speeches, consequently informing their discourse.

Outside the work of these established research groups and institutes mentioned above, the work of PhD candidate and social anthropologist Anna-Sophie Hobi at the Norwegian University of Life Sciences (NMBU) is also essential. Her research is looking at lithium and how it is creating futures in Zimbabwe and Norway. Although her research is not yet published, she has authored articles on several blogs where she points to challenges concerning the Norwegian battery production, namely the dependency on lithium and other raw materials that will have to be extracted abroad. She calls for more research on the topic, as the battery industry is a new green industrial adventure that promises a green value creation (Hobi, 2021a, 2021b, 2022). Although this thesis is not anthropological of nature, it seeks to address some of the challenges that Hobi points to. Another PhD candidate worth mentioning is historian Øyvind Haug Nordbotten, who is examining FREYR Battery, and how this company is attempting to structurally change the Norwegian economy away from an oil dependency to a net zero future (Universitetet i Universitetet i Oslo, 2022). Both Hobi and Nordbotten point to concepts such as 'green industrial adventure' and 'net zero future', which I also use in this thesis to understand and discuss Norwegian battery production. Although the above mentioned authors work on related topics, there is seemingly a lack of studies of storylines, imaginaries, and methodologies of discourse analysis as a point of departure for analysis on the Norwegian case. This is where I hope this thesis can make a useful contribution. Therefore, I now wish to introduce relevant literature on these specific concepts.

3.4 Summary of literature review

In this chapter, I summarized and discussed literature on lithium-ion batteries and the challenges of their global value chains. I also reviewed insights from literature on narrative, discourse, or similar fields. From there, I narrowed down the scope further by reviewing the limited literature available on the emerging battery industry in Norway from a social sciences perspective. I showed that within the literature on this case, there

is so far no literature that uses discourse analysis or looks at storylines, which is where I hope this thesis can be a humble contribution.

Chapter 4: Theoretical and conceptual framework

Having now presented how battery production has been addressed by social sciences to date, and placed my thesis into that context, I wish to present the theoretical and conceptual framework I will use for analysis. Discourse, storyline, statements, as well as metaphors are key concepts that are important to define, as I am primarily dedicated to analysing the framing of Norwegian battery production by using these analytical concepts. They are also an important backdrop to my methodology, using elements from discourse analysis (which will be discussed in chapter 5). I start the chapter out by reviewing some literature on discourse and how it has been used to analyse tensions in energy transitions, and propose a definition (4.1). Following on from that, I narrow down from discourse to open my analytical toolbox, by firstly defining storyline (4.2), followed by statement and metaphor (4.3). As we are interested in also looking at what types of actors are using the statements, metaphors, and storyline, we move on to discuss actors and the concept discourse coalition (4.4). Finally, I summarize the framework (4.5).

4.1 Discourse

Broadly speaking, discourse is an umbrella term, "originating from the work of Michel Foucault (…), [where it] is an analytical concept that acknowledges the active role of language in the production of knowledge and power through text and talk" (Livholts & Tamboukou, 2015, p. 4). My understanding of discourse and discourse analysis is influenced by the analysis of politics and the argumentative turn in discourse, inspired by scholars such as Fairclough and Hajer. According to Fairclough, Foucault's emphasis on knowledge and power needs to be complemented by analysis of language in use; "[d]iscourse is a practice not just of representing the world, but of signifying the world, constituting and constructing the world in meaning" (Fairclough, 1992, p. 64). Using the topic of this thesis as an example, different actors are through text and talk telling a story about Norway's battery initiative as an industrial adventure and a key enabler for the energy transition. Some of these stories build on a discourse seeking to unite concerns for climate change with economic growth, through technological solutions. Furthermore, the mode of discourse is argumentative, and can create a certain framing of an issue, or a "particular version of events" (Burr, 2003, p. 64 in Livholts & Tamboukou, 2015, p. 22). Because of this, the argumentative approach holds, "discourse fulfils a key role in

processes of political change" (Hajer, 1995, p. 59). Building on and combining these points, I then propose to understand discourse as *language in use in the production of knowledge and power through text and talk, which represents, signifies, constitutes, and constructs the world in meaning*.

Building on scholars such as Fairclough to define discourse, I also place this thesis and myself in a tradition of understanding discourses and social structures as being in a dialectical relationship. This touches upon an important debate between different disciplines of discourse analysis. This debate is simply put about whether language reflects reality, argued by descriptive discourse analysts, or whether language is essential in the construction of reality argued by critical or applied analysts, where the work of Foucault has been influential. The latter, connecting discourse to its social and historical context is often associated with critical discourse analysis (Dijk, 2008; Fairclough, 1995; Wodak & Meyer, 2016), sometimes also known as political discourse analysis (Fairclough & Fairclough, 2012). Scholars from a more descriptive tradition of discourse analysis, who aim to "describe how language works in order to understand it", deem applied, or more critical discourse analysts, unscientific because they "are swayed by his or her interest or passion for intervening in some problem in the world" (Gee, 2014, p. 9). Thus, I might be critiqued for having a "politically committed approach to discourse and discourses", which Poole (2010, p. 138) – a charge against scholars such as Fairclough for. Responding to that critique, critical discourse analysts claim that one must recognise the significance of language in perpetuating, justifying and exerting power dynamics within social relations and institutions (Seale, 2018, p. 480). By understanding discourses and social structures to be in a dialectic relationship, critical discourse analysists accept that reality and social structures are shaped by discourse, but also hold that discourse takes place within a "constituted, material reality" (Fairclough, 1992, p. 60).

However, even though I agree with the premise of the critical discourse analysts listed here, I also acknowledge the critique often aimed at both critical and environmental discourse analysis. As Scoville-Simonds points out in his thesis, there is a tendency to limit analysis to look at dominant perspectives and their "counter-discourses" (Scoville-Simonds, 2009, p. 14). In a similar vein, critical discourse analysis has been criticised for focusing analysis on power and institutional discourses, creating what Souto-Manning (2014) names a micro-macro separation between institutional discourses and everyday

narratives. In this thesis, I have made a conscious effort to try and examine discourses from the perspective of a wide set of actors who choose to speak out about batteries, be it in a positive or negative manner. Looking at the relationship between institutional discourses and personal narratives would be an interesting suggestion for further research, considering that my findings indicate that there is little critical debate going on about batteries in Norway (which will be elaborated upon in chapter 7).

Argumentative discourse analysis has been widely applied to the study of tensions in energy transitions. A literature review made by Isoaho and Karhunmaa (2019) on discursive approaches to analysing tensions in energy transitions, found that within studying issues of environmental social sciences, Hajer's approach was the most prominently employed, followed by Dryzek's environmental discourses. In his *The Politics of the Earth*, Dryzek (2005) identifies four categories of discourses he argued have been most prominent in environmental policy making. From his work, we will primarily take with us into the analysis a reference to ecological modernization, a discourse seeking to solve tensions between economic and sustainability concerns. However, I will also refer to economic rationalism, that critiques the role of the state in environmental concerns, and aspects of green radicalism, to analyse some of the alternative storylines.

However, the main source of inspiration for the framework in this thesis is Hajer. His approach to argumentative discourse analysis has as Isoaho and Karhunmaa point out, been used by several scholars before me. Alvarado et al. (2021) used discourse coalitions to assess whether there are alternative discourses to the dominant European discourse on green growth, and to highlight storylines pointing to other paths to a circular economy. Although I do not use discourse coalition to assess alternative discourses, I in a similar way to Alvarado et al assess the existence of alternative storylines. Else et al. (2022) similarly to the way I am employing the concepts look to identify dominant and alternative storylines, though they are assessing sustainability in the UK dairy supply chain. They furthermore focus on assessing how certain storylines gain power. Another example is Asayama and Ishii (2017) finding three dominant storylines of carbon capture storage (CCS) in Japanese newspapers, however, their analysis is somewhat limited in only discussing dominant storylines. A third one is Skorstad and Mohus (2022), analysing a set of statements making up an overarching storyline in discourse representing a

common understanding of how different actors visualise a policy for urban green transformation in Bodø, Norway. This is perhaps the interpretation of Hajer that comes closest to my approach. However, despite acknowledging the role of metaphors in Hajer's discourse analysis, as well as mentioning metaphors as a finding, there is a distinct lack of discussion of metaphors in their article.

4.2 Storyline

So far, I have discussed and defined discourse as the broader, overarching concept of this thesis. However, discourse is yet too broad a term to apply in analysis. To be able to work with and analyse discourse on a more practical level, I look again to Hajer's work on argumentative discourse, and how storylines are used as devices in the process of framing a policy issue. According to Hajer, storylines "are narratives on social reality through which elements from many different domains are combined and that provide actors with a set of symbolic references that suggest a common understanding." (Hajer, 1995, p. 62). Here, I want to stress that even though the use of this narrative might suggest a common understanding between actors, this does not mean that the actors necessarily share a common understanding. Hajer's definition is similar to Fischer's definition of "storylines", which can be seen as devices to "condense large amounts of factual information intermixed with the normative assumptions and value orientations that assign meaning to them" (Fischer, 2003b, p. 87). They both seem to indicate that actors use stories as a way to understand and communicate factual information. Importantly, storylines can be used to "cluster knowledge and create networks and are often found to guide a policy process over time; they are also ensembles of metaphors and statements executed by actors in both text and talk" (Hajer & Versteeg, 2005; Teräväinen, 2010 in Skorstad & Mohus, 2022, p. 333). A related concept to storylines is narratives, which are understood as stories that connect the past, present and possible futures. I propose that we simplify Hajer's definition somewhat to be understood as, *a narrative on social reality consisting of statements and metaphors to suggest a common understanding of an issue between a set of actors. Storylines cluster knowledge, create networks, which may guide policy processes over time.*

4.3 Metaphors and statements

My definition of storyline, points to the use of statements and metaphors as a way to frame and create legitimacy about Norwegian battery production, as we will see in chapter six. There are of course more types of figurative language, which will not be included in this thesis. Statement as an analytical concept in my dissertation does not refer to a single utterance, but rather to different acts of speech coded together thematically. I will comment further on this definition in chapter five on methodology. Statements are arguments, sentences or other acts of speech, and must "…be interpreted in line with the sender's message, using a dialectic approach between closeness to and distance from the field of study" (Skorstad & Mohus, 2022, p. 333). Statements are often part of a narrative, as actors use stories to present facts, as I mentioned above (Hajer, 2006, p. 69). In Hajer's approach, by using the storyline approach, "one effectively reinvokes the storyline as a whole" by using a statement or a metaphor that it consists of (1995, 63).

One of the other key tools we will assess in this thesis is the metaphor. According to (Lakoff & Johnson, 2008, p. 6), human cognition is mainly metaphorical, meaning that our ability to understand and make sense of the world is chiefly through the use of metaphors. It has been recognised in CDA due to its wide use in argumentation (Musolff, 2012, pp. 302-303). Lakoff and Johnson (2008) hold that "[t]he essence of a metaphor is understanding and experiencing one kind of thing in terms of another (ibid, p. 5). As we are also interested in the active use of the metaphor, I propose we use Ritchie's understanding of the metaphor as "seeing, experiencing, or talking about something in terms of something else" (Ritchie, 2013, p. 8). A further reason for analysing metaphors, is due to the framing effect of the metaphorical story. I argue that the "green industrial adventure" is a metaphorical story framing the issue of battery production. This also illustrates how the metaphor can also be "a guide for future actions" (Lakoff & Johnson, 1980, p. 156 in Musolff, 2012, p. 302). In summary, I propose to take with us Ritchie's (2013, p. 8) definition of the metaphor as seeing, experiencing, or talking about something in terms of something else.

4.4 Actors and discourse coalition

In addition to the statements and metaphors that help create a common understanding of an issue, the actors and network of actors are an important part of the storyline approach. In this thesis, I use actor to refer to the person or entity that performs or uses the storyline, statements, or metaphors. To make sense of actors, Hajer employs the concept discourse coalition, a "group of actors that, in the context of an identifiable set of practices, shares the usage of particular set of storylines over a particular period of time" (Hajer, 2005, p. 302). As mentioned, Hajer uses this concept to understand policy change in environmental policy. Using discourse coalition as a concept is interesting, because it highlights that even though actors might disagree and produce different statements and metaphors, they can still be in a discourse coalition together. Because a storyline is a "way of thinking about a problem" rather than facts, people with different values and beliefs can be part of the same coalition (Fischer, 2003a, p. 103). This also opens up for the possibility that actors could be in a discourse coalition, and sustain a specific discourse about an issue, even if they might not agree with all aspects of that given discourse. This will be discussed in chapter six, where I shall explore the wide set of actors that I argue use the green "industrial adventure" storyline.

It is worth taking some space to distinguish discourse coalitions from other types of coalitions, to avoid confusion. Discourse coalitions differ from traditional political coalitions, because it is storylines, and not the actors' interests, that unite them. This in turn broadens the "scope of where the participating actors are to be located" (Hajer, 1995, p. 66). Discourse coalitions are also different from advocacy coalitions, a different concept that understands policy change through analysing competing political actors "who share a set of basic beliefs… who seek to manipulate the rules, budgets, and personnel of governmental institutions in order to achieve these goals over time" (Sabatier and Jenkins-Smith, 1993, p. 5 in Fischer, 2003a, p. 95). Hajer's critique of the advocacy coalition is centred upon its neglect of context. While the concept describes policy change, it does not in a satisfactory manner explain how and why. Furthermore, Hajer argues that the discourse coalition organise behind storylines, as opposed to pre-existing assumptions which Sabatier's advocacy coalitions holds (Fischer, 2003a, p. 101).

Discourse coalitions can also be utilised, together with storyline, statements and metaphors, to help assess the power and influence of a discourse. To analyse whether a discourse is dominant or not. Hajer draws on the concepts of structuration; if many actors use the discourse to frame an issue, and institutionalisation of discourse, which is if this discourse "solidifies into institutions and organisational practices" (Hajer, 2006, p. 70). Despite one type of discourse being dominant, that does not mean other discourses are not present or influential, just that there often is one type of discourse that holds more legitimacy. One example that Hajer points to is the natural sciences discourse as holding key legitimacy within environmental politics (ibid).

In summary, I propose we follow Hajer's definition of discourse coalitions as "a group of actors that, in the context of an identifiable set of practices, shares the usage of particular set of storylines over a particular period of time" (Hajer, 2005, p. 302) for the purpose of this thesis. Discourse coalition is the analytical concept I will use to assess the different actors using discursive elements to frame battery production in Norway. Furthermore, the concepts of structuration and institutionalisation will be applied to assess the level of power and legitimacy of the identified discourses.

4.5 Summary of framework

Concept	Definition
Discourse	Language in use in the production of knowledge and power through text and talk, which represents, signifies, constitutes and constructs the world in meaning (based on Livholts and Tamboukou, and Fairclough).
Storyline	Narrative on social reality consisting of statements and metaphors to suggest a common understanding of an issue between a set of actors (based on Hajer).
Statement	Arguments, sentences, or declarations, sometimes used as part of a narrative (based on Skorstad and Mohus).
Metaphor	"Seeing, experiencing, or talking about something in terms of something else" (Ritchie, 2013, p. 8) that is superficially different.
Discourse coalition	"A group of actors that, in the context of an identifiable set of practices, shares the usage of a particular set of storylines over a particular period" (Hajer, 2005, p. 302).

Table 1: Summary of the conceptual framework used for analysis.

In this chapter, I have discussed theoretical and conceptual framework for this thesis, which I will draw upon in the analysis chapters six and seven. The framework is

summarised in Table 1. In the following chapter, I will continue to build upon the framework by laying out the methodology of discourse analysis. In doing so, I wish to go beyond a mere description of the discourse and storyline about batteries, by also analysing the actors using this storyline, as well as the counter narratives present.

Chapter 5: Methodology

In this thesis, the key aim is to analyse the storyline about the Norwegian battery manufacturing industry in argumentative discourse, primarily on a national discursive level. This is a qualitative and exploratory thesis, using a methodology that combines thematic analysis and elements of critical discourse analysis (CDA), to investigate the extent to which Norwegian battery production is successfully framed as a green industrial adventure. To respond to this research question, I have posed three supporting research questions. The first is concerned with how the emerging Norwegian battery industry is framed in argumentative discourse. Secondly, asking who the key actors using these discourses are, as well as the agendas they represent and legitimise. Third, the extent to which there is controversy concerning the role of the Norwegian battery industry in supporting the "green transition". In this chapter, I will present and discuss the research design used to answer these questions. Firstly, I will discuss how the research was conducted including overall research design (5.1), data collection, and sampling (5.2), followed by a discussion of data analysis methods, including validity and reliability (5.3). I will then assess the ethical limitations (5.4), and the methodological limitations of this thesis (5.5), before summarizing the methods (5.6). In this chapter, I seek to not only document, but to argue the appropriateness of the methods choices made, as well as show how they might be relevant for future studies.

5.1 Research design

Research design is the overall approach taken to answer a research question. This includes the research philosophy and type of study, as well as collection and analysis of data. The research philosophy guiding this thesis is tied to the theoretical and conceptual framework discussed in chapter four; which is linked to a philosophy of social constructivism and an interpretive tradition of research. As discussed in sub-chapter 4.1, I propose that we understand discourses and social structures to be in a dialectic relationship, where discourses and its surroundings both affect each other. Similarly, qualitative analysis is the result of the data as well as the researcher interpreting it, and the interaction of this knowledge. Within qualitative research, I argue it is not possible to do research from an objective point of view, and that it is not the goal either. Instead, the aim is to produce a researcher's interpretation of a topic. This makes it is important to reflect upon the

researcher's role and biases, which will be discussed alongside other ethical considerations in 5.4. To fit with the research philosophy, this thesis has an exploratory qualitative research design, analysing the case of the Norwegian battery industry by combining analytical elements from thematic analysis and CDA. An exploratory research design was deemed appropriate, as there is limited existing research on the topic within social sciences. I furthermore combined both inductive methods, by letting the data speak for itself, with a deductive approach by analysing the data through a conceptual framework as explained in chapter 4.

5.2 Data collection

In chapter four, I have proposed that we define discourse as *language in use in the production of knowledge and power through text and talk, which represents, signifies, constitutes, and constructs the world in meaning*. Thus, to be able to analyse battery discourses, I needed data encompassing language in use through text and talk, where I could later analyse storylines, statements, and metaphors. I have used documents, and other secondary sources, as key data. The main time of interest was 2022. This was chosen for several reasons; there were many substantial changes in the battery industry, with the launch of the government's battery strategy, as well as construction start of the battery giga factories. Furthermore, there is much data available, so I had to delimit time for feasibility reasons. I also did some supplementary data collection from 2021 and the first quarter of 2023 to ensure saturation. I supplemented this secondary data with non-participant observation in webinars on the battery industry, as well as a couple of semi-structured interviews with actors to confirm and nuance the initial findings of discourse analysis. This benefited my analysis by adding value as it provided information about the contexts of the documents and the statements, storyline, actors, and discourses identified from them. Twitter, but also Facebook, was used as a complementary secondary source. It was a particularly useful tool to get an overview of networks, as well as to identify actors engaging in public discussion on batteries. I will now describe the collection of data in more depth, first the several types of secondary data (5.2.1), followed by semi-structured interviews (5.2.2), and non-participant observation (5.2.3).

5.2.1 Documents

The chief part of data are documents sampled from a variety of sources, including the websites of battery cell producers FREYR, Beyonder, and Morrow (the three main battery producers with plants currently operating or planned), press releases, newspaper and media articles retrieved from Atekst, Norwegian governmental and policy documents, political programmes of parties with a seat in the Norwegian parliament, as well as documents from non-governmental actors. I used a purposive sampling of documents, to strategically sample documents that were relevant to the research aims (Bryman, 2016, p. 408). This was relevant as a key selection criterion was evidence of a clear argumentation or statement about the battery industry or factories in construction in Norway. This did not necessarily mean I only looked for op-eds or other argumentative texts, but could also be in the case of someone being interviewed with a clear statement about the battery industry. It is important to underscore that even though I used a purposive method, I was similarly explorative when I searched for documents. This included exploring new sources for finding documents throughout the period.

When searching for documents, I started out by searching for "batteri*", and "Norge" in different library databases and search engines. When using an asterisk after "batteri*", search engines automatically capture words starting with battery, including "batterifabrikk" (battery factory) and "batteriindustri" (battery industry), but also any other and less relevant ones. For instance, large sets of articles about electric car tests and charging stations, and articles about technical innovations not exclusive to the Norwegian case. I realised that the most relevant documents came up when limiting the search to "batterifabrikk", as all documents mentioning the Norwegian the battery factories directly or indirectly mentioned the battery industry, but not vice versa (when only searching for "batteriindustri" I got fewer relevant hits). I therefore ended up using "batterifabrikk" as the main search word for collecting and sampling data. Narrowing this down might have had an impact on my sample and data saturation, but to mitigate this I have collected documents from varied sources of data.

When sampling documents I have considered Scott's (1990) four criteria for assessing documents, that being authenticity, credibility, representativeness, and meaning (Bryman, 2016, p. 546). Furthermore, I have strived to assess the documents according to their

contexts, whom they were intended for, and the message that the author wanted to convey (Atkinson and Coffey 2011, in Bryman, 2016, p. 560). I have used a plethora of different documents to substantiate the existence of a discourse on the battery industry, and therefore I will now go through the diverse types of documents sampled and where I found them.

Battery companies' websites

Using the websites of FREYR, Beyonder and Morrow as data is useful to understand their discourse, and the type of statements and metaphors they use, because it very clearly shows how they choose to communicate their business and project. As this is essentially marketing material, it has the particular objective to sell the companies' ideas to investors and policymakers. Bryman (2016) notes several limitations of using websites for data for analysis, especially because websites are continuously updated, and therefore the research might be outdated quite quickly. I stumbled upon this as a challenge, when Morrow completely revamped their website in the beginning of 2023, after I had collected data from there in September 2022. To mediate this, I checked their new website to ensure that I included any new themes that might have emerged. I also mitigated it by supplemented data from websites with other sources. A further limitation in my analysis of these websites is that I did not do a visual analysis due to the limited scope and time constraint. Websites are meant to be a graphic representation, and the images and design of the website give the information presented a context and a setting. Still, I have been browsing these websites actively throughout the project period bot to sample data and to check for updates, and through this I have no doubt taken in impressions from these images and visual representations.

To sample the documents from the company websites, I used the NCapture browser extension to download text from the websites to NVivo. I did this to be able to code text, and generate themes more quickly. Out of the three battery companies examined, FREYR by far has the most extensive website, also including frequently updated information for their investors. They have also published the most press releases and news articles, with 54 published in 2022. In comparison, Morrow published 26 articles. Beyonder has the least extensive web site with only 11 entries in 2022. Since Beyonder had such a limited amount of website data available, I could have mitigated this with interviewing them.

However, as I will explicate in methodological limitations (5.5), I chose not to interview any of the battery companies.

Official state documents

Regarding Scott's (1990, in Bryman, 2016, p. 546) criteria for document analysis, official state documents are authentic. In terms of credibility these documents most definitely have a bias, and are subject to this study just because of that. Regarding representativeness, the documents depict the official position of the sitting government and of the Ministry of Trade, Industry and Fisheries on batteries. It is important to acknowledge that a government or ministry are not necessarily a homogeneous and fixed actor with a single position. All documents selected are from the sitting government, inaugurated in 2021. The best part of the documents collected from the government's and the Parliament's websites, all related to the Ministry of Trade, Industry and Fisheries. This is the relevant ministry, with Jan Christian Vestre from the Labour party (Ap) as the incumbent Minister of Trade and Industry. The sampled data from the Ministry are strategies (*rapporter og planer*), official investigations (NOU) and white papers (*St. meld*) on the green industrial shift and on batteries. Two key documents are the Norwegian Battery Strategy (Ministry of Trade, Industry and Fisheries, 2022c), and the Knowledge base for the Norwegian Battery Strategy (Ministry of Trade, Industry and Fisheries, 2022b). Further, news articles and press releases mentioning "batteri*" from the Ministry of Trade and Industry (28) and the Prime Minister's Office (12) were also included to analyse the political discourse on batteries. To get an insight into the wider political debate on batteries, I also included parliamentary questions[4] directed to the Minister of Trade and Industry from other parliamentary representatives mentioning "batteri*", where there is explicit mention of the battery industry. Ten written questions and answers were sampled from 2022, listed in Appendix A. To identify the position on batteries of the political parties with seats in Parliament, I also collected a small sample from their political platforms from the incumbent parliamentary period (2021-2025).

[4] Parliamentary questions are used to get information from governmental actors, and is a strategy "to monitor their actions. It can be used to scrutinise the justifications ministers give for executive branch decisions and policies" (Department of Political Science, 2012).

Media sources and op-eds

Using media sources gives an idea of what statements, metaphors, and discourse is present in the coverage of the emerging battery industry, what actors are quoted, and what media sources write on this topic. I did not do a full media analysis, but I collected the articles and op-eds most relevant for my thesis from different media sources. I collected articles from Atekst, which is Norway's leading search text archive. Atekst does not give an exact quantitative image of how many articles have been written about Norwegian battery factories. As many articles were republished from NTB[5], I rather got an image of how many articles were published and what media sources publish these stories. Furthermore, some sources are not available through Atekst. Therefore, I also used search engines to make sure I did not miss any major media sources. Searching for "batterifabrikk" in Atekst gave 656 hits in 2022. When I collected data from Atekst in August 2022, it quickly became clear that local newspapers publish more frequently about the Norwegian battery companies than national newspapers. The top three newspapers were Agderposten, Fædrelandsvennen and Rana Blad, the former covering Morrow Batteries, and the latter FREYR. Of national news, E24, Dagens Næringsliv and Teknisk Ukeblad have published the most, according to Atekst, in addition to Finansavisen and Nettavisen which I found through other search engines.

Documents from non-governmental actors

A further secondary source is documents from non-governmental actors, including civil society, non-profit actors, consultancy firms, interest organisations, trade unions, municipalities, and research intuitions. When sampling documents through searches in Atekst, I also noted that there was less focus on the challenges of the battery industry, and therefore decided to look deeper and follow up on the actors and organisations that were making these undervoiced statements. In terms of actors with an organisational affiliation, Naturvernforbundet came up as the civil society actor most frequently taking part in debate, followed by Spire. Because there was limited data through Atekst, I searched for them in search engines, as well as on their web sites, together with the search words "batterifabrikk" or "batteri*". In addition to these actors, I mapped other non-governmental or non-state actors when revising reports and strategies.

[5] Norsk Telegrambyrå, a Norwegian news agency.

As some of these documents are reports, I soon stumbled upon the challenge of what I counted as data, and what counted as context or background information. A lot of the investigations and reports are commissioned by actors who have a clear interest in developing the battery industry, that being the Norwegian government, municipalities, or other actors. I tried to separate by only including as data reports with a clear agenda, for instance *Recommendations for an industrial venture on batteries in Norway* (NHO et al., 2021), which later became one of the key reference documents for the Battery Strategy (Ministry of Trade, Industry and Fisheries, 2022c). This document is a recommendation to the government from the battery industry, and is also authored, or at least signed, by industrial actors such as FREYR, Morrow and Beyonder, in addition to employer's organisation NHO, trade union LO, as well as Elbilforeningen and research organisations. Other data in this category spans from reports written by the independent research organisation SINTEF, commissioned by the NHO (The Confederation of Norwegian Enterprise), to reports from consultancy company McKinsey, and policy paper from think thanks such as Manifest think tank. The industry itself has also written policy briefs through the national industrial collaboration platform Battery Norway (Norwegian Battery Platform).

5.2.2 Semi-structured interviews

In addition to the documents and secondary sources mentioned above, I conducted two semi-structured interviews. Semi-structured interviews, sometimes referred to as qualitative interviews, are often organised around a set of themes and open-ended questions. This allows for a conversational setting, where the researcher also takes part in generating data (Mason, 1996, p. 36 in Seale, 2018, p. 220). I started out with a plan of set questions, but allowed them to change "in order to follow the natural flow of conversation" (O'Leary, 2017, p. 240). This style of interviewing was the most suitable concerning the research design, by preparing questions, but allowing for new themes to emerge. I saw interviews as a useful tool to gain further information about the contexts of the discourses, storylines, statements, and metaphors identified from the secondary data. Furthermore, I wanted to use interviews as a method to triangulate as well as to confirm analytical assessments. The selection of informants was therefore guided by what I had identified and analysed within the primary analysis from the secondary sources.

As mentioned, when collecting and analysing documents I had noted that there was less data from actors focusing on the challenges of the battery industry. Since these statements appeared less frequently, I chose to dedicate interview time to talk to these actors. The interviews were short ones of no more than 30 minutes. Two actors did not want to be interviewed, because they did not have time to prioritise, or because they stated they did not have additional information to what they had stated publicly already. I ended up interviewing a representative from De Facto[6], and a representative from Naturvernforbundet. I based the questions in the interview guide from the themes identified from thematic analysis. The original interview guide (which can be found as appendix C) was then adapted to each informant. I used video recordings to facilitate transcription, which also allowed me to be more attentive during the conversation as well as to adjust the interview throughout the conversation. Both the interviews were then transcribed using UiO's version of Autotekst. I then checked and corrected the transcriptions, before coding them in NVivo. The coding procedure is described in sub-chapter 5.3.1.

5.2.3 Non-participant observation

To be able to write convincingly about discourse and narrative, I found it important to supplement my document analysis with some analysis of spoken word, and observation. Therefore, I used this method to triangulate findings from the secondary data as well as to reach saturation, by observing webinars that I attended. Non-participant observation is a method used to try to understand a case by taking part in an activity whilst not participating actively (O'Leary, 2017, p. 251).

Taking part in webinars on batteries made it possible to gain an idea of different networks and key actors, as well as their discourse. In terms of validity, it also helped confirm and nuance the themes first identified from the codes. I attended three webinars from a webinar series called Nordic Battery Thursdays, a collaboration between Innovation Norway, Business Finland, and Business Sweden together with the EBA250[7] initiative. I also watched two recordings of webinars, one from a digital public meeting on Morrow

[6] Independent foundation that carries out research for the Norwegian trade union movement.
[7] The European Battery Alliance 250 (EBA250) initiative is a collaborative effort aimed at fostering the development and growth of sustainable and competitive battery value chain in Europe.

Batteries in Arendal, and the launch of FREYR's Customer Qualification Plant. I wanted to observe these events to be able to say something about how the industry communicate to their stakeholders, but also what sort of questions that were asked by participants in the audience. In non-participant observation, the actors being observed are not supposed to know about the observer and their objective (O'Leary, 2017, p. 253). However, I only observed participants who were publicly speaking in seminars, which means that they should expect people to observe them. The digital nature of the webinars allowed me to gain access to industry level conferences which otherwise would have been difficult to attend. However, I only observed the actors speaking in the webinars, as well as the people choosing to ask questions publicly, and not the participants physically in the room. A complete list of webinars attended is listed in appendix B. Having discussed data collection methods, I will now move on to dissecting my methods for analysis.

5.3 Data analysis methods

5.3.1 Thematic analysis

In this project, I have combined elements from thematic analysis CDA. I used these methods in two different steps of the process, firstly doing thematic analysis, followed by using elements from CDA. In the first phase of the research project, I used an exploratory method to assess the secondary sources to identify themes related to batteries and battery production in Norway and to identify actors taking part in debate. An exploratory research method has been an asset to this research topic, as there is limited published research published, and the gaps in the research are many and wide. More specifically, I employed a thematic analysis, which is a qualitative approach that involves identifying, analysing, and presenting themes within data. By using this method, the focus is on organising and providing descriptions of the dataset. It further goes beyond that, by the interpretation of deeper meanings and implications of the topic (Braun & Clarke, 2006, p. 79).

The process consisted of importing data into NVivo for coding, where I started out doing a word frequency search, which is a function that groups stemmed words. Moreover, I employed a mixed inductive-deductive approach to identify significant themes within the data. This involved deductive searching for pre-defined themes associated with sustainability and batteries, while also remaining open to the emergence of new themes,

inductively. For instance, my hypothesis was that voices sceptical of batteries as a green industrial adventure in Norway would primarily connect to issues such as mining and sourcing of critical minerals from the Congo and Latin America. This is because of my background working with social movements in Latin America and Norway. However, this was barely mentioned, and if so, not in detail. What I found more evident in public discourse in op-eds, interviews as well as comment sections, was more connected to electricity prices in Norway, as well as geopolitics and China as a dominant actor. After I had analysed the articles, I went through the codes and categories, and narrowed them down into categories and grouped the ones that were coinciding or seemed to relate to one another. Repetition is frequently employed as one of the primary criteria to designate a theme as a key concept. Additionally, the theme must hold relevance to the research focus to be recognised as significant (Bryman, 2016, p. 586). Whilst identifying key themes, I also asked myself what ideas and representations are behind and justify these themes, what meanings, arguments or images were being used or mobilised (Seale, 2018, p. 486). Whilst doing a thematic analysis was useful to define themes and hint towards key discourses, I wanted to go beyond a mere identification of discourses. Therefore, I also used elements from CDA, which will now be explained.

5.3.2 Critical discourse analysis

Discourse analysis is a method and research strategy for analysing language in use in its social context, stemming from discourse theory, which I already discussed in chapter four when presenting the theoretical and conceptual framework. Rather than repeating the theoretical groundings for discourse analysis, I will try to focus on the methodological side of discourse in this chapter. I do this whilst also acknowledging that theory and method are tightly knit together when it comes to discourse analysis, and that it might seem a bit artificial to separate them. Like Gee, I argue that different theories and methods of discourse analysis should be considered "thinking devices" that the researcher should adapt to their work and perspective Gee (2014, p. 12). Thus, my methodological process of doing discourse analysis is inspired by Hajer's 10 steps for discourse analysis (Hajer, 2006, pp. 73-74), and Skorstad and Mohus (2022) and Else et al. (2022) who have adapted Hajer's basic steps for a discourse analysis in their methodologies. Like these authors, I

am analysing an overarching storyline, by looking at the metaphors and statements which are creating legitimacy for this storyline.

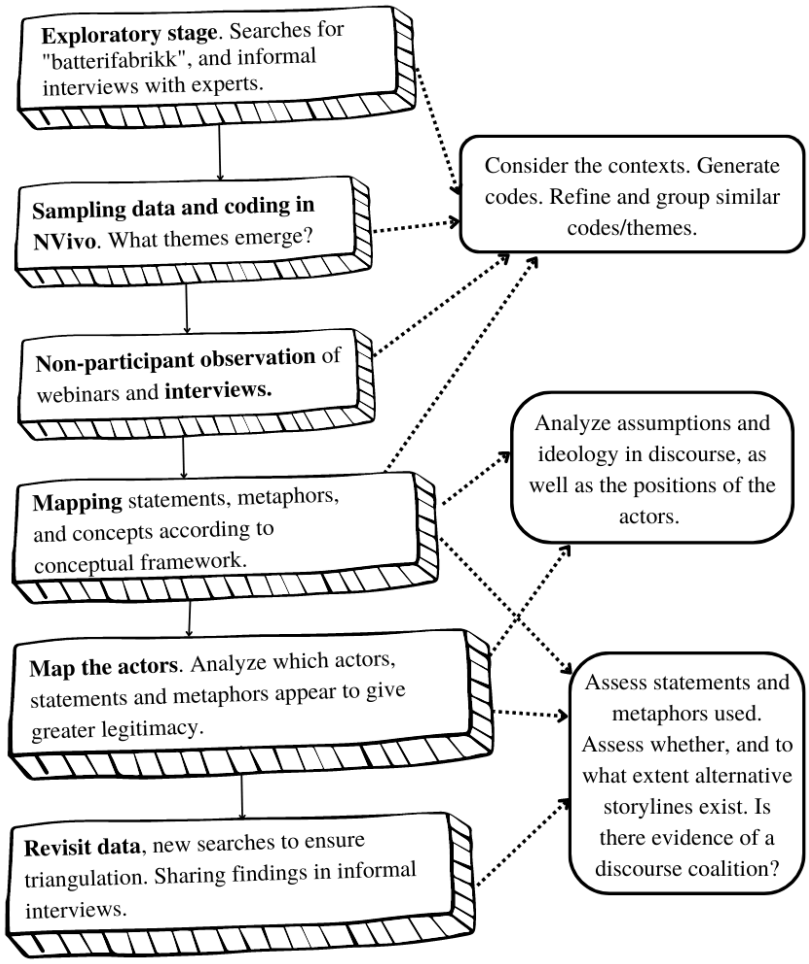

Figure 2: Illustration of the analytical process, combining elements from thematic analysis and discourse analysis. Drawing and process is inspired and adapted from Hajer (2006, pp. 73-74), as well as Else et al. (2022) illustration of their process inspired by Fairclough (2001) and Bloor and Bloor (2007).

The methodological and analytical process is mapped in Figure 2. I reviewed the codes from thematic analysis and created new codes in NVivo, starting to map statements, metaphors, and recurring concepts that were used to strategically frame the storyline about batteries in Norway. These also said something about the type of discourse used in the text analysed. I also took note of the assumptions or ideologies in the discourses, and the position of the authors or actors cited. Whilst mapping the different actors, that either being the author of the text analysed or the actor quoted, I also reflected upon what actors seemed to take up more space and given greater legitimacy, and which statements and metaphors they used. After concluding that the dominant storyline was the green industrial adventure, I also questioned why these approaches gain so much attention, and

what mechanisms play a role in keeping the storyline in place. My assessment of discourses also included identifying and analysing conflict or tension, as well as points of agreement concerning Norwegian battery production in the green transition. Throughout the analytical steps I had identified actors using statements and metaphors, and discourses that were critical of the main storyline. However, I also identified actors who use completely different statements but agree on the overall storyline that batteries should become Norway's next green industrial adventure. I revisited the data and made some new searches to ensure data saturation, as well as sharing and discussing my findings in informal interviews.

5.3.3 Validity and reliability

The research conducted in this thesis is a result of the data as well as me as the researcher interpreting it, and the interaction of this knowledge. This is because I believe that "humans *interpret* the world, they do not have access to it 'just as it is'." (Gee, 2014, p. 141). This means that the results of this study are not generalizable, but as discussed already, creating results that are generalizable is not the aim when doing a qualitative study. The findings might have turned out different if I had interviewed other informants, analysed a different data set, used a different conceptual framework, or used a different period for data collection. The limitation of the period that I collected data from was necessary for the feasibility of the project, but could also mean that debates or themes which have been present either before or after have not been captured. This also opens for the possibility that another researcher could have identified other themes which in turn could have led to other conclusions. However, this does not mean that qualitative research can be reduced to an opinion of a researcher, or that there is no need to reflect upon validity and reliability in discourse analysis. Gee (2014) argues that discourse analysts "will normally argue for the validity of their analyses by arguing that some aspects of convergence, agreement, coverage and linguistic details are met in their analysis" (p. 143). For me, following a methodology inspired by Hajer and Fairclough, giving a detailed description of the data collection, as well as analysing through a conceptual framework has ensured the research some validity and reliability. Furthermore, I have used a triangulation of methods, by doing a literature review, thematic and discourse analysis, and using documents, interviews as well as non-participant observation as

sources of data. Having briefly commented upon validity and reliability, I will now move on to consider ethical implications.

5.4 Ethical considerations

In a qualitative study, the aim is often to produce contextual, real-world knowledge, which is less controlled and more interpretive. Research positionality is therefore one of the major ethical considerations in qualitative research, and reflexivity an important part of the research process (Bryman, 2016). For instance, identifying and selecting the themes, statements and metaphors chosen for analysis relied upon factors such as repetition of use, but also to some extent relied upon my intuition as a researcher. I came into this research project from a background working with social movements and politics in Latin America, and working to lobby Norwegian politicians to create policies that do not negatively affect the conditions of these movements in Latin America or elsewhere. This was also how I initially took an interest of the subject. Having lived and worked in Bolivia, I had learnt about the conflicting narratives concerning lithium extraction in the country. Years later having moved back to Norway, I noticed the language used in the news to describe the emerging Norwegian battery value chain, and my intuition told me that this was worth researching. My experience from Bolivia had also made me aware of critical voices around battery value chains, which meant I was actively looking to include voices that looked at challenges.

My research project necessitated the collection and storing of information about the actors using storylines, statements and metaphors about batteries. As this included information that classifies as personal data according to EU's data protection regulation, I submitted an Notification Form for personal data to NSD explaining my planned process for safely collecting and storing information counting as personal data.

Another concern worth mentioning is that a possible distortion of views could have arisen from the translation process. Although a lot of the communication collected from the battery companies' websites, and information noted from the webinars, was in English, nearly all the documents collected from Atekst were in Norwegian. Furthermore, all the interviews were conducted in Norwegian, and the entire analysis process was similarly done with these transcripts and the themes defined from the data. Similarly, a lot of the documents retrieved and sampled for analysis were in Norwegian, following this same

process as with the interviews. Quotes from both informants and secondary data was only translated when quoted in the thesis. Some of the documents analysed were translated into English by the actors themselves (such as the Battery Strategy). This was a useful tool to find the official translations for metaphors and concepts used in statements.

5.5 Methodological limitations

As with all research, this thesis has its limitations. Some of the limitations have already been commented upon, but in this section, I will try to further account for some of the methodological challenges I encountered as well as how I worked to mitigate the impacts of these. Primarily, I have limited the analysis of a global and multi-situated issue to only Norwegian discourse. Other studies, connecting the battery factories to its full value chains and the discourses and narratives of the actors along that, will undoubtedly strengthen and widen our understanding of batteries in Norway.

One of the key strengths of this study is analysing a wide set of data, to be able to say something about the use of statements and metaphors used across different contexts and from many different actors. Still, I have delimited the scope and excluded certain data sources, and only in limited capacity analysed difference between discursive levels. This was done to suit the aims of the research, and fit with the time restraint. This inherently also limits the in-depth analysis of the language used in all the documents falling outside these categories, and critically discussing the context of the documents which could have been accounted for by doing an analysis of a smaller selection of documents. This came with limitations, and I want to mention three that I encountered, which could be interesting for future research to investigate.

Firstly, focusing only on discourse in municipal or county documents and other sources from the geographic areas where the giga factories are constructed could have given a more in-depth analysis with more regional variations. These documents, similarly to state documents, have a bias that is useful for the study of discourse. Secondly, to give a fuller answer to the over-arching question about the extent to which the Norwegian battery industry has been successfully framed as a green industrial adventure, it would have been useful to assess to a greater extent how (and even whether) this discourse has been received in the Norwegian public. The analysis could have been enriched by looking more at everyday narratives, and not just in people actively partaking in debate themselves.

This could have been done by for instance conducting a focus group with people who use electric cars, as they are interested, but not necessarily partaking in the debate on a Norwegian battery industry. Third, the comments sections in some newspaper online sites could have been a useful source for complementing the dominant discourse about batteries with narratives from the readers engaged in these topics. Analysing comments sections and online forums, as well as interviewing these people, could be a further interesting way to see if the storyline of a green industrial adventure is consumed and recycled in people's narratives.

As I also mentioned previously in the section discussing websites as a data source, I am limited by choosing not to complement my analysis with a visual analysis, or variations of discourse analysis such as multi-modal discourse analysis. One of the most common disadvantages of discourse analysis is its primary focus on analysing text. Websites consist of graphics, images, and design, which together with the text tell a story that they wish people to consume. The colours and images used could have been an interesting complement to my analysis. By browsing the websites and sampling documents, I did consume the images and graphical elements that complement the text, which has helped me identify which elements gained more influence. It would have been interesting to analyse this in more depth.

Finally, I have chosen not to interview actors who use the statements and metaphors pertinent to the main storyline about batteries. This was because of the amount of data found to represent these actors, which meant I did not then prioritise to collect more data from these actors. However, doing such interviews could have complemented and given these actors the possibility to comment directly on the findings, which could have added more analytical depth to the paper.

5.6 Summary of methods

In this chapter, I have described and discussed the research methods used for this project. First, the research design and the philosophy guiding this project, from a tradition of social constructivism, seeing discourse and its context as being in a dialectic and mutually inclusive relationship. Secondly, I mapped out the data collection method, which consists of several types of secondary data, supplemented by semi-structured interviews and non-participant observation. From there, I described the methods used for data analysis, which

started out with a thematic analysis, thereafter incorporating discourse analysis. Finally, I have considered ethical considerations and the methodological limitations of this thesis, also pointing to areas, which could be interesting for researchers to investigate in the future. I have endeavoured not only to document but to argue the pertinence of the methods choices made, and demonstrate their relevance for future studies. With this in mind, we can now move on to discussing how the overarching storyline of a green industrial adventure is constructed.

Chapter 6: The next green industrial adventure

The key aim of this thesis is to analyse the extent to which the Norwegian battery industry is successfully framed as a green industrial adventure. To do so, I propose the structure of two analysis chapters, where I switch between presenting findings, analysis and discussion. This is to be able to scrutinise both what I argue is the dominant storyline; the green industrial adventure in one chapter, as well as presenting and analysing counter narratives in a separate chapter. In both chapters, I employ the theoretical and conceptual framework established in chapter four, which means I am analysing statements, metaphors and storyline, as well as actors using argumentative discourse concerning the Norwegian battery industry.

This first analysis chapter is mainly concerned with responding to the first two supporting research questions of this thesis; describing and analysing the existing discourses on the Norwegian battery manufacturing industry, and analysing are who the key actors producing and using this discourse. It also in part grapples with the third research question, because it examines the extent of interaction of these key actors, and can therefore also indicate the level of tension or controversy concerning the Norwegian battery industry in supporting the green transition. To describe and analyse discourse, I use the conceptual framework discussed in chapter four to identify and assess metaphors, statements, and actors that together suggest a common understanding of the Norwegian battery industry. Throughout the chapter, I draw upon different examples to analyse the several discursive elements. The chapter goes as follows; firstly, I present and dissect the metaphors identified as part of this storyline (6.1). Following that, I present the four key statements that emerged from the data (6.2); Batteries will accelerate the energy transition (6.2.1); Batteries will bring jobs, industrialisation, and profit (6.2.2); New battery technology will solve sourcing and sustainability issues (6.2.3); and Norway has cheap and renewable energy (6.2.4). Following on, I present an analysis of the actors who use the storyline and its supporting elements, by using discourse coalition as a concept (6.3). I then sum up the overall storyline, by arguing that these discursive elements and actors together contribute towards a storyline of a green industrial adventure, seeking to create legitimacy for the battery industry through this discourse. I also suggest that this is the dominant discourse on batteries in Norway (6.4). Finally, I conclude the chapter (6.5).

6.1 Metaphors

The over-arching research question that I endeavour to examine in this thesis, is the extent to which battery production has been successfully *framed* as a green industrial adventure. To give a satisfactory answer to that, I argue that the way actors use metaphors to frame the battery industry is an essential component. As discussed in chapter four, on the theoretical and conceptual framework, I propose we follow the understanding of metaphors as "seeing, experiencing, or talking about something in terms of something else" (Ritchie, 2013, p. 8). I am particularly interested in the framing effects of the metaphor, because the metaphor can be "a guide for future actions" (Lakoff & Johnson, 2008, p. 142). I will now present the metaphors altogether before delving into analysis.

When coding the data set for this thesis, it became noticeably clear that metaphors recurred very often when actors were arguing for or against the battery industry. In other words, the metaphors used gave an argumentative edge to the user. The metaphors that I have identified are used by different sets of actors and were found across various data sources. They most frequently appeared on the websites of the battery companies and in webinars where representatives of the companies attended, in media articles, op-eds and in governmental documents. The metaphors that seemed to appear most often are gathered in Table 2. I have grouped them together according to their resemblance.

Petroleum	An adventure	Nation	Temporal	Purity
The new oil	Industrial adventure	Renewable nation	Battery time crunch	Clean batteries
Oil adventure	Battery adventure	Battery nation	Battery race	Green batteries
	Green industrial adventure		Battery world cup	Clean energy

Table 2: The metaphors most frequently used in the storyline.

Some of the metaphors that surfaced are quite similar. Observing the metaphors listed above, several of them refer to an adventure, appearing with words such as "industrial", "green" or "battery". Other metaphors make comparisons to the Norwegian petroleum industry by referring to the historical role of Norway as an oil country and industrial giant. A third set refer to the nation, connecting more to notions of identity. Some metaphors are temporal in their orientation, by helping to frame the battery adventure as a venture that is pressed for time. Lastly, several uses of "green" or "clean" seem to seek to convey an image of sustainability of batteries and the energy sources that will power the giga

factories. The metaphors were often used in conjunction with each other, reinforcing how the storyline is multi-faceted. For instance, in the report by consultancy firm McKinsey, *Norway tomorrow: Ten opportunities for Norway* (Lund et al., 2022), battery adventure, battery nation and battery time crunch recur. Furthermore, there is overlap between the different categories I have employed, for instance, metaphors grouped as petroleum, adventure or nation draw upon similar images of the past industrial adventures. Still, when I now delve into the analysis of the metaphors, I have, for the ease of reading clustered the metaphors together due to their resemblances. Firstly, I will discuss the petroleum metaphors (6.1.1), followed by 'an adventure' (6.1.2), and nation (6.1.3). Following on from that, I will dissect temporal metaphors (6.1.4), and then 'clean and green' (6.1.5), finally summarising the metaphors (6.1.6), before moving on to assessing statements.

6.1.1 Petroleum

A key type of metaphor that appeared in the data material were ones making a comparative reference to the petroleum and gas industry in Norway, implying that the battery venture might have a similar trajectory. Actors likely use these metaphors to get positionality towards politicians, signalling that the industry should be prioritised because of the pivotal role it might play in society, and the income that it might generate (Terjesen, 2016). 'New oil' is the metaphor in this group that figured most prominently. At the launch of the Battery Strategy in 2022 the minister Jan Christian Vestre proclaimed, "We are, my dear friends, in the decade of the battery. Batteries *are* the new oil" (Ministry of Trade, Industry and Fisheries, 2022d). Although this metaphor is replicated in media discourse (Olsen, 2022), it seems to originate from Vestre and the battery strategy launch. Furthermore, it is used as a shorthand to discuss the feasibility and the profitability of the battery industry in Norway (Bakken, 2022). Another example from the data is the oil adventure; "[t]he battery industry in Norway is at the starting line of what many compare to the oil adventure of the 1970s" (Elmagasinet, 2022, author's translation). These metaphors hinge upon Norway as an oil nation, and an adventurous tale about how a small country on the outskirts of Europe took on a new industry, and accelerated it to world-leading competency (Noreng, 2018). In this way, making comparison to the petroleum

industry signalises technological innovation, industrial development, but also the unprecedented wealth that the industry has generated for Norway.

The metaphor ‘new oil’ is Norway-specific in this context, but that phrase is also used to describe that metals and especially critical minerals such as lithium, cobalt and nickel could become the “new oil”, implying that they are about to replace gasoline in powering electric vehicles (BloombergNEF, 2022). ‘New oil’ and the related ‘white gold’ have also been used as metaphors to describe lithium and lithium extraction in Chile, Bolivia and Argentina, to symbolise that this raw material could become a “catalyst for new forms of development” (Barandiarán, 2019, p. 381).

In addition to refer to the petroleum industry in a positive note to build upon a previous industrial adventure that Norway went through, the petroleum metaphors also appear to be used to exemplify an industry that can sustain Norway economically for a long time. Examples from the data comment on the possible revenues of the industry; “Battery production for 180 billion kroners annually, could replace oil and gas revenues” (Kalkenberg, 2021, author's translation). According to the findings of Dale and Kristoffersen (2018), petroleum extraction is to some extent part of the Norwegian national identity, especially regarding how the nation state can best provide security for the Norwegian population. They use the term ‘oil ontology’ to describe this sense of security. The security they refer to is tied to the successful handling of the oil and gas revenues, which is often what makes Norway highlighted as best practice, compared to other countries dependent on petroleum.

Norway’s history with a petroleum industry might also explain the presence of ‘new oil’ in the case of Norway’s battery industry, as opposed to the Swedish battery manufacturing company Northvolt, whose slogan is “make oil history” (Green Europe, 2022). However, the ‘new oil’ metaphor can also show how Norway must innovate and move away from oil and gas as a sustaining industry. For example, the report by McKinsey & Company states that “the Norwegian oil age is nearing an end, as demand for oil and gas is expected to decrease” (Lund et al., 2022, p. 4). However, the use of ‘new oil’ concerning the creation of a Norwegian battery industry is not necessarily entirely in opposition to the oil industry, and rather, batteries will be essential to electrify the oil platforms and industry. The petroleum industry itself, through the interest organisation Norwegian oil

and gas, used the ‘new oil’ metaphor to name an independent initiative (*#DenNyeOljen*) to engage young professionals on themes of energy, climate and welfare (Bakkehaug et al., 2020). Furthermore, the Minister of Petroleum and Energy, Terje Aasland, stated that the government would open for more exploration for oil and gas, and it does therefore not look like there are major plans to fade out the petroleum industry immediately (Tornås & Øvrebø, 2023). Analyst for Pareto, Nadia Martin Wiggen, stated that due to the strict energy market and energy crisis in Europe, “oil is the new oil” (Holter, 2022, author's translation).

This also demonstrates that the ‘new oil’ metaphor is not used exclusively to describe the battery industry. Indeed, it seems to be so widely used that it might be an easier task to list industries that do not claim they will be the ‘new oil’. A Google search on 14.05.2023 gave 22 100 results for *den nye oljen* (the new oil). Different actors brand everything from knowledge (Bjørgum, 2022), to salmon farming and seafood (Nordgård & Jørgensen, 2022), and even trust (Kuvaas, 2023), as the ‘new oil’. Based on the data I have reviewed, it does not seem like ‘new oil’ has one single origin, or a stated definition from those who use it. However, what seems to be implicit in the use of ‘new oil’, is that it is something that will replace the ‘old oil’, the petroleum industry in Norway. More specifically, ‘new oil’ can suggest what might sustain Norway as a country, when the profitability from the petroleum industry declines. There are some examples from academia on this use of ‘new oil’, including a research project on bio economics at the research institute Ruralis. They define ‘new oil’ as “one of the industries that that will bear the loss of oil revenues and the petroleum industry’s demand for manpower” (Ruralis, n.d.). One of the articles from this project compares the public administration of petroleum to that of renewable industries to give a conclusion on whether these industries can generate wealth similar to that from oil (Brigham & Moses, 2021).

The fact that ‘new oil’ is so widely used begs the question of how effective this metaphor really is, and whether it becomes a platitude rather than an effective metaphor. Furthermore, Martin Gjelsvik at the research institution Iris argues that stating that we will have a ‘new oil’ is imprecise; “First of all, we will continue with oil, even if it is perhaps a controversial statement, and moreover, I do not think that there will ever be an equivalent to the profitability oil has had” (Terjesen, 2016, author's translation). He

continues to argue that we do not necessarily want any industry to be as profitable and dominating as petroleum, but rather many different industries (ibid).

To sum up, even though some might argue that the 'new oil' metaphor is ineffective or worn-out, this metaphor and other references framing the future of the battery industry in a comparative manner to that of the petroleum industry, figured prominently in the data. My findings indicate that actors seek to frame the income opportunities of battery cell production as able to match those of petroleum. This is backed up by several investigations and reports, concluding that batteries as a value chain is expected to have a turnover potential of 90 billion NOK by 2030 (Valstad et al., 2020), and a potential export turnover of 78 billion by 2030 (Basso et al., 2022). These reports will be commented upon further when discussing statements (6.2.2). Next up is a similar Norwegian-specific metaphor identified in the data, one that refers to several types of adventures, most extensively the industrial adventure.

6.1.2 The adventure

The various uses of 'adventure' in an equivalent way to the petroleum metaphors were used to symbolise the jobs and income opportunities that the battery industry might provide. Examples of this metaphor include battery adventure, industrial adventure, and green industrial adventure, with industrial adventure figuring more prominently. It figures in different data sources, including "Batteries could be the next big Norwegian industrial adventure" in a report by NHO, LO and 18 other actors (NHO et al., 2021, author's translation), and "These measures will secure competency to Norway's next industrial adventure" (BattKOMP, 2023, author's translation) from the BattKOMP project led by the interest organisation Norsk Industri. In a similar way to 'new oil', the industrial adventure seemed to be used to predict, or question, whether batteries were to become the next income-generating adventure in Norway. Media sources use the metaphor to ask whether the Norwegian battery initiative could become a new industrial adventure (Bakken, 2022). Industrial adventure is also used to frame other types of industry, including the salmon farming industry and aquaculture industry (Olaussen, 2018) and offshore wind (Flobak, 2022; Steen & Hansen, 2018). In these examples, the industrial adventure is also used as a metaphor to primarily symbolise the generating of income.

In a similar to how the ‘new oil’ metaphor is used, the metaphors that refer to ‘adventure’ make reference to Norway’s petroleum history, with the ‘oil adventure’ as a past ‘industrial adventure'. Therefore, the framing effects of the ‘new oil’ metaphor are similar to the ‘industrial adventure’, and these similarities will not be repeated more than the mention in the paragraph above. However, ‘the industrial adventure’ also opens the possibility of comparisons to other industries that were key for development and industrialisation of Norway. For instance, one of Norway’s greatest industrial adventures before petroleum was the development of the hydropower industry. With the pioneer Sam Eyde establishing hydropower plants in Norway in the 1890s, Norway could use renewable energy to power industry that developed during the 20th century. Sam Eyde has given name to both the Eyde cluster[8], and Morrow’s giga factories will also be named after him, Eyde 1, 2 and 3 (Morrow Batteries, n.d.). Hydropower also enabled the development of industry and jobs in small communities all over Norway, as well as profit through taxes, fees and dividends to public owners (Fornybar Norge, n.d.). The ‘industrial adventure’ metaphor therefore carries with it the image of Norway as an industrial nation with competency in the processing industry, and the heritage of Norwegian local communities as industrial societies. By tapping into Norwegian identity and history, the metaphor thereby conveys business development, industrial development and the ripple effects that follow.

In addition to the prosperity aspect, the use of the ‘adventure’ metaphors can also symbolise embarking on an exciting and possibly risky quest, given that there are several challenges in establishing a successful battery industry in Norway. As one example, a report written by industry actors from Norway, Sweden and Finland, have listed seven challenges, or “decisive market necessities”, that must be overcome if the industry is to succeed in the Nordics (Innovation Norway et al., 2023). This explicit mention of challenges indicates that the actors engaging with this storyline are very much aware of; that there are hurdles that need to be overcome. Importantly, they *can* be overcome, symbolised by the use of temporal metaphors, as well as statements about technology, which will be discussed later in the chapter.

[8] Cluster working to develop future leading green process industry, which has a Norwegian battery value chain as one of its priority areas.

6.1.3 The nation

Metaphors referring to the nation play into the sense of Norwegian identity in a similar way as metaphors of 'adventure' and 'new oil'. What distinguishes them from the previous two is that in addition to referring to past successes, these seek to also frame the country as one that takes climate change seriously. It shows that Norway is a country with a plan of getting ahead in the game of producing the technology that the green shift arguably needs. For instance, when describing the battery industry as one of ten possible industries for Norway, the McKinsey report *Norway Tomorrow* refers to Norway as the "battery nation", supported by questions such as "What does it take to make Norway a super power in battery production?" (Lund et al., 2022, p. 70). The report further makes reference to the Norwegian identity in the following way:

> It is typically Norwegian to appreciate good battery capacity. Just ask the owners of Norway's 500 000 electric cars, which collectively represent the highest market share for electric cars in the entire world (Lund et al., 2022, p. 60).

This suggests that this metaphor connects Norway, Norwegians and Norwegian identity, to the electric car, and that this is part of the appeal of why there should be an industry established here. This will be further discussed in relation to the green transition under the first statement (6.2.1).

Another data example is from the presentation of Norway's battery strategy, where the framing is "10 steps for Norway to become a leading battery nation" (Ministry of Trade, Industry and Fisheries, 2022a). This use of the metaphor similarly to the 'industrial adventure' suggests that the Norwegian government and state will be actively involved in developing an industry that will sustain the country in a similar way to what petroleum has done. Thus, the use of these metaphors are arguably a part of building legitimacy and credibility concerning Norway as a major green player. A similar nationalistic rhetoric is found in Bolivia around lithium, a crucial upstream raw material for LIBs. Barandiarán (2019) uses sociotechnical imaginaries to analyse tensions and metaphors used by different actors to legitimise lithium extraction in Argentina, Chile and Bolivia. As lithium is a nationalised resource, the conclusion is that the dominant vision is that it is a good that will benefit the society, instead of being exported abroad. It shows a society

where the state is an actor that invests in "science, technology and new industries" to develop the economy (p. 389).

The use of metaphors and discourse in constructing national identity has been assessed by scholars such as Wodak et al. (2009, p. 35). Out of the many different strategies that they point to as part of constructing identities, I will only point to a few that are applicable in this context. The perhaps most relevant is the creation of a common political past, present and future through discourse. The construction of the common past is among several factors tied to "political successes, times of prosperity and stability" (ibid, p. 31). In this context, it could be the referring to the success of the petroleum industry and hydropower plants, and to the people who made that possible. For instance, when speaking at the launch of FREYR's Customer Qualification Plant, Prime Minister Jonas Gahr Støre highlighted the following:

> Norway was built by industrial pioneers, who dared to do, who combined private and public support, and who paved the way for others. You are now part of that proud tradition (FREYR Battery, 2023, 32:58).

Wodak et al. (2009) further point to the construction of present and future "problems, crises and dangers" (p. 31), that in the context of this storyline could include the catastrophic effects of climate change that need to be overcome. They also point to the "future political objectives" (ibid), which according to this discourse is the acceleration of the energy transition through creating a Norwegian battery industry. These three factors are a small part of what Wodak et al. argues help construct national identities, "based on the formation of sameness and difference" (ibid).

6.1.4 Temporal

A different type of metaphor which I grouped in the data set, is the temporal metaphor, used to express the scarcity of time in developing a battery industry in Norway. One example which recurred in several data sources, was the "battery time crunch" (Norsk Industri, 2021) coined by BattKOMP[9] to address this squeeze, followed by the "World Cup on green large-scale industrial establishments" (Beyonder, 2022a), and "the world's

[9] BattKOMP is a project that addresses the skills gap in the battery value chain. Led by Norsk Industri in collaboration with LO, Prosess21 and with participation from the battery companies.

biggest industrial race" (Kalkenberg, 2021, author's translation). A further example of a temporal metaphor is that "[t]he green train is leaving the station now" (Ministry of Trade, Industry and Fisheries, 2022g). The contexts these were used in was most often describing the actors in Europe competing for battery specialists and skilled workers, and to close the demand gap for battery cell production, both between themselves as well as with the US and the domination of China in EV and battery technology. The context of electricity security policies, the war between Russia and Ukraine and changing geopolitics further intensifies this "race", as mentioned in chapter 2. The competition from other actors, and the role of China is also a key theme that critics point to, which will be dealt with in depth in chapter seven.

Semantically, these metaphors seem to convey that it is almost too late, but if we hurry, we might get ahead in the game still, as in that "the battery adventure is now or never" (Lund et al., 2022, p. 28). Accompanying this sense of urgency in the competitive element of establishing Norway and Norwegian companies on the world battery stage are the implicit reasons as to why they argue speed is needed. A reference to acceleration of the green transition as a justification for upping battery production in relation to climate change, will be discussed as one of the statements later in the chapter, under section 6.2.1.

6.1.5 Purity

The final category of metaphors that will be discussed in this chapter is what I have termed purity metaphors; the use of green and clean in different constellations to symbolise sustainability. One could question whether "green" is so worn out that it has lost its metaphoric effect, to become more of a descriptive concept. Still, green recurred in the data, often in a context making it a metaphor, for example in 'green industrial giant', and 'green industrial initiative, which is also the name of the governmental industrial policy that batteries are part of (Ministry of Trade, Industry and Fisheries, 2022f). The use of 'green' was also present at the local discursive level, for instance used by the mayor of Rana, Geir Waage, claiming that Rana municipality as the host for FREYR's giga factory would become a green industrial capital.

In addition to framing the industrial policy of batteries and the industry as 'green', these metaphors were used to frame the battery chemistries of the Norwegian companies. For instance, FREYR claim that they will produce "industrial scale clean battery solutions"

(FREYR, 2022b, p. 10). ‘Clean’ and ‘green’ was also used to frame the energy sources that go into producing the batteries, by the use of ‘clean energy’ from either wind or hydropower sources (FREYR, 2022b, p. 22). These were mentioned as key reasons as to why the Norwegian battery solutions are framed as clean and sustainable, as will be discussed further in the fourth sub-chapter on statements (6.2.4).

Green and clean in these contexts seems to symbolise a minimal carbon footprint. They further imply a cleanliness, an “environmental cleanliness” that can be achieved when driving EVs as they produce zero tailpipe carbon emissions (Manjunath & Gross, 2017). Environmental cleanliness further implies a limited impact on the environment and nature. Linking back to the metaphor on the nation, the connection to nature is noted as one of the key elements of the Norwegian national identity, as noted by Eriksen (in Norgaard, 2011, pp. 138-139), and it is part of a “legitimating background narrative” for Norwegians (ibid, p. 140). Norgaard calls the self-image that Norwegians have of themselves “Mythic Norway”. As she argues, “idealized characterizations of Norway and Norwegians may be ‘true’ to some extent yet at the same time public images of national identity are a social construction”. She highlights that the connection to nature, and values including environmentalism, are in opposition to the current political and economic situation of Norway (Norgaard, 2011, p. 141) due to its petroleum dependency. Similarly, we might talk about a Norwegian “battery myth” that is presented as clean, given the reference to both zero tailpipe emissions, and the stress of using “clean” energy to power the LIB giga factories. At the same time, this constructed image does not consider the impact of the extraction of raw materials needed for batteries.

6.1.6 Metaphors summarised

In summary, I have discussed five groups of metaphors that were used by different actors to help construct a narrative about Norwegian battery production, and batteries. I argue that these are part of the industrial adventure-storyline. The ‘new oil’ and ‘oil adventure’, make historical reference to the profitability of Norway’s petroleum industry. Similarly, ‘battery adventure’ and ‘industrial adventure’ refer to both the oil industry as well as the historical development of hydropower industry in Norway, and how that helped develop local communities. The use of ‘nation’ in metaphors arguably also strengthens this image as it constructs the image of a past political successes, and I argued that the use of ‘battery

nation' and 'renewable nation' helps construct an image of future common political objectives. Another category of metaphors were temporal metaphors, helping frame the battery industry as a venture that is pressed for time. Lastly, purity metaphors, "green" or "clean" seek to convey an image of sustainability, environmental cleanliness that can be linked to the image of clean and untouched nature – a crucial part of the national Norwegian identity. With these metaphors in mind, the next element to be examined are statements.

6.2 Statements

Statements are another key component of the theoretical framework I have employed as a way to navigate discourse on batteries. As established in chapter 4, statements are arguments, sentences, or other acts of speech. A statement here does not refer to one single utterance, but different acts of speech coded together thematically. I will use the statement as a vehicle to bring in relevant theory and examples that help to reflect upon themes that appear. The four statements that will be examined are: Batteries will accelerate the energy transition (6.2.1), Batteries will bring jobs, industrialisation and profit (6.2.2). New battery technology will solve sourcing and sustainability issues (6.2.3), and Norway has cheap and renewable energy (6.2.4).

6.2.1 Batteries will accelerate the energy transition

The first theme I noticed recurring in the data was the reference to batteries' role in bringing about the energy transition, the transition from predominantly fossil-fuelled energy systems to energy systems based on renewable energy. The statement *Batteries will accelerate the energy transition* points to the fact that batteries will be the enabler for the electrification of society and for a net zero future, to reduce emissions and limit the heating of the planet. This reflects a global net zero discourse on climate action, which holds decarbonisation and lowering emissions through technology and energy efficiency close to heart. In addition to presenting batteries as a key enabler for the green transition, there is a reference to time and time running out. This statement is cross-sectional, in the sense that it was found in all types of data sources, and was used by all different sorts of actors. The battery companies use it most often, which is unsurprising as this statement is an intrinsic part of their brand and mission. Although quotes from the websites of

FREYR, Beyonder and Morrow were all coded as part of this statement, Beyonder put it most eloquently:

> A sustainable future will increasingly depend on replacing existing technologies with renewable energy production technologies. This makes battery technology one of the most important key enablers for the green energy transition. (Beyonder, 2022b).

What is perceptible from these sampled quotes is that the goal of producing batteries is to enable the energy transition to avoid or lessen the impact of future disasters from climate change. Batteries enable the decarbonisation of electric vehicles and other means of transportation, as well as the decarbonisation of energy systems. This last factor enables the use of renewable energy to produce both batteries and the upstream materials necessary to produce them, ensuring a "greener" production of batteries (Montague, 2023). Through this venture, the users of this statement hold that we are going to combat climate change, increase electrification, and power the world with renewable energy, all to hasten up the energy transition.

However, batteries are not just portrayed as one of many ways to reach this goal. As stated by the CEO of FREYR, Tom Jensen; "The battery industry is one of the most important contributors to doing something about climate change in the short term" (Haugstad, 2022, author's translation). This example plainly illustrates that batteries are a prerequisite to meet global goals on climate change. Another way that actors underline this point is when they refer to the severity of climate change, and thereby manifesting that the future depends upon batteries. For instance, on Morrow's website, they write, "The climate crisis is at a tipping point as our planet approaches an irreversible climate breakdown. If we do not act now, the world is heading towards a 3-degree increase rather than the critical 1.5-degree goal." (Morrow Batteries, 2023a). However, even though the reference to the severity of climate change is significant in this statement, it comes with a side of hope, because there is still time to turn the situation around. After telling us that the situation is extremely dangerous, Morrow tells us "there are solutions to our climate crisis", and these are "decarbonisation, electrification and sustainable energy systems" (Morrow Batteries, 2023a). To use a very metaphoric image, batteries become knights in shining armour that

have the ability save us from the villain that is the irreversible damage from climate change.

Accompanying decarbonisation through batteries as the path to energy transition is the continual mention of time and speed in varying forms, by using words as acceleration, fast and rapid to illustrate the pace at which we need to develop the battery industry. This is further reinforced by the use of the temporal metaphors discussed previously (6.1.4). Similar to how batteries are presented as the prerequisite for a successful energy transition, time and the scarcity of it is presented as indispensable if the battery industry in Norway is to develop successfully. In other words, we must act now, and fast, according to this statement. This is evident in how the use of time is a prerequisite for success, and "…it is urgent if we are to capture market shares in a rapidly growing market. That is why we must act now" (Ministry of Trade, Industry and Fisheries, 2022e). Thus, speed matters not only because we are in the age of the Anthropocene, and the Norwegian battery actors are insistent upon their take on climate action, but also because of the competition with other countries, and the dominating role of China. This was discussed under sub-chapter 6.1.4 on temporal metaphors.

Acceleration of the energy transition is key to the vision, business model and communications strategy of the battery companies. For instance, Beyonder states that "climate targets and global environmental degradation is requesting for an acceleration of industrial electrification" (Beyonder, n.d.). As a response to the threat from acceleration of climate change, FREYR Battery seeks to "produce green battery cells to accelerate the decarbonization of energy and transportation systems globally" (FREYR, 2022a). Arguably, the vision of Morrow Batteries encapsulates green growth, as they argue that "[m]aking batteries more affordable is key to accelerating the green energy transition" (Morrow Batteries, 2022b). To sum up, the battery companies hold that climate change is accelerating; therefore, we must accelerate the decarbonisation of energy systems and transport and by producing affordable and sustainable batteries.

Acceleration and temporality when speaking of energy transitions has emerged as a central focal point for policy makers and within global climate politics and discourse. For instance, the latest WMO State of the Global Climate report holds that "[s]ea level rise accelerates, European glacier melt shatters records, extreme weather causes devastation"

(The World Meteorological Organization, 2022). This could imply that to have any chance at countering the fast speed of the effects of climate change, the velocity of change, in this case producing batteries, needs to be just as quick. Although there are many concepts and metaphors within global discourses on climate change and energy transitions, the goal of 'net zero' emissions by 2050, according to The Paris Agreement's goal of 1.5 degrees seems to be saturated into multiple levels of discourse on climate action. Net zero is equally present in law and policy-making at both the European, as well as Norwegian national level. This was summarised by Fankhauser et al. (2022), arguing that "climate policy has a new focus: net-zero emissions" (p. 15). Net zero is originally a scientific concept from physics, and has become a target goal, but is increasingly referred to as "a frame of reference through which global action against climate change can be […] structured and understood" (ibid). Within the net zero discourse, the urgency of zero is also a key component, with global initiatives such as the "Race to Zero" campaign which tries to engage non-governmental actors and gain traction for the shift to a carbon-neutral economy (Race to Zero, n.d.).

As this thesis is interested in the discourse on the battery industry in Norway, it is also interesting to consider for a moment what net zero and decarbonisation looks like in Norway. One image is the electric car. In Norway, two out of three new passenger cars sold in 2021 were electric (Bråthen, 2022). According to Statistics Norway, the amount of electric cars has increased 372 per cent between 2016 and 2021 (Statistics Norway, 2022a). At the same time, 80,9 per cent of all travels that Norwegians undertake is using their passenger car, an increase of 3,8 per cent from 10 years before, and six-doubling in the past 50 years (Statistics Norway, 2022b). One of the assumptions of why so many Norwegians drive an electric car, is due to the sustainability aspect. As mentioned above discussing metaphors, green and clean are words that resurface frequently when it comes to both batteries and battery production in Norway, but also when it comes to electric vehicles. For instance, in an article aiming to 'mythbust' that EVs are not climate friendly, the author states that "electric car which gets electricity from clean, renewable sources, emits no greenhouse gases" (Eide, 2020, author's translation).

However, the massive switch to EVs cannot solely be credited to the fact that Norwegians have great ambitions to mitigate climate change. The incentive subsidy policies offered to new car buyers plays an important part. A master's thesis done by Nygaard (2016)

found that the policies had increased car transportation and could have negative effects on climate change due to increasing the number of cars on the road. Furthermore, owning an electric car is a symbol of status. One study which was done on the 'neighbour' effect concluded that people who buy EVs are people with economic resources and knowledge and curiosity into new things. These people have high income and higher education, and were the ones most eager bought a Tesla when it first arrived. According to the masters students conducting the study, these people were not considered traditional "green" voters (Borgwardt & Knutsen, 2018). Furthermore, Norwegians have the second highest car ownership rate and the lowest utilization of public transportation among European countries (Pilskog, 2017). This, combined with the fact that more people own cars despite switching to electric, begs the question of whether simply replacing the car fleet with EVs will ensure a just green transition, if people are simply swapping from one car to another, without really changing mobility patterns.

The question of consumption and changing mobility patterns is relevant to touch upon, as battery production is highly resource and mineral intensive (which was discussed in chapter 2 and 3). As Valero et al. (2018) emphasize, renewable energy technologies require more raw materials than current energy sources. Thus, in the pathway that has been laid out in the "green" energy transition, transitioning away from fossil fuels means we become more reliant on other non-renewable raw materials. In addition, there are environmental, social, and political issues related to this, and concerns for making energy transitions just. As touched upon in chapter 3, there are concerns from several disciplines over how battery value chains might reinforce extractivist relations because many mining sites for minerals such as lithium are often located in rural, indigenous communities in the Global South (Jerez et al., 2021). A scenario created by the Climate and Community project at the University of California, Davis found that "lithium demand can be reduced by up to 92 percent in 2050" in a scenario where we travel less with personal EVs and more on public transport (Riofrancos et al., 2023). Others also emphasize the importance of facilitating for more public transport as a way to reduce our "material footprint" and contribute to a more just transition (González et al., 2023). As we will see in chapter 7, these concerns are to some extent raised by actors who use 'greenwashing' counter narratives when speaking about the Norwegian battery industry.

To recap *Batteries will accelerate the energy transition*, this statement connects batteries to the energy transition by claiming it will be its key enabler. Part of this statement is the presentation of batteries as a profitable solution to climate change, which I will elaborate upon in the following sub-chapter. The use of concepts and metaphors stressing time and urgency is deep-seated. However, the emphasis on speed is not just connected to climate action, but also importantly to the geopolitical situation with China's dominating role in battery production, and a race to become the countries which succeed to build up functioning battery value chains. I have also argued that this statement reflects the net zero discourse on climate change and energy transitions. I complemented this with a discussion of electric vehicles as an image of the energy transition in Norway.

6.2.2 Batteries bring jobs, local development and profit

It is not just the focus on batteries as an enabler of the green transition and the pace of this transformation that was prominent in the data. The second statement is concerned with the lucrativeness and job opportunities of establishing a battery manufacturing industry and giga factories in Norway. It links this establishment to local development and industrialization, especially in the areas where the giga factories will be established or are under construction. The quote below from Minister of Trade and Industry, Jan Christian Vestre, very neatly illustrates this statement:

> If Norway seizes these opportunities, the Norwegian battery value chain could employ tens of thousands of people and create a turnover of at least NOK 90 billion by 2030. (Ministry of Trade, Industry and Fisheries, 2022a, translated by author).

This statement uses numbers to illustrate value creation opportunities and attractiveness of the industry, as well as to create legitimacy. To some extent, it is not unusual that numbers appear as we are discussing economic issues. However, there is a rhetorical effect of numbers when they are used outside their initial context. The numbers that the Minister refers to in the quote above is from a report written by the Confederation of Norwegian Enterprise (NHO), where it is estimated that the battery factories could provide up to 30 000 new jobs and a turnover of approximately 180 billion NOK by 2050 (NHO et al., 2021). Similarly, the McKinsey report *Norway tomorrow*, estimated that a

200 Gigawatt hour battery production would increase Norway's GDP with 40 billion NOK (Lund et al., 2022, p. 28). Much discourse analysed here seems to rely upon numbers from the same reports issued by consultancy firms such as Menon Economics and McKinsey. Several of the host municipalities to the giga factories have hired Menon Economics to analyse ripple effects and societal implications of establishing giga factories in their local communities[10]. In addition, Menon Economics have also published a report on the gathered employment and ripple effects from Norwegian battery production (Aslesen et al., 2022).

The role of numerical discourse in creating legitimacy in public policy has been analysed in research looking at different crises, such as the Covid-19 epidemic (Jablonka & Bergsten, 2021). Numerical discourse seems to play a vital role in the successful framing and legitimacy of the Norwegian battery industry. When revising the media coverage of the battery industry, 2500 jobs is a number that recurs. For instance, in June 2021, the official Norwegian broadcaster NRK stated "The battery factory will employ 2500 people", about Morrow in Arendal (NRK, 2021), and similarly, in 2019, when FREYR launched their plans, the local newspaper Rana No wrote "Battery factory will give 2500 new jobs" (Marthinsen, 2019). These companies have since revised the exact numbers of the possible employment down. However, the company Elinor which very recently announced they were constructing a giga factory used the exact same number in their press release "Building a giga factory in Trøndelag – will need 2500 employees" (Bævre, 2023). In addition to the number of 2500 in direct employment, reference is also made to the indirect employment. In the case of Arendal, the numbers are 3 to 4 times that, a result of people relocating to Arendal, less people moving out, local industrialization, building of roads, schools and so on (Arendal kommune, 2022b).

The number 2500 jobs and the promised ripple effects has probably also been a key reason as to why so many municipalities competed to host battery factories. Reviewing media sources from a couple of years prior to 2022, which was the time of interest in this project, a theme that recurred was the amount of municipalities wanting to host the battery

[10] For example, Agder county government and Arendal municipality where Morrow is constructing (Vennerød et al., 2022), and Nordland county government, Rana municipality and Rana Utvikling where FREYR are establishing their factories (Winje et al., 2021).

ventures, including “82 actors will fight over new battery factory and 2000 jobs” (Myrset & Lunde, 2021).

In addition to numerical discourse helping illustrate and legitimise the job and income opportunities, what I will refer to as a green growth discourse is present; a reconciliation of profit and sustainability. When the previous Prime Minister Erna Solberg launched the Climate Action Plan 2021-2030, she referenced establishing a battery industry in Norway, saying: “Value creation is a precondition, not an obstacle, to stop climate change” (Solberg, 2021). In addition to the specific numbers of potential income referred to previously, examples from the data set include a statement from the Executive Chairman and Founder of FREYR, Torstein Dale Sjøtveit; “Electrification and batteries are instrumental parts of the solution, representing one of the most exciting and sustainable growth vectors in the market.” (FREYR, 2022a).

Discourses reconciling growth and sustainability have been theorised by many different scholars, including Dryzek, and one of his environmental discourses mentioned in chapter four; ecological modernization. Simply put, in ecological modernization, the assumption is that both market and state can work together to protect the environment (Dryzek, 2005, p. 167). Importantly, it “involves solving environmental problems by making capitalism less wasteful within its existing framework. This means that we cannot rely upon ‘the invisible hand’ in market systems to promote good environmental outcomes (Dryzek, 2005, p. 167). In analysing Norway and Norwegian environmental policy, Dryzek used what Christoff (1996a in Dryzek, 2005, p. 173) termed weak ecological modernization; characterized by technological optimism leading to an exaggerated belief that new technology will solve climate and environmental problems. A further characterisation is that state and government must make standards and incentives to foster growth for the industries. This in turn gives business an interest in complying with policies on climate change and the environment. Dryzek’s analysis seems to still be relevant in the case of the Norwegian battery industry, as battery technology is presented as a key solution to climate change, as well as the active role the Norwegian government has taken in facilitating for the industry to flourish. Christoff’s own critique of weak ecological modernisation, is that in its extreme form, it simply becomes a rhetorical tool for the interests of business (1996a in Dryzek, 2005, p. 173). Hajer (1995) similarly questions whether ecological modernisation merely becomes a “rhetorical ploy” for capitalism in

crisis, by trying to bring together two incompatible components, being concerns for the environment and development (p. 33-34).

There are other theories apart from ecological modernization that take the "rhetorical ploy" criticism a bit further. For instance, Harvey's spatiotemporal fix is a theory that refers to a mechanism where capitalism mitigates its contradictions and crises by finding new ways to create new markets and exploit untapped resources to create new opportunities for accumulation or profit making. This can take on several forms, the extraction of natural resources, creation of new industries or technological innovations. These crises, according to Harvey, emerge from the inherent crises of capitalism; overproduction, over accumulation of capital, and uneven development (Harvey, 2004, pp. 65-66). The reliance of capitalism on the combustion of fossil fuels and the dangers posed by climate change is one example of such a challenge. In the case of the topic of this thesis, batteries could then be presented as a fix which 'moves' capital accumulation, and assures that we achieve more growth. Harvey argues that capitalism is addicted to endless expansion through economic growth and technological change, and therefore these fixes are temporary. To continue growth, capitalism therefore needs to achieve technological change. This all touches upon a critical dilemma within the green transition, whether we can reconcile growth with sustainability.

To recap *Batteries will bring jobs, local development and profit*, this statement connects batteries to job creation and profitability. It is substantiated by numerical discourse, and builds on some key numbers that can be traced back to reports done by a small numbers of consultancy firms. These numbers help legitimise the green industrial adventure. Although this statement is prominent on all discursive levels, the findings indicate that it is particularly present with local actors such as local media and municipalities. What is further inherent to the statement is the presentation of batteries as a profitable solution to climate change through a green growth discourse. This touches upon a critical dilemma within the green transition; whether growth and sustainability actually can be reconciled. I briefly mentioned Dryzek's weak ecological modernisation as one theory that explains the Norwegian battery industry policy as trying to reconcile sustainability and economic growth. However, as both Christoff, and Harvey's spatiotemporal fix highlight, the banner of green growth as a way to merely promote sustainability whilst achieving economic growth.

6.2.3 New battery technology will solve sourcing and sustainability issues

It should perhaps come as no surprise that when we are analysing an emerging technology industry, technology discourse would figure prominently. The third statement evident the data expresses the significant role of technological innovation in new and how "sustainable" battery technologies that will be used by the Norwegian companies. This quote, from the products section on Morrow's web site is an example of this statement:

> We aim to be at the forefront of battery technology development. By the middle of this decade, we will start to commercialise a new generation of battery technologies for the same markets but based on the high-voltage material LNMO[11]. Our LNMO technology is a more sustainable solution that uses cheap manganese as a scaffold to make better use of the lithium and nickel inside it. (Morrow Batteries, 2023c).

The actors most frequently using this statement are the battery companies, perhaps because they are the ones most frequently asked about their technology. One example is from the webinar series Nordic Battery Thursdays, organised by Innovation Norway and its Nordic counterparts. In one webinar dedicated to talk about the Norwegian battery industry, representatives from FREYR, Morrow Batteries, and Beyonder were asked about how they would mitigate the challenges concerning sustainability and sourcing of minerals such as lithium. As a response to this, they all highlighted their battery technology. For FREYR, the representative highlighted their licensing of 24M technology, and specifically that compressing the production process from fifteen to five steps reduces the necessary input of energy, thereby reducing the carbon footprint. Beyonder presented a different angle, because they are the only one of the three companies that have developed their own technology. They are using sawdust from forestry residue, and creating a battery without cobalt and nickel. Morrow highlighted the nexus between sustainability and low-cost as a key idea in their battery strategy. Furthermore, as presented in the quote above as well, Morrow plan to replace cobalt, and reduce nickel, in their Lithium Manganese Nickel Oxide (LMNO) technology (Business Norway, 2021, 36:38). These technologies, are referred to as second, next or new generation of batteries by all three companies. However, as mentioned in chapter two,

[11] Lithium Manganese Nickel Oxide (LMNO).

both FREYR and Morrow are both producing “first generation” batteries first. Morrow will produce Nickel Manganese Cobalt (NMC) technology for the EV market, and Lithium Iron Phosphate (LFP) for ESS (Morrow Batteries, 2023c). FREYR will pair their aforementioned 24M technology with battery chemistries such as Lithium Iron Phosphate (LFP) (FREYR, 2022b, p. 18).

One important characteristic of this statement is that the actors using it acknowledges the challenges of today’s battery technologies. The battery companies contrast their second generation technology to “conventional” LIBs, as well as mentioning how innovative technology “will” solve issues to symbolise optimism and determination. Thus, the battery companies present the challenges of traditional battery technologies that are being used in LIBs today as a key reason to why their technology is needed. As an example, on Beyonder’s website where they present their technology, they point to the challenges of conventional li-ion battery technology:

> [T]here is an increasing concern with the environmental cost of battery production chains. The extraction of minerals used to make batteries requires enormous amounts of energy and water and can impact the lives of the people in mineral-producing countries. Another issue is the lack of effective battery recycling solutions. Today, relatively few batteries end up being recycled, due to among other things, technical constraints, economic barriers, logistic issues, and regulatory gaps. (Beyonder, 2022b).

As a solution to this challenge, Beyonder present their technology; “Our patented battery technology is a better alternative to the use of conventional Li-ion batteries and solves challenges not addressed in today’s batteries in high-power applications.” (Beyonder, 2022b). Similarly, FREYR on their website present the technology they will use as “revolutionary”, and focus on how the technology process of limiting production steps will make them more sustainable as there is less of an energy consumption. However, there is little mention of the raw materials the company will use, and no mention on the “Products” part of their website (FREYR, n.d.).

My findings discussed above indicate that there is a discursive focus on the process of diminishing the role of certain raw materials in batteries and battery technologies. This begs the question of whether the focus of the sustainability of battery technologies,

obscures the inequalities and issues connected to battery value chains. As I have mentioned previously, there are challenges related to the extraction of several minerals, including lithium and cobalt. To take one example, all companies are very aware, and make explicit points in all their communication that it is crucial to move away from cobalt. For instance, both Beyonder and Morrow make it part of their marketing that they are going to be free of cobalt. "Morrow's plan is that they before 2030 will have a fully operational giga battery factory that becomes one of Europe's biggest, and to be the world's first battery factory that does not use cobalt" (Bjørlo, 2022). Furthermore, Beyonder states that "With our innovative and sustainable combination of raw materials and the absence of critical substances such as cobalt, this new cell also has an enormous performance in terms of longevity, extreme temperature tolerance and high loading and unloading cycles." (Beyonder, 2022b). FREYR, on their hand, refer to "sustainable" cobalt in their marketing (FREYR, 2021a). Another reason why the three companies focus on reducing minerals such as cobalt is to be able to meet green industrial policies and battery regulations from the EU that will have stricter requirements for sustainability and social impacts (Lorentzen et al., 2022).

What is evident with this shift away from cobalt and other minerals, is that companies have to use other raw materials instead. As mentioned, Morrow are looking to use manganese to be able to reduce the amounts of both nickel and cobalt, which they argue will make it more sustainable as well as cheaper to produce. However, manganese is not completely without complications. As researchers from the Centre for Research on Multinational Corporations (SOMO) have found, 75 per cent of the world's manganese reserves are situated in South Africa, in the Kalahari Manganese Field. Researchers from SOMO found that communities in these areas were "deprived of their rights to water, safe and accessible healthcare", free, prior and informed consent as well as participation in the mining for manganese in their areas (González et al., 2021, p. 78). The researchers further highlighted that manganese is refined in countries such as China and Norway (ibid, 79). My intention is not to single out Morrow as the bad guy, or claim that the manganese they use will come from these fields. However, it is prudent to ask whether we are simply moving from one problematic and critical mineral to another that has slightly better reputation.

In addition to noting a discursive shift from cobalt to other raw materials, I also noted a related finding as a response to the challenge of ethical and sustainable minerals for LIBs. Several actors stressed the importance of quickening processes for opening mines for raw materials as part of the European, Nordic and Norwegian value chain. In an episode of *Paretopodden*, CEO of FREYR, Tom Jensen, states that "we need to speed up the permits for mining projects, there are a lot of new mining projects that need to be established if we are going to electrify", referring to this happening in Norway (Alsberg, 2022). In the before-mentioned report *Norway Tomorrow*, McKinsey & Company write that there needs to be a massive increase in mining for minerals, and that deep sea mining could be an important factor in developing Norwegian battery industry. For this to happen, more permits must be given and in a quicker pace (Lund et al., 2022, p. 71). However, as Hobi (2022) highlights, there should be a greater acknowledgement of the fact that if battery cell production is to succeed as an industry in Norway, Norwegian companies will be dependent upon mining outside, and especially in the Global South. Even though Norway wants to become self-reliant, and create a robust mining sector in Norway, this will take time. Furthermore, mining has a lot of negative impacts, both for indigenous peoples, society and the natural environment. This means that for the foreseeable future, actors in the Norwegian battery industry will most likely depend upon the extraction of raw materials from outside the European value chain (Hobi, 2022).

Summarizing the statement *New battery technology will solve sourcing and sustainability issues*, it seeks to communicate the predominant role of technological innovation in the new and sustainable battery technologies that will be used by the Norwegian companies. There is a focus on the future, and second-generation technology, as a way to solve sourcing and the use of critical minerals such as cobalt in conventional LIB chemistries. Acknowledging these challenges was also used present the next generation of batteries as the salvation. However, I also raised some challenges concerning what I argue is a discursive focus on the shift from cobalt to other raw materials such as manganese. Another related focus is the opening of mines in Norway and the Nordics to increase self-sufficiency in the value chain. In summary, this statement showed how technology discourse might legitimise continued patterns of exploitation, by showing how the technology alleviates them.

6.2.4 Norway has cheap and renewable energy

The fourth and final statement that I wish to present is key to explain why there are efforts to build a battery industry in Norway. At the end of the day, what makes batteries green, according to the storyline, is the energy that goes into producing both the up-stream materials and the battery cells, not just shifting to using batteries. According to the discourse, and this statement, the input that makes Norway stand out from the crowd is the immense access to renewable energy. This gives legitimacy to the "green" and "clean" batteries, as opposed to other countries that are reliant upon non-renewable energy. The following quote from Minister of Trade and Industry, Jan Christian Vestre, responding a written question from Parliamentary Member Sivert Bjørnstad of FrP (Progress party), demonstrates this very clearly.

> Norway has good preconditions for contributing to a common European battery boost. Thanks to our power supply, which is almost 100 percent renewable, we can produce battery components with a lower environmental footprint than any other country in Europe (Dokument 15:9 S (2021-2022) spørsmål nr. 1278).

This statement represents a drive to promote the attractiveness of Norway as a host for giga factories producing battery cells, because the abundance of renewable energy sources is something that sets it apart from other battery producing countries. Actors using this statement point to three key factors, which promotes Norway as a host country for clean battery solutions.

The first key factor is that the energy supply is renewable, clean, and sustainable. In addition to the claim that battery technology will make batteries greener, as discussed earlier in the chapter, the access to clean energy sources is emphasised as a success factor, and an important reason as to why this needs to happen in Norway. Access to clean power has therefore been a decisive factor as to why the companies have chosen the specific areas for their giga factories. One example from the data shows this explicitly: "To serve a growing market, Beyonder is planning to build a giga factory at Haugaland Næringspark, after diligent consideration of local community, nature surroundings, access to personnel, and clean power." (Beyonder, 2022c).

The second factor emphasised by actors using this statement is that electricity in Norway is cheap, which will make it affordable to produce batteries in Norway. This is something that both FREYR and Morrow point to when presenting their facilities:

> Our facilities are located at Mo i Rana industrial complex in Northern Norway, where we can leverage (…) abundant, low-cost renewable energy supply (…). (FREYR, 2022c).

> Morrow Batteries is starting development of a large-scale factory in Norway, where it will benefit from some of the lowest electricity prices in the world. (Morrow Morrow Batteries, 2021).

The third factor stressed by the actors using this statement is the plenteousness of renewable energy in Norway, signalling that there is a lot of renewable energy for giga factories. This was emphasised in an opinion piece, written by representatives from different parts of the battery value chain in Norway: "We have natural advantages that few others have. Where others have to use fossil energy as an input factor, Norway has access to large amounts of renewable energy that can be used in building industry" (Aasheim et al., 2021). Offering a decarbonised footprint for the batteries is the competitive advantage that will make it possible for Norwegian companies to compete. CEO of FREYR, emphasised this competitive advantage in the podcast Clean Power Hour:

> There is a demand for localised production of batteries using a somewhat similar solution to what is produced in Asia today, but offering a competitive advantage of a decarbonised footprint of the battery, which largely is about what power source you are using, both on producing the upstream materials as well as the battery cell itself (Montague, 2023).

The abundance of renewable energy is a key competitive advantage, and therefore, actors also pressure to build more energy infrastructure in Norway. This was signalled from the most recent of the Energy commission's report, highlighting that with the amounts of green industries under construction, as well as traditional industries seeking to electrify, there is an immediate need to increase the infrastructure (NOU 2023:3). However, simply ensuring renewable input does not ensure sustainability or that the production of batteries happen in a just manner. Wind power parks in Norway as one source of renewable energy

have been heavily debated the past years. Just recently, there were huge protests against what has been termed Northern Europe's biggest wind park on land in Fosen. The Supreme Court in Norway judged them to have been unlawfully erected. However, since the sentence did not state what should happen to the wind turbines, they are still standing. This has been the main criticism of the actors protesting, as they claim that the wind turbines must be taken down (Engen, 2023). From analysing counter narratives on the battery industry, this statement claiming that cheap and renewable energy is a competitive advantage is the one that has been challenged the most. The critique is rooted in the political context in Norway and Europe, the Russian invasion of Ukraine, volatile electricity prices, as well as an upcoming local election with political parties mobilising in Norway. The critique against this statement will be touched upon in greater detail in chapter 7, under the economic infeasibility narrative.

Through this fourth statement, I have argued that actors underscore the importance of renewable energy sources as one, or perhaps the, competitive advantage that producing batteries in Norway has. The actors using the statement heavily rely upon this statement for legitimacy of the "green" and "clean" batteries, as opposed to other countries that are reliant upon non-renewable energy for producing batteries and upstream factors.

6.2.5 Statements summarised

Thus far, in this chapter, I have briefly discussed groups of metaphors as well as four statements that are all components that are drawn upon in constructing a storyline of the battery industry in Norway. Together they frame the battery industry as a profitable venture that will bring industrialisation and development to Norway, whilst also combating climate change. However, although analysing metaphors and statements as rhetorical elements might make it seem that they just exist, there are key actors who use them strategically, which we will now assess.

6.3 Actors

6.3.1 Actor groups

So far, in this chapter, I have dissected discourse about Norway's battery industry by analysing statements and metaphors that together make up a storyline about battery

manufacturing as a green industrial adventure in Norway. However, in addition to defining and analysing what is being stated in discourse, another key aim of this thesis is also looking into the actors *using* these statements and metaphors arguing for batteries as the next green industrial adventure. In this sub-section of the chapter, I will firstly list key actors and the metaphors that they most frequently use. Some of these actors collaborate explicitly. However, I will secondly bring in discourse coalition as a concept to show how these actors support the same storyline, although some either work independently or are in competition with each other.

The rationale for looking at actors, is that storylines, statements and metaphors, do not just exist by their own accord, people use them as "'short hand' in discussions" (Hajer, 2023). In this thesis, I use actor to refer to the person or entity that performs or uses the storyline, statements, or metaphors. I identified actors through mapping the authors or speakers of the documents or multimedia assessed and linking them to the organisation or entity that they represented. For instance, even though Chief Executive Officer (CEO) Tom Einar Jensen often was the speaker or author on behalf of FREYR, I have not included him as an actor, but rather linked him to the company that he speaks on behalf of.

In table 3, I have clustered actors together in actor groups, together with examples of metaphor use. As most actors seem to draw on several, if not all metaphors, I have included a maximum of two metaphors per actor group in order to distinguish them. I categorised the actor groups according to how the individual actors describe themselves on their web site. Some of the data examined was authored by a coalition or expert groups that were temporarily set up to give an investigation or a report, for instance Prosess21[12], and BATTKomp[13]. These were not included in analysis. However, the actors contributing to these coalitions are listed elsewhere in the actor group table.

[12] Prosess21 is an expert group sat down by the Ministry of Trade, Industry and Fisheries to give recommendations on how to minimise emissions in process industry up to 2050.
[13] Project initiated by business interest organisation Norsk Industri to map and analyse competency needs in the battery industry in Norway.

Actor group	Metaphors used	Actors
Battery company	Clean batteries, new oil	FREYR, Morrow, Beyonder.
Consultancy firm	Battery nation, battery race	McKinsey & Company, Menon Economics, Rystad Energy.
Industrial collaboration platform	Battery nation, battery time crunch	Battery Norway, The Nordic Battery Collaboration (Innovation Norway).
Interest organization	Industrial adventure, battery time crunch	NHO[14] and sectoral federations of NHO (Energi Norge and Norsk Industri). EV Norway (*Norsk elbilforening*).
Media	New oil, industrial adventure	NRK, DN, Teknisk Ukeblad, E24, Finansavisen, Nettavisen. Agderposten, Fædrelandsvennen, Rana Blad, Rana No, Rogaland Avis.
Municipality	Industrial adventure, battery adventure	Municipalities of Arendal and Rana.
Non-profit actor	Green batteries, carbon negative battery industry	Bellona Foundation.
Political party	Industrial adventure, clean energy	FrP (Progress Party) most active outside governmental actors (see sub-chapter 6.2.3 for detail).
Research institute	Industrial adventure, green batteries	IFE (Institute for Energy Technology), SINTEF.
State and government	Green industrial adventure, battery race, battery nation.	Minister of Trade and Industry Jan Christian Vestre, Ap government, Ministry of Trade, Industry and Fisheries.
Think tank	Green industrial giant	Manifest think tank.
Trade union	Industrial adventure, green energy	LO (Norwegian Confederation of Trade Unions), *IndustriEnergi* (sectoral federation of LO).
University	Industrial adventure	Norwegian University of Science and Technology (NTNU), University of Oslo (UiO).

Table 3: Actor groups and metaphors they most frequently use.

There are some actor groups that I mapped, that are not included in this table. This does not mean that none of these actors use these statements or metaphors or contribute to the storyline, but that they did not appear to do so in the data set. The first group is civil society actors, voicing concerns of the social and environmental impacts of battery production. There were also various groups from the business community, to academics,

[14] Confederation of Norwegian Enterprise (NHO)

to commentators, that used independent media and more established media sources as outlets to voice their concerns of the economic feasibility of the Norwegian battery venture. Because these groups voice concerns, I have chosen to rather discuss them in chapter seven, when highlighting counter narratives to the green industrial adventure.

The most active actors using this storyline are perhaps the battery companies that have coherent communications strategies that are very much in line with the storyline under assessment, and the Norwegian state and government, represented by the Minister for Trade and Industry, and the Ministry of Trade, Industry and Fisheries, with their Green industrial policy and Battery Strategy. I would argue that the agenda of the actors listed here is evident from the storyline; they have a clear interest in ensuring the different battery initiatives are successful. Actors in this thesis use the discourse because it helps them make sense of the world, to communicate to others, and the discourse is clearly consistent with a particular economic agenda, and prevailing social norms.

6.2.2 Discourse coalition on batteries

Through the set of shared statements and metaphors, there are many examples of documents where a broad selection of the actors listed above explicitly collaborate. For instance, different actor groups (interest organizations, trade unions, battery companies, research institutes and universities) together launched the report *Recommendations for an industrial venture on batteries in Norway,* which explicitly aims to map out how batteries can become the next Norwegian industrial adventure (NHO et al., 2021). Another example is Battery Norway, a national industrial collaboration platform founded by several battery companies, including Beyonder, FREYR and Morrow. Collaboration and strategic partnerships also seem to be an essential ingredient for the battery sector throughout the Nordics, with the frequent webinar series *Nordic Battery Thursdays* being organised by Innovation Norway and its Nordic counterparts. Furthermore, the recent report published through this Nordic partnership highlights strategic partnerships and collaborations between actors in the Nordic battery value chain as a prerequisite for success (Innovation Norway et al., 2023).

When discussing explicit collaborations on batteries in Norway, it is also relevant to briefly mention the extensive European-level collaborations that the Norwegian value chain is part of. While Norwegian actors rival with European actors, they are also

dependent on working together to able to compete with dominant global actors such as China. The European Commission also creates several laws that the Norwegian industry must follow, including the EU Battery Regulation. Given that the EU-regulations must be followed in Norway, it should come as no surprise that the green industrial adventure-storyline is reminiscent of the discourse in the EU's Green New Deal, and following initiatives such as European Battery Alliance and IPCEI (Olsson, 2022).

What is interesting to note is that the statements and metaphors used in the different documents describing these collaborations as strikingly similar to the ones part of the green industrial adventure-storyline. This quote illustrates it well, from the joint statement on political and industrial collaboration on battery and raw material value chains between The European Commission's Vice-President for Interinstitutional Relations and Foresight Maroš Šefčovič, and Jan Christian Vestre, Norway's Minister of Trade and Industry:

> Given the urgent need to tackle climate change, and secure supplies of sustainable energy, materials and technologies instrumental to decarbonisation and the competitiveness of their economies, while increasing resilience of strategic ecosystems, the EU and Norway share the ambition to strengthen and expand their cooperation in the area of the raw materials and battery value chains (Representation in Cyprus, 2022).

On the one hand, there is a similar stress of urgency, batteries are presented as an accelerator of an energy transition to combat climate change, renewable energy sources, and sustainable use of materials and technologies to urge on decarbonisation. On the other hand, ensuring that European actors can compete on the global battery stage by building resilience. Similar to the discourse found in Norway, the examination of data indicates that there is a collective understanding of sustainability and energy transitions as a task of decarbonisation, and that the need for a strong battery collaboration in Europe is exacerbated by the need to stand united against and become less dependent on Russia.

However, although I have showed how some of the actors listed do explicitly collaborate, many of them are in economic competition with each other (like the battery companies), or in political opposition, or working more independently, like the think tanks and media sources. Still, they support the same storyline. One of the greatest misconceptions that

Hajer notes about discourse and discourse analysis, is that actors who disagree cannot share a discourse. As discussed in chapter four on the theoretical framework, Hajer proposes the concept discourse coalition to explain that the common use of a storyline is what unites people or actors in a discourse, not their interests, or political positioning. As the discourse coalition concept is not so preoccupied with people and their belief systems, but rather the context where they use storylines, statements and metaphors, it also allows for a greater analysis of actors that might make contradictory statements, or contribute to different discourse coalitions (Hajer, 2006, p. 70).

A further fact that makes it interesting to use discourse coalition as a concept is because it highlights that even though actors might disagree and produce different statements and metaphors, they can still be in a discourse coalition together. A discourse coalition "[r]efers to a group of actors that, in the context of an identifiable set of practices, shares the usage of a particular set of storylines over a particular period of time" (Hajer, 2005, p. 302). Given our understanding of storylines, there should be a suggested common framing of the battery industry between the actors in the discourse coalition, even if they do not get together to agree upon this fact, and that they might use the storyline in different ways.

The case of building green industry, and in this case, a battery industry, can definitely be explained by Hajer's concept. Actors are not necessarily in agreement or in alliance even though they are contributing towards the same storyline. The discourse coalition using statements and metaphors examined consists of a wide variety of different actors, as exemplified in the table above. To take a deeper dive into this, and investigate whether this is also the case within one actor group, let us look at one group of actors that disagree for a living, political parties.

6.2.3 Illustration of discourse coalition: political parties

To further illustrate the relevance of the discourse coalition concept to analyse actors who enact a common storyline, but might use it differently, we are going to zoom in on political actors. This is also an effective way of discussing discourse coalitions, as political parties have different belief systems, and therefore would have been placed in different advocacy coalitions. As I am analysing argumentative discourse, and examining batteries as a green industrial policy, it is perhaps no surprise that some of the key actors

using this storyline are political ones. Establishing and facilitating for a Norwegian battery industry has been a priority for the incumbent Norwegian government since inauguration in 2021. This is evident in their governmental platform *Hurdalsplattformen*, where it is mentioned 5 times; specifically talking about battery cell production and value chains in Norway (Regjeringen, 2021, p. 14).

From the other data examined, it is clear that in the political discourse talking about a Norwegian battery industry, there is generally a positive inclination towards the premise of building a Norwegian battery industry. See Table 4 for detail.

Political party	Descriptive code (quote)	Interpretive code
Socialist Left Party (SV)	"We must realise the great potential we have in Norway to create a battery industry (…)" (SV, 2023, author's translation).	Uniting a just energy transition with green industrial politics.
The Red Party (R)	"Have large-scale government investment in green battery production, with particular emphasis on maritime batteries" (Rødt, 2021, p. 55, author's translation).	Uniting a just energy transition with green industrial politics.
Labour Party (AP)	"The value chain for battery production has great potential and can lay the foundation for new industrial adventures" (Arbeiderpartiet, 2023, author's translation).	Green industrial politics. Active user of 'industrial adventure'.
The Centre Party (SP)	Not mentioned in their Parliamentary Election Manifesto, but SP is in government together with AP.	
The Christian Democrats (KrF)	Not mentioned in Parliamentary Election Manifesto. "This could be the start of a new industrial adventure in Mo I Rana, Nordland, why, all of Norway", leader for Nordland KrF (Høgseth, 2019, author's translation).	Green industrial politics.
The Green Party (MDG)	Not mentioned in Parliamentary Election Manifesto. One question to Vestre in 2022 about sufficient renewable energy for establishing green industry such as batteries.	Green industrial politics-
Liberal Party (V)	Not mentioned in their Parliamentary Election Manifesto. Two written questions to Vestre in 2022 about batteries and industrial partnerships with the EU.	Green industrial politics, EU collaboration.
The Conservative Party (H)	"Høyre wants to facilitate battery production in Norway" (Høyre, 2021, author's translation).	Green industrial politics.
The Progress Party (FrP)	"With clean Norwegian power we can create new, green and profitable businesses like data centres, battery production and hydrogen production" (Fremskrittspartiet, 2021, author's translation).	Green industrial politics, profitability, clean and renewable energy.

Table 4: Political parties and their attitudes towards a battery industry in Norway.

Although there are some objections to the storyline (which will be discussed in the next chapter), there is no debate over whether or not we should build a battery industry in Norway. Even though these are actors with different political backgrounds, they all showcase support of building battery factories in Norway.

The claim that all political parties show support of building battery factories is based on a brief search for batteri* in the political programmes for the current parliamentary period of 2021-2025 of Norwegian political parties with a seat in the Norwegian Parliament. There are minor differences in framing, but the perhaps most obvious way to note slight variations in inclination could be noted from where in the programme the topic of batteries or battery industry is placed. For instance, the Socialist Left party (SV) talks about a Norwegian battery industry under "A just green transition" and "A popular green transition", whilst most of the other parties explicitly mentioning batteries, place it in a separate chapter on building (green) industry. Some of the parties, like Labour, mention it both under sections of business, as well as climate change. Still, there is room in Hajer's discourse coalition concepts for different interpretations or meanings of the storyline, even if the actors use the same storyline (Hajer, 1995, p. 13).

Not all the parties have included "batteriproduksjon" or "batteriindustri" in their manifesto. This goes for the party The Centre Party (SP), however, they are in government together with the Labour Party (AP), so it is safe to assume that they hold the same position. Therefore, I also did a brief search in other data to get an idea of their framing of batteries. This does of course only give a superficial idea of the parties' attitudes towards green industry and battery production, as it is based upon a limited data set. Further so, because I have not discussed these political parties according to their ideology or influence. Still, it is remarkable to note the similarity between the parties under the descriptive codes.

In addition to what is noted above, several of the political parties have asked questions to the Minister of Trade and Industry concerning the battery industry during the time of interest. The representative that most frequently used written questions to ask about the battery industry were representatives from The Progress Party (FrP). FrP is a right-wing political party, describing themselves as a liberalistic party, working for a strict immigration policy and lower taxes (Fremskrittspartiet, n.d.). This also highlights that

FrP as a party on the opposite political side of governmental party Labour (AP), that might have critical remarks, or statements, can still be counted in this discourse coalition.

6.2.4 Actors summarised

This sub-chapter has sought to shine some light on who the actors producing statements and metaphors that make up the storyline are. I presented the different actor groups, linking them to the statements and metaphors they most frequently use. The recurrent argument of this thesis is that there seems to be a wide set of actors who act together in a discourse coalition towards the green industrial adventure-storyline. To exemplify this, I did a brief presentation of political parties' attitude towards batteries and the development of a Norwegian battery industry. Having examined metaphors, statements, and actors, we can now move on to assess the storyline, and try to assess its power and influence.

6.4 Storyline: the green industrial adventure

Throughout this chapter, I have been referring to "storyline" as if it were a given fact that the green industrial adventure is a storyline. However, having now discussed statements, metaphors, and actors, I now wish test out the storyline concept to see if it works with the data I have analysed. In Figure 3, I illustrate how I argue that the storyline (batteries are a new, green industrial adventure), is supported by statements, metaphors, and used by actors, as was established in the theoretical chapter.

Firstly, I wish to recap the discussion and definition of storyline, and the distinction with discourse. In chapter four, I proposed the definition of discourse as *language in use in the production of knowledge and power through text and talk, which represents, signifies, constitutes, and constructs the world in meaning*, by drawing on definitions of Livholts and Tamboukou, and Fairclough. I argued that I found discourse too broad of a concept to employ analytically, thereby narrowing it down to storyline, as well as drawing upon metaphors and statements. By doing so, I also moved away from an explicit analysis of knowledge and power, although power and power relations are implicit in the discourse I have analysed. Consequently, my analysis lacks an explicit analysis of the power relations in the discourse produced about batteries in Norway, beyond the discussion of structuration and institutionalisation of discourse under discourse coalitions.

To narrow down, and define storylines, I simplified Hajer's definition, proposing the understanding of storylines as *Narrative on social reality consisting of statements and metaphors to suggest a common understanding of an issue between a set of actors.* I stress the fact that the storyline, or narrative, *suggest* a common understanding, or a common framing of an issue, between actors. I find this important to stress, as we are discussing discourse, and how actors make sense of the world and communicate issues to others, and not just the world as-is. Furthermore, a suggested common framing means that the actors who use the storyline might have different understandings of the issue. They might use storyline components in different ways, and they might have different values or interests. Furthermore, although actors might not always explicitly use 'the green industrial adventure' as a short-hand in discussion, I argue they enact the 'green industrial adventure' by using the metaphors and statements assessed.

To assess whether storyline is a suitable concept, how might we then sum up this mutual understanding of battery production that has been discussed throughout this chapter? The actors' use of statements and metaphors tells the story that battery production in Norway is a means to achieve two distinct goals. Firstly, the story is a means to enable the green transition by using purity metaphors to frame batteries as clean, and temporal metaphors to stress the urgency of climate change, and that batteries will accelerate the energy transition. Second, the story tells that establishing a battery industry will create profit and local development by re-industrialisation, by using metaphors of adventure and nation that make reference to previous industrial adventures in Norway, as well as playing into national identity. Furthermore, the story claims that batteries will bring thousands of jobs, and billions of income in profit. These two goals are made possible by new and more sustainable technology, framed with purity metaphors as "clean", and the claim that new technology will solve challenges of sustainability and sourcing of raw materials such as cobalt. Finally, the story of enabling the green transition and creating jobs and profit is made possible by claims of Norway's cheap and abundant natural power, which unlocks the attractiveness of Norway as a host country for batteries. Throughout the storyline, it is evident that technology optimism is a key attitude to development. Green growth, with clean and sustainable production of batteries using renewables, is the platform for development. Moreover, acceleration of the green transition by using batteries becomes the key tool for transformation.

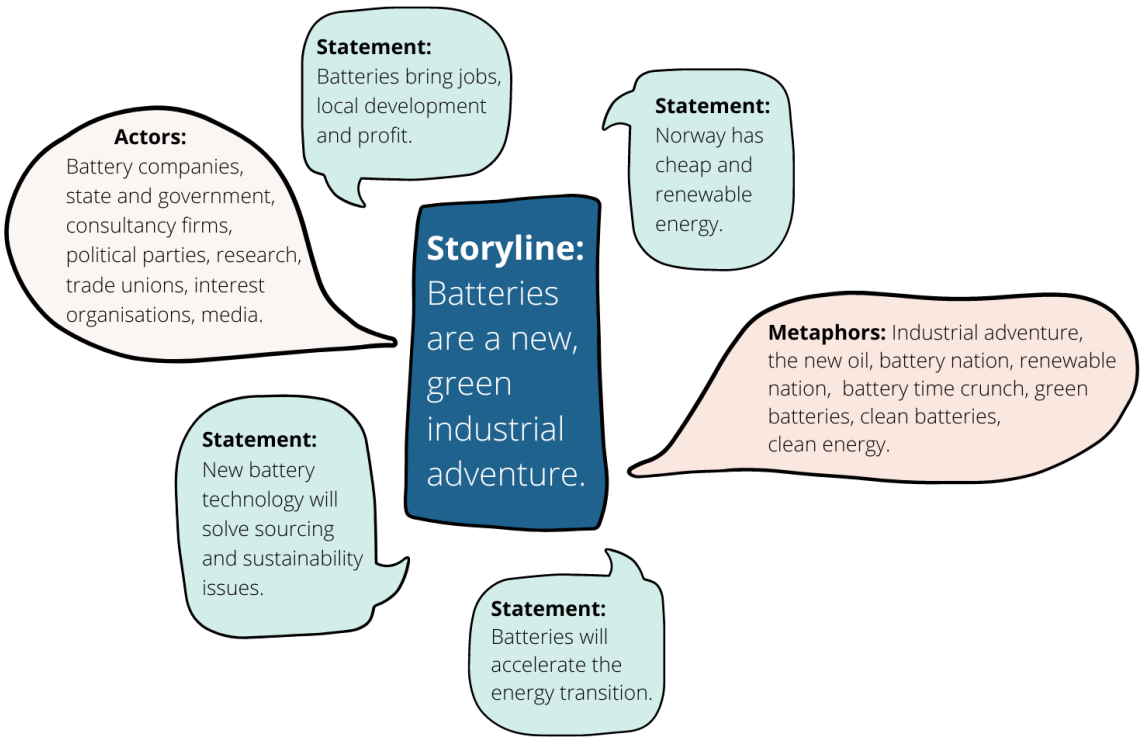

Figure 3: Illustration of the dominant storyline on batteries identified in this thesis.

The users of the storyline seek to create legitimacy for the battery production in Norway by trying to weave it into the nations' self-understanding, by using metaphors linked to Norway as a nation, and comparative metaphors that frame the battery adventure as something that could be as profitable as the petroleum adventure. Temporal metaphors time together with a statement stressing acceleration pinpoints the urgency of the matter that is a precondition for this to happen successfully. The green industrial adventure as a main storyline has credibility because it builds upon a story that already exists, which is that Norway is an industrial nation. This tale in turn hinges upon the nostalgic story of industrialisation of local communities. Combining this with the focus on sustainability creates a metaphor which has come to classify or symbolize the storyline; *the green industrial adventure*.

One key component of the storyline is that sustainability is framed as a challenge of reaching net zero, and the energy transition becomes as a task of reaching net zero through electrification by using batteries. Through using numerical discourse and focusing on the low carbon footprint of batteries produced in Norway due to their use of renewable energy sources. This means that other types of footprints and issues gain less attention, even if they are not necessarily actively excluded. These other footprints, being social, human

rights, or environmental, are easily 'fixed' by the promise of more sustainable technology that uses less critical minerals. Some of the actors analysed have a broader understanding of both sustainability and the energy transition than this, but I argue that when they engage with the green industrial adventure-storyline as part of the discourse coalition, they enact this collective understanding.

Having now summed up and discussed the storyline, we can move on to assess the extent to which this storyline represents a dominant discourse. To do so, I have proposed that we take Hajer's concepts of structuration and institutionalisation of discourse. Structuration of discourse is if many people use it to conceptualise the world. As Hajer (2006) explains, it is "when a discourse starts to dominate the way a given social unit" make sense of the world (p. 70). In the case of this thesis, we can refer to that social unit as the actors using argumentative discourse across different platforms in Norway in 2022, who in their argumentation made explicit mention of "battery industry". As sub-chapter 6.3 demonstrated, a wide set of actors use the components of the green industrial adventure-storyline. Furthermore, as I will discuss in chapter 7, the alternative storylines that are present also use these rhetorical components, even if it is to argue against the storyline. Thus, we can propose that there is a structuration of discourse. What this thesis cannot conclude on, is the extent to which people outside of argumentative discourse use this storyline, or how it is received in everyday narratives. Institutionalisation of discourse, on the other hand, assesses whether discourse solidifies into institutions and organizational practices. However, the broad use of this storyline in Norway, as well as its presence throughout a broad data set, as well as in policy documents concerning green industrial projects (Ministry of Trade, Industry and Fisheries, 2022c, 2022f), shows that it has to some extent solidified into institutions across the political spectrum and beyond. This also suggests an institutionalisation of discourse. A more in-depth analysis of certain institutions or organisations would be necessary to conclude further.

Having concluded that according to the data set analysed, the level of structuration and institutionalisation suggests a dominant discourse, we might then assess what the implications of the success of this storyline are. The green industrial adventure-storyline allows climate change to be used as a driver for quick change in policy, especially when combined with statements promising profit, jobs, and cheap and renewable electricity to increase attractiveness for Norway as a host country for the battery value chain. When

this storyline is successful, it could create quick change and progress in the political development on batteries. The fact that all three of the battery companies examined have received governmentally sanctioned economic support is a strong indicator of this. In this way, the industry is reliant upon the success of this storyline, as it needs quick pace in policy change and consultation processes to open mines to increase access to raw materials, as well as continued investment from governments.

However, there are also risks to accelerating the battery adventure in relation to green growth. In the case of this thesis, battery industry can be analysed as a temporary fix that 'moves' capital accumulation from fossil fuels to batteries and assures that growth and expansion continues. It further coincides with Dryzek's analysis of the environmental policies of Norway as a case of "weak" ecological modernization. This, in accompaniment of urgency that underlines the storyline, could mean that the battery industry is successfully framed as sustainable, but which lacks the checks and balances to ensure a *just* energy shift.

In summary, when it comes to the framing of batteries in argumentative discourse, the findings I have so far assessed suggest that there is to a large extent a dominant storyline of a green industrial adventure, and this discourse has a certain degree of legitimacy as it enjoys both structuration and institutionalisation.

6.5 Conclusion

This chapter has analysed argumentative discourse on batteries in Norway, by assessing metaphors, statements and actors all guided by an over-arching storyline of a green industrial adventure. I first analysed several metaphors (6.1) that in diverse ways help frame battery production in Norway, including petroleum metaphors, metaphors referring to nation, temporal and purity metaphors. Next, I assessed four key statements (6.2). The first statement focuses on batteries as a way to accelerate the energy transition. The following one links the battery industry to economic growth, jobs, and local development. A third statement holds that innovative technology will solve issues of sustainability and sourcing. Finally, Norway's cheap and abundant renewable electricity is presented as one of the major factors for host attractiveness. All of the metaphors and statements assessed rest upon the assumption that economic and environmental concerns can be united, by chiefly focusing on carbon footprint rather than social impacts. Followed by the

discussion of metaphors and statements, I briefly assessed the actors (6.3), who narrate this storyline. I argue that they are in a discourse coalition because they do not necessarily share belief systems, but all share the same storyline. Finally, I drew all these elements together in a summarising discussion (6.4), by demonstrating the relevance of the storyline concept, arguing that these discursive elements represent a dominant discourse on batteries in Norway. I briefly also discussed the implications, that by using this storyline, climate change can be used as a driver for change in policy, together with promises of profit, jobs and abundant, renewable energy. However, this chapter has excluded an analysis of perspectives that reject this storyline, and they will now be assessed.

Chapter 7: Counter narratives - tension on the decarbonisation path

The previous chapter discussed how actors in a discourse coalition are using statements and metaphors to produce a storyline about Norwegian battery manufacturing as a green industrial adventure. This chapter mainly seeks to grapple with the third research question; *to what extent is there controversy concerning the role of the Norwegian battery industry in supporting the "green transition"?* Discussing tensions in the discourses on batteries in Norway allows us to explore the legitimacy and level of success of the statements and metaphors, and thus also the influence of the main storyline of battery production in Norway as a green industrial adventure. In this chapter, I want to highlight that there are different counter narratives that point to dilemmas and challenges from a disperse group of actors. There seems to be a duality to the counter narratives identified that together counter both the "green" and the "profitable" claims of the industrial adventure-storyline. From the data, I grouped together two key counter narratives, one greenwashing counter narrative pointing to concerns for social and environmental impacts of 'green' batteries, and one economic infeasibility narrative. Furthermore, when assessing batteries as part of the energy transition there was also an implicit reference to the phasing out of the petroleum industry, which will be discussed as a 'suppressed' discourse in this chapter.

In this chapter, I employ 'counter narrative' as a concept. It shows that the statements, metaphors and claims discussed are used as a response to the argumentative discourse and actors that frame the battery industry as a green industrial adventure. However, I try to venture beyond an understanding of a homogenous dominant discourse, and a homogenous counter narrative. As I will hint towards in the discussion, the actors using counter narratives can also be analysed as sharing discourse with the proponents of the green industrial adventure, as they for instance use similar metaphors (although in different ways). Furthermore, we will see that some political actors use statements from both the dominant storyline, as well as counter narratives. A caveat should be noted in that the counter narratives will not be analysed in as much depth as the dominant storyline. The purpose of this chapter is to nuance the somewhat tidy picture of the previous chapter, by showing to tensions in the concepts, as well the fact that actors use counter narratives to challenge some key claims.

The chapter assessing counter narratives is organised as follows. Firstly, I present and discuss the greenwashing counter narrative (7.1), by delving into statements, metaphors and actors using this narrative. Secondly, I assess the economic infeasibility narrative (7.2), together with metaphors, statements, and actors. I will then go on to summarize and discuss the impact of these counter narratives (7.3). Fourthly, I assess the "phasing out" of the petroleum industry as a suppressed discourse related to the energy transition and batteries (7.4), and finally I summarise the chapter (7.5).

7.1 Greenwashing narrative

The first type of counter narrative identified in the data material uses statements and metaphors that directly address and challenge the dominant storyline discussed in chapter six. The critiques identified primarily voice concerns for the battery value chains' impacts on the natural environment and the justice perspective connected to the extraction of minerals, referred to previously in this thesis as the social and environmental footprint (as opposed to carbon footprints). In this narrative, greenwashing is used as a shorthand to highlight the discrepancy between the way batteries and the battery industry are presented, and the social and environmental impacts of its value chain. The actors using this narrative include civil society organisations such as Naturvernforbundet and Spire, that both have experience in scrutinising 'green' industrial projects. To assess this counter narrative, this section of the chapter will be organised as follows. Firstly, I will assess the actors identified as using this narrative (7.1.1), followed by statements (7.1.2), and metaphors identified (7.1.3), before summarising the counter narrative (7.1.4).

7.1.1 Actors

The documents coded together as part of this counter narrative were found most evidently in opinion pieces, strategies and press releases or news articles published on the web sites of a couple of civil society organisations. It was not largely present in the key policy documents examined, or general media coverage examined through Atekst. The actors using it most frequently were non-governmental organisations (NGOs) that work on issues related to climate and the environment. These include Naturvernforbundet and Spire, which both have a history of critically reviewing 'green' projects that have environmental and ecological consequences, as well as for indigenous peoples. When

collecting and coding documents, only 6 different documents were assigned codes in line with this counter narrative. Since my sampling method was searching for articles specifically mentioning the Norwegian battery industry, this could imply that I have not captured more general discourse that make a mention of batteries. However, my findings indicate that these actors do not talk a lot about batteries and battery production in Norway. This coincides with what Hobi wrote in an article posted on the blog Lithium Worlds, "… with the notable exception of Naturvernforbundet, Norwegian civil society has been rather quiet about the new large-scale industrial visions", referring to the battery industry (Hobi, 2021b).

One assumption of why Norwegian environmental civil society does not engage more in this debate to a significant extent, might be the preoccupation with pressuring Norway to phase out oil and gas production. For instance, the main campaign of Greenpeace in 2022 was stopping the construction of Wisting, Equinor's planned oil field in the Arctic, which would have been the world's northernmost oil field (Greenpeace Norge, 2022). Furthermore, my findings indicate that instead of zooming in on just battery production, these organisations have a more over-all perspective of critically analysing green industrial policy. This is evident in Spire's campaign from 2021, *Green overgrowth*, which gave critical view of the concept green growth and the reconciliation of growth and sustainability concerns (Vandeskog, 2021). As discussed in chapter six, my findings indicate that a green growth discourse is at the heart of the dominant battery storyline.

Since Naturvernforbundet and Spire represent two of several civil society actors who most frequently express the greenwashing counter narrative, they will be the main focus of analysis. Naturvernforbundet is "Norway's oldest environmental and nature protection organisation", working on "areas conservation, climate change, energy and transportation" (Naturvernforbundet, 2023a). Spire is an environmental and development organization working to promote a more sustainable world by creating awareness and political influence, with climate justice as a core principle (Spire, 2023). Local and regional branches of Naturvernforbundet operating where the giga factories are being

constructed are particularly active, seen in Nordland County, Agder County and Trøndelag County[15].

The greenwashing narrative could be analysed as the environmental discourse that Dryzek has termed "green radicalism" (Dryzek, 2013), in that the actors using it reject the belief that economic growth and sustainability can be truly reconciled. Being too far away from the claims of the green industrial-storyline, means they could have less influence and access to impact the dominant discourse. In this, they differ ideologically from what Dryzek might term more reformist organisations, which I argue include Bellona, an organisation which is part of the discourse coalition of a green industrial adventure. Bellona and other NGOs working on issues related to climate and the environment have a more technology optimist approach to their work, and are supportive of establishing a Norwegian battery industry, given the pivotal role of batteries in the energy transition (Bellona, n.d.). As argued in chapter two, Bellona was part of founding Morrow Batteries.

7.1.2 Statements

> So, the only thing we ask of Freyr is that you stop with "green" fairy tales and start calling a spade a spade. […] The transition away from fossil energy, which is already underway, must happen. But simultaneously, the nature crisis calls for great restraint in future energy and material consumption, which will never be "green" (Naturvernforbundet, 2021, author's translation).

The text quoted above was sampled from an opinion piece in the local newspaper Rana blad, written by members of Naturvernforbundet in Nordland County, and addressed directly at the battery company FREYR. It should be highlighted that Naturvernforbundet are not principally against building a battery industry in Norway. For instance, Naturvernforbundet's guide to statements on batteries for county and local groups states that "both battery factories and data centres could have greater benefit to society than the negative consequences" (Naturvernforbundet, 2023b, author's translation). This was furthermore emphasised in the interview I had with a representative from Naturvernforbundet (Informant Naturvernforbundet, author's translation). Their critique

[15] FREYR is in Nordland, Morrow in Agder, the shelved project JBI and recently announced Elinor in Trøndelag.

is rather that the proponents of the battery industry need to stop selling it as a green adventure and start acknowledging the significant consequences of giga scale battery production for nature and people. Said in other words; stop greenwashing battery factories.

The claims made by the actors using the greenwashing narrative point to two key thematic areas. Firstly, the dilemma of resources and the sourcing of critical minerals, and secondly, the environmental encroachment of the giga factories. Enclosing both of these thematic areas are principles that shows that consideration of the climate and the environment must always come before profit. Tackling the resource dilemma first, both the Nordland and Trøndelag sections of Naturvernforbundet have pointed to sustainability issues of extracting battery minerals, and consequently denounce the use of "green" rhetoric by the industry. They question how the massive increase in the extraction of lithium and other minerals necessary for batteries is going to happen (Hobi, 2021b). This is similar to Spire, stating that "[i]t requires metals and minerals that we know are extracted in ways that are neither environmentally nor socially sustainable" (Åsnes, 2022, author's translation). It should be noted that Spire's critique is not exclusively directed at the battery industry, but more generally as a critique towards the Norwegian government and their green industrial shift policy, where batteries is one focus area. The focus on battery minerals framed in the context of the "dark side of the green shift" has also been subject to coverage in several media outlets, including Finansavisen about cobalt in the Congo (Klemsdal, 2022), and Klassekampen about lithium in Bolivia (Grasaas-Stavenes, 2021). However, this is without explicit reference to establishing a battery industry in Norway.

The second thematic area of this narrative, which is perhaps most evidently used by Naturvernforbundet, is the impact that the giga factories, transport and the total infrastructure of new residents and industry might have on the natural environment, including possible loss of arable land, marshes or old species-rich forests (Naturvernforbundet, 2022). Naturvernforbundet also raise critique over the competitive element between the municipalities that came about when the different battery initiatives were choosing where to base their projects. The municipalities involved made vast areas available in a brief amount of time because of the time pressure, without proper impact assessments. The municipalities and areas that ended up not being selected by the battery

companies, still have large areas ready, which now will go to industry instead of nature (Informant Naturvernforbundet, author's translation). This is for instance the case in Hamar, whose area is going to host a Tik Tok data centre instead of a battery factory (Green Mountain, 2023). Naturvernforbundet is in general critical to this element of unprecedented speed, which leaves no time for a discussion about where to prioritize big industrial projects. This critique clearly clashes with the acceleration that the dominant storyline holds true. One example of a statement illustrating this is from just after Arendal municipality had signed initial contract with Morrow, Peder Johan Pedersen, the leader of the Agder branch of Naturvernforbundet warned municipalities about uncritically housing large facilities such as battery factories:

> It can be compared to the wind power bonanza that spread a couple of years ago. Municipality after municipality has later reacted after they saw the wind power plants' consumption of nature. The battery factory municipalities could find themselves in the same situation. They have willingly given away large areas without reflecting on it. (Mehl, 2021, author's translation).

Wind power parks are also part of the necessary infrastructure for battery giga factories that this narrative critiques. For instance, Spire, in one of the opinion pieces assessed stated that "… battery production requires large amounts of energy, and therefore cannot be called a green industry" (Åsnes, 2022, author's translation). The quantity of energy that a battery giga factory requires is a clear challenge, which was highlighted in the newest report from the Energy Commission (NOU 2023:3). This rhetoric is remarkably similar to that of the green industrial adventure-storyline, in its reference to acceleration and climate change:

> If we are to reach the climate targets, it will mean huge demand for more renewable energy. (…) New green industry will be established. We are entering a new era that requires a massive overhaul of the energy system, and we are running out of time. We are no longer talking about increasing the pace. We must rise to a pace we have not seen before. (NOU 2023:3, p. 9, author's translation).

The actors using the climate and environmental justice narrative, and Naturvernforbundet especially, have raised critique at a possible development of a wind park at Sjonfjellet in Helgeland, where critics have argued that Freyr have had a hidden agenda to build wind

parks there (Indsetviken, 2021). However, the resistance against wind power has increased, which was illustrated by the recent immense demonstrations against the wind park at Sámi reindeer-herding territory in Fosen (Engen, 2023). After these demonstrations, wind power plans at Sjonfjellet are temporarily postponed, and Freyr and the government now want a dialogue with the Sámi herders (Sjonfjellet vindpark, 2023). With this resistance and a possible revamping of the licensing system for wind power it might take up to nine years before any new land-based wind projects are up and running (Indsetviken, 2021).

7.1.3 Metaphors

The metaphors drawn upon in this narrative consist mainly of the use of green with or without brackets, in different variations, including the 'green' fairy tale, greenwashing, and green growth. They are often used in conjunction with each other. The 'green' metaphor is used in a similar style to that which the dominant storyline hinges upon, but rather than *grønt industrieventyr* (green industrial adventure), which is presented as an exciting venture, they use *"grønne" eventyrfortellinger* (green fairy tales), referring to something that is made up or something that is too good to be true. Placing green in quotation marks, the actors using this metaphor seem to object to how green or sustainable the battery venture is. However, this example also shows how the dominant storyline seems to frame even some of the metaphors and statements of dissenting voices, as the actors using the counter narratives must use a similar discourse. The fact that actors who disagree can share a discourse, is one of the key factors that Hajer points to in explaining why some discourses gain power and influence (Hajer, 2023).

It signalises that simply using green as a concept is not sufficient, as the leader of Naturvernforbundet in Kristiansand in Agder, Alf Holmelid, wrote in Fædrelandsvennen. He told Morrow that a "green label is not a free pass" (Holmelid, 2022, author's translation), highlighting that "[a]ll industry, including that which is part of the transition to a fossil-free society, must tolerate a factually critical debate about resource use and consequences for nature and the environment" (ibid). Targeting the now shelved Joint Battery Initiative (JBI), the local branch of Naturvernforbundet in Trøndelag told the companies behind the joint venture, Equinor, Panasonic and Hydro, to "stop greenwashing battery factories", and warned that these companies were tempting local

municipalities in Norway with “green” workplaces in asking them to present proposals for plots for battery factories (Solem, 2021, author's translation). When asked about “greenwashing” in the interview I conducted, Naturvernforbundet expanded:

> Battery factories are packaged to appear as a climate measure, whilst emphasising the urgency of the situation so that we do not have time for impact assessments and reflection. They are doing this instead of being honest and saying; this giga industry will have a significant impact on nature, both the building of cell factories but also the extraction of the necessary raw materials. (Informant Naturvernforbundet, author’s translation).

More than just being a metaphor, greenwashing has made its way into political platforms of different organisations as a key concept of critique. Spire has included greenwashing in their politics of technology and consumption (Spire, n.d.), and they use greenwashing as a metaphor to explain phenomena where products or companies pretend to be more environmentally friendly than they actually are (Spire, 2023). Spire have used greenwashing to critique batteries as part of the sitting government’s roadmap for green industry, which they argue is “imbued with technology optimism, and avoids addressing the fundamental cause behind the climate and nature crisis: We emit too many greenhouse gases” (Spire, 2022a, author's translation). The battery strategy is one component of this roadmap. They have also used the metaphor to critique Norwegian climate politics, which they argue is based on green growth, because it does not require a change in consumption patterns but simply that we ‘green’ them. A key thing to note here is that Spire uses green growth in a different way than the industrial adventure-storyline, as Spire uses it as a concept of critique. Spire also uses “greenwashing” to describe the case of the wind power plant in Fosen. They argue that climate justice must be integrated into climate politics and initiatives, to avoid sacrificial zones which pay the price so that the rest of society can continue to consume as before under a green banner (Spire, 2022b).

Greenwashing of batteries is not an issue that the battery companies neglect entirely, or a metaphor that they do not use. For instance, FREYR have claimed they are against greenwashing by taking a stand against the Guarantees of Origin scheme (GO-ordningen), together with actors such as the Norwegian Confederation of Trade Unions (LO), and Norsk Industri, a sectoral federation of interest organisation NHO. Through the

Guarantees of Origin scheme, energy companies that generate power from renewable sources can sell "guarantees of origin" to costumers reliant on coal for production. This in turn enables the coal-based customers to promote renewable energy without actually using it themselves (Montel, 2022). Although FREYR's concern of greenwashing might be legitimate, we might also suggest that the battery factories probably do not want other non-renewable based competitors to have the competitive advantage of renewable, Norwegian electricity power their industry. Furthermore, it emphasizes how the battery companies understand "green" to be synonym to mean with renewable energy sources, according to the users of the dominant storyline.

Other uses of this statement, and of "green" as a metaphor, is in the context of ownership and tax avoidance. The NGO Tax Justice Norge (TJN), as well as actors writing blogs and opinion pieces, inherently question the "green" industrial adventures. TJN found that the Cayman Island registered Alussa Energy Acquisition Corp, which made it possible for FREYR to enter the New York Stock Exchange, own 70 per cent of FREYR (Ringstad & Hjertaker, 2021). To add to this, the main office of FREYR is in Luxemburg, which has been rated as the sixth worst tax paradise in the world, according to Tax Justice Network (Rystad, 2023). Another partnership worth mentioning in this regard is the joint venture together with Koch industries to develop battery manufacturing industry in the United States (FREYR Battery, 2021). In addition to getting their wealth from oil, they have been linked to electoral campaign of Donald Trump in 2016, and other climate change denialists (Fang, 2019). TJN advise the Norwegian Ministry of Trade, Industry and Fisheries to exercise caution in investing state funds in "green" industries such as wind power, data centres and battery factories, as they have special challenges in terms of tax and transparency due to their high rate of investment (Klæboe Jacobsen, 2022). The topic of ownership was included in a question asked by FRP to the Minister, however, without using to the "green" metaphor. It concerned why only FREYR with offices in Luxembourg get governmental investment together with a general concern for high salaries for the CEO (Dokument 15:17 S (2021-2022) spørsmål nr. 2521). This was before the government had announced that also Morrow and Beyonder were granted support.

7.1.4 Summary of counter narrative

Summing up the greenwashing narrative, the actors using this are mainly NGOs who base their critique on how the construction of giga factories and the necessary complementary infrastructure could impact the natural environment, concerns for responsible sourcing of minerals, and the amount of electricity needed to power these giga factories. The fact that the claims are radical in the sense that they reject green growth, indicates they could have less influence and access to impact the dominant discourse. Even though these actors are not necessarily arguing against a battery industry, they reject the storyline of a green industrial adventure, because they argue it greenwashes and thereby hides the dirtier and darker sides of the green transition. In relation to the third research question of this thesis, this explicitly showcases a level of controversy concerning the role of Norwegian battery industry in the "green" transition concerning the environmental and social impacts.

7.2 Economic infeasibility narrative

Moving on from the greenwashing narrative, we are now going to dissect a counter narrative which in a separate way rejects the green industrial adventure storyline. The main claim made within this narrative is that it is unlikely that the battery industry will be economically feasible. The actors using this narrative point to geopolitical challenges and a lack relevant competency in batteries, a critique of government investment, and the volatile electricity prices. This counter narrative was found in a broad set of data, including general media coverage, reports from independent research centres, and was the counter narrative which was most present in independent newspapers and blogs. I also observed that this storyline was present in social media accounts of the authors featured in the independent newspapers. Furthermore, this counter narrative enjoyed coverage with political actors. The structure of this section of the chapter will be as follows. Firstly, I will assess the actors and some of the statements they used that I argue form part of this narrative (7.2.1). Secondly, I analyse the metaphors used (7.2.2), before summing up the counter narrative.

7.2.1 Actors and statements

The composition of the group of actors using the economic infeasibility narrative is broad and disperse, and therefore I will discuss actors and examples of statements they use together. The first actor group that stood out were commentators writing for alternative media such as Document and iNyheter[16]. These alternative media sources are characterised by a worldview where Norway and Norwegian culture is "threatened by immigration, morally corrupt politicians and anonymous, international power constellations" (Dahlback, 2021, author's translation). When the fact-checking website faktisk.no analysed alternative media in Norway, and why they have some of the highest interaction of all Norwegian media, they found that sharing happened in a web of Facebook groups and pages that they termed the Norwegian echo chamber. Despite the fact that a lot of news from NTB are republished and they thereby function as an alternative news source, they mainly write on immigration, Islam and climate scepticism (Dahlback, 2021). The actors publishing on these sites use very direct and often derogatory language to describe the emerging battery industry, by stating that "the fact that the entire world will run on batteries was decided by little girls in green parties at an after party" (Andersen, 2022a, author's translation). Further, they critique the public investment in the battery industry as high risk, and that the need for production of batteries in Norway is artificially created by politicians and not markets (Andersen, 2022b).

A second group of actors are academics using opinion pieces as a way to express themselves. This quote is one example which illustrates the counter narrative:

> The Norwegian players are late to the market. While the Norwegian players are practicing effective production, the established ones have been doing this for years. This means that it will be difficult for the Norwegians to catch up with them in terms of efficiency in production. A lot indicates that the large Norwegian investment in battery production is a high-risk sport which, worst-case scenario, is "dead upon arrival." (Andreassen, 2022, author's translation).

This quote is sampled from an opinion piece in Finansavisen written by professor at Norwegian School of Economics (NHH), Tor Andreassen. He emphasises the

[16] iNyheter is an alternative media site created by Helge Lurås, who founded and was part of Resett for many years.

international political economy of battery value chains as a key reason as to why the Norwegian battery adventure might be doomed before it has gotten off the ground. Otherwise, the abundance of cheap and clean electricity was highlighted as a key statement of the green industrial adventure-storyline. Another actor was the recently published report from De Facto (an independent foundation that carries out research for the Norwegian trade union movement), where they looked at consequences of Norwegian electricity prices on Norwegian trade and industry (Lekve, 2023). This example shows how the counter narrative directly questions the attractiveness of Norway as a host country for giga battery factories. It concerns the renewable energy for the battery factories, that is presented as a, or perhaps *the*, competitive advantage for Norway as a host country for battery manufacturing. With the ongoing electricity crisis, Norway does not have much comparative advantage as a battery producer, as evident in the following quote:

> What can Norway get good at? Where is our competitive advantage? We can't compete on raw materials, we can't compete on proximity to markets, we definitely don't compete on wages, and we don't want to either. We compete a bit on competence, and we compete on energy prices. And that last factor has now disappeared. (Informant De Facto, author's translation).

The economic infeasibility narrative is also evident with other actors, including opinion pieces from commentators in other media arguing that perhaps the state is not the best at deciding where to invest and not (Søberg, 2023). Others include Trygve Hegnar, the editor-in-chief of Finansavisen, one of Norway's leading business newspapers, and business magnate Øystein Stray Spetalen. Other billionaires join Hegnar and Spetalen in their critique of Norway's big bid in the battery industry, critiquing that the government increased taxes for businesses whilst taking on a role as an investor in a very uncertain technological future. One of the examples pointed to is "support to a risky battery factory of 4 billion kroners when the main owners are American" (Ravfem, 2022). Editor-in-chief Gunnar Stavrum has also dedicated a lot of editorial space in Nettavisen to debate the viability of the battery factories. For instance:

> The next contribution to creating a power shortage is the state-supported battery factories that are now being planned across the country. (…) We already know that Freyr estimates that their factory needs 1.2 - 1.3 billion kilowatt hours

> (roughly the same as the city of Drammen), while Morrow Batteries' new battery factory in Arendal needs twice as much. If we add the power demand from Elinor in Trøndelag, we pass 5 TWh by a good margin - i.e. a new power consumption partly financed by tax money, in a sector where Norway has minimal history and knowledge compared to foreign competitors. (Stavrum, 2023a, author's translation).

This example from Stavrum seeks to point to some consequences that the battery industry could bring with it, that being higher electricity for taxpayers, as well as an exhaustion of Norway's energy surplus. The possible impact on the electricity bills is also highlighted by other commentators in Nettavisen, warning that the giga factories "could be a disaster for both energy consumers and taxpayers" (Rystad, 2022). Journalists reporting for the national news broadcaster NRK, also state that "[t]he green industrial adventure will probably give me and you higher electricity prices" (Indsetviken, 2021).

We need to contextualise the time period that these examples were sampled from, which was the winter of 2022 with very volatile electricity prices, especially in southern Norway, where a common framing used was the electricity crisis due to the impact it had for consumers (Ulvin, 2022). This also helps explain why some of the media coverage bears the mark of sensationalism. There are different explanations concerning the reasons behind the electricity crisis, but they all seem to agree on the fact that it is impacted by relations outside of Norway. One conclusion is that the new submarine power cables from Norway to Germany and England have exposed the Norwegian market to the energy prices in the European market. The war in Ukraine therefore further aggravated these problems (Lekve, 2023, p. 6, author's translation). Other actors criticise the submarine cables as a simplified conclusion to why the electricity prices rose so much, and rather point to the high prices in natural gas. This gave high electricity prices in Europe despite of the cables, as prices in (especially in southern) Norway have been impacted by gas, coal and quota prices before these cables were put into use (Molnes, 2022).

Political actors have also used the economic infeasibility narrative to voice concerns over the electricity prices and the profitability of the battery industry in Norway. The previously mentioned Bjørnstad, asked in a written question to the Minister for Trade and Industry, "Battery factories are a power intensive industry. At the same time, Statnett warns that the power surplus in Norway will be nearly gone by 2026. How many TWh

will be available to establish new battery factories in Norway towards 2030?" (Dokument 15:9 S (2021-2022) spørsmål nr. 1278, author's translation). Venstre has also voiced concerns over the energy needs of giga factories, and stated that the battery initiative needs to be complemented by the initiative to build floating offshore wind and other initiatives to increase energy infrastructure in Norway (Berge, 2022). These concerns echo the conclusion of the abovementioned Energy commission report, "More of everything – faster", which estimates that the historic energy surplus in Norway will run out in the next couple of years. They point to the ever-increasing energy consumption of the Norwegian population and industry as an explanation, and that this will starkly increase with the massive investment in green industry (NOU 2023:3, p. 9).

In addition to the concern about electricity prices, political actors have also directly questioned the profitability. The Progress party (FrP) representative Bjørnstad posed a concern during question time, to the Minister for Trade and Business. He posed the question, that if it is the case that "battery production in Norway has the prospect of becoming as in demand and profitable as the minister claims, why is there a need for billions of kroner in state subsidies?" (Bjørnstad, 2022). Bjørnstad refers to the 60 billion of kroners promised in government loans, guarantees and equity for the green industrial shift policy as well as the tax increases for business. Consequently, he fears, state capitalism might ensue, where the state is the biggest economic driver. He concludes that "the state is ill-suited to lead the market" (ibid). These examples from the FrP representative shows that FrP, as a political actor, uses elements from both the green industrial adventure-storyline[17], as well as counter narratives. This might suggest that FrP have an understanding of the 'green industrial adventure' storyline as established in chapter 6, and rather sees the battery industry as a venture where the government should not be so heavily invested.

7.2.2 Metaphors

Having assessed the different actors as well as some examples of the statements they use, let us dissect the metaphors they also use. One of the most frequent metaphors used in

[17] As mentioned in chapter six, their political programme 2021-2025 states "With clean Norwegian power we can create new, green and profitable businesses like data centres, battery production and hydrogen production" (FrP, 2021).

this statement is *luftslott* (pipe dream), used in separate ways to question the feasibility of the established green industrial adventure metaphor established by the dominant discourse and its actors. The use of the metaphor *luftslott*, which can be translated to castle in the sky, is used to describe a great and grand dream that has no root in reality. The English language equivalent pipe dream is used to describe "an idea or plan that is impossible or very unlikely to happen" (Merriam-Webster, n.d.). In this context, pipe dream is used as an antithesis to the green industrial adventure, both to argue against it, as well as asking whether it will be a success or a failure, including examples such as "Battery factories in Norway – a Norwegian pipe dream?" (Danielsen, 2022, author's translation), and "Are the plans for giga factories a pipe dream or a potential gold mine?" (Fornybar Norge, 2021).

Luftslott is a metaphor used across the board from different actors who argue against the battery industry, also the actors using the greenwashing narrative. One example is that this metaphor is also used by Naturvernforbundet, in an opinion piece, used to question whether promises about a factory is used to propel the building of a wind power plant nearby; "Is the battery factory just a pipe dream, established to entice municipalities and the population to say yes to wind power plants on Sjonfjellet?" (Vågene, 2019, author's translation). Pipe dream is also used by scholars such as Hobi to highlight the fact that the European battery industry will be dependent on mining from resource-rich countries for some time going forward; "[m]ineral self-sufficiency in Europe seems like a pipe dream, given the few mining sources and refining projects that currently exist on the continent" (Hobi, 2022).

Furthermore, there is evidence of a direct comment on the metaphors used in the dominant storyline, which we also saw in the greenwashing narrative. This includes that the "[b]attery adventure might be put on hold" (Karlsen, 2023, author's translation), as well as "[t]he battery adventure is bursting" (Hegnar, 2023). Furthermore, as described in the paragraph above, there is a lot of mention of risk, that being the economic risk that the Norwegian government is making by investing in an industry which seems to be "doomed". Norwegian investor Spetalen, stated that investing in the battery industry in Norway and green investment in general is "crazy", and that the battery boom in Norway has a "99.9 % chance of failing" because of the fierce competition with big international firms as well as the pivotal role of China (Grini, 2022).

Another mark of this narrative is the use of a ridiculing type of language, as evident in the quote from Spetalen, as well as the many pieces written by Hegnar, editor-in-chief in Finansavisen. It seems Hegnar might have a personal vendetta against the battery industry and the government's role in it, as he is allocating a lot of space to cover it. In a satirical editorial, Hegnar wrote that "Minister of Finance and Trade Jan Christian Vestre (Ap) has decided that battery factories are the new oil, and that now [the development] is going at a breakneck speed" (Hegnar, 2022, author's translation). He continued to mock the ambitions of politicians and three leading battery producing companies Freyr, Morrow and Beyonder seeing Norway as a lead player, and that "they're probably trembling with fear in Germany and China" (Hegnar, 2022, author's translation).

As mentioned by Hegnar, as well as in several of the paragraphs above, a recurring message is that it is not feasible to build a new industry from scratch based on state subsidies. This is also reiterated by Torfinn Harding, professor in economics at the University of Stavanger (Solem, 2023). In an editorial analysing the announced 'new' industrial politics of the Støre government after their inauguration, Hegnar wrote "[w]e've never seen so much weird and exciting, but do not throw state funds at them. The market will solve that perfectly. An active state, which they are suddenly talking about, is so diffuse and non-committal. And unnecessary" (Hegnar, 2021, author's translation). This 'leave it to the market' rhetoric, is reminiscent of Dryzek's "Prometheans" in environmental discourse, even if these actors might not see the construction of battery factories as an environmental concern. Very simply put, Dryzek's Prometheans "believe that the only task for government in environmental affairs is to leave markets well alone" (Dryzek, 2005, p. 120). It is also to some extent reminiscent of the economic rationalist discourse of Dryzek's (ibid). The economic rationalist's rhetorical tool that is perhaps most applicable to this statement, is the horror story which portrays the government as creating "perverse, inefficient, and costly results" (Dryzek, 2005, p. 136). These horror stories work because they are true. As an example, the geopolitical challenge is very true, and the industry itself is very much aware of the fact that Norway has got some tough competition on the international battery stage and that the battery industry is a very capital-intensive industry. The spin that the actors using this statement employ to make it a horror story, is the conviction that it will not be economically feasible.

Speaking of economic feasibility also allows us to yet again touch upon the happy marriage of economic and sustainability concerns, hailed by the dominant discourse. This statement also clearly shows that, despite the importance of the sustainability focus, the economic considerations and the economic incentives offered that decide whether the battery industry will be established in Norway or not. One recent incident that supports this is the fact that FREYR is prioritizing the building of a battery giga factory in the US over Norway, due to the recently introduced green policy in the US, called the Inflation Reduction Act (IRA). As described in one news article, "the battery adventure might be put on hold" (Karlsen, 2023, author's translation). The IRA is, explained very plainly, the plan of the US government to use 369 billion dollars to subsidise green industry development in the US. IRA includes tax benefits for American produced electric vehicles and batteries, which does not sit well with European producers (Lea et al., 2023). This is because there is no similar arrangement exists in Europe or Norway today, which means that for FREYR it is more profitable to prioritise its investments in the US. This is a consequence of the battery industry being a very investment intensive industry, which requires years of inflowing funds before it becomes profitable. This also indicates that policy packages like the IRA can steer the development of the battery market.

7.2.3 Summary of counter narrative

Summing up this counter narrative, the main claim made is that the initiative to assemble a battery industry in Norway is not economically feasible. The actors making these claims point to geopolitical challenges, claiming that the most likely outcome of the "battery adventure" is that Norway will be outcompeted on the global battery scene, due to our lack of competitive edge, and volatile electricity prices. Some of the actors further critique the involvement and investment of the government and public funds. It was used in many diverse types of data, including media sources such as Finansavisen and Nettavisen, independent newspapers and blogs, as well as by political actors in written questions. Throughout the statement, there seems to be an effort to frame the battery adventure as risky, where the risk referred to is purely economic, and of the Norwegian government as an actor that is inept to develop and invest in green industry. I argued that the rhetorical devices utilised are reminiscent of both the Promethean and economic rationalist environmental discourse of Dryzek's. Especially the use of the horror story that portrays

the government as an inefficient actor which should not try to interfere with the market, and should not take these risks, seems to be evident.

7.3 Counter narratives challenging the industrial adventure storyline?

So far in this chapter, I have argued that there seems to be two main counter narratives used in the argumentative discourse concerning the Norwegian battery industry, one that I termed the greenwashing narrative, and the other the economic infeasibility narrative. What these counter narratives have in common is the fact that they have critical remarks to the discourse concerning the emerging Norwegian battery industry that I discussed in chapter six. Furthermore, the metaphor 'green' industrial adventure, or the use of 'green' in brackets, is evident in both narratives, and it is similarly used in conjunction with negatively charged concepts to sow doubt about the dominant storyline. The presence of counter narratives indicates a level of tension in discourse on batteries and demonstrates that there is a level of disagreement in argumentative discourse on batteries in Norway. There is furthermore a duality to the counter narratives that I have identified and analysed, and together they raise concern over the green growth aspect of the metaphors, statements, and the united storyline of the green industrial adventure. In this section of the chapter, I wish to discuss the counter narratives, and hint towards their influence, or lack of influence.

7.4.1 Influence of counter narratives

In this chapter I employed 'counter narratives' as a concept, as I felt it gave a clearer indication of how the statements, metaphors and claims discussed are responding to the argumentative discourse and actors that frame the battery industry with a storyline of the green industrial adventure. However, according to Hajer's understanding of storylines and discourse coalitions, and as I also argued in chapter six, actors who disagree can still share a discourse. I have tried to illuminate that fact in this chapter, by pointing to how some actors, like The Progress Party (FrP) use discursive elements from both the dominant storyline and the counter narratives. Furthermore, civil society organisations Naturvernforbundet and Spire clearly disagree with the government's understanding of the 'green industrial adventure', but they still use this same metaphor, and thus also could be argued to share a discourse. The fact that actors who disagree can share a discourse, is

one of the key factors that Hajer points to in explaining why some discourses gain power and influence (Hajer, 2023). In this sense, the counter narratives can help legitimise the 'green industrial adventure' storyline, even if the actors use it in a counter narrative, and if their intention is to discuss the legitimacy of the storyline.

Mentioning Hajer's concepts, I also want to acknowledge that a different way to structure this thesis could have been to present all of the actors discussed in both chapter six and seven one in one discourse coalition, connected by the green industrial adventure-storyline, or a set of storylines. What would distinguish the actors would be their different interpretation of the storyline, or the green industrial adventure. As emphasised earlier, both in chapter four and chapter six, that the "assumption of mutual understanding" (Hajer, 2006, p. 69) of an issue is false. Rather, a framing of an issue in a storyline might suggest a mutual understanding of an issue.

Having acknowledged and discussed my use of Hajer's concepts, I also want to discuss the influence of the counter narratives, and how actors using these narratives to communicate about green policies might impact or shape the 'green industrial adventure' storyline. According to the findings in my thesis, the counter narratives are not equally influential, in contributing to a level of controversy concerning the green industrial adventure storyline. Despite the substantiality of the critique within the greenwashing narrative, my findings suggest that these ideas and discourses are to a greater extent side-lined by the dominant discourse. Rather, the economic infeasibility narrative, which focuses on electricity prices and international political economy, seemed to receive more coverage and attention in media sources. This narrative was further prominent in discourse from political actors, where the question of sustainable and ethical sourcing of minerals for the Norwegian battery industry received no attention in the data I examined. If we assess the questions asked by other Parliamentary politicians to Minister of Trade and Industry, Jan Christian Vestre in 2022, they are concerned with why there is a need for state subsidies if the battery industry is to become profitable (Bjørnstad, 2022), how the building of giga factories is going to mitigate the rising electricity prices, and connected to this; how building green power-intensive industry will impact people (Dokument 15:9 S (2021-2022) spørsmål nr. 1278). They do not mention explicitly the possible social and environmental impacts of battery value chains. However, as discussed in chapter 6, there are some political actors that similarly to the users of greenwashing

narrative refer to climate justice in their political programme, such as the Socialist Left Party (SV). This might make it possible to discuss issues such as sacrificial zones, whether that concerns communities impacted by lithium mining or infrastructure needed for renewable energy for giga factories in Norway. This happened during the Fosen demonstrations, where SV was one of the actors supporting the Sámi reindeer herders, where others saw it as a superior need to create wind mills in combating climate change than to recognise the perspectives of the Saami people (Stavrum, 2023b).

The overall research question of this thesis is the extent to which there is a successful framing of the Norwegian battery industry as a green industrial adventure. The presence of counter narratives pointing to important challenges and dilemmas indicates that the green industrial adventure storyline is not yet a common-sense narrative, or a storyline that is accepted by all of society. My thesis cannot conclude on how actors understand or interpret the storyline for themselves, neither on how personal narratives plays into this. Furthermore, I cannot draw definite conclusions on the reflection of the storylines, statements, metaphors and counter-narratives analysed in this thesis in these personal narratives. I argue that the economic infeasibility counter narrative is more influential, because more actors use it and it was present throughout more platforms, which indicates a level of structuration; that many people use this counter narrative to conceptualise battery production in Norway. However, the identification of actors using the economic infeasibility narrative across many types of documents does not mean that these are yet so influential as to compete with the suggested common understanding of the green industrial adventure (established in chapter six). A further point is that a successful framing of the battery industry as a green industrial adventure does not necessitate the absence of disagreement of alternative storylines or counter narratives, but rather that the storyline (the suggested common understanding of the green industrial adventure) eclipses the counter narratives. Having said that, the economic infeasibility seems to be the counter narrative that has the greatest possibility of further influencing argumentative discourse on batteries in Norway.

What might then be the implications if these counter narratives gain more influence, and more actors start using them. As discussed in chapter six, the storyline of the green industrial adventure is dependent upon quick change and progress in the political bureaucracy concerning batteries. Therefore, if the greenwashing or economic

infeasibility gain more influence, or structuration and institutionalisation, it could reflect and impact the level of government investment or a stagnation in development of a successful battery industry. This stagnation might hinder Norway to adapt to a green and sustainable future, creating green industry and jobs. Using the words of the dominant storyline, it could inherently slow down the process of accelerating a Norwegian battery industry. This means that the counter narratives have potential, especially the economic infeasibility narrative, as it has already been lifted in political discourse.

Economic feasibility and economic incentives from governments seem to be a decisive factor in green industrial policies according to what I have discussed so far in this thesis. As discussed under 7.2, the introduction of the Inflation Reduction Act (IRA) in the US immediately led to headlines such as "The battery adventure might be put on hold" (Karlsen, 2023). All indications given by FREYR at the stage of writing seems to be that they will prioritise building battery cell capacity in the US before giga factories in Norway, unless Norwegian policy makers can come up with similar incentives (Karlsen, 2023). The EU is working hard to avoid that investments in green industry get moved overseas. This also has an impact on Norway as a member of the EEA and therefore also covered by the EU's law of state aid (Lea et al., 2023). Two other interconnected issues where the battery industry seems dependent upon a successful storyline, are a quickened pace in licensing processes to increase mining in Europe for battery minerals as well as increasing the renewable energy infrastructure in Norway. Both counter narratives, but mostly the economic infeasibility, therefore could have the possible effect of slowing down or hindering development of a successful Norwegian battery industry.

7.4.2 Eclipse of counter narratives

On the other hand, the side-lining of counter narratives pointing to the possible social and environmental impacts of battery value chains, could lead to a hasty development of a battery industry that is framed as sustainable, but which lacks the checks and balances to ensure a just energy shift. Even though I argue critical actors and discourses are eclipsed or side-lined, they are not necessarily actively excluded or have no access to impact the battery actors. If looking outside of public and accessible argumentative discourse, there are several examples of environmental NGOs taking part in seminars on how to develop sustainable battery industry in local communities. As an example, Nature and Youth

(Young Friends of the Earth Norway) participated in a workshop in Arendal municipality, where they gave inputs together with Sabima and the World Wildlife Fund on sustainability connected to the building of Eyde Material Park and loss of nature in the area (Arendal kommune, 2022a). This was also included in the *Knowledge base: Basis for Norway's battery strategy* (Ministry of Trade, Industry and Fisheries, 2022b, p. 47), under sustainability challenges for the industry. However, from interviewing Naturvernforbundet, I found that the experience of dialogue and inclusion of the regional branch of Trøndelag, is somewhat mixed:

> There is a varying degree of dialogue with the battery producers. There are some public meetings we take part in, and they have to relate to us a bit. We have a legal interest as an organisation, so we can demand some dialogue. But they are not that interested in talking to us. We do not think we have all the answers to the dilemmas that the battery industry presents, but we can take part in the discussion. (Informant Naturvernforbundet, author's translation).

Since I was not able to interview other branches of Naturvernforbundet, or Spire, I cannot conclude on whether the situation they describe is the same for Naturvernforbundet or other civil society organisations elsewhere. However, this gives an indication of how the greenwashing counter narrative relates to the dominant storyline. The findings in this thesis do therefore suggest that the actors who ask the most critical questions are not included in discussions on the battery industry unless they make a claim to take part. Referring back to Dryzek's weak ecological modernisation theory here, this could indicate that Naturvernforbundet (or Spire) are not considered reformist enough to be included in decision-making concerning green industries. As mentioned before, they are not in opposition to the building of battery industry, but they want to discuss dilemmas and challenges. Lifting these issues in debate could at the least help give a more realistic framing of some of the impacts of the battery industry in Norway.

Furthermore, as discussed in 7.1, Naturvernforbundet want a more nuanced and realistic framing of what the social and environmental impacts of creating a battery industry in Norway would entail. This framing has to go beyond the green industrial adventure-storylines promises of more sustainable technology and increasing mining in Europe and the Nordics as a future mitigation. As pointed out by Hobi, Norway's vision of self-

sufficiency in the whole value chain might obscure the fact that if battery production is to become a leading industry, Norway will be dependent upon the mining of raw materials from the Global South for some time. Creating a robust mining sector in Norway will take time, and furthermore, it "is politically challenging due to its impacts, and would probably not satisfy the expected demand in time" (Hobi, 2022). This coincides with Naturvernforbundet's use of the greenwashing narrative, where they implore the battery industry to call a spade for a spade, and be open about the social impact instead of painting a flawless image of giga factories as a green adventure. This is further supported by a report published by The Research Council of Norway on future trends regarding the green transition, holding that "there will be an increased focus on the social and distributional impact of the green transition" (p. 15).

The mention of social and distributional impact of the green transition, and especially in terms of the raw materials that need to be extracted, does become a bit superficial in this thesis. My thesis does not, and did not intend to, include narratives of what the energy transition looks in areas where the Norwegian battery value chain needs to extract its minerals. These voices seem to be missing in the narratives, statements and metaphors in argumentative discourse on the battery value chain in Norway, other than the references made to social and environmental impacts of the greenwashing narrative, and some media sources mentioned earlier. This highlights an opportunity for further research, to analyse the Norwegian battery value chain in Norway from a perspective that takes these narratives into account. By studying value chains or using insights from political ecology, a further analysis could take power and how power relations impact narratives into greater account than I have done through this thesis. As shown in the literature review, there is already a rich literature studying lithium extraction and narratives from local perspectives along the value chain. Connecting these analyses to the upstream part of the value chain, like the Norwegian battery producers, could further contribute to a factual, realistic image of what acceleration of an energy transition as held by the dominant storyline in Norway will look like. Not just electric cars, and green giga factories running on clean energy, but also the large-scale mining and massive environmental impact that such a transition will necessitate.

7.4.3 Summary

Summing up this section of the chapter, I have discussed the counter narratives that I identified in the data set, that I denominated a greenwashing narrative and an economic infeasibility narrative. Based on the analysis of the actors, statements and metaphors part of these counter narratives, I tried to discuss the possible impacts of these narratives gaining influence or continuing to get side-lined. I pointed out that the economic infeasibility narrative is used by a wide set of actors, and has also gained prominence within political discourse, as opposed to the greenwashing narrative. Therefore, it seems that in discourse concerning the Norwegian battery industry, the economic infeasibility narrative is more influential than the greenwashing narrative. When it comes to the greenwashing narrative, the eclipse of these perspectives and actors could imply that the battery industry succeeds in framing itself as green, but lacks critical discussion of its implications. Research does indicate that there will be more focus on the social and environmental impacts of the energy transition.

7.4 Supressed discourses

Through this thesis, we have arrived at a storyline about the Norwegian battery industry as a green industrial adventure, followed by examining some of the counter narratives present in argumentative discourse in Norway. However, by having made methodological choices limiting the data material to sources explicitly discussing the Norwegian battery industry, there are perspectives, dilemmas, and tensions very much related to batteries that could be further illuminated. Batteries are to be the enabler of a massive electrification of society, according to the suggested common framing of the dominant storyline. Subsequently, any discussion on the mass-electrification of society hinges upon discourses related to batteries. I therefore briefly want to comment upon some suppressed, or unspoken discourses which touches upon the bigger debates of electricity and the energy transition. By suppressed discourse, I refer to the implicit presence of batteries in all discourse that tackles the energy transition, electrification, and the greening of society.

To illustrate these discourses, I want to use an example of a debate where batteries and the battery industry is not explicitly mentioned, but are inherently present, which is the length of life of the fossil fuel industry in Norway. Lithium-ion batteries are presented as

a key pillar of a fossil-fuel free economy and in replacing fossil energy sources with electricity. Therefore, they are arguably the backbone of the green industrial shift. However, whilst the battery industry is on a forward march, investments in the fossil fuel industry are also increasing, and there are plans to use batteries in the electrification of oil rigs on the Norwegian continental shelf (Equinor, n.d.). This is an ambiguous narrative where the battery industry is going to be the cornerstone of a fossil free economy, but also contribute to prolong the fossil fuel industry as long as possible. Furthermore, it touches upon an interesting issue, which is the complexity of Norway's "climate friendly identity", taking into account the massive current importance of its oil and gas based economy (Skjoldanger et al., 2021, p. 28).

Some actors argue that the fossil fuel industry in Norway will be forced to phase out, as the market will swing to prefer renewables when they are cheaper to produce than fossil-based energy (Marsdal, 2021). Brett Christophers challenges this, by arguing it is not the production costs, but rather the profitability that will decide when fossil-based energy is phased out. This is in line with the findings of this thesis, given that profitability is one of the key statements of the battery industry's dominant storyline. Christopher also argues that whilst the price of producing renewables is sinking, it does not match the profitability in fossil fuel industries (Christophers, 2022). Following his argument, it does not seem likely that the phasing out of the fossil fuel industry will happen at its own accord. This is also highlighted by other scholars that point out that the strategies to build green industry to a very low extent challenge the fossil capital (Buck, 2021), and that other than the vague non-time specific "phasing out" discourse, there are few discussions about how the deconstruction of the fossil fuel industry will be happening (Schnell et al., 2022). This was also touched upon in one of my interviews, where the representative from Naturvernforbundet said, "[t]here is no green shift happening, because we haven't shifted from anything, we have just started new projects" (Informant Naturvernforbundet, author's translation). Rather than wait, Buck argues that we need a "synchronised dance" where plans for green industrial projects are part of the choreography of breaking down the financial structures upholding the fossil fuel industry (Buck, 2021, p. 57).

7.5 Conclusions

This chapter has had the objective of responding to the third research question regarding the extent to which there is controversy concerning the role of Norwegian battery industry in supporting the "green transition", to also comment about the legitimacy and level of success of the dominant storyline. The discussion in this chapter has also further illuminated the first two research questions, by showing to other discourses and actors. I started out by identifying and analysing two counter narratives that I identified, that in different ways point to dilemmas and challenges concerning battery production in Norway. In the first counter narrative assessed, actors use greenwashing as a metaphor to criticise the sourcing of critical minerals, and the environmental encroachment of giga factories. Counter narrative number two directly questions the economic feasibility of the battery industry, holding that Norway will be outcompeted on the world battery stage. Beyond dissecting these counter narratives, which to a certain extent represent alternative storylines, I also briefly suggested their influence. My findings were that these counter narratives are largely eclipsed by the dominant discourse. Discussing this, I posed the question of whether the side-lining of counter narratives concerned with the social and environmental impact of battery value chains could lead to a hasty development of a battery industry that is framed as sustainable, but which lacks the checks and balances to ensure a just energy shift. I finally briefly discussed batteries as part of a larger discourse on the energy transition and electrification, by relating them to the discussions concerning the phasing out of the petroleum industry in Norway.

Chapter 8: Recharging for the future? Concluding remarks

The aim of this thesis has been to critically analyse what discourses and actors are present in debates on the emerging Norwegian battery value chain, and to analyse whether there is controversy or tension connected to the role of Norwegian battery production in supporting the green transition. The key contribution of my thesis has been to draw attention to the use of figurative language such as metaphors and statements, and to show how key actors in and outside the battery industry frame the green transition. This has been done through the over-arching research question:

> *To what extent is the Norwegian battery industry successfully framed as a green industrial adventure?*

To respond to this research query, I posed three supporting research questions. The first is concerned with how the emerging Norwegian battery industry is framed in argumentative discourse. Secondly, I explored who the key actors using these discourses are, and what agendas they represent. Third, I investigated the extent to which there is controversy concerning the role of Norwegian battery industry in supporting the "green transition". I used thematic analysis and discourse analysis, and adapted my method from a framework developed by Hajer to respond to these questions. I analysed a wide range of data, mainly from secondary data, but also supplemented with interviews and non-participant observation. These allowed me to gain a good overview of the framing in argumentative discourse on a national level, the key actors using this discourse, and the tensions present.

In the thesis, I have discussed the research questions throughout two analysis chapters, chapter six and seven. In this concluding chapter, I will recap and conclude my findings in a slightly different manner, by following the order of the supporting research questions. I will finally suggest the relevance of my study, and highlight suggestions for further research.

8.1 Framing of the Norwegian battery industry

My first supporting research question is concerned with how the Norwegian battery industry is framed in argumentative discourse. To assess this framing, I used thematic analysis and discourse analysis inspired by Hajer (2006), using storylines, statements, and

metaphors as key analytical concepts. From the data analysed, I argued that there is one dominant storyline on batteries in Norway, as well as two counter narratives.

The dominant storyline, I denominated *the green industrial adventure*. This storyline is substantiated by four key statements. First, batteries will accelerate the energy transition. Second, batteries bring jobs, local development, and profit. Third, new battery technology will solve sourcing and sustainability issues. And fourth, Norway has cheap and renewable energy. I also identified different types of metaphors, including metaphors framing batteries as the "new oil", a framing of batteries as the next "green industrial adventure", metaphors stressing the immense urgency of the process of building battery industry as a "time crunch", and lastly, metaphors describing batteries as "clean" and "green", to enhance their low carbon footprint.

I proposed an understanding of storyline as *a narrative on social reality to suggest a common understanding of an issue between a set of actors*, inspired by Hajer. From analysing statements and metaphors, I argued that the suggested common understanding, was understanding sustainability as reaching net zero emissions, and the energy transition as a way of reaching net zero by using batteries to enable electrification. Furthermore, actors using the storyline draw upon numerical discourse to focus on the low carbon footprint of batteries produced in Norway due to the use of renewable energy sources. Consequently, there was less focus on other footprints, as social and environmental consequences "will" be solved by technology using less critical minerals. Another key element of the storyline is the premise of green growth, that it is possible to create profit whilst working to combat climate change. As this storyline was used in a wide set of data sources, my findings suggest that the green industrial adventure enjoys a level of institutionalisation, terms that Hajer uses to assess power and influence of a discourse. Thus, the green industrial adventure-storyline allows climate change to be used as a driver for quick change in policy, especially when combined with statements promising profit, jobs, and cheap and renewable electricity to increase attractiveness for Norway as a host country for the battery value chain.

Accompanying what I argue is the most prominent framing of the battery industry as the green industrial adventure, were two counter narratives. There seemed to be a duality in these counter narratives, in that it rejects the claims of the battery industry being both

green and profitable. I used counter narrative as a concept, because it highlighted that the actors using these narratives seemed to be responding to the statements and metaphors in the dominant storyline, as a way of questioning its legitimacy. The first counter narrative I named the greenwashing narrative, whose users critiqued the 'green' and 'clean' claims. The users of this narrative pointed to giga factories' possible impact on natural environments and the responsible sourcing of minerals for LIBs as two main concerns. The second counter narrative, I termed the 'economic infeasibility' narrative, where the users question the profitability of the battery venture, by pointing to geopolitical challenges, a lack of competitive advantage, and volatile electricity prices in Norway.

8.2 Actors using discourse

The second research question asked what actors use the discourse about batteries, and what strategies and agendas they represent and legitimise. In chapter 6.3, I presented the actor groups using or performing the *green industrial adventure*-storyline. These span from battery companies, consultancy firms, interest organisations, municipalities, political parties, state and government actors, to trade unions and universities. The actors that use this storyline most frequently are the battery companies FREYR, Morrow and Beyonder, as well as the Minister for Trade and Industry and the associated Ministry. I employed Hajer's discourse coalition as a concept to analyse the actors using the storyline. I highlighted that even though actors include political parties that disagree on ideology, who might use and understand metaphors and statements differently, their use and performance of the storyline might still suggest a common understanding of the Norwegian battery industry as a green industrial adventure. Further, I argued that in addition to the institutionalisation of the discourse mentioned above, the fact that so many different actors use it to frame the battery industry, what Hajer terms structuration, further suggests that this is the dominant discourse on batteries in Norway.

The actors using the counter narratives, were presented throughout chapter 7. The actors using the greenwashing narrative were primarily civil society actors. The users of the economic infeasibility narrative included academics, independent research institute, media coverage, editors-in-chief of Finansavisen and Nettavisen, business leaders, independent media sources, as well as from political actors such as The Progress Party (FrP).

8.3 Controversy concerning the battery industry in the "green transition"?

The third and last supporting research question was concerned with controversy in discourse concerning the Norwegian battery industry as a contribution in the "green transition". When analysing the actors using the *green industrial adventure*-storyline, I found little to no political disagreement on whether battery production should take place in Norway or not. Political actors might disagree, and might use different statements or metaphors, their use of performance of the storyline suggests a common understanding of battery production as a green industrial adventure, representing a common policy goal.

The existence of actors using counter narratives indicates that there is a level of controversy concerning the role of the battery industry in the "green transition", as the duality of the counter narratives identified pointed to disagreement on both claims of the battery industry as 'green' and 'profitable'. The data collected indicates that the economic infeasibility counter narrative received far more coverage compared to the greenwashing narrative. Furthermore, the economic infeasibility narrative was also used by political actors, such as The Progress Party. The fact that the economic infeasibility narrative gained was used more in the data, might be linked to the fact that there is an ongoing and heated debate about power and electricity which hinges upon the battery industry. Thus, the use of this counter narrative indicates that the controversy present concerning building green industry as part of the "green transition" is centred on governmental inefficiency and impact of mass-electrification might have on people at large.

In chapter seven, I discussed the implications of the counter narratives gaining influence. I highlighted that this could impact the level of government investment, which, could lead to a stagnation in the development of a battery industry. On the other hand, the side-lining of counter narratives or critical actors pointing to dilemmas and challenges could lead to a hasty development of a battery industry that is framed as sustainable, but which lacks the checks and balances to ensure a just energy shift.

8.4 The green industrial adventure

I argue that the above summaries of the three supporting research questions together show that the Norwegian battery industry has been framed as a green industrial adventure to a large extent in the data material examined. Many different actors use the statements and

metaphors that I identified to conceptualise and communicate about battery production. Furthermore even dissenting voices frame their metaphors and statements in the dominant storyline. For instance, the actors using counter narratives draw upon metaphors such as the "green industrial adventure" to either describe, or try to delegitimise the claims of the storyline. Actors using counter narratives rely upon the same metaphors and statements as the dominant discourse, can also help explain why a discourse becomes or stays dominant.

In summary, the battery industry in Norway is chiefly framed as a green industrial adventure that seeks to unite concerns for climate and profit. There is a suggested common understanding that a battery industry is "necessary" in Norway, even if actors disagree on a political level and use discourse in diverse ways. This indicates that urgency of the climate crisis can catapult change in green policy, especially when combined with promises of profit, jobs, and cheap and renewable energy. There are counter narratives voicing concerns of greenwashing and economic infeasibility, but these are largely eclipsed by the dominant discourse. The side-lining of counter narratives could lead to a hasty development of a battery industry that is framed as sustainable, but which lacks the checks and balances to ensure a just energy shift.

8.5 Further research and concluding reflections

As the battery adventure continues to evolve there will be an increasing amount of data ready to be analysed for researchers. As I have indicated throughout the thesis, I have encountered several areas that need to be further researched. One of them concerns local variations of discourse on batteries. The appeal of the green industrial adventure seemed to be even more successful in local areas where the battery companies are establishing their giga factories. However, I cannot draw any definite conclusions, since I have not analysed local discourse in detail, and more research is needed to shine light on the local discursive levels of green industrial development.

The key contribution of my thesis has been to draw attention to the use of figurative language such as metaphors, statements and storylines, and to show how key actors in and outside the battery industry frame battery production. I hope that the findings in this thesis can be a contribution to a limited but growing field-within interdisciplinary, social sciences looking into the discourse and dilemmas in the emerging battery value chain in

Norway specifically, and the downstream part of the battery value chain more generally. The findings of my thesis illuminate the complexities of accelerations and tensions of energy transitions within interdisciplinary fields of social sciences. These findings might also reflect the Norwegian government's green industrial shift more broadly, as battery production is only one of several industries that the government is aiming for in their policy. The debates and discourses on batteries and a Norwegian battery industry opens, or even reflects, a larger discussion and debate on the green transition. Dissecting and analysing these debates contributes to the conversation of what sort of green transition and society it is that we want, and the future for which we are recharging.

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Appendix

Appendix A: Parliamentary questions asked to Minister of Trade and Industry concerning batteries in 2022

Date	Actor	Document no.
16.02.2022	Sivert Bjørnstad (FrP)	Dokument nr. 15:1278 (2021-2022)
04.04.2022	Svein Harberg (H)	Dokument nr. 15:1774 (2021-2022)
22.04.2022	Alfred Jens Bjørlo (V)	Dokument nr. 15:1884 (2021-2022)
29.05.2022	Marius Arion Nilsen (FrP)	Dokument nr. 15:2181 (2021-2022)
30.06.2022	Sivert Bjørnstad (FrP)	Dokument nr. 15:2521 (2021-2022)
13.09.2022	Ola Elvestuen (V)	Dokument nr. 15:2886 (2021-2022)
03.10.2022	Ingjerd Schou (H)	Dokument nr. 15:11 (2022-2023)
14.10.2022	Rasmus Hansson (MDG)	Dokument nr. 15:117 (2022-2023)
16.10.2022	Marius Arion Nilsen (FrP)	Dokument nr. 15:132 (2022-2023)
15.12.2022	Steinar Rørvik (FrP)	Dokument nr. 15:737 (2022-2023)

Appendix B: Webinars attended

Actor group	Actor	Webinar	Date
Battery company	FREYR, Morrow Batteries, Beyonder	Nordic Battery Thursdays: Nordic perspective from Norway	18.11.2021
Various	NHO, Battery Norway, political parties (V, SP, SV, AP and FrP)	Webinar about batteries	14.01.2021
Battery company	FREYR	Launch of FREYR Chapter One (Customer Qualification plant)	15.03.2023
Municipality, battery company	Arendal municipality, Morrow Batteries	Public meeting about the development of the battery factory	25.10.2022
Government	Minister of Trade, Industry and Business	Launch of battery strategy	29.06.2022
Public company	Innovation Norway (Business Sweden, Business Finland, Swedish Energy Agency)	Nordic Battery Thursday – launch of the latest Nordic Battery Value Chain report	23.02.2023

Appendix C: Interview guide

Interview guide for Master's project:

Accelerating the green transition: Exploring Norwegian battery narratives.

The data for this research project will to a large degree be collected through document analysis of websites, press releases, newspaper and media articles retrieved from Atekst, webinars, podcasts, and Norwegian policy documents. To supplement this data, open-ended individual interviews will be conducted. The interviews will be largely informal and unstructured and conducted by asking open-ended questions to gain in-depth knowledge of an issue. This method will provide flexibility for the interviewee to keep conversation flowing in a relatively informal way, and for the researcher to adapt questions to whichever topic the respondent might bring up. A rigid interview guide will not be developed, but ad-hoc interview guides will be created based on the main research questions:

- How are different narratives framing the emerging Norwegian battery industry?
- Who are the key actors using these battery narratives, and what strategies and agendas do they represent and legitimise?
- What tensions or conflict, agreement and negotiation are present in the Norwegian battery narratives, and the interaction between them?

The questions will develop and become more specified as informants and topics emerge gradually during the course of research.