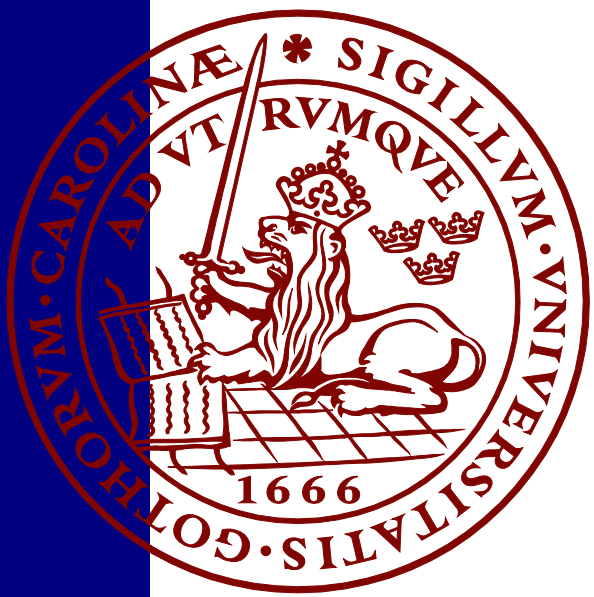
Socio-technical Imaginaries of the Energy Transition in Iceland

potential consequences for future conservation efforts

Sigurlaug Guðmundsdóttir

Master Thesis Series in Environmental Studies and Sustainability Science,
No 2023:049

A thesis submitted in partial fulfillment of the requirements of Lund University International Master's Programme in Environmental Studies and Sustainability Science (30hp/credits)



LUCSUS
Lund University Centre for Sustainability Studies

Socio-technical Imaginaries of the Energy Transition in Iceland

potential consequences for future conservation efforts

Sigurlaug Birna Guðmundsdóttir

A thesis submitted in partial fulfillment of the requirements of Lund University International Master's Programme in Environmental Studies and Sustainability Science

Submitted September 27, 2023

Supervisor: Fabiola Espinoza Córdova, LUCSUS, Lund University

Abstract

In 2021, the Icelandic government stated that Iceland will implement an energy transition plan with the goal of becoming a 100% carbon neutral and fossil free nation by 2040, furthermore, that a doubling in renewable energy production was needed to reach that goal. This led to an upsurge of a discourse among stakeholders and concerned citizens about the future of Iceland. This thesis is an attempt to identify storylines reflecting specific socio-technical imaginaries by following an argumentative discourse analysis approach through a political ecology lens. Data was collected through policy documents, news statements and interviews. A key storyline was identified as "win the race" imaginary, where current electives of power wished to make an example of Iceland as *the most* sustainable and green country of the world. This imaginary is beneficial to the energy companies and unfavorable to the landscape of Iceland and those who try to speak for it.

Keywords: energy transition, conservation, socio-technical imaginaries, discourse analysis, political ecology, Iceland

Word count: 11258

Acknowledgements

Dedicated to Daði Freyr, Doja Cat, Miley Cyrus and Lo-fi girl. And to the 10 yo computer that held it together.

In all seriousness, I want to thank Fabiola for the guidance and for pushing me onto the imaginaries, Valdís for the proof-reading to the very last minute, Kalli for the fun talk, Guðrún for lending me the car, Tómas for just being himself and to the rest of the gang in Lund, Jenni, Lison, Jamila, Gus, Lauren, Malia, Sofie, Tea, Nicola, Simone, Jana, Elliot, Karolina, Katrine, Eda, and all the rest. Thank you to my people in Iceland, mamma og pabbi, bræður, Hallbjörg and my coworkers and bosses that gave me room to work at work and made the summer really fun.

Table of Contents

Table of figures

Table of tables

1 Introduction

Climate change has been a popular topic of discussion and research for decades now and with good reason (Fawzy et al., 2020). The latest IPCC (Intergovernmental Panel on Climate Change) reports have shown striking evidence for the immediate consequences that global climate change can have on the Earth and its citizens (Seneviratne, et al., 2021). For example, in Northern Europe those consequences can present themselves as deadly heatwaves or freak storms that can lead to landslides (Bednar-Friedl, et al., 2022). These reports and international treaties such as the Paris Agreement have acted as drivers for nations to follow and set goals that aim to mitigate those consequences (UNFCCC, n.d.). For example, nations can pledge to phase out of fossil fuels and revert to using only renewable energy, i.e. energy transition (Labussière & Nadaï, 2018). The energy transition is a necessary step in the fight against climate change and is first and foremost a responsibility that falls on the global north as the richest 10% of humanity consume at least 35% of the world's energy according to numbers from 2015 (Smil, 2018). However, the decisions to come about and reach those goals will ultimately be decided by the minority (government) and not the majority (citizens) even in democratic countries and will be highly influenced by the climate crisis (Povitkina, 2018). Moreover, people's dominant visions of the future and the historical narrative of each country can have great impact (Rudek, 2022). Therefore, it is interesting to see how much the decision-making process of how to reach the energy transition in each country is driven by any certain vision of the people in power rather than the common people. Furthermore, to what extent non-human nature is realized within that vision.

Iceland is one of the countries that has pledged to uphold the Paris Agreement (Ministry for the Environment and Natural Resources, 2021). In 2021, the government officially stated that Iceland will implement an energy transition plan where the goal is to become a 100% carbon neutral and fossil free nation by 2040 (*Agreement on the Platform for the Coalition Government*, 2021). However, this official statement sparked some controversy and lead to a dispute about the discrepancy in the way the goal was advertised and what it really entailed (Ministry of the Environment, Energy and Climate, 2022). The government went on to say that a doubling in energy production output would be needed to reach this goal, to quote the current minister of energy and environment: "*It is obvious, according to the Green Book [expl. Government issued report on the state and challenges of energy affairs] and the best information we have, that it is necessary to at least double the energy production to achieve the energy transition*" (Logadóttir, 2022b). That would mean introducing some new renewable energy sources, such as wind energy to Iceland or build at least five new mega hydropower plants (Björnsdóttir, 2022). According to numbers from 2019 out of all the electricity that Iceland produces

100% comes from renewables but controversially, 80% of that electricity goes to heavy industries (Orkustofnun, 2020). Households are heated up by using the remaining 20% but the transportation sector is still running on fossil fuels and if the renewable energy is not redistributed from the heavy industries then this is where the doubling of energy is needed (Orkustofnun, 2020).

In the eyes of the world, Iceland is considered a frontrunner in the renewable energy sector for its rich resources and pioneering work in harnessing and utilizing geothermal energy and hydropower (Ellis, 2023). Interestingly, ever since this abundance of renewable energy resources were discovered and harnessed, the phrase "*it is our duty to save the world*" has become more and more common in the discourse in Iceland (Benediktsson, 2021). This hero-complex is highly contagious especially with those who have any stakes in the renewable sector or have any decision-making power (Landsvirkjun, 2021).

In addition to being a frontrunner in renewable energy, Iceland is also well known for its beautiful landscape. It is unique in being seemingly untouched and vast, with few trees to obscure the scenery, and for the amazing interplay of ice and fire, with large glaciers and active volcanos (*Iceland's Best Natural Wonders*, 2021). For the past decades tourists have flocked to the country to witness the wonder in increasing numbers. For the past year have over 2 million tourists traveled to Iceland compared to 2009 when that number was only 500 thousand (Icelandic Tourist Board, 2009, 2023). Conservation of this landscape is therefore very important and to quote the writer Kristín Helga Gunnarsdóttir; "*Now more than ever, nature is presented as an easy-to-digest quick dish and even as an emergency contribution to the global climate problem. Iceland's highlands need to enter a highland national park as soon as possible. It is a land that we have a duty to preserve as Europe's last large, continuous, and unspoiled wilderness*" (Gunnarsdóttir, 2022). Conservation of this landscape is sustained in national parks and protected areas and within those areas no production of renewable energy such as hydropower plants and geothermal powerplants can be constructed (*48/2011*, n.d.).

The public in Iceland has many different views on this dispute or what is the most important factor, for example, protecting nature, securing energy production for future generations, profiting from sustainability and seeing the introduction of new technology as an exciting opportunity for Icelandic landscape, etc. (Bjarnason, 2022; Isaksen, 2021; Landvernd, 2021). With the climate crisis looming over the world have people's visions for the future started to result in more radical decisions-making, for example, in the form of greener technology that lowers emissions *but* is invasive to the environment (Benediktsson, 2021; Dryzek, 1997) and the question that follows is; what are we willing to sacrifice to survive?

In this thesis I aim to explore the clashing visions for the future that have risen in Iceland in recent years surrounding the push for an increase in renewable energy production and to what affect they can have on the conservation of the Icelandic landscape by detecting and describing any storylines that reflect those imaginaries in the discourse. In other words, try to answer the above proposed question, what are we willing to sacrifice to survive? I do so by analyzing collective visions of the future of energy production using the concept of the imaginary (visions of the future will be referred to as imaginaries from now on). Imaginaries, in particular, *socio-technical imaginaries*, are people's collective vision of a desired future that is guided by new technology and development and have immense role in shaping decisions regarding energy transitions (Rudek, 2022). Imaginaries have been used for assessing the optimalisation of niche sustainable solutions such as micro-smart grids in cities (Engels & Münch, 2015) to assessing how imaginaries of energy are reflected in digital games (Wagner & Gałuszka, 2020). Upham et al. (2022) used imaginaries to assess the public opinion towards data centers in Iceland and Norway and similarly Hirt et al. (2022) used imaginaries to assess what future vision of solar energy is gaining momentum in Switzerland.

Rudek (2022) presents a few knowlede gaps within sociotechnical imaginaries research which will act as a motivation for this thesis. Those being, the lack of research focusing on the origin of sociotechnical imaginaries and research that focuses on public reason instead of only on policy making. Specifically in Iceland, the assessment of imaginaries of energy transitions are often, if not always, highly connected to its implications to nature (Benediktsson, 2021). However, no specific connection has been made between the current energy transition plan and the new technologies that are bound to follow, and the future outlook of the Icelandic landscape and the effect it could have on conservation efforts.

I first reviewed literature on the topic and then conducted an argumentative discourse analysis on policy documents and on the interviews that I conducted, using a political theory lens. Further explanation of the theory and methods used are found in chapters 3 and 4.

1.1 Sustainability science

This thesis will contribute to the expanding topic of sustainability science. Sustainability science is essentially a field of science that aims to bridge the conversation between natural sciences and social sciences (Jerneck et al., 2011). It seeks to value the needs of society while preserving all the Earth's systems thus primarily serves as an interdisciplinary science dedicated to overcoming the divides among conventional scientific fields and the boundaries that separate interconnected human endeavors, including energy production, agriculture, urban living, and transportation sectors (Kates et

al., 2001). Energy transitions have therefore always fit within the definition of sustainability science, as the transition from non-renewables to renewables is obviously a change to the environment (both for the better and worse) and is inherently political and social (Labussière & Nadaï, 2018).

1.2 Research aims and questions

Through the lens of political ecology, I will try to understand the imaginaries of the energy transition proposed for Iceland by looking for certain storylines that reflect them and assess who is benefiting from dominating discourses and who is not. The power relations of the opponents of the energy transition plan versus the energy companies benefitting from it will be analyzed and their perspective roles in influencing governmental decisions. The constant debate of whether to commodify or protect nature will be considered and the history of energy production and conservation will be touched upon, with the overall aim of generating knowledge that could be beneficial for all stakeholder groups and help them understand each other values. Hopefully, this knowledge will help protect the landscape whilst being a step forward in the fight against climate change.

Within the theory of political ecology, the following research questions will guide this thesis:

> RQ 1: What are the dominant storylines that reflects the socio-technical imaginary of the energy transition in Iceland?
>
> RQ 2: Whose interest do the dominant storylines serve?
>
> RQ 3: What are the consequences of the dominant storylines for conservation efforts?

The first research question acts as the main goal of the thesis. The second question will build on the first question, as well as determining the current main actors in the debate to flush out people in power. The third question will look at the landscape and nature of Iceland and how the discourse on the energy transition could lead to either good or bad consequences for the conservation work of the future.

2 Background

The energy transition globally refers to the shift of the primary energy use and consumption from greenhouse gas emitting fuels such as fossil fuels to non-emitting sources or renewables (Arent et al., 2017). For Iceland, this means primarily shifting the energy used in the transport sector to renewables as most heating and electricity is already utilizing hydro power or geothermal power (*Markmið og skuldbindingar*, n.d.). In this chapter I will introduce the basic history of energy utilization in Iceland as well as what future targets have been set by the current Icelandic government. Furthermore, I will introduce the history of nature conservation in Iceland and what landscape means to the Icelandic people.

2.1 Energy in Iceland

In the beginning of the 20th century, Icelanders started to use the abundance of geothermal energy found on the island for something other than bathing and cleaning by leading the hot water in pipes to their houses. Around the same time electrification of the country started with small hydropower stations that steadily grew with growing demand. The first large hydropower plants were built in the late 60s by the state company Landsvirkjun and were coupled with the construction of the first aluminum smelter (own by a Swiss company). Landsvirkjun is to this day the largest energy company in Iceland with 15 hydropower plants, 3 geothermal powerplants and is currently experimenting with operating 2 windmills (Benediktsson & Waage, 2020; Landsvirkjun, n.d.-a).

In 2020, had domestic renewable production reached 85% of the total primal energy supply in Iceland, with 65% coming from geothermal energy and 20% from hydropower, see figure 1 (Government of Iceland, n.d.). This means that there is, currently, still about 15% of the total primal energy supply that is non-renewable energy like fossil fuels, mainly imported diesel and gas for cars, ships, and airplanes (Government of Iceland, n.d.). These remaining final 15% are the main targets of the energy transition.

The currently elected government, running since November 2021, has set out three main targets to reach before the year 2040 based on the Energy policy that was published a year prior (*Agreement on the Platform for the Coalition Government*, 2021; *Orkustefna fyrir Ísland*, n.d.). Originally the goals were set for the year 2050 but the government upped the ante and raised the goal of becoming carbon neutral to the year 2040; "*Iceland wants to lead by example and has set itself the goal of achieving carbon neutrality in 2040 instead of 2050*" (*Markmið og skuldbindingar*, n.d.). The

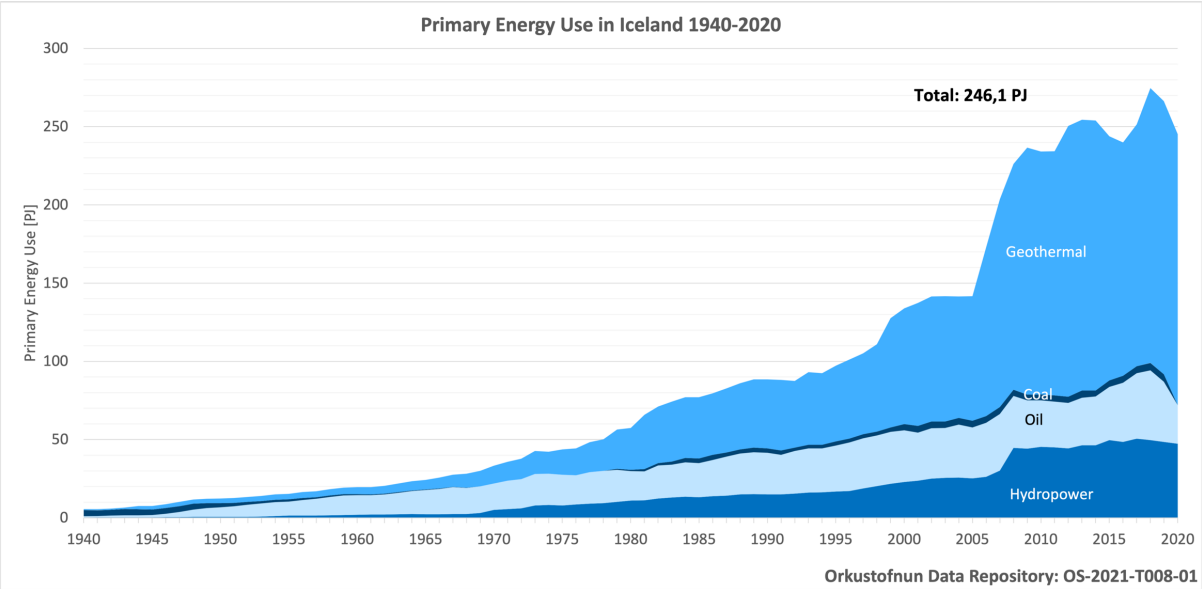


Figure 1 Primary energy use in Iceland (Orkustofnun, 2021).

first target is in coherence with the Paris Agreement for 2030, where Iceland has a common goal with Norway and EU to reduce emissions by 55% or more compared to emissions from 1990, but also an independent national goal of 55% reduction in emissions by 2030 compared to 2005 (Ministry of the Environment, Energy and Climate, 2022). The second target is reaching carbon neutrality by 2040 and the third is being fossil fuel free by 2040. The last one is extremely ambitious and would result in a complete shift from fossil fuel run engines to electrically run engines in all transportation within the country and to and from the country. However, Iceland still has far to go in terms of consumption. Iceland has the highest household energy consumption per capita in Europe, of which 60% is for heating (see figure 2) (Statistics Iceland, 2020).

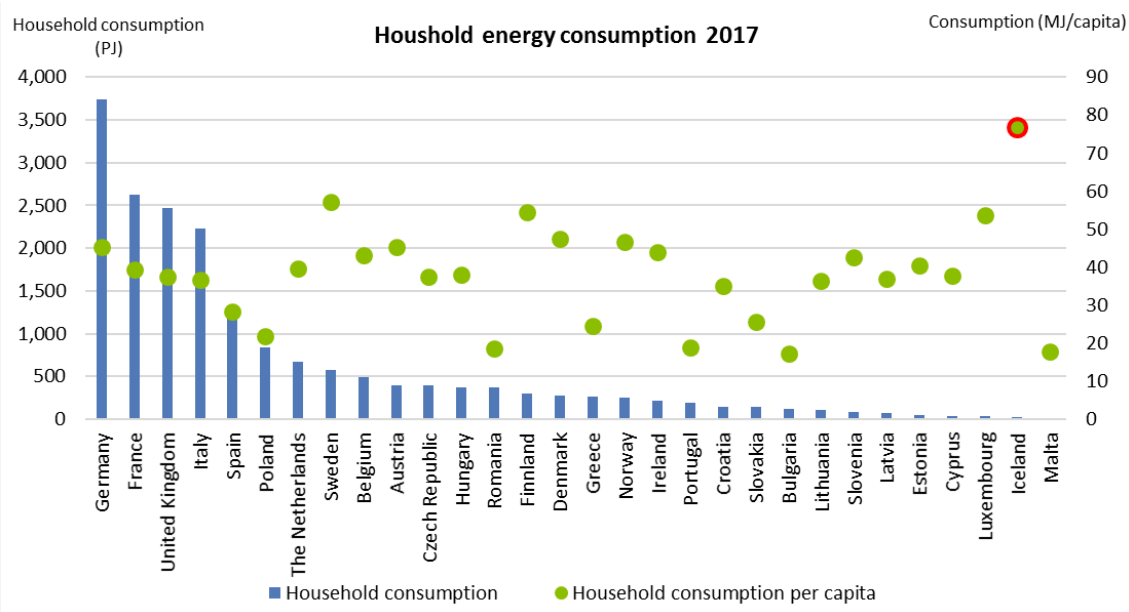


Figure 2 Household energy consumption (Statistics Iceland, 2020).

A part of the energy transition plan is introducing new modes of renewable energy production. Wind energy is relatively new to Icelanders, where most people have only seen the wind turbines in Denmark and Sweden, as well as being new for the government to manage (Logadóttir, 2022a). The turbines can be as tall as 150 meters and are very visible in the landscape (Logadóttir, 2022a). At least 35 wind energy projects have been proposed so far and they have both been submitted by Icelandic energy companies and foreign energy companies (Aðalbjörnsson & Guðmundsson, 2022). Very few have been accepted so far, those are Blöndulundur (projected energy production of 350 GW hours/year) and Búrfellslundur (projected energy production of 440 GW hours/year) (see figure 3) (Landsvirkjun, n.d.-b), at the same time most of the proposals have been rejected by the Master Plan (*ice. Rammaáætlun*) committee or withdrawn by the company itself or are still being considered by the committee. The Master Plan is a government issued framework that is the first step that all energy projects need to go through to be considered for utilization (Pétursdóttir, 2021). The committee investigates the environmental, societal, and economic effects of energy projects on their proposed areas and categorizes them into *utilization*, *on hold* and *protection* (Pétursdóttir, 2021).

Figure 3 Computer generated picture of how the windmill park of Búrfellslundur would look like (Landsvirkjun, n.d.).

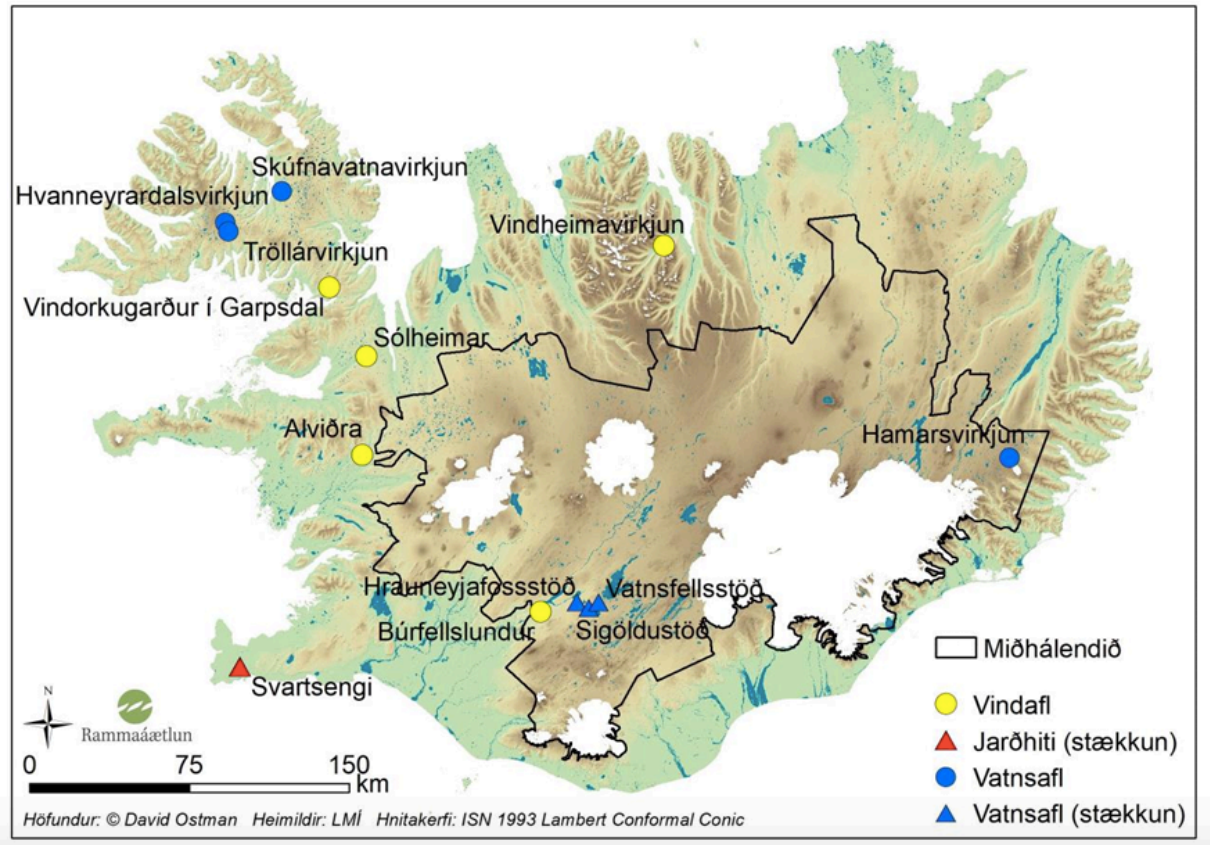


Figure 4 Map of the energy proposals that were considered in the latest report from the Master Plan committee. The black line indicates the central highlands, yellow marks for wind energy, red for geothermal (increase), blue for hydropower and blue triangle for hydropower increase. Notice how Búrfellslundur windfarm is right on the border of the highlands (Pétursdóttir, 2021).

2.2 Nature in Iceland

Wilderness area is an area that has no human constructures and Iceland covers around 42% of all the wilderness areas in Europe (Landvernd, 2019). The central highlands are a particular topic of debate because they are a popular recreational area and central to sheep farmers as a pastural land (Landvernd, 2019). According to a study by Ólafsdóttir and Sæþórsdóttir (2020), do most Icelanders regard the wilderness areas in Iceland as an economic, cultural and environmental asset to the country.

The nature and landscape of Iceland have great cultural value and since the rise of tourism in the country, a large economic value. It is the land of fire and ice and truthfully so. Large glaciers, black sands and vast wildernesses free from human interference have attracted travelers and filmmakers to the country. The landscape gives and it takes, the harsh highlands have bred stories of trolls and ghosts and the beauty has influenced many poets. Therefore, changes to the landscape and nature can have an incredible cultural impact (Thórhallsdóttir, 2007). This became very clear during the proposal and construction phase of the largest power plant in Iceland, Kárahnjúkavirkjun, that was

built in the middle of the highlands north of Vatnajökull glacier. Sparking protests involving the throwing of green skyr (expl. Icelandic yoghurt) on the politicians and writing of books and papers about the case (Ragnarsson, 2004).

However, conservation efforts in Iceland did not really become recognized until the 1970's when a debate between the township of Akureyri and farmers in Mývatnssveit resulted in a bombing of a dam in the Laxá river which really shows the power of activism (Ríkisútvarpið, 2013). Today, over 25% of the country that is protected via protection laws and national park establishments, see figure 4 (Kristjánsdóttir, 2022; Statistics Iceland, n.d.). The largest national park, Vatnajökulsþjóðgarður, currently covers around 15% of the country (*Sérstaða þjóðgarðsins*, n.d.). Of which, a large part is untouched wilderness.

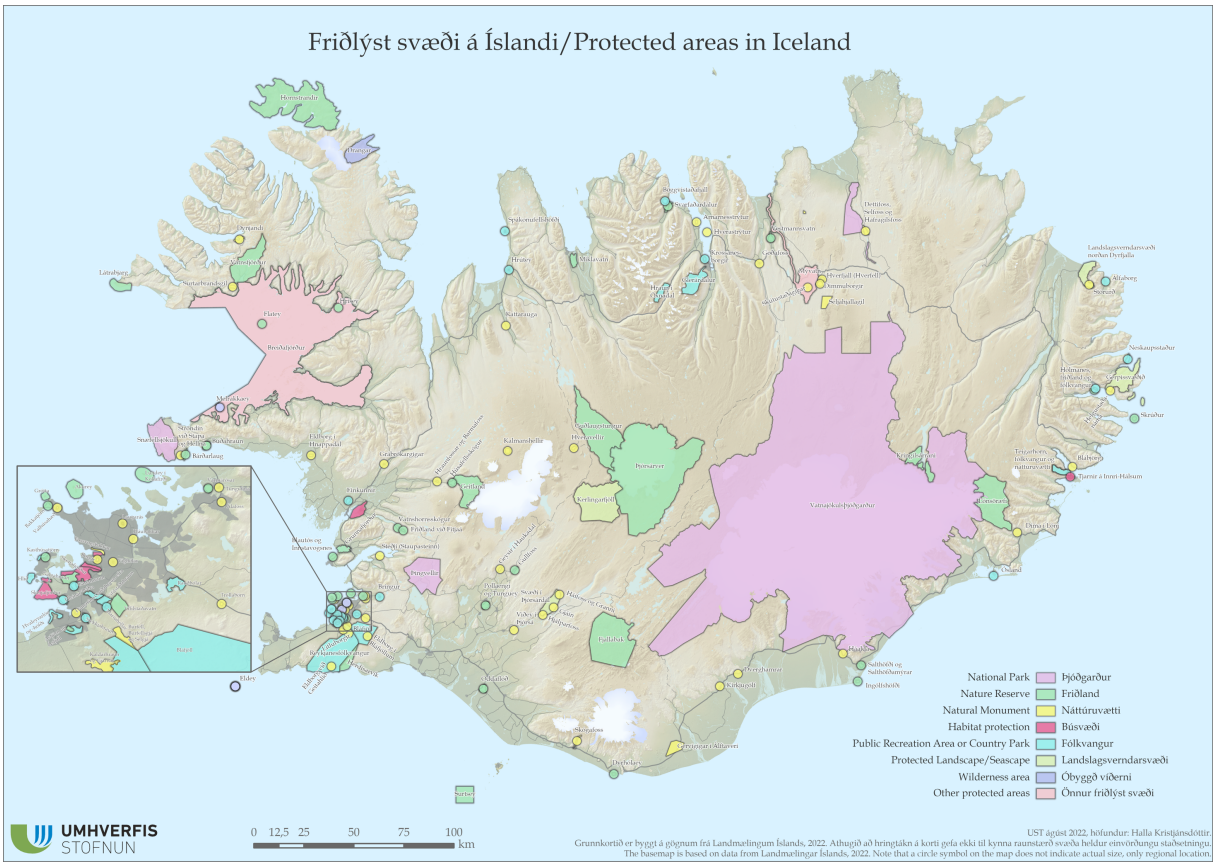


Figure 5 Protected areas in Iceland in 2022 (Kristjánsdóttir, 2022).

2.3 The debate and society

Unsurprisingly, the introduction to the energy transition efforts of the government ignited a debate that has been on the rise ever since. As stated in the report *State and Challenges of Energy Affairs (Green Book)* from 2022:

> "Opinions are divided on public actions, actions of others and on Action Plans that should lead to energy transition. The matters of dispute concern, i.a. the different assessments of how much electricity is needed for energy transition for transportation and for a full energy transition, in which regions this electricity should be generated and how it should be distributed and finally, with what production methods the electricity should be generated. Furthermore, opinions are divided on increasing energy production for a variety of new business and export activities that are being worked on around the country. Energy-intensive industry generates about a quarter of Iceland's export revenue and has played a major role in building Iceland's electricity system and living standards in Iceland." (p. 21)

Interestingly the committee ends this statement by empathizing the fact that energy-intensive industry is a major player in the improved living standards in Iceland over the years as if they are already defending those industries and do not mention the effect it could have on the landscape (see further discussion on this in chapter 5.2.2). The opinions that they refer to can be used as arguments among the citizens are prominent in public forums such as Facebook and newspapers. Furthermore, these opinions can also appear among stakeholders in open meetings and public statements.

An example of a recent debate in Iceland that led to a division of the public is the Highland national park project. In 2020, a loud debate started within the Icelandic parliament, centering on whether to bring to a vote a proposal that aimed to transform the entirety of the Icelandic highlands into a national park, see figure 6 (Rúnarsson, 2021). This controversial debate divided the nation into two distinct groups, with supporters and opponents passionately advocating for their respective positions. However, ordinary citizens and vested stakeholders interpreted the debate in diverse ways, leading to fruitful and at times harsh discussions. For some, the debate revolved around safeguarding the highlands from extensive development projects such as hydropower dams and wind farms (Gunnarsdóttir, 2022). Others viewed it as an opportunity to draw more tourists to the highlands and secure the designation of the largest national park in Europe (Landvernd, n.d.). Meanwhile, some perceived the proposal as a violation to their rights to roam freely within the highlands (Ingólfsson, 2020). The Icelandic highlands have long been portrayed as wild and mysterious and consequently a

force of nature that should remain untouched (Benediktsson, 2021). Therefore, the discussion of establishing an official national park in the highlands, effectively restricting future energy production investments in the region, had been discussed before in the parliament but this was the first time the voting actually took place (*Hálendisþjóðgarður*, 2019). As of 2022, a new environmental minister assumed power, subsequently suspending the progress of this bill. Nonetheless, the discourse surrounding this topic continues to resonate within Icelandic society (Morgunblaðið, 2021). Furthermore, it set a prerequisite to the energy transition discourse because the same groups seem to be forming but now with a more abstract and holistic topic.

Now these types of disputes might happen because there are clashing imaginaries within the society. Different aspects of society that envision different futures for the country but inevitably have the same goal of becoming more sustainable.

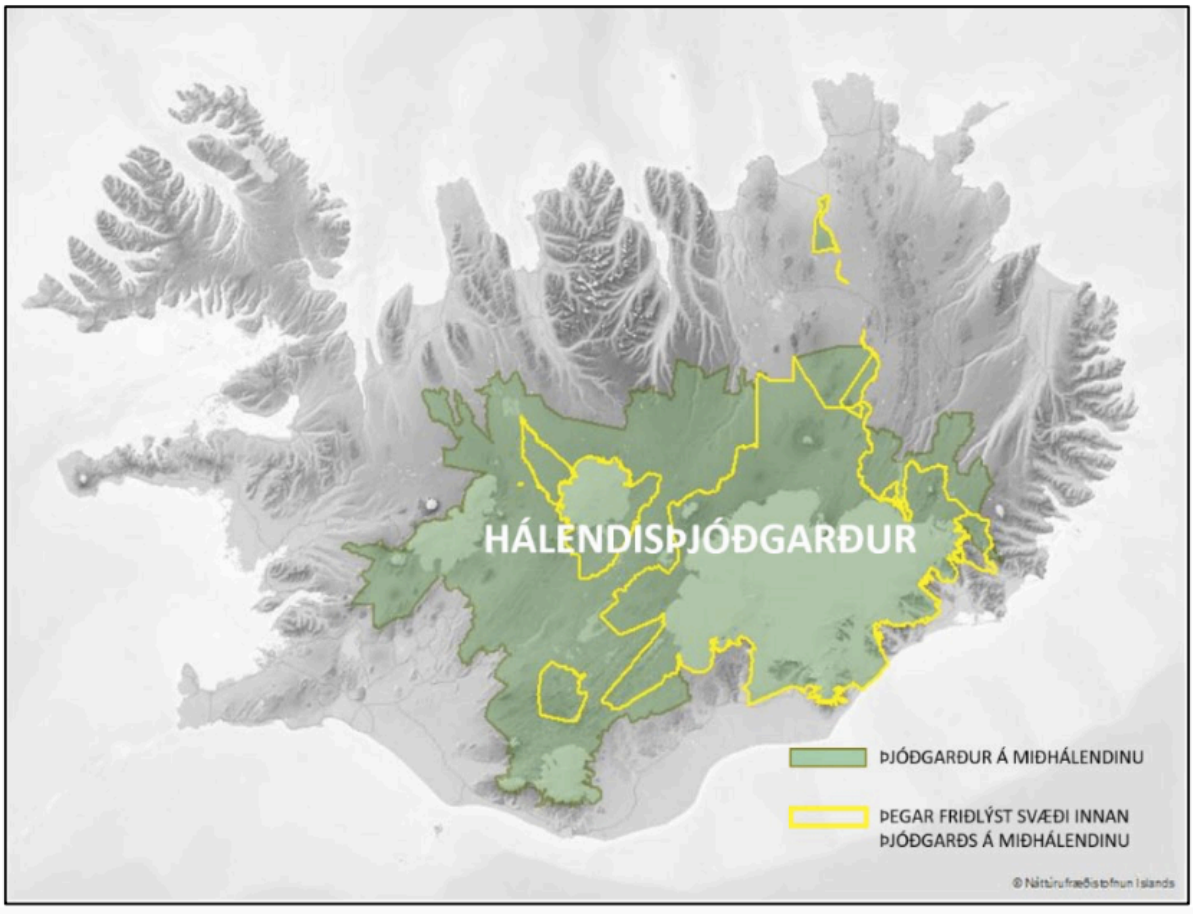


Figure 6 Proposed area (in green) for the highland national park (Hálendisþjóðgarður, 2019).

3 Theory

Theory and adaptive frameworks are used in sustainability sciences as a mode of generating and consolidating knowledge (Schlüter et al., 2022). In the following chapter, I present the political ecology theory which will provide me with the grounds to understand the power relations in my research. After explaining the theory, I will present the socio-technical imaginaries framework and further back up its relevance to this case.

3.1 Political ecology

> „Environmental conflicts are, therefore, struggles over ideas about nature, in which one group prevails not because they hold a better or more accurate account of a process – soil erosion, global warming, ozone depletion – but because they access and mobilize social power to create consensus on the truth“ (Robbins, 2012, p. 128).

Political ecology as a theory or a term is trying to explain the connections between environmental governance and society. In other words, the focus is on how society and nature coexist and function. It states that political and economic processes essentially affect the decisions that have direct effect on the environment. Therefore, the environmental problems cannot be considered in isolation from the political and economic context in which they were created, which is the capitalistic system of continuous growth. Furthermore, political ecology explores or tries to address the change in environmental systems by considering its relation to power. Hence political ecology studies look for the causes of environmental problems and not their results and tries to be both critical in explaining why an environmental problem occurred and explore solutions, offering both a *hatchet* to break away the problem and a *seed* to grow new socio-ecologies (Robbins, 2012).

However, conflict over environmental resources is also typically a struggle over ideas like the quote here above indicates. And that is why it is relevant to use political ecology theory for this thesis where the ideas behind these energy proposals will have large impact on nature. Furthermore, within political ecology there are many aspects and, in this thesis, the aspect of poststructuralist power perspective, inspired by Foucault, will be used to analyze the dominant storylines with key focus on discursive power (Svarstad et al., 2018). "Discursive power" is used when actors, for example, corporations, government agencies or NGOs, generate discourses and persuade other groups to adopt and support the continuation of their discourses (Svarstad et al., 2018).

3.2 Imaginaries

Social imaginaries are collectively shared visions of the future held by the same social group about what the desired and proper life should look like. That social group can range from being a small town or religious group to a whole nation. When analyzing a problem that has not yet been realized the problem becomes an imaginary. People always like to look to the future and envision a smarter world or somewhat of a utopia. Planning and policymaking are tools used by people to push that vision to become real. However, not everyone shares the same vision which can lead to conflicts. This is highly relevant when planning involves energy production because most energy projects are built with the intention to last decades and for future generations to reap the benefits (Benediktsson, 2021; O'Neill, 2016).

3.2.1 Socio-technical imaginaries

Socio-technical imaginaries are, as defined by Jasanoff & Kim (2015, p. 4), "*collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology*". As a matter of fact, there have been a couple of papers that have explored the socio-technical imaginaries of energy transitions in other countries and with good reason as energy transitions have been going slower than anticipated. As Rudek (2022, p. 220) puts it; "*It turns out that the dominant techno-economical perspective is insufficient to break the deadlock*." This concept is complex and holistic and evidently future-focused. The energy transition in Iceland, as well as everywhere else, is or will be connected to technology and innovation. Therefore, it is highly relevant to explore the sociotechnical imaginaries of energy transitions rather than only social imaginaries.

The concept of socio-technical imaginaries originated with two social scientists Sheila Jasanoff and Shang-Hyun Kim and their book called the *Dreamscapes of Modernity* (Jasanoff & Kim, 2015). Since the publication of this initial argument, the sociotechnical imaginaries approach has been widely applied to frame discussions about energy transitions, both in Northern and Southern global contexts (Rudek, 2022). For example, Karhunmaa (2021) showed how policy actors are influenced by the sociotechnical imaginary of carbon nutrality in Finland and Rabiej-Sienicka et al. (2022) showed how a dominant sociotechnical imaginary focused on energy security leads to resistance towards an energy transition in Poland. This continued utilization underscores its enduring significance as a theoretical and methodological framework for analyzing how societies perceive and chart pathways toward carbon neutrality.

4 Methodology

In this section I will present how I obtained the data and the methodology used in this analysis. This thesis was conducted using mixed methods of qualitative research by both conducting interviews and analyzing policy documents and official statements.

4.1 Data collection

The interest for the topic of this thesis began with seeing the discourse, of both the Highland national park proposal and the energy transition proposal, unfold in the media in Iceland. Both in official statements by the government and energy companies and the public discussion in media outlets like Facebook and in the newspapers. By using a mixed methods approach of both talking to stakeholders directly and analyzing relevant documents and statements, I was able to get a better picture of what socio-technical imaginaries appeared in what social groups.

4.1.1 Open interviews

In open interviews, instead of the interviewer leading the conversation with predetermined questions, the goal is to break away from the usual structured format. While the interviewer may suggest important topics and questions for the interviewee to address, the interview's direction is primarily guided and explored by the participant themselves (Robinson et al., 2021).

For this thesis I performed 4 open interviews, all performed in Icelandic, with people that had diverse points of view on the topic and stakes in the discourse (see table 1). They are and will further be referenced as they appear in the table 1. First, I made a list of institutions and/or organizations that I believed had stake in the energy transition plan. Then I sent an email to a respondent from those organizations describing my intentions and the topics I wanted to discuss. Almost everyone responded with an interest of talking to me but because of time constraints and the scope of this thesis I only chose 4 respondents that covered a wide enough range of stakes; one researcher that had worked with the Master Plan committee, one actor that represented an energy company, one actor that represented municipalities and one actor that represented a conservation organization. All the interviews were performed over video calls in March of 2023, with each call lasting around 40 minutes, and were recorded with permissions from the respondents but for the sake of their privacy their names or names of the institutions that they represent will not be disclosed. Their position towards the energy transition plan was not known prior to the interview. After the interviews I transcribed them myself and translated to English to make the analysis easier.

Interviewee	Position (energy transition plan)
Researcher	Against
Environmentalist	Against
Municipality	With and against
Energy company	With

Table 1 Interviewees

Before I performed those interviews, I talked to a researcher that had done interesting research on socio-technical imaginaries in Iceland. That initial interview that was not for any data collection, but it did help with the decision on the direction of this thesis as the researcher was both very knowledgeable about energy production in Iceland as well as about environmental conservation work.

4.1.2 Document analysis

The documents that were primarily analyzed are shown in table 2. As the analysis is based on argumentative discourse analysis the range of data had to come from different viewpoints (Hajer, 2006). Three main sources are from government documents. The first one is the statement of the current government coalition and their goals for the future. The second one is a report that was done by a committee that was appointed by the minister of environment and energy and analyzed the current state and challenges of energy affairs. Finally, the third one is a report done by a committee, that was also appointed by the minister of environment and energy, to analyze the proposal of wind energy possibilities. Then I picked one nature conservation organization and found statements from them speaking about those reports and statements. I also tried to find statements from any opposing company that spoke about the statements that the conservation group made but I only managed to find one from the Iceland Chamber of Commerce. Finally, I looked at the website set up for the public by the energy companies detailing the plans for the energy transition for the public. None of these documents precede the current government meaning that they were released no later than the year 2021.

Document	Type	Author	Data	Year
Orkuskipti.is (*Orkuskipti*, n.d.)	Website	The Federation of Icelandic Industries (*ice. Samtök Iðnaðarins*), the National Power Company of Iceland (*ice. Landsvirkjun*), the Association of the Icelandic Electricity Industry (*ice. Samorka*) and EFLA (engineering and consulting company)	Advertisement for the energy transition in Iceland by the energy sector	2022
Agreement on the Platform for the Coalition Government (*Agreement on the Platform for the Coalition Government*, 2021)	Policy document	Government	Current governmental plans for energy transition	2021
• "Iceland's nature sacrificed? – declaration due to governing agreement" (Landvernd, 2021)	News statement	The Icelandic environmental association (*ice. Landvernd*)	Reply to the treaty from an environmental agency	2021
The state and challenges of energy affairs (Green Book) (Ministry of the Environment, Energy and Climate, 2022)	Report	Working committee for the Ministry of Environment and Energy	Analysis of energy affairs	2022
• "An energy transition we can be proud of" (Felixson, 2022)	News statement	The Icelandic environmental association (*ice. Landvernd*)	Reply to the Green Book	2022
○ "Welcome to the future, in 2003" (Stefánsson, 2022)	News statement	Iceland chamber of Commerce	Reply to the Icelandic environmental association (*ice. Landvernd*) reply to the Green Book	2022
Wind Energy - Options and Analysis (Gunnlaugsson et al., 2023)	Report	Government	Forecast for possible wind energy in Iceland	2023
• Wind energy options and analysis. Working group report, case no. 84/2023 (Magnúsdóttir, 2023)	Report	The Icelandic environmental association	Reply to the forecast	2023

Table 2 Documents

4.1.3 Data analysis

Coding is a method used to label data segment with a term that captures how the researcher interprets the meaning (Mills & Birks, 2017). In this case the coding is underlining what I interpreted to be the main storylines of the energy transition discourse in Iceland. I uploaded the interview transcripts in English and the chosen documents, in English if available and in Icelandic if not available, to NVivo and then I coded in line with the chosen theoretical background of political ecology and socio-technical imaginaries to try to determine the storylines that reflected the socio-technical imaginaries (see chapter 5). The data was themed and sub-coded as shown in table 3:

Theme	Code
Ideas of the future	• Energy transition • Ambition • Technological development
Conflict with nature	• Landscape • Culture • Conservation
Discursive power	• Profit • Ambition • Dispute

Table 3 Codes based on the theoretical background chosen for this analysis.

4.2 Argumentative discourse analysis

Discourse theory is used to analyze and gain insights into the dynamics of power within discourses and in this case, the discourse surrounding the transition to renewable energy in Iceland (Fairclough, 2003). Discourse analysis is a method that is used to understand the taken-for-granted ideas that the discourse has formed and understand how social structures have validated them over time (Robbins, 2012). An example of a taken-for-granted idea that is reinforced by popular media is how women are supposed to be the natural caretakers while the men are more suited to work outside the home and provide for the family, which is then made seem “true” with policies such as lack of paternity leave for

the fathers (Newman & Henderson, 2014). Another, more extreme example of a taken-for-granted idea in the western world, is that Africans live in huts and don't have any clothes, which is then made to seem "true" with misinformation in news and lack of news coverage from the countries in Africa (Mwakikagile, 2007). By using discourse analysis these types of hegemonic discourses can be understood and flushed out and even deconstructed.

Argumentative discourse analysis (ADA) is a method coined by Hajer (1996) in which he defines the narratives as storylines:

> "The argumentative approach operationalizes the idea that discourse is constitutive of the realities of environmental politics. The environmental conflict thus does not appear as primarily a conflict over which sorts of action should be taken (or whether action should be taken) but as a conflict over the meaning of physical and social phenomena. In this process storylines fulfill a key role. They determine the interplay between physical and social realities. Storylines are seen as the vehicles of change and are analyzed in connection to the specific discursive practices in which they are produced. This methodology will help to explain the political dynamics in the environmental domain" (Hajer, 1996, p. 72).

In practice, ADA is a method to examine what is being said to whom and in what context (Hajer, 2006). Because people's reactions to statements can unveil disagreements and lead to arguments. Ideally ADA goes in-depth into the back-and-forth argumentations of everyone involved and Hajer originally presented 10 steps that should be part of the analysis of any case. But due to time constraints and the scope of this thesis only a few of those steps were taken. Those being:

1. *Desk research*, where the literature is reviewed, and history understood.

2. *Helicopter interviews*, where 3 or 4 actors are chosen to be interviewed because they have an overview of the case from different perspectives.

3. *Document analysis*, where documents are reviewed to try and locate the employment of storylines and help structure the discourse.

4. *Sites of argumentation*, where a search is employed for argumentative exchange to reconstruct the arguments.

5. *Interpretation*, where the results are interpreted.

In this study it is highly relevant to use discourse analysis to understand the hegemonic discourse that influences the energy landscape. With the aim of finding the powerful or most

influential narrative that is pushing for more energy production and disregarding conservation efforts. Furthermore, to understand the ways in which the ones in power shape the thinking or imaginaries of people, it is crucial to look into the various narratives and storylines utilized by different individuals and stakeholders (Adger et al., 2001). ADA will help in comprehending the diverse arguments presented by various stakeholders (Hajer, 1996). An essential objective is to grasp the narratives employed by these stakeholders, as this will shed light on which sources of influence wield the greatest impact on the decision-making process and shape people's imaginaries (Benediktsson, 2021; Nielsen, 2016). With the aim to gain an understanding of the collective vision for the future of energy production in the country and subsequent consequences to conservation efforts.

4.3 Research ethics, positionality, and limitations

This study has several limitations. Firstly, it's challenging to remain unbiased and not advocate for the environment, given my Icelandic background and environmentalist perspective. However, the intention was to adhere to Robbins' (2012, p. 86) approach, using "*political ecology to both build up and break down, critique and support, listen and argue simultaneously*". Secondly, many of the source materials and news coverage are in Icelandic, and the interviews were also conducted in Icelandic, which complicated the analysis of the discourse. Thirdly, restricting the research to solely examining storylines and narratives might present a one-sided view, while the issue appears to be deeply intertwined with the economy. Lastly, this is an ongoing debate and therefore I could not keep up with the news that were contributing to the arguments of some stakeholders every day. Furthermore, Icelanders like to argue a lot on Facebook and Twitter and often in semi-closed groups, so there is a limitation to what I saw and read and what else is being argued between the citizens.

5 Findings

In this chapter I will go through each theme and code and present examples of the arguments that present the discursive power of the storylines that reflect imaginary of the energy transition. The themes and codes were chosen after first initial reading of the documents and interviews, and here I present what each theme highlighted. Furthermore, I personally interpreted and supported the findings with additional data.

5.1 Ideas of the future

5.1.1 Ambition

Statements adhering to ambition were very prominent in the analysis. The first sentence of the website for the energy transition showcases the imaginary clearly; "*Iceland can become the first country in the world to use only green, renewable energy*." Again, the coalition agreement states the same; "*The goal is to achieve carbon neutrality and full energy conversion no later than 2040, which will make Iceland the first state to be independent of fossil fuels*." Furthermore, in the Greenbook they assert; "*Iceland is ahead of other nations in the field of energy transition. The clean energy transition of electricity and heat is almost complete in Iceland, which is unique in the world, in addition to which Iceland is in a good position to become one of the first countries, or even the first, to completely stop using fossil fuels. This provides Iceland with the opportunity to serve as an example in the international climate context*." Seemingly, the ambition signifies that the objective is not solely about achieving the energy transition but about leading the way and demonstrating to the world that it is possible. This, in turn, aims to position Iceland at the forefront of global discussions on energy transitions. But interestingly, the Greenbook also states that "*Iceland's target of a 55% reduction in greenhouse gas emissions on Iceland's direct responsibility by 2030, carbon neutrality no later than 2040 and that Iceland will be the first nation to be independent of fossil fuels by 2040 is one of the more ambitious national targets. However, the 2050 target is considered more realistic for independence from fossil fuels if technological developments are taken into account*." Meaning that the goal is already too ambitious in their opinion. Indeed, one of the interviewees [researcher] highlighted the concept of ambition; "*It was literally our obligation to sacrifice our energy resources for the sake of the global community and to save the earth. And this thread of "Iceland saves the world" regularly appears in the discourse of those who advocate what they call energy transition. And it seems very important to me to try to dig a little deeper into this term "energy transition" and what people are talking about. It is, in fact, ambiguous*."

These statements probably stem from the fact that Iceland was quite poor for a long period and Icelanders do not want to be looked down upon and considered small (Karlsson, 2016). Major success from geothermal and hydropower technologies seem to have given us an edge, leading to this rush of competitiveness in other areas. That is not to say that it is all bad and as the environmental agency states in their reply to the coalition agreement, right before they question how the government claims to reach the goal; "*The Icelandic environmental association board welcomes the new government's plans to reduce greenhouse gas emissions by 55% in 2020 compared to 2005 and to aim for carbon neutrality and a full energy transition no later than 2040*."

5.1.2 Energy transition

Now as the interviewee in the preceding text said, it is important to dive a litter deeper into the meaning of the energy transition term. What do the stakeholders really mean by it? In the coalition agreement they state; "*We will set ourselves an independent national target of a 55% reduction in emissions for which Iceland is directly responsible by 2030, compared to 2005 levels. Emphasis will be placed on targeted and ambitious measures to reduce emissions from land use and accelerate energy conversion in all areas*." So, the goal is to become green in all aspects of that term, not only target the last 15% of the fossil fuels use in the country. However, in this context, they do not provide a definition for the term "energy transition." On the website dedicated to the energy transition, they elaborate that it encompasses "*replacing the oil and gasoline we currently use with energy sources with a lower carbon footprint. The energy transition thus implies a major change in the use of resources and the structure of energy systems. Full energy transition aims to use only renewable and green energy sources in sea, air and land*." Therefore, the goal is clear but the road to reach it is what causes the dispute. The website declares that "*in the government's report on the state and challenges in energy affairs [Green Book], it is stated that to achieve a full energy transition, approximately double the current electricity production in Iceland is needed. In 18 years, therefore, a system that has been built up over 60 years has to be doubled."* This however is an overstatement considering the report [Green Book] where the need for a doubling in production is never mentioned, it is simply put forth as one scenario against five other scenarios and is the most extreme one. When asked about this, one interviewee [energy company] stated that they look at it this way; "*1 million tons of fossil fuel are imported to Iceland, if we are going to switch that energy to some other energy, then renewable energy is clearly lacking, something new is needed to replace it, but how much it will be, I think it remains to be seen, and I'm hoping that it will be less than this doubling, because I also have faith that some technological innovations will be introduced, some changes in habits and something else like energy, both improved*

utilization and energy saving". So clearly not everyone that advocates for the energy transition believes this statement of doubling in energy is needed and there is faith in technological development.

The energy transition website emphasizes that the transition is crucial to meet Iceland's climate goals while enhancing energy security and independence. In response, the Icelandic environmental association criticizes the energy sector for exaggerating the risk of energy shortages and pushing for more power plants, potentially circumventing rules to minimize environmental harm. They argue that an endless demand for cheap energy must be balanced with prioritization, efficiency improvements, and moderation. However, the website counters this argument by clarifying that the terms "energy transition" and "energy saving" should not be equated. It acknowledges the role of improved energy efficiency and savings in a successful transition but emphasizes that these alone are insufficient for achieving a comprehensive energy transition.

5.1.3 Technological development

Given the above discourse it seems clear that the energy transition will be coupled with advances in technology and sustainable solutions and in the coalition agreement they assert; "*We want to create a consensus on the utilization of resources. We emphasize combating climate change by reducing emissions, energy conversion and green investment. At the same time, it is our task to prepare Icelandic society for increased technological advances, while ensuring further improvement in living standards for all generations*". Now what these technological advances entail is unclear.

In the Green Book, they point out that problem and highlight a key issue regarding the lack of a well-defined political vision for the future of the high-energy industry in Iceland. Various government policies, like the Green Carpet initiative, call for increased energy production. The high-energy industry currently contributes significantly to Iceland's export revenue, and there are ample opportunities for diverse development across the country. However, there is uncertainty surrounding the electricity supply and the status of the transmission network, which is already hindering development. This uncertainty needs to be addressed to ensure predictable growth in the future. Moreover, a clear policy decision is required regarding whether Iceland should increase fuel production, at least to meet the domestic demand when the energy transition occurs. Although the dominant technology for various aspects of transport and transportation is not yet certain, hydrogen production is seen as a crucial factor. Its feasibility needs to be thoroughly examined, and a position must be established regarding whether it is economically viable for Iceland to produce fuel for export. Therefore, an emphasis is on the need for clear policy direction in the face of evolving energy demands and technological advancements. Iceland's heavy industry is a vital economic driver and should be

guided by well-defined policies to ensure sustainable development and adaptability to the energy transition plans.

The production of green fuel poses a challenge to the imaginary of the energy transition because the future market for it remains uncertain, making it difficult to predict. In the feasibility report for wind energy production they state; "*It is necessary to take into account considerations about the energy transition and about the climate in general about the scope, location and whether and how quickly the development of wind farms needs to be started, i.e. based on the need for domestic electric fuel and also with regard to its possible export.*" This possible export worries one interviewee [researcher]; "*Landsvirkjun (energy company) had no interest in wind energy for a long time. But suddenly, everyone wants to be involved, and these foreign companies plan to come and exploit the naivety of the locals. It's really colonialism in a way. But it's multinational corporate colonialism*." Also stating; "*this is typically Icelandic that when the wind power finally comes here to this rock 20-30 years later than our neighboring countries. Then, it's not about one wind turbine or two, but about 40!*"

Wind energy is truly something that Icelanders know little of but is tempting to think that it could be something new that they could excel at as well. Showing the world that Iceland is great and so sustainable, and everyone should look to Iceland and its success. Additionally, the electrification of the transportation fleet would show that we are self-sufficient and incredibly green. Benediktsson (2021), discusses the idea that it should instead incite us to spread our knowledge to the world.

The environmental association does not express a complete negative outlook on wind energy per se but has raised concerns about the coalition wanting to rush the development; "*the environmental association believes that the development of wind farms in Iceland should be done very carefully and that they should unconditionally fall under the Master plan. The board considers the plans to pave the way for wind power plants with special laws, as mentioned in the governing charter, very worrisome*." Furthermore, one interviewee [municipality] noted that "*there is a definite race going on*" when talking about wind energy investors.

5.2 Discursive power

5.2.1 Ambition

As the chapter 5.1.1 highlights many ideas about the future involve ambitious goals and targets, this ambition can also have discursive power and even lead to policy changes in policy. As is seen by the fact that the current government decided to change the goal to be reached 10 years earlier than what the former government had set out to target. The Green Book states that "*in the government*

agreement that took over in 2021, the goal of a fossil fuel-free Iceland was accelerated to 2040 from 2050. It is necessary to elaborate on the reasons for this acceleration and make it clear to all parties involved what it entails. If the goal is to be met, all electricity producers, public institutions and stakeholders involved in the licensing process must coordinate criteria and actions."

5.2.2 Dispute

The quote in chapter 2.3 expresses concerns that opinions are divided on how much energy is needed for the energy transition, where it should come from and who should be allowed to use it with special concerns raised for the heavy industry market. The quote ended with a statement saying that the energy intensive industry generates a large revenue for Iceland and played a big part in building the electricity system and thereby raising the living standards in Iceland. It is true that some of the major constructions like Kárahnjúkavirkjun, which is the largest hydropower plant in Iceland, would not have been built unless a heavy industry was built nearby to utilize the energy (in that case an aluminum smelter owned by Alcoa) (Benediktsson, 2009). However, there are concerns that it will only incite more outside industries to come to Iceland which would leave no room for the energy transition plan, meaning that more energy will be needed to meet the demands. Unless Iceland will become a producer of green fuels and become a gas station stop for the rest of the world, like interviewee [researcher] said "*the idea is to use the energy we produce to create hydrogen, which would then be pumped into transport ships. So, this would essentially become like a gas station*". In fact, the Green Book addresses these concerns *"that there is no guarantee that an increased supply of electricity would be used in the energy transition".* And explain that it will depend on whether the electricity supply can match the rising demand. Further elaborating, that the core concern revolves around whether the energy market genuinely allows for an adequate supply or if certain barriers to entry, whether formal or informal, necessitate a unique allocation system to determine who gains access to electricity and who does not.

One of the main arguments that the conservationists use is the fact that most of the electricity produced is being sold to heavy industries and therefore closing one of them down would leave Iceland with more than enough energy to complete the energy transition plan. As expressed by interviewee [environmentalist]; "*I mean we just need to stop selling energy to two smelters and then we will have enough energy for the energy transition*." However, this statement got them into a little debacle with an actor from an energy company, as they describe; "*Then he says, it is irresponsible of you to say this. And I say, it is not irresponsible of me to say this, it is irresponsible to produce aluminum with an environmental mess like it is done, because there is a really big environmental footprint of aluminum production. So, I say he is irresponsible, and he says I am irresponsible. … , we just completely*

disagreed because we just look at it so completely differently. He just thinks it is irresponsible that Iceland is not producing aluminum for someone who wants to buy coca cola cans, he thinks it is irresponsible to not want to do it. I think it is irresponsible to produce some coca cola cans and sell more coca cola. We are just completely at odds. And I think he is as irresponsible as he thinks I am." But what constitutes as a responsible thinking then? A quote from the Icelandic chamber of commerce statement where they criticize the scenario proposed by the Icelandic environmental association, says; "*A full energy transition without a significant increase in energy production and negative effects on economic prosperity in Iceland, considering the assumptions and existing reasoning, does not stand up to scrutiny. The proposal would still have a significant negative impact on economic prosperity*." And, "*in short, it can be said that the organization offers a changed attitude where the protection of pristine nature is placed far above human needs*." Therefore, in their mind responsible thinking should be anthropocentric and not biocentric.

Considering this dispute I asked the actor from the energy company what they thought about the conservationists questioning and protesting almost every energy project and they had an interesting answer; "*this is just their role, or I just see it as they are coming up with points of view that are necessary to come up in the discussion and also often lead to things being thought of in a different way and that can lead to a change. … It would be kind of strange if everyone was just like 'this is great' and then I'm not sure that we would have such well-constructed and well-built power plants and that it would be thought of as well*." And that is true, for example, the hydropower plants that have been built in Iceland have lasted many decades and were built with future expansion in mind to harness the extra energy that comes with climate change when more and more glacial melt enters the system (Landsvirkjun, n.d.-c). However, they also went on to say; "*But of course I think that there is always about 5%, which is generally opposed to new constructions and more energy production*."

5.2.3 Profit

The mention of profit is most noticeable on the website for the energy transition where statements such as "*Iceland's economic benefit from a full energy transition until 2060 corresponds to the funding of the health care system for almost 5 years"* and, "*The energy transition will significantly reduce Iceland's emissions, amounting to 88 million tons of CO2 equivalents. Its value is about 500 billion ISK"* and, "*Iceland's economic benefits from the energy transition that is now ahead can amount to 1,400 billion ISK until the year 2060*." Therefore, a strong focus in the advertisement campaign is the profit of sustainability to make the energy transition look more appealing to the public. However, this is criticized by the opposition, to quote interviewee [Environmentalist]; "*This is how the business world*

*looks at sustainability, they are going to make a lot of money from this. It is just an opportunity and now the *dingdingding* dollars will just roll in. You know, Iceland will be so rich from sustainability because we are so incredibly environmentally friendly, and we are so very good at this (irony implied).”*

The interviewee [municipality] expressed concerns for the local authorities; “*But I just think that energy issues are primarily issues that concern the local authorities a lot. That we need to ensure energy security is something that I think everyone understands. The natural question then is what constitutes energy security. There is competition for energy, energy is a product, and naturally there is a certain risk that if not enough is produced, something will be cut.*”

5.3 Conflict with nature

5.3.1 Conservation

No actor goes so far as to say that nature conservation is not necessary but again the coalition empathizes being at the forefront internationally while the environmental association expresses caution. Citing the coalition; “*Iceland should be at the forefront of international environmental action, but to do so it must overcome major challenges. The progress and development of Icelandic society has been based on creating a balanced co-existence of people and nature. We need to build on this for the future, and in so doing ensure the preconditions for the wellbeing of current and future generations*.” Whilst the environmental association suggest; “*Caution must be exercised if additional electricity is to be obtained. Extremely valuable Icelandic nature and wilderness are at stake. A quality and professional Master plan and a significant environmental impact assessment are the tools we have to date*.”

However, those tools like the Master plan are criticized for acting as bottlenecks for the development of energy projects. Like they state in the Green Book; “*the procedural period is considered too long and the Masterplan (for Nature Protection and Energy Utilization) method does not work due to the long processing period of the Parliament“* and one interviewee [municipality] simply says that the Master Plan an old tool. This and any other the suggestions of greatly changing the Master Plan are seen as a declaration of war by the environmental association; “*It is worth reminding that nature conservation and climate protection must go hand in hand. The intention to go against the opinion of the experts on the ranking into groups of the Master Plan III is in fact a declaration of war. There has been a general consensus that a framework plan, based on professional criteria, would be a prerequisite for a broader agreement on nature conservation and power plants. If the government goes against this reconciliation, the reconciliation effort is worthless. The introduction of the treaty talks about an agreement on resource utilization. It must be based on dialogue and transparency and be*

based on professional practices, nature conservation laws and international conventions." This shows the great passion for the environment that agency has.

Finally, the coalition agreement ambitiously declares that; "*A national park will be established in already protected land areas and glaciers in public lands in the highlands by amending the Act on Vatnajökull National Park*." However, that scenario has yet to materialize, or it has at least been deferred to the extent that Iceland will likely have passed the deadline for the energy transition by then.

5.3.2 Culture

If one word could describe the way Icelanders look at their landscape and energy production, it would be the word 'unique' as can be seen in the following statements. From the Iceland chamber of commerce; "*electricity generation is the art of balancing human well-being and nature conservation. Icelanders produce a lot of energy but are also at the forefront of using renewable energy sources. 85% of the energy Icelanders use is produced by renewable means. It is unique."* From the environmental association reply to the coalition agreement; "*let us not forget that Iceland's nature is unique on a global scale and its value for all mankind, living and future, cannot be measured in money."* Furthermore an interviewee [researcher] describes it so; "*we have a landscape and wilderness with features that are rare or even unique, such as the basalt ridges, which are a unique landscape or geological formation in the world. And of course, we have an international responsibility to preserve these natural phenomena and ensure that these organic or natural processes that have created them continue to function without man interfering. And partly, this international responsibility is reflected in opening up the country to tourists from all over the world. So, in my mind, our responsibility towards the world through Icelandic nature and biological and geological diversity and landscape diversity is many times richer than being able to drop some money in the ocean while maintaining the capitalist, business as usual, economic system*." Responsibility seems to be intertwined with the culture in a way that if that responsibility fails it could lead to immense guilt.

5.3.3 Landscape

The issues that come with the energy transition are big, and the landscape could become neglected in the prioritization "*which is why it's so dangerous when politicians talk about these things in an overly simplistic way. (Imitating politicians:) 'Yes, we Icelanders need to save the world'. And how do we do that? By destroying the nature that we are also responsible for and ultimately even more responsible for in relation to the world*" [researcher]. However the interviewee [energy company] would reply with;

”*we are using natural resources, and one of the first things in our environmental policy is that we respect nature, and it is no coincidence that it says because this is very important to us and most of us who work here are nature lovers and want to protect nature and do everything we can to solve our project so that there is as little disturbance as possible*.” Emphasizing as little disturbance as possible yet admitting that “*naturally they [the power plants] have an impact on the environment and that's just the way it is*.” This controversy of renewable power production is therefore prominent in the discourse.

6 Discussion

From the findings I identified one key storyline that is prominent within the discourse of the energy transition in Iceland and reflects a sociotechnical imaginary of an energy transition. I call it the "*win the race*" storyline, where being the first in the world to achieve a carbon neutral and fossil free country status is used as an argument to push the energy transition in Iceland. The storyline is presented through arguments that empower the imaginary of the desired future of becoming a carbon neutral nation. The arguments serve to either support or oppose the realization of the energy transition plan more than the goal of carbon neutrality itself which seems to have a consensus of being a necessary and inevitable goal. This key storyline is most evident in the discourse of those who support the plan and therefore is beneficial to the ones who are investing in renewable energy production. Alternative storylines focusing on landscape and the obligation that Iceland must preserve it, also submerged but within those storylines there is less emphasis on technological development being the savior of the day. In this chapter I will go through the findings in more detail and reflect on the research questions.

6.1 Understanding of the discourse

The fact that there is a discourse happening about the energy transition where actors of environmental agencies and the public are questioning the plans of the government shows that there is not a consensus about the storyline even though the desired future of carbon neutrality is in a collective agreement. Although Iceland has a better chance of 'winning the race' than most other nations because of our already utilized renewable resources this seems to not fully convince the public of the greatness of the energy transition targets. Maybe especially because the new technology like wind power, does not seem to resonate strongly with Icelanders. Benediktsson (2021) emphasizes that the strong focus on technology can be limiting as other competing imaginaries that do not include technology can manifest how desirable futures are envisaged. Therefore, the competing storyline of the preservation of the landscape is fully capable of reflecting a storyline that puts non-human nature on the same pedestal as humans.

Furthermore, this does not mean that Iceland is the only nation that thinks that they could 'win the race'. For example Carvalho et al. (2022) show a similar storyline in Portugal where there is an imaginary that places the country at the forefront of the energy transition, reasoning that it is because of the country's climate, natural resources, and political vision, ergo Portugal could become a leader in the transition to carbon neutrality.

6.2 Power relations

Research question 2 askes whose interest does the storyline serve?

A strong focus was on profit and questioning the effectiveness of the Master Plan with the discourse focusing on how energy as a product leads to benefits to the ones selling it. Therefore, it is obvious that this storyline that is pushing for an increase in demand and will therefore benefit the energy companies. This is further pushed with the criticism of the Master Plan by the energy companies as being a hindrance for development and especially 'when time is of the essence today'. They have also argued that new wind energy projects should be exempted from the framework to speed things up. However, conservationists argue that it is a good tool to make sure that potential environmental damages are analyzed. Furthermore, the Master Plan could act as a barrier or a bottle neck for future energy heavy industry, in case there will be more data center companies coming to Iceland and/or something new. Lindström & Ruud (2017) show that the same sort of bottle neck problem is occurring in Sweden and Norway.

Ultimately it is the government that makes the final decisions. Therefore, if competitiveness is mostly what guides them then decisions regarding the environment could start to become rushed. Furthermore, as proposed in the introduction, the willingness to sacrifice nature in order to survive could become greater. Competition within the economical market works when it is on a small scale and helps keeping prices of products down, but what will happen when we try to do it on a larger level and compete on an international scale for sustainability? Is it a good development or not? This calls for further research on the topic.

6.3 Commodification versus protection

Research question 3 askes what are the consequences for nature conservation efforts?

If the key storyline persists it could have the consequences that the reliability of conservation policies like the Master Plan will be reduced so that energy projects will gain easier access to the permits to be allowed to be constructed. But that will only happen if the social resistance is silenced. Which does not seem to be happening because for example, recently the proposal for the construction of a hydropower plant in Þjórsá was met with such resistance that the construction permits that the energy company had already claimed were taken back to make peace with the public (UUA, 2023).

Through the lens of political ecology, we should turn away from the polarization between people and nature. Instead, we should change our systems to be more sustainable. There is always a

need for a strong voice for the environment and non-human nature that speaks for conserving and protecting it rather than commodifying nature to save it. With political ecology we are trying to unpack the problems that have many layers which most environmental problems do. Icelanders have an interesting view of nature compared to Denmark and Sweden, according to a study by Árnason (2005), the views on landscape in Iceland are different from to the ones expressed in Denmark and Sweden, which were are quite similar. For example, Icelanders deem the landscape more important than the flag while the other two countries do view the flag as more important, and Icelanders consider the landscape scarier than the neighboring countries. Also, views on the importance of the landscape changes with fluctuations in the economy, right after the economic crash of 2008 the landscape was not deem as important by Icelanders.

7 Conclusions

In conclusion, a key storyline was identified as “win the race” imaginary, where current electives of power wished to make an example of Iceland as *the most* sustainable and green country of the world. This imaginary is beneficial to the energy companies and unfavorable to the landscape of Iceland and those who try to speak for it. Icelanders should recognize that this imaginary could become a dominating factor in the energy transition plan discourse and be aware of its power.

At its core, this thesis primarily focuses on discourse analysis, aiming to understand who is communicating what to whom and for what purpose. The central concern here is not to undermine the importance and necessity of the energy transition goal, which is indeed commendable and crucial for everyone. Rather, the issue lies in the approach of treating it as a competition, which has led to certain challenges, particularly the desire to discard the Master Plan to expedite a certain idea of progress. The environmental agency seeks to draw attention to this aspect where the problem isn't the goal itself but the discourse surrounding it. This raises a valid question: What if, by the year 2040, we technically meet the set goals, but due to the influx of heavy industry and population growth, we still find ourselves reliant on importing fossil fuels to sustain our operations? In essence, the thesis underscores the significance of discourse analysis while highlighting the potential ramifications of emphasizing competition over the energy transition, as it could impact the long-term sustainability of energy independence.

7.1 Further research

There are many possibilities for advancing this kind of research. For example, political scientists could have more insight into how policies form, economists could dive deeper into the drivers within the economy and philosophers could question the ethics of the energy transition. I would like to see further research on the demographics in terms of age and background and how that affects people’s opinions. I would also like to see this kind of research specifically conducted in Icelandic for Icelanders as the language can carry different meaning compared to the English language.

8 References

48/2011: Lög um verndar- og orkunýtingaráætlun. (2011). Alþingi. https://www.althingi.is/lagas/nuna/2011048.html

Aðalbjörnsson, T., & Guðmundsson, I. H. (2022, March 15). *Hugmyndir um tugi vindorkuvera á Íslandi*. Kveikur. https://www.ruv.is/kveikur/vindorka/

Adger, W. N., Benjaminsen, T. A., Brown, K., & Svarstad, H. (2001). Advancing a Political Ecology of Global Environmental Discourses. *Development and Change*, *32*(4), 681–715. https://doi.org/10.1111/1467-7660.00222

Agreement on the Platform for the Coalition Government of the Independence Party, the Left Green Movement and the Progressive Party. (2021). https://www.government.is/library/05-Rikisstjorn/211101%20Stjornarsattmali%20EN%20A4%202022.pdf

Arent, D., Arndt, C., Miller, M., Tarp, F., & Zinaman, O. (Eds.). (2017). *The Political Economy of Clean Energy Transitions* (1st ed.). Oxford University PressOxford. https://doi.org/10.1093/oso/9780198802242.001.0001

Árnason, Þ. (2005). *Views of Nature and Environmental Concern in Iceland*. https://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-4591

Bednar-Friedl, B., Biesbroek, R., Schmidt, D. N., Alexander, P., Børsheim, K. Y., Carnicer, J., Georgopoulou, E., Haasnoot, M., Le Cozannet, G., Lionello, P., Lipka, O., Möllmann, C., Muccione, V., Mustonen, T., Piepenburg, D., & Whitmarsh, L. (2022). 2022: Europe. *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, 1817–1927. https://doi.org/10.1017/9781009325844.015

Benediktsson, K. (2009). The Industrial Imperative and Second (hand) Modernity. In *Place Reinvention: Northern Perspectives* (pp. 15–31). https://doi.org/10.4324/9781315600574-2

Benediktsson, K. (2021). Conflicting imaginaries in the energy transition? Nature and renewable energy in Iceland. *Moravian Geographical Reports*, *29*, 88–100. https://doi.org/10.2478/mgr-2021-0008

Benediktsson, K., & Waage, E. (2020). Power without politics? Nature, landscape and renewable energy in Iceland. *Annales de Géographie*, *N°736*, 107–130. https://doi.org/10.3917/ag.736.0107

Bjarnason, B. (2022, November 30). Þúsund vindmyllur—Vísir. *visir.is*. https://www.visir.is/g/20222345485d

Björnsdóttir, S. H. (2022, June 21). *Allt að fimm nýjar Kárahnjúkavirkjanir í orkuskiptin—RÚV.is*. https://www.ruv.is/frettir/innlent/2022-06-21-allt-ad-fimm-nyjar-karahnjukavirkjanir-i-orkuskiptin

Carvalho, A., Riquito, M., & Ferreira, V. (2022). Sociotechnical imaginaries of energy transition: The case of the Portuguese Roadmap for Carbon Neutrality 2050. *Energy Reports*, *8*, 2413–2423. https://doi.org/10.1016/j.egyr.2022.01.138

Dryzek, J. S. (1997). The Politics of the Earth: Environmental Discourses. In *The Politics of the Earth* (pp. 23–40). Oxford University Press. https://

Ellis, R. (2023, August 19). *Iceland: Will the tiny island emerge as a decarbonization superpower?* SOSV Climate Tech Summit. https://sosvclimatetech.com/iceland-emerging-as-a-decarbonization-superpower/

Engels, F., & Münch, A. (2015). The micro smart grid as a materialised imaginary within the German energy transition. *Energy Research & Social Science*, *9*. https://doi.org/10.1016/j.erss.2015.08.024

Fairclough, N. (2003). *Analysing Discourse: Textual Analysis for Social Research* (1st ed.). Routledge. https://doi.org/10.4324/9780203697078

Fawzy, S., Osman, A. I., Doran, J., & Rooney, D. W. (2020). Strategies for mitigation of climate change: A review. *Environmental Chemistry Letters*, *18*(6), 2069–2094. https://doi.org/10.1007/s10311-020-01059-w

Felixson, T. (2022, June 21). Orkuskipti sem við getum verið stolt af. *Landvernd*. https://landvernd.is/orkuskipti-sem-vid-getum-verid-stolt-af/

Government of Iceland. (n.d.). *Energy*. Retrieved March 2, 2023, from https://www.government.is/topics/business-and-industry/energy/

Gunnarsdóttir, K. H. (2022, October 31). Öræfaástin og eignarhaldið. *Landvernd*. https://landvernd.is/oraefaastin-og-eignarhaldid-2/

Gunnlaugsson, H., Ólafsdóttir, B., & Óttarson Proppe, K. (2023). *Vindorka—Valkostir og greining*. Stjórnarráð Íslands. https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/URN/Vindorka_skyrsla_april-2023.pdf

Hajer, M. A. (1996). *Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Oxford University Press,. https://ludwig.lub.lu.se/login?url=https://academic.oup.com/book/2959

Hajer, M. A. (2006). Argumentative discourse analysis. In *Words matter in policy and planning—Discourse theory and method in the social sciences* (pp. 72–73).

Hálendisþjóðgarður. (2019). Umhverfis- og auðlindaráðuneytið. https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=b3fa873b-15d3-11ea-9453-005056bc4d74

Hirt, L., Sahakian, M., & Trutnevyte, E. (2022). What subnational imaginaries for solar PV? The case of the Swiss energy transition. *Technology in Society*, *71*, 102068. https://doi.org/10.1016/j.techsoc.2022.102068

Icelandic Tourist Board. (2009). *Tourism in Iceland in figures—October 2009*. Icelandic tourist board. https://www.ferdamalastofa.is/static/files/ferdamalastofa/talnaefni/tourism_in_iceland_in_figures_oct_-2009.pdf

Icelandic Tourist Board. (2023). *Tourism in Iceland in figures – August 2023*. https://www.ferdamalastofa.is/static/files/ferdamalastofa/talnaefni/ferdatjonusta-i-tolum/2023/agu/august-2023.pdf

Iceland's best natural wonders. (2021, September 17). Lonely Planet. https://www.lonelyplanet.com/articles/best-nature-spots-iceland

Ingólfsson, A. Þ. (2020, December 11). Grenjandi minnihlutinn lætur í sér heyra og vantreystir ráðherra. *Kjarninn*. https://kjarninn.is/frettir/2020-12-10-grenjandi-minnihlutinn-laetur-i-ser-heyra-og-vantreystir-radherra/

Isaksen, I. Ó. (2021, April 8). Hvaðan á orka fram-tíðarinnar að koma? *visir.is*. https://www.visir.is/g/20212094655d

Jasanoff, S., & Kim, S.-H. (2015). *Dreamscapes of Modernity*. University of Chicago Press. 10.7208/chicago/9780226276663.001.0001

Jerneck, A., Olsson, L., Ness, B., Anderberg, S., Baier, M., Clark, E., Hickler, T., Hornborg, A., Kronsell, A., Lövbrand, E., & Persson, J. (2011). Structuring sustainability science. *Sustainability Science*, *6*(1), 69–82. https://doi.org/10.1007/s11625-010-0117-x

Karhunmaa, K. (2021). *Imagining energy transitions: Carbon neutrality in Finland*. https://helda.helsinki.fi/handle/10138/330475

Karlsson, G. (2016, May 9). *Hvernig var lífið í gamla daga?* Vísindavefurinn. http://www.visindavefur.is/svar.php?id=72121

Kates, R. W., Clark, W. C., Corell, R., Hall, J. M., Jaeger, C. C., Lowe, I., McCarthy, J. J., Schellnhuber, H. J., Bolin, B., Dickson, N. M., Faucheux, S., Gallopin, G. C., Grübler, A., Huntley, B., Jäger, J., Jodha, N. S., Kasperson, R. E., Mabogunje, A., Matson, P., … Svedlin, U. (2001). Environment and development. Sustainability science. *Science (New York, N.Y.)*, *292*(5517), 641–642. https://doi.org/10.1126/science.1059386

Kristjánsdóttir, H. (2022). *Protected areas in Iceland* [Map]. The Environment Agency of Iceland. https://ust.is/library/sida/Nattura/FS_kort_202208.pdf

Labussière, O., & Nadaï, A. (Eds.). (2018). *Energy Transitions: A Socio-technical Inquiry*. Springer International Publishing. https://doi.org/10.1007/978-3-319-77025-3

Landsvirkjun. (n.d.-a). *Aflstöðvar—Orka úr 100% endurnýjanlegum orkugjöfum*. Retrieved September 27, 2023, from https://www.landsvirkjun.is/aflstodvar

Landsvirkjun. (n.d.-b). *Búrfellslundur*. Retrieved September 25, 2023, from https://www.landsvirkjun.is/burfellslundur

Landsvirkjun. (n.d.-c). *Búrfellsstöð*. Retrieved September 26, 2023, from https://www.landsvirkjun.is/aflstodvar/burfellsstod

Landsvirkjun. (2021). *Gerum heiminn grænan saman—Ársskýrsla 2020—Samantekt yfir starfssemi*. https://www.landsvirkjun.is/api/get-pdf?id=b9a9da9f-670a-48c8-ba4f-5d45032fa8a2_LVI-Arsskyrsla-islenska-2102-34.pdf&name=LVI-Arsskyrsla-islenska-2102-34.pdf

Landvernd. (n.d.). Hálendisþjóðgarður tryggir aðgengi og vernd einstakra víðerna. *Landvernd*. Retrieved March 1, 2023, from https://landvernd.is/halendisthjodgardur/

Landvernd. (2019, February 16). Villtasta prósentið—Víðerni Íslands. *Landvernd*. https://landvernd.is/villtasta-prosentid-viderni-islands/

Landvernd. (2021, November 29). Náttúru Íslands fórnað? - Yfirlýsing vegna stjórnarsáttmála. *Landvernd*. https://landvernd.is/natturuislandsfornad/

Lindström, A., & Ruud, A. (2017). Whose Hydropower? From Conflictual Management into an Era of Reconciling Environmental Concerns; a Retake of Hydropower Governance towards Win-Win Solutions? *Sustainability*, *9*(7), Article 7. https://doi.org/10.3390/su9071262

Logadóttir, S. Ó. (2022a, July 16). Búrfellslundur gæti orðið fyrsta vindorkuverið sem rís á Íslandi. *Kjarninn*. https://kjarninn.is/skyring/burfellslundur-gaeti-ordid-fyrsta-vindorkuverid-sem-ris-a-islandi/

Logadóttir, S. Ó. (2022b, December 2). Skrítið ef „enginn staður á Íslandi kæmi til greina fyrir vindorku". *Kjarninn*. https://kjarninn.is/frettir/skritid-ef-enginn-stadur-a-islandi-kaemi-til-greina-fyrir-vindorku/

Magnúsdóttir, A. Ö. (2023). *Valkostir og greining á vindorku. Skýrsla starfshóps, mál nr. 84/2023*. Landvernd. https://landvernd.is/wp-content/uploads/2023/05/Umsögn-Landverndar-vegna-skýrslu-um-vindorku_LOKA_17-maí2023.pdf

Markmið og skuldbindingar. (n.d.). Retrieved September 25, 2023, from https://www.stjornarradid.is/verkefni/umhverfi-og-natturuvernd/loftslagsmal/adgerdaaaetlun-i-loftslagsmalum/markmid-og-skuldbindingar/

Mills, J., & Birks, M. (2017). *Qualitative Methodology: A Practical Guide*. SAGE Publications, Inc. https://doi.org/10.4135/9781473920163

Ministry for the Environment and Natural Resources. (2021). *On the Path to Climate Neutrality Iceland's Long-Term Low Emission Development Strategy*. https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/Iceland_LTS_2021.pdf

Ministry of the Environment, Energy and Climate. (2022). *The State and Challenges of Energy Affairs with reference to the goverment's climate action targets and emphases* (p. 167). Ministry of the Environment, Energy and Climate. https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/URN/URN_State_of_Energy_Issues_EN_Web.pdf

Morgunblaðið. (2021, November 28). Þjóðgarður á hálendi í allt annarri mynd. *Morgunblaðið*. https://www.mbl.is/frettir/innlent/2021/11/28/thjodgardur_a_halendi_i_allt_annarri_mynd/

Mwakikagile, G. (2007). *Relations Between Africans and African Americans: Misconceptions, Myths and Realities*. New Africa Press.

Newman, H. D., & Henderson, A. C. (2014). The Modern Mystique: Institutional Mediation of Hegemonic Motherhood. *Sociological Inquiry*, *84*(3), 472–491. https://doi.org/10.1111/soin.12037

Nielsen, T. D. (2016). From REDD+ forests to green landscapes? Analyzing the emerging integrated landscape approach discourse in the UNFCCC. *Forest Policy and Economics*, *73*, 177–184. https://doi.org/10.1016/j.forpol.2016.09.006

Olafsdottir, R., & Saeporsdottir, A. D. (2020). Public Perception of Wilderness in Iceland. *Land*, *9*(4), 99. https://doi.org/10.3390/land9040099

O'Neill, J. (2016). Social Imaginaries: An Overview. In *Encyclopedia of Educational Philosophy and Theory* (pp. 1–6). https://doi.org/10.1007/978-981-287-532-7_379-1

Orkuskipti. (n.d.). Retrieved September 20, 2023, from https://orkuskipti.is/

Orkustefna fyrir Ísland. (n.d.). Retrieved September 25, 2023, from https://www.stjornarradid.is/verkefni/audlindir/orkumal/orkustefna-fyrir-island/

Orkustofnun. (2020). *OS-2020-T013-01: Electricity consumption in Iceland 2019*.

Pétursdóttir, G. (2021). *Skýrsla verkefnisstjórnar 4. Áfanga rammaáætlunar um vernd og orkunýtingu landsvæða 2017-2021*. verkefnisstjórn 4. áfanga rammaáætlunar um vernd og orkunýtingu landsvæða og umhverfis- og auðlindaráðuneytinu. https://www.ramma.is/media/ra4/Skyrsla-verkefnisstjornar-RA-4.pdf

Povitkina, M. (2018). The limits of democracy in tackling climate change. *Environmental Politics*, *27*(3), 411–432. https://doi.org/10.1080/09644016.2018.1444723

Rabiej-Sienicka, K., Rudek, T., & Wagner, A. (2022). Let it Flow, Our Energy or Bright Future: Sociotechnical imaginaries of energy transition in Poland. *Energy Research & Social Science*, 102568. https://doi.org/10.1016/j.erss.2022.102568

Ragnarsson, Ó. (2004). *Kárahnjúkar—Með og á móti*. JPV.

Ríkisútvarpið. (2013, January 24). *Laxárdeilan—Hetjudáð eða hryðjuverk—RÚV.is*. RÚV. https://www.ruv.is/oflokka-eldra-efni/laxardeilan-hetjudad-eda-hrydjuverk/

Robbins, P. (2012). *Political Ecology A Critical Introduction* (2nd ed.). ohn Wiley & Sons Ltd.

Robinson, J., Barron, A., & Pottinger, L. (2021). Open interviews. *Methods for Change: Impactful Social Science Methodologies for 21st Century Problems*. http://aspect.ac.uk/wp-content/uploads/2021/05/Open-Interviews.pdf

Rudek, T. J. (2022). Capturing the invisible. Sociotechnical imaginaries of energy. The critical overview. *Science and Public Policy*, *49*(2), 219–245. https://doi.org/10.1093/scipol/scab076

Rúnarsson, B. (2021, June 12). *Kölluðu Hálendisþjóðgarð opinbera útför—RÚV.is*. RÚV. https://www.ruv.is/frettir/innlent/2021-06-12-kolludu-halendisthjodgard-opinbera-utfor/

Schlüter, M., Caniglia, G., Orach, K., Bodin, Ö., Magliocca, N., Meyfroidt, P., & Reyers, B. (2022). Why care about theories? Innovative ways of theorizing in sustainability science. *Current Opinion in Environmental Sustainability*, *54*, 101154. https://doi.org/10.1016/j.cosust.2022.101154

Seneviratne, S. I., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S. M., Wehner, M., & Zhou, B. (2021). Chapter 11: Weather and Climate Extreme Events in a Changing Climate. *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, 1513–1766. https://doi.org/10.1017/9781009157896.013.

Sérstaða þjóðgarðsins. (n.d.). Vatnajökulsþjóðgarður. Retrieved September 25, 2023, from https://www.vatnajokulsthjodgardur.is/fraedsla/serstada-thjodgardsins

Smil, V. (2018). Energy in World History. In *Energy and Civilization*. The MIT Press. https://www.jstor.org/stable/j.ctt1pwt6jj.10

Statistics Iceland. (n.d.). *Hagstofan: Landlýsing*. Hagstofa Íslands. Retrieved September 25, 2023, from https://hagstofa.is/talnaefni/umhverfi/natturufar/landlysing

Statistics Iceland. (2020). *Statistics Iceland: Iceland with highest per capita household energy consumption in Europe*. Statistics Iceland. https://statice.is/publications/news-archive/environment/energy-consumption-for-households-in-europe-in-2018/

Stefánsson, J. (2022, June 27). *Velkomin til framtíðarinnar, árið 2003*. Viðskiptaráð Íslands. https://www.vi.is/greinar/velkomin-til-framtidarinnar-arid-2003

Svarstad, H., Benjaminsen, T. A., & Overå, R. (2018). Power theories in political ecology. *Journal of Political Ecology*, *25*, 350–425.

Thórhallsdóttir, T. E. (2007). Environment and energy in Iceland: A comparative analysis of values and impacts. *Environmental Impact Assessment Review*, *27*(6), 522–544. https://doi.org/10.1016/j.eiar.2006.12.004

UNFCCC. (n.d.). *The Paris Agreement | UNFCCC*. Retrieved September 25, 2023, from https://unfccc.int/process-and-meetings/the-paris-agreement

Upham, P., Sovacool, B., & Monyei, C. (2022). Imaginaries on ice: Sociotechnical futures of data centre development in Norway and Iceland. *Environment and Planning E: Nature and Space*, 251484862211266. https://doi.org/10.1177/25148486221126619

UUA. (2023, June 15). 3/2023 Hvammsvirkjun. *Úrskurðarnefnd umhverfis- og auðlindamála*. https://uua.is/urleits/3-2023-hvammsvirkjun/

Wagner, A., & Gałuszka, D. (2020). Let's play the future: Sociotechnical imaginaries, and energy transitions in serious digital games. *Energy Research & Social Science*, *70*, 101674. https://doi.org/10.1016/j.erss.2020.101674