Norwegian University of Life Sciences

Master's Thesis 2023 30 ECTS
Faculty of Landscape and Society (LANDSAM)

Energy justice in the development of offshore wind farms on the Åland Islands

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Acknowledgements

I would like to express my deepest gratitude to my supervisor, Lars Kåre Grimsby, who has continuously supported me with great guidance and advice, and has always met me with positivity, flexibility, and a hopeful attitude which has been invaluable in the process of creating this thesis. I would also like to extend my sincere thanks to my co-supervisor, Edvard Nordlund, who has supported me through technical and case-specific expertise, as well as valuable discussions that has helped forming this thesis. Lastly, I would like to thank my family, friends, and colleagues who have supported me in several ways during this process.

Abstract

This thesis applies an energy justice perspective on the development of offshore wind farms on the Åland Islands, looking into potential injustices, who is being affected, and if there are processes through which citizens can be heard in the issue. This is investigated by analyzing public hearing responses from the process of creating the maritime spatial plan for Åland, assessing whether people were actually heard in the issue. In addition, newspaper articles are analyzed in order to get e deeper understanding of attitudes and potential injustices specifically in the development of offshore wind power. The findings show that a lot of the feedback given from different actors to the maritime spatial plan was taken into account, including exclusion of municipal and private waters, as well as fish farms, from the plan. However, there are a lot of concerns about the offshore wind farms expressed in the newspaper, including a lack of information, questions about environmental impacts, financing, and the profitability of wind power. The conclusion is that early and transparent communication with citizens is crucial in order to keep the trust of the public.

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List of Abbreviations

DSO = Distribution System Operator

LTEs = Letters to the Editor

OWF = Offshore wind farm

TSO = Transmission System Operator

ÅMHM = The Åland Environmental and Health Protection Authority

ÅSUB = Statistics and Research Åland

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1. Introduction

Climate change is becoming an increasingly pressing issue for the whole world, and report after report from the IPCC is published about the risks of letting it go further and the urgency of taking action. The energy sector with the use of fossil fuels is the major contributor to this crisis, thus it is crucial to make an energy transition to renewable alternatives as fast as possible (Leichenko & O'Brien, 2019). There is also a need for a rapid increase in energy supply due to the increased demand from electrification. There are already many options of renewable energy sources, but they are developing at a fast pace and introducing new technologies can be challenging, both due to high investment costs but also due to skepticism and concerns among the public. One of the largest renewable energy sources is wind power, and more and more developers are now turning to offshore wind power due to, for instance, beneficial wind conditions, the ability to have larger wind turbines, and a lack of available land areas (Sidén, 2015). One benefit of this is that the impact on citizens is decreased, including less noise pollution and less visual impact on landscapes, as the wind turbines are further away from people's homes. However, concerns still remain regarding aspects such as disturbance of the visual landscape and environmental impact from wind turbines (Devine-Wright & Wiersma, 2020). These concerns have to be taken into account in order to avoid conflicts between citizens and authorities or developers, as this can cause long delays or even the cancellation of projects, in addition to the discontentment and injustices felt by citizens (Ottinger et al., 2014).

One of the regions where offshore wind power projects are currently in the planning phase is the Åland Islands. When the Government of Åland adopted their maritime spatial plan in 2021, several potential areas for offshore wind power were identified (Miljöbyrån, 2022). This has created a lot of interest among big wind power developers, and several projects for large-scale offshore wind farms are now in the planning phase in the Baltic Sea surrounding Åland. The Government of Åland is behind a project called Sunnanvind, where preparations are made for auctioning areas to wind power developers while making sure that Åland will benefit from the development (Ålands landskapsregering, 2021b). From the Government's perspective, offshore wind power is seen as the new economic pillar for Åland, thus showing their positive attitude to the development of offshore wind power in Åland's waters (Mattsson, 2020). However, the attitudes among the population might be different. Statistics and Research Åland (ÅSUB) published data in June 2022 on the Åland population's attitudes towards offshore wind power (Fagerström, 2022) . The report shows that a majority supports the development, but still many letters to the editor (LTEs) in the newspaper show that there are also complaints.

In relation to the development of OWF, the concept of power-to-X is often mentioned. Power-to-X adds value to the development of wind power as it can function as a type of energy storage, solving one of the biggest challenges of wind power: intermittency. Through this, energy can be stored when there is more energy produced than what is consumed, and can instead be consumed on a day with little, or no, wind. Thus, there are strong synergies between wind power and power-to-X, which is why they are often mentioned together Reuter, 2019.

This thesis investigates energy justice in relation to the development of offshore wind farms (OWF) on the Åland Islands. Energy justice is a relevant perspective for this subject, as it attempts to identify the distribution of injustices, groups of people who are not recognized, and if there are processes through which people can get heard (McCauley et al., 2019). By identifying these aspects at an early stage of the project development, actions can hopefully be taken in order to avoid conflicts and injustices when going forward with the projects.

The problem that this thesis will address on a larger scale relates to the urgency of making a transition to renewable energy in order to mitigate climate change. More specifically, the problem in the development of wind power can be viewed from two perspectives. First, from the perspective of project developers, conflicts with local actors can hinder the development of wind power, which is neither beneficial for developers or for the purpose of mitigating climate change. Second, from the perspective of the citizens there should be a sense of justice and acceptance of the development of wind power, which is not achieved if the interests of citizens are run over by the interests of developers.

1.2 Research questions and objectives

The overall objective of this thesis is to explore the process of allocation of space for development of offshore wind power on Åland with an energy justice perspective. The aim is to contribute with knowledge that can be useful when increasing the pace of the energy transition, while having support from society as whole. In addition, I aim to investigate ways in which potential injustices in the development of offshore wind power may be prevented in Åland, and possibly other small island states.

In order to guide the research, three research questions will be investigated:

RQ1: Who are the relevant actors and their roles and motivations in the development of offshore wind power on Åland?

RQ2: How are potential injustices in the development of offshore wind power on Åland distributed?

RQ3: Who is at risk of being ignored in the development of offshore wind power on Åland?

RQ1 was based on a part of the Environmental Governance Systems (EGS) Framework in order to get a better understanding of the relevant actors. RQ2 and RQ3 were investigated through an energy justice perspective and identified potential injustices, recognition or unrecognition of actors, and processes through which actors can get heard, focusing on the public hearings of the maritime spatial plan.

1.3 Outline of the thesis

This thesis begins with a background chapter (0), explaining core aspects relevant to this thesis including climate change, the transition to renewable energy, offshore wind power and power-to-X and the project development phase, followed by a specific section about Åland, its governmental structure, and energy system. After this the aspects from the background are combined into a chapter (3) about the case of OWF and power-to-X on Åland, outlining relevant developments. This is followed by a chapter (4) on the theory, focusing on energy justice and explaining an approach to energy justice and the EGS framework. After this the research methods (0) are explained, including sections about sampling and data collection, method of analysis, trustworthiness, ethical considerations, reflection on limitations, and Flexens' role in this thesis. The following chapter (0) is the analysis, including the mapping of relevant stakeholder groups, the analysis of public hearing responses, and an analysis of relevant newspaper articles. Finally, there is a discussion chapter (7) where the most relevant findings are presented and connected to previous research, followed by a conclusion of the thesis.

2. Background

The background chapter begins with explaining the global challenge of climate change and why there should be a transition to renewable energy sources. Then the basics of the renewable energy sources that are relevant for this thesis, offshore wind power and power-to-X, and the wind power project development process are explained. This is followed by some background information about Åland, including its governmental system and energy sector.

2.1 Climate change

The climate on earth is changing, and one of the most apparent ways through which it can be seen is the average temperature that is steadily increasing, which is a phenomenon mentioned as global warming. This is caused by the greenhouse effect, which means that the energy from the sun goes through the atmosphere and warms up the surface of the earth. The surface then emits infrared thermal radiation that partly goes back to space and partly is absorbed by the greenhouse gases in the atmosphere (e.g., carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)). This effect is necessary to keep the temperature on the planet suitable for life. However, the dramatic increase of greenhouse gases causes more heat than necessary to stay within the atmosphere, which leads to an increased warming effect (Leichenko & O'Brien, 2019). This has many side effects that can have detrimental consequences for life on the planet, including more and longer heat waves, the melting of glaciers, rising sea levels, shorter winters, more forest fires, spreading of diseases etc. (Leichenko & O'Brien, 2019).

Although the climate is constantly changing by nature, it is possible to differentiate between the regular pattern of the climate, and the abnormal changes that can be observed today. Since the middle of the nineteenth century there has been such rapid increase in temperature and other changes in the climate that other known factors affecting climate change cannot explain the issue (Leichenko & O'Brien, 2019). The increase in global temperatures and the rising amount of CO_2 in the atmosphere, however, has proved to have an almost linear relationship (Leichenko & O'Brien, 2019). In turn, the reason for the increase of greenhouse gas emissions is traced back to, among other activities, the human burning of fossil fuels (Leichenko & O'Brien, 2019). Leichenko & O'Brien (2019:30) provides a concluding statement about climate change: "[…] human-induced increases in atmospheric concentrations of greenhouse gases are changing the Earth's energy balance. Energy that would otherwise escape to space is trapped in the atmosphere by these additional gases. As a result, the planet is warming."

2.2 The transition to renewable energy

Fossil fuels, including oil, coal, and natural gas, are considered non-renewable and finite as the formation of it takes millions of years (Leichenko & O'Brien, 2019). According to Leichenko & O'Brien (2019:102-103), fossil fuels account for 78% of the energy used and 70% of the greenhouse gas emissions globally. Fossil fuels are used in several human activities, such as transportation, electricity production, heating and cooling, industrial processes etc. However, the economic sector with the most emissions of greenhouse gases is the electricity and heat production sector (25% of emissions), with the runner up being agriculture, forestry, and other land use (24% of emissions) (Leichenko & O'Brien, 2019). The demand for energy is rising, and since fossil fuels are finite and contribute to climate change, new alternatives for energy production must be found (Leichenko & O'Brien, 2019).

One of the options for addressing the issue of climate change is to make an energy transition away from fossil fuels, and instead use renewable energy sources, since this type of energy production does not contribute to the net emissions of greenhouse gases (Leichenko & O'Brien, 2019). Renewable energy can be defined as "[…] energy derived from natural sources that are replenished at a higher rate than they are consumed" (United Nations, n.d.).

There are several types of renewable energy sources, including for instance wind power, solar power, hydropower, geothermal energy, and biomass fuels (Leichenko & O'Brien, 2019). According to Leichenko & O'Brien (2019), in 2019, 19% of the global energy consumption derived from renewable energy sources.

2.2.1 Offshore wind power

The main energy source that this thesis will focus on is offshore wind power. Wind power entails capturing the energy from the movement of the wind through, in this case, wind turbines. In basic terms, wind turbines are tall towers with, most commonly, three blades on top that rotate by the force of the wind. The energy from the rotation is then captured and transformed to electric energy in a generator in the nacelle on top of the turbine (Sidén, 2015).

Sidén (2015:109) provides three main reasons for why wind power is built offshore (at sea) instead of on land. The first one is that there is a limited amount of available land areas with suitable conditions. It is also common with resistance from people living nearby potential locations for wind power. Placing the wind turbines offshore opens up a lot more opportunities as there are big areas that are not in use to the same extent as many land areas. The size and technology of offshore wind turbines is evolving fast, but it is most suitable to place the turbines

where the sea has a depth of up to 30 meters (Sidén, 2015). The second reason is that the force of the wind is stronger and more even at sea, which means that there can be a higher level of energy production. Lastly, the wind turbines that are produced today are so big that it is difficult to transport and install them. As long as the harbors meet the necessary conditions, it is much easier to build the wind turbines offshore (Sidén, 2015).

Even though the impact on the environment close to where people live is much less when building offshore wind power, there is still some resistance to offshore wind power projects. One of the reasons can be an opinion that the horizon should be natural and free from disturbing objects (Sidén, 2015). However, many other arguments can be used, such as the impact on the environment and animals.

2.2.2 Power-to-X

Power-to-X is the other concept related to renewable energy that will be discussed in this thesis. Power-to-X means turning electricity into another energy form, which can be for instance hydrogen, heat, or synthetic fuels (Reuter, 2019). What makes this technology so relevant is that it provides a solution for the issue of intermittency in renewable energy sources; storage. By using renewable electricity to produce these alternative fuels, the energy can be stored instead of used directly when it is produced, and it can also help preventing overloading the grid when there is more energy production than consumption (Reuter, 2019).

When producing green hydrogen, renewable energy is used to power an electrolysis that splits water molecules into oxygen and hydrogen. This hydrogen can then be used for instance to fuel sectors that are difficult to decarbonize, such as heavy transportation and industries, but it can also be used to heat buildings (Reuter, 2019). Hydrogen can be further processed to other fuels such as green methanol, ammonia, and synthetic methane (Smart Energy Åland, 2022).

2.2.3 Wind power project development

When analyzing the processes surrounding the development of offshore wind power, it is useful to have an insight in the project process and planning of wind power in general. To begin with, a survey has to be conducted of the area of interest to identify potential places that might have suitable conditions for wind power. When these places are identified, feasibility studies are performed where several important aspects are assessed and the outcome determines whether if it is worth continuing to develop the project or not. These aspects include e.g., if there are close neighbors, if there is an available power grid, if it is possible to get access to the area, if

it is possible to get the permissions, if there are other activities that might conflict with wind turbines, and if there is a local acceptance of wind power or if there is risk for a lot of resistance. If all these aspects seem suitable, the next steps are to make calculations of the power production and economics of the project, and if the project seems profitable, the actual project development can start. In the context of offshore wind power, there are a few specific aspects that also have to be taken into consideration, e.g., if the sea floor is suitable, that the foundations will endure waves and ice, how to send the power to land, and to minimize the need of maintenance since they are not as accessible as on land (Wizelius, 2007).

Wizelius (2007:257) divides project development into ten different steps that can be seen in Figure 1. First, there is an early dialogue to inform the local authorities and people living nearby. After that an area to build on must be acquired, which means that a contract has to be made with land- or water owners. After that is when the actual detailed planning can start, including decision-making on technical aspects such as sites within the area, the number of turbines, and the size of them. When that is done the detailed plan should be presented to authorities and the public in a second dialogue. The fourth step is to conduct an environmental impact assessment (EIA). Then begins the more concrete part of applying for building permission, purchasing everything, signing contracts with other actors such as grid operators, installing and connecting the wind turbines to the grid, and transferring the wind power plant to the owner if the owner is not the same as the developer (Wizelius, 2007).

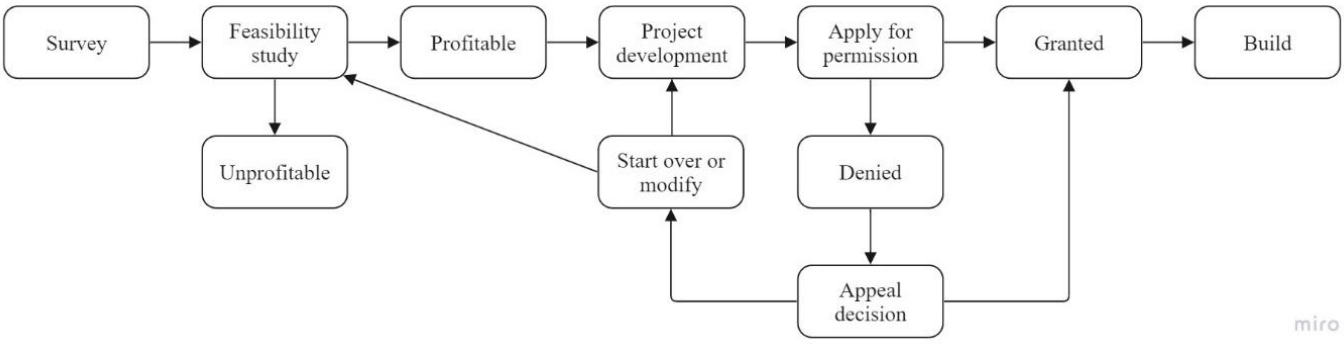

Figure 1: The project development process according to Wizelius (2007)

There are many steps in this process and challenges can emerge that delays or stops the project. One part of this is the option to make an appeal against the permissions when the developer has received them, which could be done by, for instance, a landowner in the area. Such a situation would stall the project until a court has assessed the issue, which is a lengthy process that can cause a delay of multiple years. This is one reason for why it is crucial to involve and inform different actors throughout the whole project process so that adaptations can be made and concerns can be addressed at an early stage. Wizelius (2007) states that how

the developers act can have a big impact on the local acceptance of the project. “How local inhabitants react depends on how they learn about the project. If they get good information at an early stage most of them will be positive” (Wizelius, 2007:224). Thus, it is crucial that there is good dialogue where local stakeholders get to be involved (Wizelius, 2007).

This insight into how complex the process of developing a wind farm can be will provide a better understanding of how far Åland is in the process and why it is crucial to assess who is being heard in the issue.

2.3 Background about Åland

This master thesis is a case study, and the chosen case is Åland, or the Åland Islands. This is an island group consisting of about 6757 small islands in the Finnish archipelago between Sweden and Finland (Nordiska rådet & Nordiska ministerrådet, n.d.). The region has a special autonomous status, meaning that Åland is a part of Finland but has their own parliament with own laws in many different areas (Nordiska rådet & Nordiska ministerrådet, n.d.). In addition, the region is demilitarized and neutral, and in contrast to the rest of Finland, the only official language is Swedish (Nordiska rådet & Nordiska ministerrådet, n.d.). All of this is due to a compromise made in 1921 by the League of Nations in order to solve the issue of Ålanders hoping to reunite with Sweden after Finland became independent from Russia (Ålands Lagting, n.d.). Åland has about 30,000 inhabitants divided between 16 municipalities, where about a third of the population lives in the only city, Mariehamn, while ca. 2000 people live in the archipelago and the rest live on the countryside (Ålands landskapsregering, 2022b). A few important sources of income for Åland include maritime traffic, tourism, agriculture and fishing (Nordiska rådet & Nordiska ministerrådet, n.d.).

2.3.1 Governmental system on Åland

Due to the autonomy, Åland has its own governmental system with the Government (Ålands landskapsregering), the Parliament (Ålands Lagting) and legislation. There are elections every four years, appointing 30 members to the Parliament that in turn decide who will be the eight members of the Government. The areas where Åland can have their own legislation include for instance education, culture, healthcare, environment, business, internal transports etc. Examples of areas that Åland cannot affect and that are instead ruled by Finnish law include foreign affairs, the court system, customs and state taxation. Åland also has their own political parties, but the ideology is similar to equivalent parties in surrounding countries (Ålands

landskapsregering, 2022b). In the election of 2019, there were eight political parties on Åland, where the party Åländsk Center received the most votes (ÅSUB, 2019) and currently leads the Government (Ålands landskapsregering, 2022d). The other parties are Liberalerna, Moderat samling, Ålands Socialdemokrater, Obunden Samling, Ålands Framtid, Hållbart initiativ, and Ålands Demokrati (ÅSUB, 2019).

2.3.2 The energy sector on Åland

In 1992 the first wind turbine came to Åland and was installed in the archipelago municipality Sottunga (Kraftnät Åland, n.d.). Today there are in total 28 wind turbines in different places on Åland (ÅSUB, 2023b). In 2022 there was a big increase in the wind power production when a wind power park in Långnabba, Eckerö, was put into operation increasing the share of wind energy on Åland from 20 % to 65 % of the electricity supply on an annual basis (Kraftnät Åland, n.d.), and it is thus the major source of energy on Åland. However, at times with little, or no, wind, the biggest source of energy is import from Sweden, while the cable connected to Finland is only used as back-up (Saari, 2019). Åland is also in the Swedish SE3 area on the electricity market NordPool (Kraftnät, 2020). The big share of import means that Åland has limited control over the energy mix that is consumed.

Kraftnät Åland is the Transmission System Operator (TSO) on Åland, which means that they are managing the power grid (Kraftnät Åland, 2020). Then there are two Distribution System Operators (DSOs); Ålands Elandelslag and Mariehamns Energi, that are responsible for the operation of the distribution system (Saari, 2019). On Kraftnät Åland's website they provide data about the energy transfers, and although the numbers can vary during the year due to for instance weather conditions, an example of the energy transfers in March 2023 shows that there was 46.7 % wind power production, 38,8 % import from Sweden, 4,5 % import from Finland, 2.0 % bio energy production, and 8.1 % export to Sweden (Kraftnät Åland, 2023). The bio energy comes from Mariehamns Bioenergi which is a wood chip combined heat and power (CHP) plant. However, as seen in the data this plant is not used very often as there are usually cheaper alternatives in the energy market (Saari, 2019). There is also a small share of solar power on Åland and it can be expected to increase through subsidies from the government (Saari, 2019). For instance, in the beginning of 2023 there was an opportunity to apply for subsidies for solar parks (Ålands landskapsregering, 2023). In case of an emergency situation there are also generators and gas turbines available on Åland (Saari, 2019).

3. The case

This chapter outlines the development of offshore wind power on Åland so far, including how it started with the maritime spatial plan, some key information about the Government's project, and the most important events in relation to this. In addition, the development of power-to-X on Åland is discussed.

3.1 Offshore wind power development on Åland

During recent years discussions have taken place on Åland regarding the development of offshore wind power in the sea outside of Åland's coast. An identified starting point for this is the early phases of the maritime spatial planning process, where different stakeholders were invited to discuss the needs and visions for the use of the sea on Åland in order to cooperate and avoid conflicts between activities. The stakeholders included were for instance water and landowners, companies, and municipalities. In relation to this early planning several reports were produced as background information (Ålands landskapsregering, 2021a).

One of these reports (Malmström et al., 2019) was an analysis of the current state and the future vision for Åland's blue economy, where one of the sectors are energy. This report brings up the fact that Åland has set a target in their energy and climate strategy for 2030 to increase the share of renewable energy sources in the energy consumption to 60 %, and that 60 % of the energy consumed should be produced locally (Malmström et al., 2019:12). In the strategy it is also stated that renewable energy production should be supported on Åland. However, in the report about the blue economy it is emphasized that offshore wind power is not mentioned specifically in the strategy. In a SWOT-analysis in the report it is stated that there is great potential for wind power on Åland, and that the small scale of the administration on Åland can increase the pace of bureaucratic processes related to projects (Malmström et al., 2019: 14-15). However, the lack of experience in developing offshore wind power both on Åland and in Finland is expressed as a weakness. In the vision presented in this report the building of offshore wind power parks is included for energy transmission to Åland but also as export to Sweden and Finland. The report was published in the spring of 2019 (Malmström et al., 2019).

Around the beginning of 2020 the Government started preparing a strategy for offshore wind power (Mattsson, 2020), which was when they realized the potential for the development (Ålands landskapsregering, 2020). In September 2020 the Government presented this information in a press information event, stating that potential areas for offshore wind power were identified during the work of creating the maritime spatial plan. The maritime spatial plan

describes how the waters owned by the Government are and will be used in the future, outlining areas for different activities. The aim is to have a sustainable use that contributes to good quality of the water and environment, while also fostering development and growth. The areas for OWF have been identified according to certain features of the environment, such as depth of the water and the wind conditions, but the areas can be modified when further investigations are conducted. There was one public hearing in the beginning of 2020 (Eriksson, 2019) and one in the beginning of 2021 (Fellman, 2021), and on the 22nd of March 2021 the Government of Åland adopted the new maritime spatial plan (Figure 2). In the plan an initial estimate of areas for where there would be a potential opportunity for the development of offshore wind power are marked in pink. As seen in Figure 2, there are a few relevant areas both in the north and in

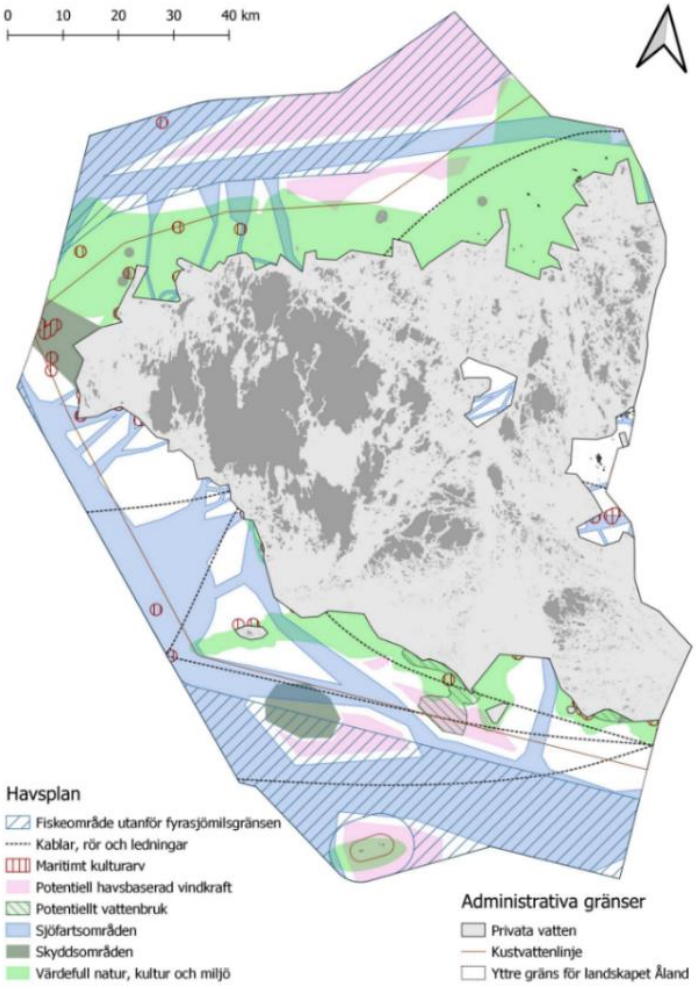

Figure 2: The maritime spatial plan of Åland (Miljöbyrån, 2021)

the south of Åland (Miljöbyrån, 2022).

In the same press release in September 2020 presenting the identified potential for OWF on Åland it was explained that the potential concerns a total area of about 1.000 km² that could fit 500 wind turbines, with an annual energy production of ca. 45 % of Finland's current total

energy production. They also mention the further potential of a next step being power-to-X. The Government's role in this project is to push the vision forward and control the direction of the development. They start with a centralized process in order to make sure that Åland will gain from the development, preparing for auctions of the maritime areas for OWF (Blix, 2022b). It was clearly stated that the project would not be paid or built by the Government of Åland, but rather by private actors. The investments that are done from the Government's side only relates to the hiring of professionals, ordering of reports etc. It was declared that a number of international energy companies had already shown interest in the development of offshore wind power in these areas when finding out about the Government's plans (Ålands landskapsregering, 2020). What the Government sees that Åland has to gain from this development is a new economic pillar and export industry, self-sufficiency in terms of energy and a society based on renewable energy, new industries, income through the leasing of water areas and taxes, job opportunities and opportunities for new local businesses, education, innovation and development of specialist competence (Ålands landskapsregering, 2020). The work that was done in 2020 was mostly focused on discussions and meetings with key actors, and the next steps as explained in the press information event were to continue discussions with key actors, get a roadmap, look into legal aspects, reach out to professionals in the field, and to build an action plan (Ålands landskapsregering, 2020). Furthermore, it was mentioned in the press information event that a cooperation had been started with Lappeenranta-Lahti University of Technology for them to produce a strategic roadmap for the development of OWF on Åland. This roadmap was then ordered in February 2021, with the goal of presenting different scenarios and options for the development (Ålands landskapsregering, 2022a). By the end of 2021 the roadmap was finalized, recommending that Åland proceeds with the development (Jakobsson, 2021).

In April 2021 the Government sent a document to the Parliament with the vision for large-scale offshore wind power in Åland's water areas (Ålands landskapsregering, 2021b). The Parliament's Finance and Business Committee got the task to analyze the document and collect information about the matter, and in January 2022 they held an open hearing, inviting several professionals in the field to present relevant knowledge (Ålands landskapsregering, 2022f). In April 2022 the committee had finalized a statement supporting the vision from the Government. In the Government's vision it is stated that it will take 10-15 years until the areas for OWF are established and the turbines are in full operation (Ålands landskapsregering, 2021b), and after the Parliament had discussed the committee's statement it was concluded that the process has

to be sped up by decentralizing and involving private actors as soon as possible to keep up the interest (Blix, 2022a).

In November 2021 it was announced in media that the company OX2 will cooperate with Ålandsbankens Fondbolag to develop an offshore wind power project on the south side of Åland, and they began the process of establishing a local office on Åland (Mattsson, 2021; Eriksson, 2022a). In March 2022 the company Ilmatar Energy also announced their interest in developing offshore wind power on Åland, seeing the northern parts of the maritime area as the most interesting. They also stated that the Government's project Sunnanvind might have an important role to play. Also Ilmatar started hiring locally for the affiliated company Ilmatar Offshore Ab (Eriksson, 2022f). In May 2022 OX2 and Ålandsbankens Fondbolag also announced a new project that would target the northern areas, which seemingly increases the competition. However, competition is expected from many different actors for all the potential areas for OWF (Eriksson, 2022d), and there are other actors that have also shown interest despite not establishing on Åland yet (Eriksson, 2022c).

In a press message in April 2022 the Government encouraged actors to write a notice of interest to investigate water areas suitable for OWF and start discussions with the national defense (Jakobsson, 2022). After this, it also became public that the company Svea Vind Offshore AB is interested in the areas of the Sunnanvind project (Pussinen, 2022b). In July 2022 OX2 initiated their seabed survey, which is a part of the environmental impact assessment that is expected to take between one and two years (Pussinen, 2022a). Ilmatar did the same in October 2022 (Widing, 2022). On December 1st 2022 there was an open hearing about largescale wind power arranged by the Parliament's Finance and Business Committee (Lobråten, 2022b). In February 2023 it was announced that the vocational high school on Åland will start an adult education in wind power technique in order to meet the future need for workforce (Mattsson, 2023c).

3.2 Power-to-X development on Åland

An interest for hydrogen on Åland was already expressed in the Government's climate strategy from 2007 (Ålands landskapsregering, 2007), and the interest remained in the updated energy and climate strategy from 2017 (Ålands landskapsregering, 2017). During 2020 the Government together with the company Flexens investigated the possibilities for hydrogen ferries in the archipelago. A central point in the hydrogen discussions at this time was the challenge of how to address the emission heavy archipelago traffic, being a sector that is

difficult to decarbonize. However, there is a lack of political agreement and decision-making regarding how the archipelago traffic should be decarbonized, which has put this development on hold (Kullman, 2023a).

At the press information event in 2020 when the potential for OWF was presented, it was also mentioned that a next step could be power-to-X The energy produced by the OWF could produce big volumes of hydrogen, but also other products such as methanol, green gasoline/diesel, green aviation fuels, and fertilizer (Ålands landskapsregering, 2020). These are all options for future new industries that could come out of the development of OWF. On the Government's website they state that it is well motivated to investigate and analyze the potential for processing part of the produced energy to hydrogen as a way to deal with the intermittency of wind power and fluctuating electricity consumption and market prices (Ålands landskapsregering, 2022c).

In 2022 it was announced that Högskolan på Åland (college), with the cooperation from the company Flexens, planned to purchase a small-scale electrolyser for educational purposes. This was also a welcomed initiative from the wind power developers Ilmatar and OX2 (Smart Energy Åland, 2022). In the beginning of 2023, the company OX2 has presented several news, including for instance that they are investigating the possibility of a 'Mega Green Harbor' that would fulfill the needs for wind turbine construction, but also include for instance green hydrogen production (Mattsson, 2023b). Furthermore, a cooperation was started between OX2 and Orkla to investigate possibilities of using hydrogen in the local chips factory (Eriksson, 2023b).

Thus, the interest and investigations for hydrogen production on Åland seems to have increased, but so far there has not been any physical implementation of power-to-X technologies. Since the development of power-to-X is linked to the development of offshore wind power, which is now only in a planning stage, it will take many years before any plans are realized.

4. Conceptual framework

This chapter presents the concept energy justice and the tenets that it can be divided into. It is also explained how the perspective of energy justice can be applied in reality. Furthermore, the EGS framework and how it will be used in this thesis is clarified.

4.1 Energy justice

According to McCauley et al. (2019:919), "Energy justice is a conceptual, analytical and decision-making framework for understanding when and where ethical questions on energy appear, who should be involved in their resolution and ultimately which solutions must be pursued to achieve a sustainable energy system underpinned by fairness and equity." In general, energy justice encompasses the social justice concerns related to energy. Within this is both the challenge of making energy accessible on a global scale, and the challenge of mitigating climate change by reducing the use of fossil fuels, each of which are included in the United Nations Sustainable Development Goals 7 and 13. Energy projects often face conflict, whether it is criticism about the environmental impact of extracting oil, or opposition towards building renewable energy sources such as wind power. Thus, analysing justice concerns related to this is crucial when the goal is a future with inclusive and resource efficient low carbon energy (McCauley et al., 2019).

Within energy justice literature the concept of justice can be divided into different tenets. McCauley et al. (2019) presents five forms of justice with *distributional*, *recognition*, and *procedural* as the common tenets, but also explaining cosmopolitan justice and new alternative forms of justice. *Distributional* justice identifies where impacts of an energy technology are located. For instance, it has been found that polluting energy production is often placed in locations with minorities or poverty. This type of justice can also encompass time aspects such as impacts on future generation. *Recognition* justice attempts to identify if there are specific groups in society that suffer from the impacts and are misrecognized. Misrecognition can be divided into three main categories: cultural domination, non-recognition, and disrespect. Concepts like these can be of relevance for instance when studying conflicts between extractive industries and indigenous populations. *Procedural* justice demands formal and informal ways in which individuals can be involved in decision-making, and also be part of creating a more equitable solution. This requires that the legal processes are easily accessible for individuals. Cosmopolitan justice focuses on the global and universal aspects of justice, emphasizing that the principles of justice must apply to all humans and nations, not focusing on specific groups

or countries but rather the equal moral worth of humans. Lastly, McCauley et al. (2019) describes a few up and coming alternative forms of justice deriving from a criticism towards the dominance of western and anthropocentric perspectives. Alternatives presented in relation to this include for instance Hinduism, Buddhism, and ecocentrism, which unlike the previous justice tenets put more emphasis on minimizing environmental impact, addressing poverty and needs for future generations (McCauley et al., 2019).

4.2 Three tenets of energy justice

Jenkins et al. (2016) presents an approach for energy justice where the different tenets, *distributional*, *recognition*, and *procedural*, are assessed both from an evaluative and a normative perspective, where the evaluative perspective investigates injustices, and the normative perspective looks into recommendations on how to approach the issues of injustice. This approach, which is presented in Table 1, includes questions that can be applied in order to find answers of where the problems lie and what the solutions could be (Jenkins et al., 2016).

Table 1: Jenkins et al.'s (2016) approach on energy justice

Tenets	Evaluative	Normative
Distributional	Where are the injustices?	How should we solve them?
Recognition	Who is ignored?	How should we recognize?
Procedural	Is there fair process?	Which new processes?

Jenkins et al. (2016) provide concrete examples of issues that can be assessed with each tenet. A classic example of *distributional* justice is the placement of wind farms that is often disliked from populations in the affected areas, but it could also have to do with any other infrastructure or for instance the access to renewable energy. A case of *recognition* justice, or misrecognition, could be the minimizing of people's negative attitudes towards a renewable energy source to merely a 'lack of knowledge' or even 'incorrect knowledge', rather than valid feelings. Lastly, examples of *procedural* justice could be mobilization of local knowledge about suitable locations when developing a wind power project, gender equal representation in a political body, or inclusion of minority voices (Jenkins et al., 2016).

Jenkins et al.'s (2016) approach to energy justice will be used in this thesis in order to provide insight into potential inequalities in the development of offshore wind power on Åland.

If inequalities and affected groups can be identified at an early stage in the project process, conditions and communication for creating an inclusive transition to low carbon energy sources can be identified, which might lower the risk of future conflicts in the course of the project development.

4.3 The Environmental Governance Systems Framework

The Environmental Governance Systems (EGS) Framework by Arild Vatn (2015) is a tool that can be used when looking into how natural resources are governed. The framework combines governance structures in society, such as institutions and resource regimes and the actors who control them, with technology and infrastructure and the attributes of the environment in order to analyze the interactions and the outcomes of a system. An important aspect to be aware of in order to understand the framework is that Vatn (2015) defines institutions as the conventions, norms, and legal rules that govern how we act. The EGS framework is relevant when applying the energy justice perspective on wind power development as it relates to how we govern both climate change and nature, and puts interactions between actors in the center. This framework will be used when answering RQ1: "Who are the relevant actors and their roles and motivations in development of offshore wind power on Åland?". The answer to the question will serve as an overview and background information for the further analysis of injustices in relation to the development of OWF on Åland.

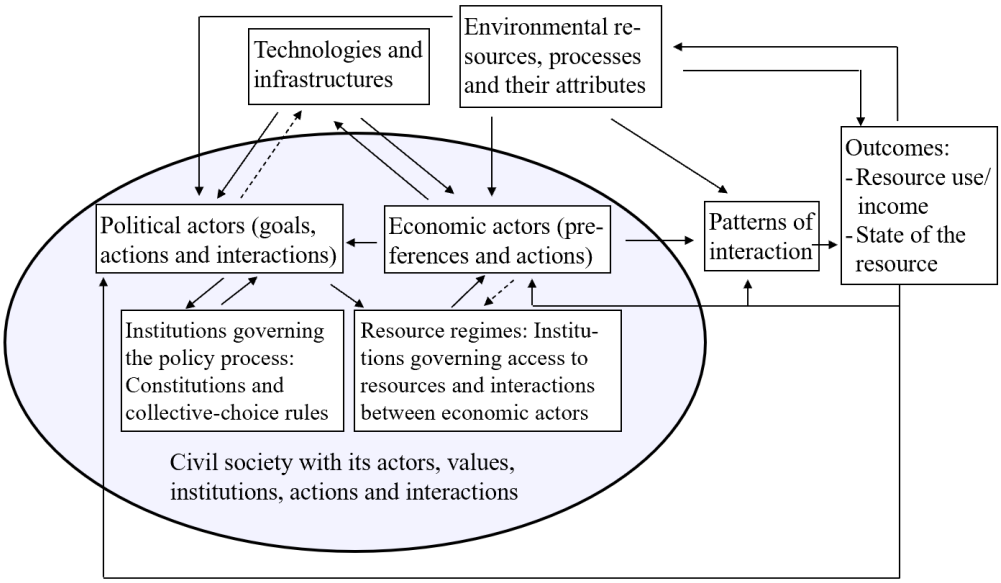

Figure 3: The Environmental Governance Systems Framework

The framework will be used as a tool for structuring the mapping of all the important stakeholders, focusing on the categorization of different types of actors into economic actors,

political actors, and civil society actors. Then it will be possible to investigate the roles and motivations for each actor, which can help explaining who has something to gain from the development of OWF, and where and for whom potential injustices might occur.

5. Methods

This section of the thesis describes the research method, including how the data has been collected, how the analysis has been done, how the trustworthiness for this study can be assessed, ethical considerations, what could be considered limitations of the study, and what part Flexens has had in this study.

The analysis in this thesis was divided into two parts based on the frameworks presented in the previous section. The first part is the mapping of the relevant actors and their motivations and responsibilities using the part of the Environmental Governance Framework that addresses different types of actors: economic actors, political actors, and civil society actors. This provided a general overview of some key stakeholders that have an impact on, or are affected by, the development of the OWF on Åland and answers RQ1. The overview of key stakeholders was useful in the further analysis of potential injustices.

The second part of the analysis was based on the three-tenet energy justice perspective, which goes more in depth on injustices by using the evaluative questions presented in Table 1. Thus, in the analysis the three tenets were used in order to investigate where injustices can be found, who gets to be heard, and if there are processes that allow people to be treated fairly. This will provide an answer to RQ2 and RQ3.

5.1 Sampling and data collection

The analysis in this study was based on information found in various types of texts and documents where people have voiced their opinions. This type of data was chosen since it gives a broad overview of the views from different types of actors, including for instance individuals, companies, authorities, and people from different regions, rather than focusing on in-depth knowledge about one particular group. By using this data that is already available, more time can be allocated to the analysis of a wide range of statements that together form a more accurate representation of the views in society, rather than only selecting a few. According to Bryman et al. (2021), a benefit of using documents is that they were not produced specifically for the purpose of the research. Hence, they are not reactive, so the method of collecting the data do not have an impact on the data itself which is good for the validity of the study.

The material used for RQ1 consists mainly of information found in websites and newspaper articles about different actors that have been identified as relevant or have been visible in the analyzed material. For RQ2 and RQ3, empirical data in the form of public hearing responses from the process of creating the maritime spatial plan have been collected and

summarized in Appendix A. The public hearing responses were considered the most relevant data in the case as there has not been a public hearing regarding the offshore wind power specifically, but rather the OWF were identified and discussed as a part of the maritime spatial plan. In order to get more insight into the views on the development of OWF on Åland specifically, relevant newspaper articles and LTEs from a local newspaper are used in addition to the public hearing responses. By asking the registrar in the Government's office through email for these public hearing responses and any other relevant document related to offshore wind power, 64 public hearing response were received in total from both the first and the second public hearing. Due to an issue with emailing the documents, not all of the public hearing responses that were sent in during the hearings were received in time for the analysis in this thesis. However, as mentioned, the ones that were received and included in the analysis are outlined in Appendix A

For the analysis that was based on newspaper articles and LTEs, relevant articles for offshore wind power were identified by using the website of the local newspaper Ålandstidningen to search for the Swedish term 'havsbaserad vindkraft' (offshore wind power). From those searching results the most relevant articles were identified according to if they mainly discussed offshore wind power and if they had a strong opinion or criticism regarding it and the processes surrounding it. For the LTEs specifically, no sources were included in order to protect the anonymity of the authors. It is useful to keep in mind that LTEs can also be written anonymously or under a pseudonym, which means that no actual conclusions can be drawn about the person behind the LTE. In addition, it is noteworthy that the opinions in an LTE could be exaggerated for the purpose of creating a debate, if one would wish to do so. According to Bryman et al. (2021:509), assessing the authenticity of texts in mass-media can be a challenge as the authorship can be unclear, thus making it uncertain if the author provides accurate information. However, the LTEs in this study are analyzed as opinions rather than facts, and it is not possible to know whether people are truthful or not. Nevertheless, it can be assumed that an individual writing an LTE would not do so unless there was a purpose of conveying an opinion. Hence, for this study it is assumed that the voiced opinions are true at least to an extent.

5.2 Method of analysis

The research method in this thesis can be said to be inspired by qualitative content analysis where the underlying themes in the documents are being analyzed and then exemplified through quotes (Bryman et al., 2021:516-519). For the public hearing responses, the documents did not

always address OWF as the responses related to the maritime spatial planning. While analyzing these documents, both the actual mentioning of OWF was searched for, but also criticism towards the maritime spatial planning as a whole as this provided insight into the views on how the maritime space should be used in a more general sense. In general, the underlying themes that were searched for in both the public hearing responses and the newspaper articles and LTEs were the ones presented in the three-tenet energy justice perspective. Thus, the focus was whether the data conveyed anything that could be related to a perceived injustice, discontentment, or a feeling of not being heard. One distinction between a systematic content analysis and the analysis in this thesis is that the findings do not necessarily have to be patterns, but rather each opinion has their own value as it portrays a view that exists in society. For the LTEs, the focus was to identify general themes that were brought up in the debate as there are very many of them that bring up the same issues and have the same authors.

5.3 Trustworthiness of research

In Krefting (1990) it is explained how the assessment criteria for quantitative and qualitative research are different. Quantitative research is assessed based on its reliability and validity, which if these aspects are good, the research is considered of high quality. However, within qualitative research it is for instance not equally as important if the results can be generalized and applied to a bigger population. In some qualitative research it is therefore useful to use another assessment criteria for the quality of the research. One way to do this is to assess the trustworthiness of a study by looking into four different aspects: *truth value*, *applicability*, *consistency*, and *neutrality*.

Truth value can also be called *credibility*, and it entails that there can be multiple truths or realities since humans have different experiences. This means that for a study to be credible, it has to in the best way possible communicate interpretations of the reality (Krefting, 1990). It could be argued that this thesis has high credibility as the data is to a large extent directly based on actors' own descriptions of their perceptions about the reality regarding OWF. This study describes the multiple interpretations of the development of OWF found in the material. The next aspect is *applicability*, which can either be seen as the ability to generalize to a larger population, or as *transferability* which means that the findings can be transferred to certain other similar contexts if sufficient descriptions of the data are available (Krefting, 1990). Transferability is more appropriate for this thesis as it is a case study, and it will be further investigated in the discussion section.

The third aspect is *consistency*, which is in quantitative research mentioned as reliability and assesses whether a study could be repeated by someone else and the findings would be the same. However, in qualitative research the human aspect is often central and it can thus be unreasonable to expect the exact same results in a repeated study since both informants and the researcher have to act in the exact same way for that to happen. In terms of consistency one can therefore instead talk about dependability, which entails that the variability encountered can be explained (Krefting, 1990). In this thesis, the data is consistent, but there is a lot of interpretation from the research involved, which means that the findings might not be the exact same in a repeated study.

The last aspect included in the assessment of trustworthiness is *neutrality*. This aspect entails that there should be no bias involved in the research. However, in qualitative research more emphasis can be put on the data rather than the researcher. For this the term *confirmability* can be used, which is fulfilled if there is an established truth value and applicability (Krefting, 1990).

5.4 Ethical considerations

While conducting the research for this thesis there has been no direct contact with individuals. Instead, all data is available and can be accessed by the public. Thus, there is not as much emphasis on the ethical considerations as there would have been if interviews were conducted or forms with surveys were sent out. However, what is worth considering is whether the names of the actors should be mentioned in the thesis or not due to privacy reasons. The text only includes names of authorities, associations, and similar that can be relevant for understanding the type of actor discussed. Names of individuals and the authors of LTEs are not used in the text.

5.5 Reflection on limitations

An important aspect to address about this study is whether it is actually able to identify the injustices and who gets heard or not. Since the empirical data consists of documentation of people who have actively chosen to speak up and voice their concerns, it has to be noted that there are most likely groups who experience injustice or concerns about the development of these new technologies that have not chosen to voice it in a newspaper or public hearing, as this is something that requires an active action or initiative. Thus, more conclusions can be drawn on who gets heard rather than who does not get heard. In this sense, using another research

method, such as conducting interviews, might have given a more in depth insight into people's views while also potentially identifying actors who do not want to voice their opinion publicly. However, using such a method would also have required a more narrow scope due to constraints in time and resources.

Another limitation of this study concerns the homogeneity of the respondents in terms of gender. With the public hearing responses it is more difficult to draw conclusions on this where a lot of the actors are organizations or companies where the people standing behind the responses cannot be identified. However, when looking at the LTEs in the newspaper there is a clear majority of male writers. This means that the views of women in the society might not be represented to the same extent as men's in this debate. In addition, there is no information about the age of the people who have responded in the public hearing or written in the newspaper.

5.6 Flexens' role in this thesis

Flexens has contributed to this thesis through supervision with feedback, discussions about the topic, and assistance with expertise about the case of OWF and power-to-X on Åland. However, they have not taken part in conducting the research and have not had a direct impact on the perspective of the thesis. What should be noted is that as a part-time employee at Flexens, which is a company focused on project development within power-to-X, there is a risk for bias in my own perspective. However, identifying concerns among actors regarding OWF and power-to-X can be considered counterproductive with regards to developing power-to-X as it might in many ways be seen as bringing attention to issues that can hinder the development and are not to the benefit of the company, which decreases the risk of bias. Nevertheless, Flexens' view is that citizen engagement is an important part of their work where all groups in society can have more knowledge about energy. In addition, identifying concerns related to energy justice sooner rather than later is also beneficial for a project's timely implementation.

6. Analysis

The analysis chapter begins my identifying relevant stakeholders and their roles and motivations in the development of OWF. This is followed by an analysis of the public hearing responses from the maritime spatial plan and relevant newspaper articles and LTEs, keeping in mind relevant aspects from the perspective of energy justice.

6.1 Actors, roles, and motivations

This section will go through the most relevant actors in relation to development of offshore wind power on Åland and explain their roles and motivations in the issue. This will provide an answer to RQ1: "*Who are the relevant actors and their roles and motivations in development of offshore wind power on Åland?*". **Fel! Hittar inte referenskälla.** shows the application of the EGS framework on the case of offshore wind power development on Åland. According to the EGS framework, the main categories of actors are political-, economic-, and civil society actors. The same categories were used below when presenting some of the most relevant actors in the case, including some of the actors who responded to the public hearings that are analyzed later in this thesis. By investigating which roles and motivations different actors have, one can also get a better understanding of the dynamics between actors when analyzing energy justice.

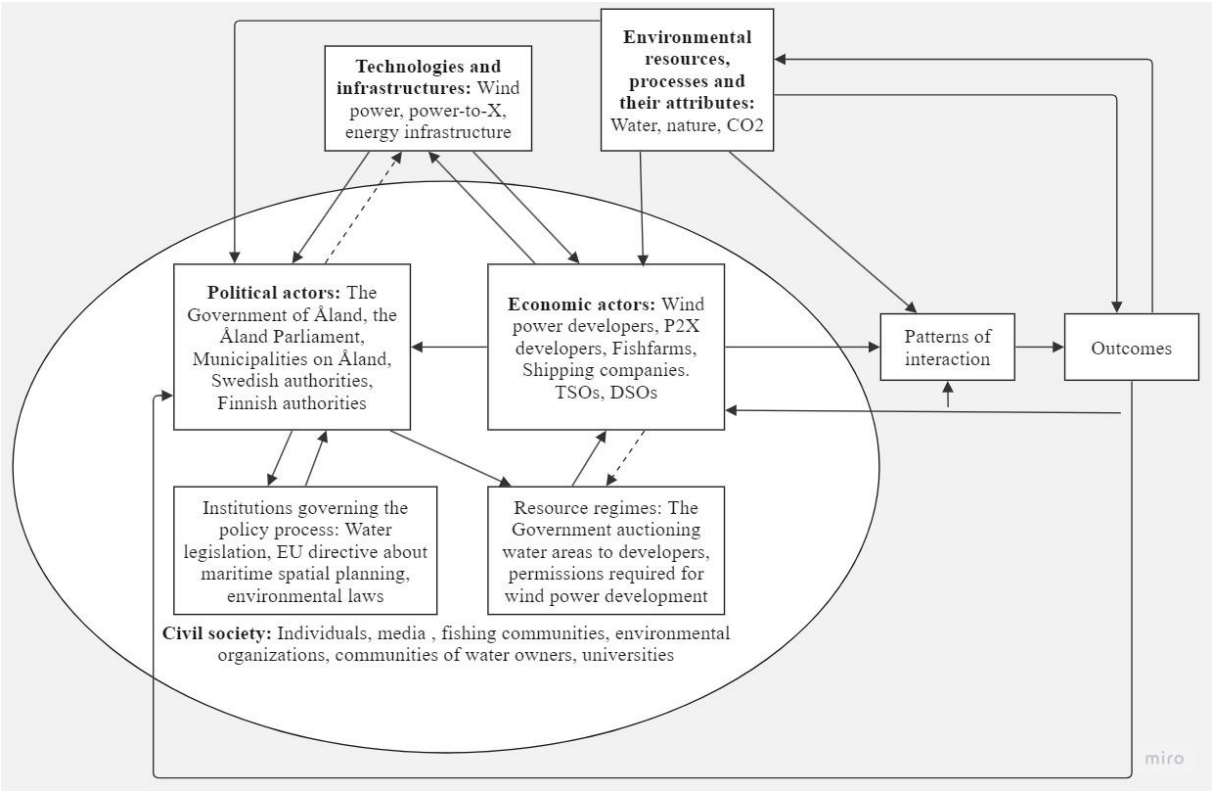

Figure 4: The EGS framework applied on the case

The EGS framework differentiates actors based on their roles, which lays a useful basis for exploring patterns of interaction. However, in this thesis I will use an energy justice framework to explore those patterns.

6.1.1 Political actors

Authorities play a curial role in terms of energy justice since they are all part of upholding the democratic system and protecting different societal interests. The central actor, at least in this early stage of the development of OWF, is the Government of Åland who is currently the driver of the development and are doing preparations under the initiative "Sunnanvind" for auctioning areas on the north of Åland to wind power developers. As previously stated, the Government consists of eight ministers elected by the Parliament, and it is currently lead by the party Åländsk Center. However, elections are coming up during the fall of 2023 (Ålands landskapsregering, 2022e). The Government has been very present in the local media and is very positive to the development of OWF and the opportunities it can create. Aspects that are brought forward are for instance new job opportunities, education, new income through export etc. (Eriksson, 2021; Mattsson, 2020). One motivation for the Government's positivity can be the 'Energy and Climate Strategy for Åland to 2030' (Ålands landskapsregering, 2017) and the 'Development and Sustainability Strategy for Åland' (Bärkraft, 2016), where targets are set for increased renewable energy production and a reduction of greenhouse gas emissions.

As previously stated, the Åland Parliament with their 30 members supported the Government's vision on offshore wind power. However, there are politicians both within the Government and the Parliament with slightly differing views. For instance, the environmental minister has a more cautious approach, emphasizing that there should be no rushed decisions and environmental impacts should be carefully evaluated (Bladh, 2022a). There are also politicians in the Parliament criticizing the project claiming that the consumers will be the ones bearing the cost (Lobråten, 2022a), while others claim that there are still too many questions to auction the areas to developers, including how big the costs are, if the material can be recycled, and how tourism will be impacted (Bladh, 2022b).

The next group of political actors on Åland are the 16 municipalities. As seen in **Fel! Hittar inte referenskälla.**, several of them are nearby the areas in the maritime spatial plan that are marked as having potential for OWF. However, as the maritime spatial plan is only

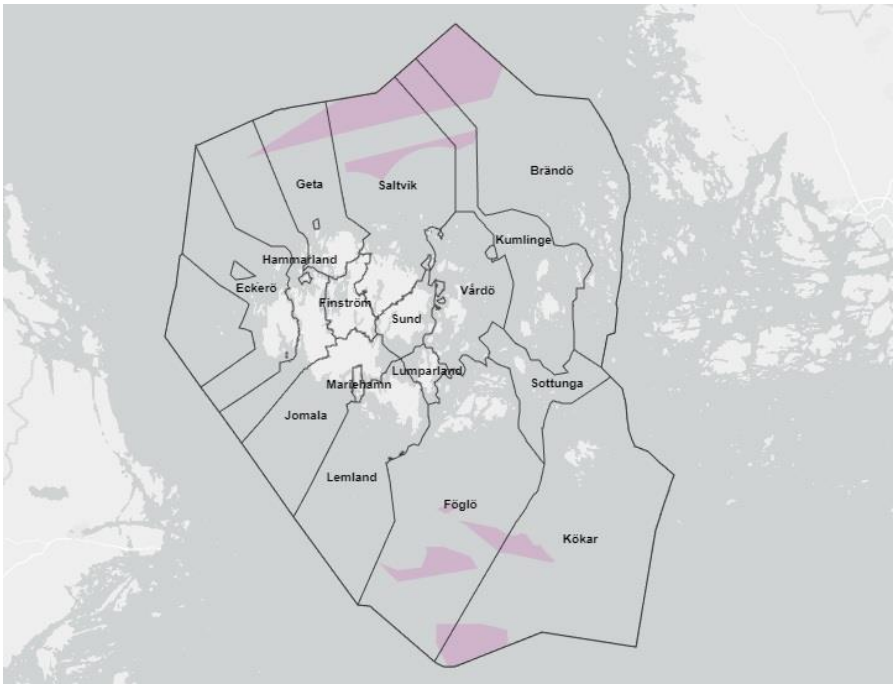

Figure 5: Map of Åland's municipal borders and areas for OWF (ArcGIS Web Map)

applied on the Government's public waters, the municipalities do not have a direct political impact.

Many of the municipalities were involved in the public hearing and some have recently been in the newspaper about this issue. More about their opinions will be explained in chapter 6.2 Who It is noteworthy that one interest for the municipalities is the economic gain from property taxes for the OWF (Eriksson, 2023a).

Looking outside of Åland, there are several authorities both in Finland and Sweden that might be impacted by the development of OWF and have thus been heard in the public hearing. For instance, the Finnish Defense Forces are crucial in wind power development as all projects have to get approval from them in order to avoid any impact on their activities, such as surveillance. They have already denied six projects on Åland (Eriksson, 2022b). Furthermore, in the public hearing responses it is clear that the Transport and Communications Agency is important in making sure that there are no impacts on for instance shipping routes or navigation systems. Other important authorities include nearby regions in Finland and Sweden, coastguard, and environmental ministries. While nearby regions might focus on protecting their own interests, environmental ministries focus on protecting the environment in the development of OWF.

6.1.2 Economic actors

The most central economic actors in this case are the wind power developers themselves. The ones that have expressed public interest in the developing of offshore wind power on Åland so far are OX2, Ilmatar Offshore, and Svea Vind Offshore. The underlying motivations for actors like these are economic. OX2 is a Swedish company that develops and sells largescale projects within renewable energy. The majority of their projects are within offshore wind power and they have been active in several places in Europe (OX2, 2023). OX2 has established a local office on Åland with the goal of making Åland the leading green energy hub in the Nordics. As explained in section 3.2 Power-to-X development on Åland , OX2 has also stated that they are investigating different opportunities for power-to-X. Ilmatar Energy is a Finnish company focusing on renewable energy and especially wind power, but they own the wind parks during the whole operational phase (Ilmatar, 2023). Their affiliated company Ilmatar Offshore has established a local office on Åland focusing on potential areas for OWF in the northern areas of Åland (Ilmatar Offshore, 2023). Both OX2 and Ilmatar have been very active in the media, promoting their projects and the benefits they can give to Åland.

Svea Vind Offshore, on the other hand, have not been present in the media but have declared their interest for the Sunnanvind project to the Government, stating that they are also interested in activities that could benefit the environment and the Baltic Sea (Pussinen, 2022b). Svea Vind Offshore focuses on wind power and hydrogen in Sweden (Svea Vind Offshore, 2023). Regarding the development of power-to-X, another relevant actor is Flexens that is a power-to-X developer based both on Åland and in mainland Finland (Flexens, 2023). They are not involved in the development of OWF but have previously for instance conducted studies about hydrogen ferries on Åland, as presented in section 3.2.

Other relevant economic actors in the maritime sector would be shipping companies and fish farming companies. However, no statements from shipping companies have been used in this analysis, or found in the newspaper. It can therefore be assumed that their interests are covered by the previously mentioned Transport and Communications Agency. As for fish farming companies, there is an association for them called Ålands fiskodlarförening which was included in the public hearing. They work towards developing the business for water use, improving economic conditions, sharing information, assisting their members and coordinating activities for the business (Ålands fiskodlarförening, 2023). It can be assumed that the interests of the fish farming companies are to continue their operations without disruptions from wind power.

Lastly, there are also relevant economic actors in the energy sector, including the TSO Kraftnät Åland and the DSOs Ålands Elandelslag and Mariehamns Energi for Åland, Svenska Kraftnät for Sweden, and Fingrid in mainland Finland. They are relevant as the largescale offshore wind power projects will require extensive upgrades of the electric grid, which puts time pressure on the TSOs (Eriksson, 2022e). Other relevant interests are to make sure that no new construction or plan impacts transmission cables or other infrastructure.

6.1.3 Civil society actors

In the category civil society actors, media actors and universities (or colleges) have been included as their functions serve civil society. Media has been central so far in the development of OWF. Reporting about the Government's progress, political debates, the progress of the established wind power developers, LTEs from citizens, and any other relevant news, media plays an important role in informing civil society about offshore wind power on Åland. In this thesis the main media source is the local newspaper Ålandstidningen. Regarding universities, their interests can be both related to research, such as Åbo Akademi, or related to potential new educations, which is the case for the college Högskolan på Åland. In the category of research, one can also include ÅSUB as they are an independent institute for statistics and investigations (ÅSUB, n.d.).

There are also several relevant organizations that engage citizens, including environmental organizations such as Ålands Natur & Miljö, fishing communities, associations for preservation such as Sälskärs fyr r.f , and communities for water owners. For water owners the interests would be to keep their property rights, while fishing communities interests might be to be allowed to continue their activities or concerns about impact on fish stocks. For Ålands Natur & Miljö and Sälskärs fyr r.f the interests are focused on environmental impact.

6.1.3.1 Survey on attitudes to offshore wind power on Åland

The last category in civil society is the individuals themselves, who play a big part especially when discussing energy justice. The study on "Attitudes to offshore wind power on Åland" by ÅSUB (Fagerström, 2022) was a survey included in ÅSUB's environmental investigation from 2022, and it can provide insight into the attitudes and interests of individuals in the development of OWF. The survey was sent out to 1254 randomly selected people above the age of 18 living on Åland, and 46% of them responded. There were six questions in the survey concerning renewable energy and wind power, and three of them focused specifically on offshore wind

power. However, it is important to note that the survey was executed at a time where the security politics were changing a lot, which means that the result might have been different just a few weeks later. Other noteworthy aspects are that men in general were less positive to wind power, while women in general were more prone to answer that they do not know (Fagerström, 2022).

The first result presented in the report by ÅSUB shows to what extent the respondents think that Åland should invest in different energy sources in the coming 5-10 years. The responses show that solar power is preferred over wind power, but they are both far more preferred than the other options which are biofuel, wave power, natural gas and imported energy. 61% think that the investments in wind power should be bigger than today, while the same number for solar power is 72 % (Fagerström, 2022).

Next, the survey investigated to what extent the respondents thought that Åland should invest in specifically wind power in the coming 5-10 years. 61 % thought that we should invest more in wind power than we do today, while ca. 19 % said that we should invest in the same amount as today. However, it seems a bit unclear if "as today" includes the current plans of huge offshore wind parks or if this is not accounted for as they are not yet constructed. 3.8 % of the respondents think that Åland should not invest in wind power at all, while 6.5 % think that it should be less than today. When asking about the Government's plan for offshore wind power specifically, 45.8 % thought that the current plans are good, while 16.9 % thought that they should be even bigger. Only 8.7 % thought that the wind power parks should not be built at all, and 7.0% thought that they should be smaller (Fagerström, 2022).

The most interesting part of the study was that 60 % of the respondents think that the benefits from wind power are clearly or partly bigger than the disadvantages. 4.7 % think that the disadvantages are much bigger than the benefits, while 4.1 % think that the disadvantages are somewhat bigger (Fagerström, 2022).

The respondents also got to vote for the three main benefits and the three main disadvantages of specifically offshore wind power. The main benefits among the respondents were emission-free energy production, production of local energy, and that it is a renewable energy source. 7.7 % did not see any benefits with offshore wind power. For the disadvantages, the effect on birdlife, effect on animals, and the risk for destruction of the place after the wind turbines are taken away got the most votes. However, 30 % responded that they do not see any disadvantages with offshore wind power at all (Fagerström, 2022).

The respondents were also allowed to add their own comments in the survey, and by reading them it becomes clear that people do have a lot of unanswered questions and concerns

regarding everything from environmental impact to efficiency and economics (Fagerström, 2022). The survey by ÅSUB does provide a good insight on what the population on Åland thinks about wind power in general.

6.2 Who is being heard?

This section of the thesis will analyze the data through the energy justice perspective, attempting to identify potential injustices, who is being ignored, and if there is a process allowing people to get heard.

6.2.1 Analysis of public hearing responses

As the Government of Åland is the driver of the offshore wind power development, the public hearings are a crucial process to look into when analyzing which actors have been heard. The public hearings analyzed in this thesis are not related specifically to the offshore wind power development, but rather the maritime spatial plan as a whole, including the areas for offshore wind power. In the description of the maritime spatial plan it is stated that affected municipalities and agencies should be involved in the planning process in order to collaborate, communicate and have an opportunity of consensus. In addition, the conditions and security of the maritime traffic is to be taken into consideration in relation to offshore wind power. Some areas for offshore wind power are overlapping with areas for fishery and valuable nature, where it is stated that it is up to the practitioner of the operations to find solutions where offshore wind power and other operations can coexist (Miljöbyrån, 2021). The maritime spatial plan passed through two public hearings where different actors were invited to voice their opinions.

As an introduction, the Government has one public document for each of the two public hearings with summaries of the responses. In the document from the first hearing it is described that the process of creating the plan included “for instance consultation with affected actors through local meetings, internal discussions with affected departments at the Government, consultation missions and meeting with responsible authorities in neighboring regions” (own translation) (Ålands landskapsregering, n.d.-a).The first draft of the maritime spatial plan was presented in the end of 2019, and the first public hearing was ongoing from the 20th of December 2019 until the 31st of March 2020. Any actor was allowed to send responses in the public hearing, including for instance citizens, stakeholders and authorities. During the first public hearing 60 responses were received, while some of them included multiple answers or signatures in one. In the latter cases the responses were divided which meant a total number of

93 responses. The responses were categorized according to the type of respondent (individual/community, municipality, authority or other actor) and the type of content (property rights, the size or detailing of the plan, social values, nature- or environmental values, economic values, the plan's ability to impact, unclear information). Among the respondents were 34 stakeholders, 33 individuals, 7 municipalities and 17 authorities, and the most common subjects were unclear information, the plan's ability to impact and nature- or environmental values (Ålands landskapsregering, n.d.-a).

In the summary of the second public hearing there were 65 responses. The categories for the respondents are slightly modified in this document, instead including: company/association, authority/university, interest organization, municipality/region/county/board, community/fishing community, and private. The private category includes name lists of individuals, which if they have been on the same name list, it is counted as one response. The document also indicates which subjects have been the most occurrent, ranging from for instance fishing, marine areas, protected areas, environmental values etc. The most important categories for the respondents in this round appeared to be nature- and environmental issues (Ålands landskapsregering, n.d.-b). Key points from the public hearing responses included in this thesis can be found in Appendix A.

When looking into who has responded to the public hearing, there is a variation in the type of actors, as also seen in the categorizations above. These include for instance the municipalities of Åland, the Finnish Defense Forces, nearby regions in Sweden, environmental organizations and ministries, fishing communities, and also individuals. This provides useful information regarding the question of who gets their voice heard. However, it has to be recognized that the responses only portray the opinions of those who have reached out, and there can still be actors that are not heard in the matter if they have not voiced their opinion in the hearings or in other ways. In addition, even though actors have responded and attempted to get their voice heard, one can question if their concerns have been taken into account in practice, or if it is merely a formality for the Government to collect the responses as a democratic process. One way to assess this is by looking into the changes that were made between the first and second public hearing to see what was actually taken into consideration. This will be further discussed below by describing some examples from the public hearing responses.

Several responses to the public hearing are from different actors in the archipelago, conveying an overall concern of making a plan for how to use the archipelago area. Examples of specific concerns include impacts on rights related to private ownership; activities carried out in the archipelago such as different traditions, hunting, and fishing; and the local decision-

making. This information provides a brief insight into that people living in, or using regularly, the archipelago area around Åland might have concerns regarding this development. The concerns brought up can be interpreted as potential injustices as the population living nearby the sea may be more impacted by any change in the maritime space, which can be linked to the *distributional* tenet of energy justice. An exemplifying quote of this is:

> *”Den åländska skärgården är unik samt till största delen privatägd och har ett stort kulturvärde vi skall värna om vår självbestämmande och planeringsrätt*
> *Högsta prioritet på Åland är ägarnas oinskränkta nyttjande av vatten som t.e.x husbehovsfiske och jakt detta oavsett planeringar på områdena på Åland det bör även finnas med i framtida planeringar och lagförändringar.” (Quote 1)*

Translation and paraphrase: The Åland archipelago is unique and mostly privately owned and has a big culture value. We should cherish our self-determination and planning right. The highest priority on Åland is the owners’ absolute use of water such as private fishing and hunting, this despite plans on the areas on Åland. This much also be included in future plans and changes in legislation.

Not only people from the archipelago were concerned about which areas were included in the plan. In fact, many of the responses analyzed from the first public hearing address the scope of the plan, criticizing that coastal waters were included even though, according to the responses, the EU directive only concerns marine waters. In some responses it is stated that the border of the plan should be moved outside a limit of 4 nautical miles, others mention that it should be moved from municipal and private waters to public waters, while some even argue that the plan should be moved outside Åland’s territorial waters to the Finnish economic zone. A concern that is frequently brought up regarding this is the protection of property rights for land and water owners.

> *”Med nuvarande förslag finns också större möjligheter för politiker, natur och miljövårdsorganisationer att besluta om inskränkningar i användning av kommuners och privata vatten och landområden. Det är kommuner, fiskelag och samfälligheter som skall besluta om användning av sina områden för det är de som vet bäst vad som behövs och är till nytta för deras innevånare.” (Quote 2)*

Translation and paraphrase: With the current proposal there are also bigger possibilities for politician and nature- and environmental organizations to decide about restrictions in the use of municipalities' and private water and land areas. It is municipalities, fishing communities, and communities that should decide about the use of their areas because they are the ones who knows best what is needed and will benefit their inhabitants.

Three responses from actors on the north of Åland, including one municipality, one community of water owners, and one joint owner of a water area, are expressing a discontentment in the first public hearing through a statement that is common for the three actors with slight modifications. From these responses one can draw the conclusion that some actors with ownership of water areas did not feel heard in the beginning of the process of creating the maritime spatial plan. This can be linked to the tenet of *recognition*. A quote from one of the responses is the following:

> *"Kommunerna som har störst erfarenhet av planeringsarbete på Åland har inte varit formellt inkluderande i framtagningen av planen och kommer inte heller att fastställa den, likaså har vi som vattenägare inte hörts, vilket varit en bättre metod för att säkerställa det lokala förvaltningsperspektivet." (Quote 3)*

Translation and paraphrase: The municipalities that have the biggest experience of planning on Åland have not been formally included in the production of the plan and will not establish it. Likewise, we as water owners have not been heard, which would have been a better method to ensure the local management perspective.

Furthermore, in one of the responses to the second public hearing with signatures from multiple individuals and fishing communities, it was indicated that the public hearing process and the first draft of the maritime spatial plan could have been communicated more clearly.

"*För de flesta av oss har arbetet med havsplanen och det första förslaget till densamma passerat fullständigt obemärkt. Vi beklagar att vi reagerar först nu men hoppas att våra synpunkter ändå skall kunna tas i beaktande."(Quote 4)*

Translation and paraphrase: For most of us the work with the maritime spatial plan and the first draft of it has passed completely unnoticed. We regret that we have not reacted until now, but hope that our comments can be taken into consideration.

Another response that clearly expressed criticism towards the spatial plan was one from an association focusing on preservation at an island in the archipelago, namely Sälskärs fyr r.f. Their criticism is directed mostly towards fish farms, but also including OWF. They argue that the placement of the fish- and windfarms around the island in the northern archipelago is not reasonable as it is one of the most untouched and clean water areas on Åland, and a fish farm would overfertilize the sea. The place also has a cultural and historical value and wind turbines would disturb the authentic impression. Furthermore, there was a petition against a fish farm by this island with 34 signatures with people from different places on Åland. There was also another response regarding the same area in the north western archipelago with similar criticism and signatures from both individuals and fishing communities. These responses were sent to the second public hearing.

> *"Är det hållbart att planera och göra det möjligt för ännu fler fiskodlingar i öppna kassar när det finns tydliga bevis på att det bidrar till övergödning och syrebrist i vattnet? Dessutom planeras att placera de nya fiskodlingarna i Ålands renaste vattenområden! Varför det? Är övriga vatten redan för nedsmutsade?" (Quote 5)*

Translation and paraphrase: Is it sustainable to plan and make it possible for even more fish farms in open net-pens when there is clear evidence that it contributes to overfertilization and lack of oxygen in the water? In addition it is planned to place the new fish farms in Åland's cleanest water area! Why? Are other waters already too polluted?

Overall, the responses to both public hearings did not put a lot of emphasis on the offshore wind power specifically. However, the issues brought up can still be indirectly linked to the development of offshore wind as it is included in the maritime spatial plan. There were also a few responses mentioning wind power, but these were often from authorities with a positive attitude towards the development of fossil free energy production. Other mentioned aspects related to the placement of the areas for offshore wind power, cooperation between nearby regions, and the need for thorough impact assessments regarding both environmental impact

but also impact on traffic such as radar and navigation systems for maritime traffic. However, for the analysis of justice aspects in this process, authorities are not the priority.

By looking into the changes that were made from the first public hearing to the final version of the maritime spatial plan, some conclusions can be drawn on whether people's concerns have been taken into consideration or not. After the first public hearing, the scope of the plan was reduced to only concern the Government's public waters, thus excluding private waters which addresses the concerns voiced about property rights. Regarding offshore wind power, the potential areas on the map were increased, and there is an emphasis on future assessments of impacts on birds, marine mammals, fish stocks, impact on seafloor, and conflicts with other users etc. Regarding fish farms, a more passive approach is used, explaining how the areas were brought forward using a model which will be further developed and cannot be used for permitting for now (Landskapsregeringen, n.d.a).

After the second public hearing alterations were made in regard to emphasizing the impact on environment, nature and cultural heritage. However, the biggest change was that fish farms were no longer included in the draft. The motivation is partly that there is base information missing, such as a location plan from the Government, that is required before public waters can be leased for fish farms. The other part is that the responses about the northern and north western part of the archipelago and its valuable features were taken into account. This does not mean that there will not be fish farms in the future, but first a location plan has to be made in cooperation with affected actors. Also some of the areas for offshore wind power were removed due to an overlap with culturally or environmentally valuable areas. One of the areas in the south were also removed due to vicinity to a safe haven (Landskapsregeringen, n.d.b).

6.2.2 Analysis of newspaper articles

Since the beginning of the discussions about offshore wind power, there has been an active debate in the newspaper Ålandstidningen. LTEs from citizens have been published in the newspaper quite frequently, most often questioning aspects relating to environmental impact, including impact on birds, insects, and the release of microplastics, and technical or economic aspects such as how the wind power will be funded, if tax payers will have to pay or if wind power is actually profitable. In other words, it is often wind power in general that is questioned, but sometimes also concerns of how the population will be affected. The concerns are also similar to those brought up in the survey from ÅSUB. By looking at the signatures on the LTEs,

it can be concluded that many of them are written by the same people, and that most of them are men.

The LTEs do provide insight into that there is criticism towards wind power on Åland, but does not say anything about how widespread it is. In terms of energy justice, the ability to debate in the local newspapers and voice opinions can be viewed as an important tool for citizens. However, there is no concrete way of assessing if people get heard in this way if there are not clear responses in the newspaper. In addition, it might not be in everyone's interest to start a debate in a public newspaper, which means that this option is probably only used by certain people.

In a recent interview in the newspaper, two citizens who have been active in the debate, both in LTEs in the newspaper and in local information events, criticize how the Government is handling the project for OWF. However, they both state that they are not opponents to wind power, but rather want to question the enthusiasm as there is a lack of knowledge and instead a lot of beliefs in this issue. They criticize how the Government is including multiple actors at the same time, and that potential consequences and benefits of the wind power development have to be assessed more thoroughly at an early stage. The concern is whether the benefits for society are actually greater than the impact on the environment (Bladh, 2023).

Another interview is with a citizen that has started a petition against offshore wind power surrounding Åland. The citizen states that there should be a referendum about it, and that he started the petition so that those opposing wind power will also get their voice heard. He claims that media alters information in a way that suits them, which is why it is not a suitable way to be heard. The arguments relate to the lack of knowledge about the impacts of OWF and questions about who the wind power will benefit, and that the alternative to wind power is nuclear power (Eklund, 2023). The online petition passed 400 signatures, with the aim of reaching at least 1000 signatures, but has now been closed (Fagerström, n.d.).

In the Parliament it was questioned whether there is a plan on how to get the population onboard, as it would be unfortunate if the project had to be stopped due to resistance from citizens that make politicians hesitant to go forward (Blix, 2022a). About a year later a communication plan for the project Sunnanvind was created, but it was then stated in the newspaper that the Government had been surprised that there was not yet a website for the project. Now a website is under development in order to improve the access to information for the citizens. In addition, it was stated that the Government will present more information to the Parliament in order to keep their confidence during the process (Quarnström, 2023).

As for the municipalities on Åland there have been questions in the Parliament about how the municipalities will be able to handle the wind power project since they have the responsibility of the planning and building permit. For the Sunnanvind project the affected municipalities are Geta, Hammarland, Brändö, Saltvik, and Kumlinge. The Government stated that they respect the authority of the municipalities and will assist according to the municipalities' wishes. Rather than a potential injustice where the involved municipalities get more impacted, there is instead a discussion about how to avoid an imbalance in the economy due to large income from property taxes for the municipalities within Sunnanvind. The goal for the Government is that the whole society should benefit from the OWF (Smeds, 2023), but the affected municipalities want more income than the rest of Åland (Blix, 2023). An interesting aspect brought up by a minister in an interview was the risk of complaints from people with summer properties that only spend a few weeks during the summer on the island (Smeds, 2023).

The Government has asked the municipalities in Sunnanvind for approval to coordinate the planning of the OWF through money from the EU so that municipalities will not be economically impacted (Kullman, 2023b). The municipalities have given their approval, but some of them emphasize requirements. One of the municipalities did not approve of one part of their water areas due to valuable environment, and some of the municipalities also demand great compensation for the intervention, including more income from property taxes than the rest of Åland (Blix, 2023).

To conclude the newspaper analysis, it is noteworthy that the rather new onshore wind power park Långnabba also has brought complaints after it started operating. The project has upset nearby landowners, expressing that their economic compensation was too small (Mattsson, 2023a). The people living near the wind power park has also complained to the Åland Environmental and Health Protection Authority (ÅMHM) about the noise level and health impact (Henriksson, 2022). Although these concerns will not apply to the same extent to the OWF since it is further away from the population, it could be possible that it has made people more cautious to support the project.

7. Discussion

In the beginning of the Analysis chapter the big variety of actors and their interests that are relevant to the development of offshore wind power were illustrated. The category of political actors included the Government, the Parliament, municipalities, and both Finnish and Swedish authorities. Relevant economic actors identified were wind power- and power-to-X developers, fish farms, shipping companies, and TSOs and DSOs. Finally, the civil society include individuals, media, fishing communities, environmental organizations, communities of water owners, and universities or researchers. Some of the most prevalent interests include economic profit, environmental impact, and to make sure that the OWF do not disrupt other operations and activities such as shipping or fishing. This emphasizes the complexity of wind power project development which makes energy justice analyses highly relevant in order to avoid conflicts.

In the analysis of the two public hearings of the maritime spatial plan, the variety of actors was further confirmed. However, many of the respondents did have a connection to the archipelago, either by living there, owning land or water areas, or by having a special interest in the value of nature and culture in specific areas. The main finding was that the public hearing process, at least in this case, seemed like a functional way of including people in decision-making. Various concerns and criticism that was expressed in the responses were taken into consideration by the Government and alterations to the maritime spatial plan were made accordingly. For instance, a lot of emphasis from the respondents was put on not jeopardizing property rights, whereby the Government decided to only plan the areas with the Government's own public waters. In addition, the strong criticism towards the environmental impacts of fish farms lead to the complete exclusion of fish farms from the plan. However, this does not prohibit potential future fish farms, but it was at least recognized that more information is required in order to draw conclusions about it.

When applying the energy justice perspective to the findings and looking into the *distributional* justice, it is clear that the impacts from offshore wind power are located in the archipelago and in coastal regions. These conclusions can be drawn from the fact that the most criticism in the responses were given from water users and owners. Although the responses to a large extent did not address offshore wind power specifically, the respondents express that important aspects to them are their rights to use the water as they are used to and to control their privately owned water areas with the use of their local knowledge without plans from the Government. Furthermore, it is important to preserve the nature and culture in archipelago

areas. These values would be highly relevant to take into consideration when deciding about the location of a wind farm, as this might have an impact on the people and environment living in nearby regions.

Looking into the *recognition* justice of the wind power development, there is no clear case of an ethnic minority or similar that is being misrecognized in the coastal and archipelago regions on Åland. However, what one could argue is that the people living in the archipelago constitutes a minority themselves as very few people live there compared to mainland Åland. According to statistics from ÅSUB (2023a), in 2022 there were 2045 out of 30359 people on Åland are residing in archipelago municipalities. This means that they can be a group that is at risk of being misrecognized. If the majority of people on Åland would live in the archipelago, there is a chance that the scenario would look differently. Another aspect to look into is whether this group is also made up of low income earners, and if they thus could be at more risk of not being recognized due to this. Another study from ÅSUB (2023c) about the income distribution in 2022 showed that there is indeed a bigger share of financially vulnerable people in the archipelago compared to on the countryside and in the city Mariehamn.

Although these are important aspect to address, it would be difficult to determine if they have an impact on the location of offshore wind power and misrecognition of people in the archipelago as OWF will inevitably be placed closer to the archipelago and coastal areas. However, what speaks against a misrecognition is the fact that many concerns from the public hearing responses were taken into account and changes were made according to them. In addition, the fact that there is also onshore wind power on Åland shows that it is not only the offshore aspect that has made it interesting. Another interesting aspect is the discussion on whether the income from property taxes in relation to OWF can instead impact the affected municipalities in a positive way, making them more financially stable than the rest of Åland.

Finally, in terms of *procedural* justice the main process discussed in this thesis has been the public hearing about the maritime spatial plan. The public hearing is a legal process that, according to this analysis, seems quite successful in involving different actors in decision-making on Åland and taking their opinions into account. However, what can be highlighted is the fact that a few respondents claimed that the municipalities had not been formally included in the process of creating the plan, and water owners had not been heard. Despite that they were heard in the public hearing, they would have liked to be more involved in the process from the very beginning. In addition, one response signed by multiple individuals in the second hearing begun with stating that most people had not even noticed the first public hearing one year earlier. This shows that there could be an improvement in communicating when a public hearing

is open in order to increase the accessibility for all individuals, and there could be an increase in the mobilization of local knowledge. A few responses also emphasized the local knowledge related to management of water areas, which shows that it might be beneficial to include this at an earlier stage in the process.

In the beginning of the analysis chapter a survey about wind power from ÅSUB was presented, showing that a majority of the respondents were positive to wind power and also specifically to the plans of building offshore wind power in the Government's water areas. Only 15,7 % in total thought that the wind power farms should be smaller or not build at all. However, the further analysis of public hearing responses provided other more critical perspectives, nuancing the seemingly positive attitude from the survey. It is not possible to draw conclusions on if the responses with criticism represent the percentage of people who were more skeptical towards the OWF, or if there is a bigger part of the population that is skeptical that the sample in the survey did not cover.

Criticism received from people living near the coast or in the archipelago, thus being the closest to the OWF, can be discussed in relation to the U-shape development of attitudes. In a study by Wolsink (2007) it is shown how attitudes are shaped in a U curve over the course of the development of a wind power project. When there is no ongoing wind power project nearby, people tend to be positive towards wind power. Then when a project is introduced the attitudes become much more critical, but tend to go back to more positive after a reasonable amount of time after the completion of the construction. However, it is emphasized that it should not be assumed that attitudes will definitely become more positive after the completion of a project, and it requires that the local population thinks that the environmental impacts have been addressed and dealt with in a sufficient way (Wolsink, 2007).

One might think that this could be linked to the NIMBY (not in my backyard) phenomenon where people are positive to wind power in general but then oppose it for selfish reasons when a project is planned near where they live. Wolsink (2007) strongly argues against this, stating that the distance does not have anything to do with the change to a more critical attitude, but rather an announcement of a project starts a process of thinking that might make someone reconsider their attitude. The NIMBY concept is more used as a label and reduces critical attitudes to ignorance and selfishness, while actually more in depth research would be required to determine the actual cause behind someone's opposition to a project. "As a matter of fact, the idea that opposition is due to egotist NIMBY-type motives is a factor that has become a great burden to the handling of critical attitudes", Wolsink (2007:1200) states. With that said, both research on attitudes and justice aspects in relation to wind power development

is important for successful project development and making a just transition to renewable energy.

One way of explaining community acceptance of offshore wind power projects is by looking at 'place-technology fit', which focuses on the symbolic meanings of places and technology. This was investigated in a study conducted on Guernsey, Channel Islands by presenting the details of a potential offshore wind project in a survey, suggesting different locations with similar distance from the coast. It was shown that when using the same design of the project, the acceptance still significantly differed between the proposed locations. This can be explained by the attributes related to each location, where the most accepted location was considered the least naturally beautiful and was also considered to be industrialized. The opposite applied for the least accepted location which was seen as more natural (Devine-Wright & Wiersma, 2020). These results can be linked to the case on Åland and the *distributional* justice, where several actors emphasize the untouched and valuable nature in the archipelago and criticize plans for OWF and fish farms in these areas. It could have been of interest to conduct a similar study on Åland before the first draft of the maritime spatial plan to see if there would have been areas that are more accepted.

Previous research on community acceptance and wind power project development emphasize the crucial role of good communication and participatory processes in order to gain the trust of society. Procedural justice is a key element in this as it focuses on access to decision-making processes and means through which people can get their voices heard. There is evidence proving that participation and collaboration in the planning of wind power projects increases the public acceptance. "Local residents will oppose the project if they perceive that the decision-making process prioritizes external economic interests or global environmental goals while ignoring local annoyances, risks for citizens, scenic value or nature protection." (Janhunen, 2018: 21). The public hearing process on Åland is one way to participate in decision-making. However, as was seen in the analysis, a lot of actors are frustrated about the lack of information.

In a study on procedural justice in wind power development, it is suggested that a collaborative governance model should be used in order to achieve both justice and time efficiency in wind power development. The collaborative governance model entails deliberative processes such as working groups with different stakeholders including wind power developers, concerned citizens, non-profit groups, and officials. The focus would be on expressing values and interests and creating a plan together that takes into account concerns from the public, while also keeping important factors such as project profitability, climate change, and energy security (Ottinger et al., 2014). Thus, there is research on how to meet the need for energy justice in the

development of wind power, which might be useful for Åland in order to avoid frustration and conflict and instead contribute to a just transition to renewable energy.

8. Conclusion

In this thesis, the development of OWF on Åland has been investigated through an energy justice perspective, emphasizing aspects that can be related to the three tenets of energy justice: distributional-, recognition-, and procedural justice. This was done by first identifying the most relevant actors and their roles and motivations in this development. Next, the responses to the public hearings from the process of creating Åland's maritime spatial plan were analyzed, focusing on voiced criticism and concerns, looking into if the process was successful in allowing people to get heard. In addition, newspaper articles and LTEs specifically addressing offshore wind power were included in order to get a deeper insight into the related concerns.

The findings show that there is an uneven distribution of impact from the development of OWF, where people living by the coast or in the archipelago are at more risk of being affected by potential injustices. Actors voiced concerns about the protection of property rights and the preservation of valuable nature and culture in the archipelago, emphasizing the crucial role of local knowledge in the decision-making. The findings indicate that the voiced concerns about the maritime spatial plan were taken into consideration by the Government to a large extent. Another key finding is that there is a frustration among the public due to many unanswered questions regarding for instance environmental impact, who will benefit from the wind power, and how it will be financed. Previous research show that participatory processes and transparent communication with citizens is crucial in order to keep the trust of the public.

This study has provided an initial assessment of energy justice in the development of OWF on Åland, and the points highlighted in this thesis will be important to follow during the course of the development. In future research when the development has gone further it could be interesting to look into the acceptance of offshore wind power when the OWF has been put into operation, and to apply an energy justice perspective to the case when the impacts are actually there rather than investigating potential injustices. In addition, similar studies can be done about power-to-X when this development has gone further.

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Reference for map in Figure 5:

Object: ArcGIS Web Map "Havsbaserad vindkraft i havsplanen per kommun" (2023) by user hanna.NL, the author of this thesis, available at https://www.arcgis.com/home/item.html?id=33a769afc1954cbcad919473cfa0fe5f
Layers: "Kommungränser" (2018) by user LRALAND, credits to Lantmäteriverket, available at https://www.arcgis.com/home/item.html?id=7b76dc140eb04d70a1654b3e381dde6a
"MSP Åland" (2021) by user LRALAND1, credits to Ålands landskapsregering, available at https://www.arcgis.com/home/item.html?id=14571f942af44d1ca84aba462854d2ce

Appendices

Appendix A

Key points from public hearing responses	
Actor	**Opinion**
First draft Two individuals	Critical towards making a maritime spatial plan due to concerns of impact on the local traditions and decision making. The plan should concern the sea, not the archipelago.
First draft Individual	Concerns about the maritime spatial plan regarding the rights of private ownership and use of archipelago areas
First draft Individual (land and water owner) *(Quote 2)*	Critical towards the maritime spatial plan regarding negative impact on ownership, the archipelago's own decision-making and activities, from external actors. Move the border outside municipal and private water borders.
First draft Karlby samfällighet/fiskelag Överboda samfällighet/fiskelag Finnö samfällighet/fiskelag Helsö samfällighet/fiskelag Österbygge samfällighet/fiskelag *(Quote 1)*	Critical towards maritime spatial plan regarding protection of the archipelago and ownership and practicing of activities. The plan should be in the Finnish economic zone instead.
First draft Kumlinge fiskelag r.f	Emphasizing the importance of protecting property rights. The plan should concern the area outside 40km.
First & second draft Ålands producentförbund	First draft: Critical to the plan addressing coastal areas rather than just marine waters such as according to EU. Such a plan might hinder activities like sustaining and hobbies. Critical that the municipalities were not formally included in the creation of the plan. Second draft: Good that the second proposal only affects the Government's waters. The rights of private owners should also be protected in the future. Management should be done by those with local knowledge. The areas for fish

	farms are misleading because they have not considered legislation for the placement.
No date (but referring to aspects of the first draft) Ålands fiskare r.f.	The area for the plan should be outside 4 nautical miles. Not clear if the plan will impact fishing. Areas for trawling should be mapped.
No date (course in 2020) Åbo Akademi Åbo Universitet	Analysis by students of the plan as a whole.
First draft Politician	Importance of protecting property rights. Ships are passing by too close to Föglö which creates erosion and areas cannot be used to the same extent. Population's knowledge should be taken more into account as they have not been listened to in previous issues.
First & second draft Region Stockholm: Tillväxt- och regionplanenämnden	Positive with some emphasis on importance of not conflicting with the border to Sweden, maritime traffic, defence, culture and nature values, fishing, dialogue, cooperation.
4.9 (year unclear) (referring to aspects from the first draft) Two individuals	Plan should be moved from inner waters to the sea. Land and water owners should be contacted and allowed to participate in any plans that concern them. Plans should not be made on private waters.
Second draft Representative from Social- och miljöavdelningen	Information regarding the plan and what should be included or not.
First draft Försvarsmakten (Sverige)	They want to keep being informed regarding the areas for offshore wind power.
First draft Kustbevakningen	No comment.
First & second draft Naturvårdsverket	Emphasis on importance of a formal strategic environmental assessment and assessment of impact on migrating birds and bats, and areas for seabirds. There should also be more protected areas with high environmental values.
Second draft Eckerö kommun	The plan does not affect the municipality's interests.
First draft Ålands fiskodlarförening r.f.	The areas for fish farms should be increased for future development.
Second draft Kökars kommun	Private waters should not be included (which is according to the Government's decision). No plan should be made for private waters and the water is well managed by its owners. A plan would weaken property rights and there is no basis for this. Overfishing and pollution is not due to the private owners but rather due to authorities, activities on land and on international waters.
First & second draft Svenska Kraftnät	First draft: The plan must not affect current transmission lines. The plan must not make it impossible for new connections. If anything is planned 250 meters from transmission lines they have to agree. They want to be informed about the areas.

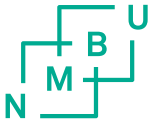
	Second draft: --“--
First draft Vestergeta Samfällighet *(Quote 3)*	The plan is too big. Only sea should be included, outside 4 nautical miles. Municipalities with experience about planning on Åland have not been formally included and will not establish the plan. Water owners have not been heard. Local perspective has to be included to benefit the archipelago and tourism. The plan should thus only concern the area outside municipal and private waters.
Second draft Svea Vind Offshore AB	Good areas for wind power. Synergies are possible with their areas for OWF. Looking forward to further contact. Åland has a good geographic position for cooperation and synergies. Positive to the suggestion.
First & second draft Lumparlands kommun	The plan does not affect the municipal activities so they do not have anything to state in the issue. They made clear that there is also no obligation for municipalities to plan their own waters, which is now not included in the plan.
Second draft Länsstyrelsen i Uppsala län	Positive to wind power, but there is an area that could potentially impact a valuable culture and environmental areas in Sweden so there has to be impact assessments and dialogue when the project goes further. The plan does not reach the goal of 10% protected water areas.
First draft Länsstyrelsen Stockholm	Bringing up different aspects of the plan that has to be clarified and worked on. Focus on sustainability.
First & second draft Ålands Natur & Miljö	Focus should be on sustainability and taking care of the sea and the plan should have a more binding status. More marine protection areas. One of the wind parks are close to a HELCOM area which can have a negative impact on birds. The background material for the placement of fish farms is lacking. Questioning the placement of a fish farm in an area that is unexploited and clean. Should be limitations on industrial fishing and more emphasis on small scale fishing.
First draft Joint owner of a water area	The area for the plan is too big. Should only concern the area outside 4 nautical miles. Municipalities with experience about planning on Åland have not been formally included and will not establish the plan. Water owners have not been heard. Local perspective has to be included to benefit the archipelago and tourism. The plan should thus only concern the area outside municipal and private waters.
First & second draft Lemlands kommun	The plan does not affect the municipal activities so they do not have anything to state in the issue. They made clear that there is also no obligation for municipalities to plan their own waters, which is now not included in the plan.
First draft Jordbruksverket	No comments.
First draft Sveriges lantbruksuniversitet	No comments.

First draft Åva fiskesamfälligheter	They are against a fishing prohibition in a specific area of the map as it is a good fishing spot for local fishermen and have been that far back in time.
Second draft Traficom	The plan should secure functioning, safe and ecologically sustainable sea transport routes. The routes and needs for sea transport should be taken into account at an early stage when planning offshore wind power areas, and impacts should be investigated. Offshore wind power should not be built on the routes, and there should be at least 1.5 km distance, which is included in the plan. There should be a description of the co-existence. Impacts on navigation, radar systems etc. should be carefully evaluated in further investigations. Routes should be more clearly marked also for future wind developers to take into account. No fish farms should be in the routes. They should be contacted if relevant to specify placement.
Second draft Satakuntaliitto	Emphasis on coordination between Åland and the Finnish side in offshore wind power, professional fishing and fish farms, and shipping.
First draft Trafikverket	No comments. The interests in marine traffic are well aligned between Sweden and Åland.
First draft Stig Abrahamsson (miljöingenjör)	Questioning the method used to map areas for recreation and tourism, and the maps are scarce in this aspect and should be based on other background information.
First draft Sjöfartverket	No comments.
First draft Tillväxtverket	No comments.
First & second draft Hammarlands kommun	First draft: it should be more clear what areas are meant for, for instance for a protected area. What is the protection for? More information is needed to be able to make an assessment. Second draft: They want the Government to still also plan the coastal waters although it was changed from the first draft.
First & second draft Föglö kommun	First draft: The harbours in the municipality should be included. More areas for use of water should be included for a possibility for development. Second draft: No more comments. Hoping that the plan will create possibilities for development of the blue economy.
Second draft Kulturbyrån, kulturmiljöenheten	The plan should have still included the inner coastal waters to fulfil the legal purpose of mapping current and future activities and the preservation of maritime culture heritage.
First draft Havs och Vatten myndigheten	Positive to wind power for fossil free electricity production, but impact on nature values and other activities has to be assessed. Important to limit polluting substances in the Baltic Sea.

Second draft Individuals and organizations *(Quote 4)*	The first draft of the plan passed unnoticed. Outlining a few specific areas on the northwest of Åland that should not be used for commercial activities such as fish farms or wind farms due to the environmental impact. Protected objects are not taken into consideration. There are important areas for small scale fishing and cultural heritage that should not be near any fish farm or wind farm. The north of Åland has a lot of preserved nature with a rich birdlife which wind power could have a negative impact on. Wind power should be further out to the sea.
First draft Miljö och Marinbiologi & Husö biologiska station (Åbo Akademi)	Focus on sustainability. Especially the area south of Åland for OWF has to be re-evaluated due to a nature protection area. There has to be more clear limitations for fishing. Add more information in the map. Fish farms should not be included or at least much more limited due to the environmental impact.
Second draft Föreningen Sälskärs Fyr r.f. *Quote 5*	The plan is not according to the goals for sustainability. There should not be more fish farms and not in the clean waters. It is not fair to destroy the environment for economic gain or job opportunities. Especially the area Sälskär should be protected due to environmental and cultural values.
First & second draft Saltviks kommun	First draft: First stating: The plan is good and does not affect municipal decision-making rights. However, Rannöarna should be included in the culturally valuable area instead of tourism and recreation. Emphasis on that the right for individuals to move and be active in the archipelago must not be affected. Adding new suggestion: Should be outside 4 nautical miles. And like other Municipalities with experience about planning on Åland have not been formally included and will not establish the plan. Water owners have not been heard. Local perspective has to be included to benefit the archipelago and tourism. The plan should thus only concern the area outside municipal and private waters. Second draft: The plan does not affect municipal activities now. However, municipalities are not obligated to plan the water areas. They felt heard.
First draft Vårdö kommun (Byggnadstekniska nämnden)	Plan should be moved from Åland's territorial waters to Finland's economic zone.
First & second draft Sunds kommun	First draft: First from building committee: It is necessary with new fossil free energy sources for emission reduction obligations. Wind power has better conditions at sea, which is why it is useful to have it in the plan. Cultural areas should be marked. New statement: plan should be

	moved outside territorial waters to the Finnish economic zone. Second draft: Still proposed by municipal director that the plan should be moved outside territorial waters to the Finnish economic zone, but decision that is the Government's authority to plan areas outside municipal areas.
First draft Individual	Concerned about the marking of private areas in the map and what it could mean in the future.
Second draft Äppelö bys land- och vattensamfällighet	The areas for fish farms and windfarms in the northwest of Åland are a direct threat to the untouched nature and unique environment with rich birdlife there. If the birds are going to stay there it is important that it is not disturbed. Fish farms are polluting the sea and has negative impact on the environment. Wind turbines will disturb both the visual landscape and species and habitats in the maritime environment north and northwest of Äppelö. It is unacceptable from a sustainability point of view to reserve areas for these activities in one of the most unique and untouched waters. These areas around Äppelö should be removed.
First draft Geta kommun	The Government should set advisory meetings with local actors in Geta and take their opinions into consideration. There should also be an information and discussion meeting for the public. Geta is positive to the marking of many areas in Geta as culturally valuable areas. These values could be further specified.
First & second draft Geta kommun	First draft: The plan should only include the areas demanded by EU. It is crucial that the interests of water and fishing communities are investigated and included. The plan should be revised regularly and conflicts should be reassessed. Individual rights should also be taken into consideration. Second draft: The earlier material used for planning municipal areas should be available to the municipalities so that it is not wasted. Then they can use it in their own municipal plan if they want.
First & second draft Miljöministeriet	First draft: Important with cooperation between Åland and mainland Finland. There is for instance a lack of information about porpoise. Areas for energy production have to be far enough from areas with seals. More species have to be taken into account, including birds. In the other document about the blue economy it is stated that the water quality is good which is false. Regarding local opinions some of them differ from research and research and laws should be

	followed. They want further cooperation after public hearings. Different units: The bad status of the sea should be considered to a large extent. Pollution from fish farms also move through borders and it is thus important to inform the mainland side about issues like these. Second draft: It is important to also coordinate the coastal areas for the ecosystems and sustainable use, so the whole territorial water is wished to be included to better coordinate different sectors/economies. Åland does not reach the target of 10% protected areas. Information about under water is lacking. The southern area is problematic for military and other radar equipment and activities like these have to be coordinated. Plans in neighbouring countries should be taken into consideration.



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