

## Article

# Under the Surface: Climatic and Societal Challenges in Marine Spatial Planning in the Westfjords of Iceland

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**Abstract:** As the global climate is changing dramatically, the Westfjords of Iceland are facing a multitude of challenges, including changing weather patterns, sea level rise, and invasive species. In order to cope with the recent climatic changes—many of which present great uncertainties to livelihoods—strategies must be developed to plan and adapt for the future. Iceland has recently launched marine spatial planning (MSP) endeavours, and one of the first planning processes has been conducted in the Westfjords. MSP presents opportunities for authorities, stakeholders, and the public to come together to forge a sustainable path ahead for marine areas that are under increasing pressure from human activities. However, MSP comes with its own considerable challenges as it attempts to engage stakeholders and the general public in decisions about an ‘invisible’ space largely beneath the surface of the sea. In this paper, the uncertainties of the environmental changes will be explored in conjunction with the multitude of societal challenges to coastal and marine planning in the Westfjords to establish Iceland’s unique context for MSP and to make recommendations for its development. Data from the planning documents as well as from semi-structured interviews and a workshop conducted in the Westfjords will be analysed and discussed. The results show both an urgent environmental need to take action to adapt to ongoing climate change effects and a complex societal structure that favours those who already have power and influence over others. Our recommendations include reforming the Icelandic MSP process with a view to strengthening the public participatory channels as well as the transparency, trust, and accessibility of the process.



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## 1. Introduction

In order to assess the only recently launched MSP in Iceland, an analysis of both the environmental and social context is necessary. Although MSP is conducted globally, local contexts, governance systems, and geographies differ to such a degree that the use of copy-and-paste approaches to MSP does not work. This study, therefore, seeks to establish both the environmental and societal factors that influence the process of MSP in Iceland, as well as to identify the potential pitfalls and obstacles and to make recommendations based on those results. This paper examines planning practices in an Arctic community that, for the first time, is attempting to mitigate the effects of climate change while also striving for sustainable economic development using the resources of the sea. MSP is inextricably linked to the processes of environmental changes, human resource use, and the socio-economic impacts of climate change. In order to make sustainable decisions for MSP, these complex processes need to be considered.

### 1.1. Environmental Changes and Marine Spatial Planning in the Westfjords of Iceland

Globally, coastal communities are under severe pressure from climate change, leading to sea level rise and increased storm events, as well as ocean temperature increase and

acidification [1–3]. Since the polar regions are warming faster than the regions in the lower latitudes [4], coastal communities in the High North are among the especially vulnerable populations. The Westfjords of Iceland are situated just below the Arctic Circle and are characterised by steep mountainsides that plummet into deep fjords, small coastal settlements, and harsh weather conditions. Livelihoods here are inextricably linked to ocean resources, with cruise tourism, fisheries, fish farming, and shipping as the prominent economic sectors [5–8]. To ensure the existence of resilient communities with a sustainable future, the marine and coastal spaces that the inhabitants depend on need to be carefully planned. The terms marine spatial planning (MSP), integrated coastal (zone) planning, and marine planning are used differently by various scholars and practitioners, but they all describe the planning processes of defined ocean spaces that often also involve the coastal zone and its activities. This paper will use the widely acknowledged scholarly term MSP throughout. However, in Iceland, the term *haf- og strandskipulag* (coastal and marine planning) is used by the planning authorities to describe this process [9].

Planning is inextricably linked with its geographical location [10], and its localities' environmental conditions. Planning the coastal and marine space is highly complex: the environmental conditions can be difficult with unpredictable weather, hazards like floods, avalanches, and landslides, thawing permafrost, ocean acidification, and species shifts. MSP aims at enabling the ecosystem-based management of oceanic resources, meaning that the health and functionality of entire ecosystems, not just singular species, must be considered [11–13]. The first joint ministerial declaration of the Baltic Marine Environment Protection Commission (the Helsinki Commission, HELCOM) and the OSPAR Commission for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR) [14] formulates that this ecosystem approach is markedly different from the previous traditional sectoral approaches to marine management. It recognises the world's oceans as vital for supporting all life on Earth, as well as acknowledging marine ecosystems as intricate systems and “an interlocking network of ecosystems” [14] (p. 1). Crowder and Norse [15] postulate that managers cannot assume that marine ecosystems will recover when stressors are reduced, as they are multi-faceted systems with complex processes.

On the other hand, planning does not only have to take into consideration the natural complexities of the area and its best resource use, but it is also a political process that involves communities, governments, and stakeholders. MSP attempts to bring together varied interests and ensure the best decisions are made representing the public. However, MSP processes are conducted within well-established hierarchies of power.

### *1.2. MSP from a Participation Perspective*

MSP processes are more sustainable and more likely to be accepted by communities when broad public participation is ensured throughout the process [16]. The wide-ranging participation of citizens is necessary for a joint outcome and to fully reap the benefits of MSP [17]. Broad participation is vital to MSP for generating community buy-in, fostering justice, integrating local knowledge, and generating ownership, transparency, and trust, as well as establishing networks, building capacity, and raising awareness of environmental issues. In reality, a lack of resources often results in limited participation opportunities for communities [18]. Top-down processes of consultation are more common than any two-way communication. Domínguez-Tejo et al. [19] found that social connection to the sea is an aspect that is not equally considered in planning practice. In fact, there is an overriding prevalence of economic values and a minor consideration of conservation issues that dictate MSP processes. Even if an MSP process allows a wide range of community members to engage, there remain many challenges to effective and just participation, such as underlying power inequalities, a lack of trust, and ineffective governance [20,21]. Flannery et al. [22] warn of the dangers of exclusion and barriers to participation, which can lead to irritation in participants and the public, as well as jeopardizing the legitimacy of the entire process. Thus, MSP operates within already established social hierarchies, norms, and contexts. These aspects must be carefully considered when introducing MSP to Iceland.

This study investigates the climatic and societal contexts and what challenges they bring to MSP in Iceland. This paper begins to establish the governance and environmental context in which the recently launched MSP endeavours operate. It will then present the Westfjords of Iceland as a case study to describe the findings.

## 2. Materials and Methods

A literature review was conducted as a first step in the study, contextualising the environmental and societal context of the newly launched MSP process. The literature consulted includes scholarly articles and academic and non-academic literature, as well as documents pertaining to the MSP process led by the planning agency.

In addition, semi-structured interviews ( $n = 48$ ) were conducted in the Westfjords. The main purpose of the interviews was to study the scope and depth of public participation in Icelandic MSP. The interviews were recorded and transcribed. The transcripts were coded, and the overarching themes were established and allocated using the qualitative analysis programme MaxQDA. The main analysis of these interviews, as well as further interviews from other case study sites in the Eastfjords and Skjálfandi Bay, are disseminated by Wilke [23]. However, during the process of these semi-structured interviews, larger themes beyond participation in MSP came to light, and these are the focus of this paper.

A public workshop was conducted on 5 May 2021. It was originally planned as an in-person meeting and envisaged to be repeated in several locations across the Westfjords to meet and talk to community members from all corners of this large region. However, COVID-19-related restrictions limited public gatherings at the time of data collection and made it necessary to re-arrange the event to an online meeting through Zoom, thereby giving all localities access to the same virtual space simultaneously. In an attempt to reach as many people as possible, the workshop was advertised both with printed flyers and online (in Icelandic and English), as well as being recorded and made publicly accessible afterwards on Facebook, a popular communication platform with many active local groups in Iceland [24,25]. The workshop consisted of a presentation of the status of the ongoing planning process and a subsequent discussion where attendees could ask questions, leave comments, and voice any concerns.

## 3. Results

### 3.1. Academic Literature

#### 3.1.1. Climate Change in the Arctic

As a result of human-induced global warming, the Arctic is undergoing unprecedented changes. Even if global warming is limited to 2 °C, the Arctic is expected to experience feedback loops that result in an average temperature increase of around 4 °C [26]. These feedback loops are caused by increasing sea and glacier ice loss, less snow, melting permafrost, and rising ocean temperatures [4,26,27]. Overland, Wang and Box [28] found that the Arctic is, in fact, responding in a coherent way to a system of change and that this response has been distinct since 1990 and has accelerated until the present day. Box et al. [29] also mention “cascading effects” (p. 13) for different Arctic climate indicators that interlink and affect one another; for example, the declining snow cover and decreases in land and sea ice masses affect their respective habitats, i.e., for polar bears and different whale species. Warming, glacier melt, and more precipitation as rain (instead of snow) are linked to changing river discharge dynamics and the warming and freshening of the Arctic Ocean. This affects marine ecosystems, for example, shifting habitat conditions for Arctic zooplankton, which, in turn, impacts the whole food web [30]. Filbee-Dexter et al. [31] found that Arctic kelp forests, which provide substrates, habitats, and vital food sources for a multitude of marine organisms, are generally positively affected by rising temperatures and reduced sea ice cover but are generally negatively affected by reduced salinity and the increased turbidity of seawater. They conclude that kelp forests in the Arctic are likely to change, and the degree of change is highly dependent on the exact locality and its context. However, it is likely that non-endemic kelp species adapted to boreal, slightly warmer,

North Atlantic conditions, will spread, whereas originally ice-adapted Arctic species will recede [31], thus potentially affecting a large variety of marine species.

As well as a greening of the Arctic, overall drier and warmer air correlates to increased lightning ignition, which increases the risk of Arctic wildfires [29]. Another effect of warming is linked to the carbon cycle as there are “substantial organic matter stocks of carbon in the Arctic contained in permafrost” [29] (p. 13), which are released into the atmosphere as permafrost thaw events continue. Overland, Wang, and Box [28] highlight the increase in air temperature, specifically in the winter seasons, as well as the increased sea ice loss during the summer seasons, as ongoing trends. All of these changes, and their multiplying and cascading effects, are changing the Arctic ecosystems in an unprecedented way [26,30].

In order to adapt to these unprecedented changes, many of which will have unpredictable effects on ecosystems and societies, immediate intervention is required [26]. Thomas et al. [30] emphasise that (a) society is not prepared for these rapid changes and does not know how to manage and mitigate their effects and (b) that the effects of Arctic climate change will not be limited to the Arctic, and they will be felt far beyond the Arctic realm. Thus, the Arctic may be one of the locations in which implementing the 17 UN Sustainable Development Goals (SDGs) approved by all member nations in 2015 is most important [32]. It has been proposed that specific Arctic-focused indicators and frameworks are required to boost their relevance for the Arctic setting and have real-world implications in the region [33,34]. On the ground, towns, organisations, and governments have promised to strive toward the SDGs to ensure the Arctic’s long-term viability.

### 3.1.2. Climate Change in Icelandic Waters

In Iceland, some favourable short-term effects are expected on land, for example, for agriculture [35], along with a longer growing season and increased vegetation cover [36]. However, Iceland is also experiencing more mid-winter thaw events, which deteriorate roads quicker [35] and destabilise mountain permafrost [37] with potential impacts on carbon release. The melting of polar sea ice is partially seen as an opportunity for increased shipping and trade options in the future. Through the rise in temperatures, Iceland will also see an increase in the melting of glaciers that are said to disappear within the next 200 years [37,38].

Iceland’s marine life is characterized by high primary production. Thus, a high abundance of phytoplankton provides oxygen and a food source for other marine organisms [39]. Although warming waters might increase ocean productivity, acidification will harm oceanic life [35]. Iceland’s oceanic waters are a mix of waters of Atlantic origin that are warmer and more saline and Arctic waters that are colder and fresher. Although, in the past, Arctic water masses dominated the Icelandic waters, the last 20 years have been dominated by the Atlantic water masses [39]. The changing conditions have had impacts on the distribution of several fish species, such as haddock, ling, anglerfish, and tusk, which have spread north from Southern Iceland (clockwise) along the Icelandic shelf. Additionally, “warming waters has led to a decline in the stock abundance and distribution of many cold-water species, while the previously rare occurrence of warm-water species in the ecoregion has increased in recent years” [39] (p. 2). While there were multiple shifts in pelagic fish stocks, some of the most impactful events have been the collapse (and subsequent partial recovery) of the Icelandic herring stocks after 1960, the arrival of large numbers of mackerel from Norwegian waters in the mid-2000s, and the simultaneous westward shift of capelin feeding grounds towards Greenland [40].

Sandeel populations have been on the decline for potentially 20 years, with negative consequences for Icelandic fish and seabirds dependent on this important food source [36]. The breeding populations of Brünnich’s guillemot, common guillemot, razorbill, Northern fulmar, kittiwake, European shag, and puffin have all declined in the last decades [40]. Additionally, the coasts and rivers have seen a variety of invasive species that have taken hold in Iceland. A total of 15 non-indigenous species have been identified by Henke,

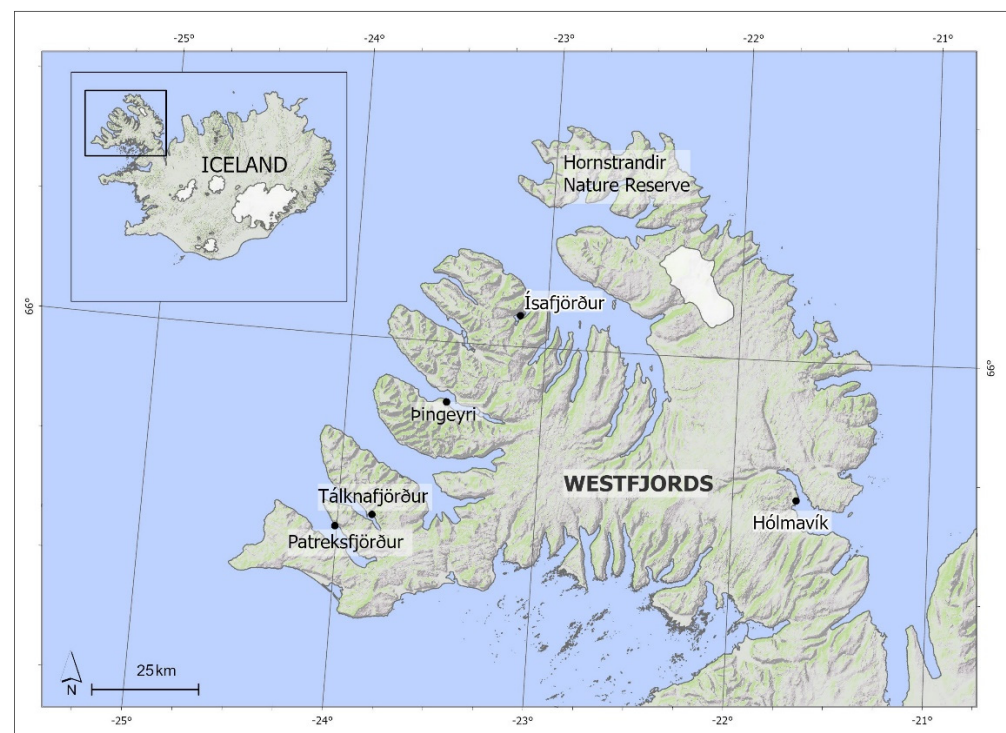
Patterson, and Ólafsdóttir [40], six of which can be categorised as invasive or potentially invasive. In particular, they found that the nursing grounds of the invasive European flounder overlap with that of the native European plaice in the West of Iceland, potentially leading to competition for food and habitat [40].

### 3.1.3. Climate Change in the Westfjords

Illustrating the local patterns and impacts of climate change is one way to induce change and increase attention to global warming. A first localised study was conducted to map climatic changes with the help of meteorological data from the Westfjords in 2022 [41].

The Westfjords region of Iceland is a large peninsula located in the country's far northwest (see Figure 1), distinguished by steep mountain slopes, deep fjords, and sparsely spread settlements. Ísafjörður is the biggest town, with a population of roughly 3000 people. As a result of climate change, the Westfjords are warming. According to Bannan, Ólafsdóttir, and Hennig [41], practically every month from 2001 to 2020 had higher temperatures than the 1961–1990 reference period, with a greater temperature differential in the winter months compared to the summer. Precipitation has also risen since the reference period. These findings are in line with much of the Arctic climate indicators, as are many of the consequences, such as the following:

- The retreat of the glacial ice of the local Drangajökull and the Greenland ice cap, freshening the oceanic water masses;
- The warming ocean waters and observed changes in fish stocks with implications for fisheries;
- The increased vulnerability of farmed fish to sea lice and increased risk of disease transmission from farmed to wild salmon in warmer waters;
- The population decline of seabirds, such as puffins, which has been linked to the reduced availability of sandeel as a food source;
- Increased pressure on Arctic fox populations, Iceland's only native land mammal, as their habitat changes rapidly. Arctic foxes are protected in the Hornstrandir Nature Reserve in the Westfjords [41].



**Figure 1.** Location of the Westfjords region in Iceland.

A specific local effect in the Westfjords that potentially has the most immediate consequences for local communities is the increase in slope processes. Due to the steepness of slopes in the Westfjords, avalanches, landslides, and other debris events are more likely than elsewhere, and increased temperatures and more frequent thaw events mean that there could be a potential increase in such events, endangering the infrastructure, settlements, and outdoor activities [41]. The recently initiated MSP process in Iceland's Westfjords must reconcile the changing environmental conditions with the many human activities that occur in the coastal and marine areas.

### 3.2. Societal Context for MSP in the Westfjords

#### 3.2.1. Academic and Non-Academic Literature

The MSP process in Iceland is characterised by its novelty, its complexity, its focus on the aquaculture industry, and, in particular, its simultaneity with the COVID-19 pandemic, as well as little public participation in decision-making and subsequent media attention.

Icelandic planning has developed in the terrestrial and urban sphere, historically focussing on improving the well-being of the capital's population from the 1910s, undergoing a turn towards environmental goals in the 1990s and lately focussing on economic concerns since 2010 [42]. This urban planning has spread throughout the country and is generally carried out by local municipalities that operate under national planning frameworks [42]. In the marine space, however, coastal municipalities only have jurisdiction up until 115 m outwards to sea. Until recently, the use of marine resources beyond that limit had not been regulated by planning. However, there have already been some academic, as well as practitioners', forays into the realm of MSP in the Westfjords in particular.

In 2009, a management resource plan was proposed by a collaboration of local and regional actors [43,44]. It covers the whole Westfjords region and details the gaps in the management of specifically marine resources, stating that municipal power in decision-making remained weak and management often occurred in sectors rather than holistically. It is the first document published with the intention of cross-agency collaboration to plan the marine space. By 2013, a community-driven, bottom-up operation had been established in one of the bigger fjord systems of the Westfjords, Arnafjörður [45]. Local municipalities and regional agencies worked together with the public and created the first ever marine spatial plan, which included different zones for various marine activities. A second pilot plan was launched in another large fjord system, Ísafjarðardjúp, in the north of the Westfjords [45]. However, limited funds halted this operation [46]. The main issue encountered by the bottom-up, locally developed plans that were created then was that they lacked a legal basis as Iceland did not have marine planning legislation then, and no national governmental organisation had been part of the planning group. Therefore, they were not considered legally binding [46].

An academic study [44] had, by then, confirmed the need for effective and adaptive MSP in the Westfjords, relating it to the region's long history in marine resource use, their dependence on fisheries, and a fast-growing aquaculture sector coupled with the lack of existing plans and limited municipal decision-making power out at sea. Sullivan [44] mapped marine user conflicts as well as recommending a thorough MSP process, including the establishment of a Westfjords coastal zone manager to lead and co-ordinate the process within the region. Another study highlighted the importance of stakeholder engagement, with a broad definition of stakeholders: those affected by any MSP endeavour [46]. Both studies highlighted the local municipalities' wish for more agency in marine decision-making and their apprehension about a national government-led MSP process [44,46]. Additionally, Lehwald [46] showed that local stakeholders were willing to participate in MSP and wished for inclusion in the decision-making process.

In 2018, the Icelandic parliament passed Law 88/2018 on the planning of coastal and marine areas [47], and the first marine spatial plans commenced in 2019. Due to the seaward limits of municipal jurisdiction, the national planning agency (Skipulagstofnun) became responsible for MSP. The Westfjords and Eastfjords of Iceland were the first areas

chosen to undergo MSP [9]. Both regions are marked by mountainous coastlines and sheltered fjords that favour multiple oceanic uses, such as fisheries, cruise, cargo and ferry shipping, and, most recently, the advent of the rapidly growing aquaculture industry. In each region, a regional council consisting of eight members was appointed by nomination from various ministries and associations as a working group creating the plan proposals. In addition, the Minister of Environment and Natural Resources appointed a local consultative group, with members nominated by different associations in the fields of business, tourism, environmental protection, regional council, and outdoor activities [9].

Three stakeholder meetings were held by the planning agency with representatives from different economic sectors. Each group was met just once in the data-gathering stage of the process.

Public engagement was conducted through an online tool at the beginning of the planning process in 2019, where citizens could access an interactive online map and mark areas of importance, concern, etc. This application was found on the Hafskipulag.is website. The COVID-19 pandemic had considerable effects on the timeline and practicalities of delivering the plans, as well as impacting much of daily life and especially the social spheres of life in the Westfjords [48]. For MSP, this meant that any public meetings were not possible during some of the periods they could have been planned for, as well as a major delay in publishing of the plan proposals. Additionally, after the national elections in the autumn of 2021, the overall responsibility for MSP changed from the Ministry of Environment and Natural Resources to the Ministry of Infrastructure in December 2021. Subsequently, a new regional council was appointed for the Westfjords and Eastfjords MSP, respectively, in early 2022 [9]. During this delayed phase of plan creation, no alternative horizon for the delivery of the plan proposals nor dates for public consultation meetings were stipulated. This information only became available in mid-June 2022 when the plan proposals were made public and the legally required period of public consultation began (15 June to 15 September 2022).

Announced on 15 June, three public meetings were held in the Westfjords in the space of two days (22 June in Bíldudalur and Bolungarvík, and 23 June in Hólmavík), with just over a week's notice [49]. These meetings were held to introduce the proposed plan to the local communities. Similarly, in the Eastfjords, two public meetings for 27 June (in Fáskrúðsfjörður) and 28 June (in Seyðisfjörður) were announced on 15 June [50]. A final public meeting to introduce the proposed plans was held on 9 August in Reykjavík, recorded and put online on the Hafskipulag website [49]. Apart from these meetings, members of the public could visit the website and leave comments there. In December 2022, after the official consultation period was finished, a document was published with reactions to all the written comments received, and a final version of the plan was subsequently approved by the regional councils both in the Eastfjords and Westfjords.

On 2 March 2023, the proposed plans were signed by the Minister of Infrastructure to become legally binding documents. Shortly before, however, the National Audit Office had published a report on the state of the aquaculture industry in Iceland, a document commissioned by the Ministry of Food, Fisheries and Agriculture and directed at the Icelandic parliament [51]. In this report on fish farming, the shortcomings regarding regulating the aquaculture industry and its licenses are discovered, and all relevant agencies, such as the Environmental Agency, Planning Agency, Icelandic ministries and political representatives, Marine Research Institute, etc., are strongly criticised for not doing enough to regulate this fast-growing industry [51]. In the following days, the topic of the fish farming report, and also the MSP process, featured heavily in the media, voicing strong reactions from different sides of the argument. Due to the rapid growth of the aquaculture industry in a short time, the authorities are reportedly unprepared to implement and monitor regulations properly, resulting in an ineffective regulatory system that leaves room for uncontrolled growth [52]. Representatives from the Marine Research Institute, for example, stated they were relieved that this issue is now in the public debate as the agency had been underfunded to handle the situation [53]. An ethics expert requested a deeper

investigation and accountability for this situation, comparing it to the parliamentary crisis after the financial crash in 2008. A member of the Arctic Salmon Trust is cited as stating that political corruption as one of the main issues at hand [54]. The Icelandic Environment Association (Landvernd) wants any further licensing of aquaculture projects to be halted until these issues have been resolved [55]. These are just some examples of the many strong reactions that this report has triggered. As opposed to the beginning of the MSP process, decisions about the marine space where aquaculture specifically takes place were suddenly much more in the public eye.

### 3.2.2. Workshop

The workshop was held on Zoom in the late afternoon on 5 May 2021 to make attendance possible for working professionals. In total, 43 people attended the online meeting. Up until that point, there had been no public meetings by the planning agency or the local committee to inform citizens. This is why, rather than a workshop whereby the participants create something or synergistically work towards an outcome, many participants used this meeting as the first source of information on the MSP process. Many were unaware of the ongoing MSP process in their local area. They lacked key information on what was being planned, who the main actors were, what the process looked like, and what their avenues for engagement were. After delivering as much information as possible on the MSP process and pointing out the existing information channels, like the Hafskipulag website, the meeting presented an opportunity for the attendees to ask questions and voice any comments and concerns they might have.

Some of the topics covered here showed that there was considerable confusion as to the scope of the planning process, as its exclusion of fisheries was discussed. The current MSP process does not apply to or interfere with commercial fisheries management, which is regulated by its own quota system. Since the public had little information on the proposed MSP process, many did not understand why fisheries, in particular, were not covered by a marine plan since they represent one of the main marine industries with obvious stakes in the marine space. Others had questions as to how much citizens could engage with the process and whether their opinions would matter.

The theme of participation permeated this public meeting as well, with attendees voicing their previous experiences and opinions: one bottom-up barrier was identified in that the general public in Iceland might not be very willing to engage in any participation activities or participate too late in a respective process. Workshop attendees stated that it is not commonly taken up much, partly because of some negative experiences with on-land planning. So-called “yellow-post-it-notes-meetings” were not popular, meaning when a facilitator asks local people to write down their concerns or wishes, people fear that these are simply thrown away. The workshop attendees also commented on the tendency of many citizens to only enter into any of the planning processes in the later stages when it is too late to influence decisions. Several top-down barriers were also identified, especially how people would be put off by the superficial participation strategies offered by the planning actors that do not seem to take their opinions seriously. Workshop attendees described quick participation fatigue if people had the feeling that they could not actually make their voices heard. However, there was also an acknowledgement of the fact that effective public participation is very hard to do: “I think we [in Iceland in general] are still kind of trying experimentally how to do public participation. And [ . . . ] it’s just like, turns out to be a bit fake, or people feel that or, and it’s kind of difficult to do it.”

### 3.2.3. Interviews

Through the semi-structured interviews, the interviewees had the opportunity to cover topics that they were particularly knowledgeable about or wanted to discuss in more depth. The interviews range from casual conversations to two-hour-long semi-structured interviews. The themes presented here are solely those that came up in addition to those already described under the workshop and literature sections.



One theme that permeated many interviews in the Westfjords was the power of the few, describing instances where the interviewees made points that emphasised that only a few people are involved in decision-making. For example, one interviewee voiced concern over “powerful people doing planning in secret”. This sentiment was also shared by an interviewee who talked about the selection of stakeholder groups: “[You get a] skewed view of the problem, you only need two or four eloquent, strong-willed people for bias. It doesn’t represent the people”.

Although the topic of corruption was much more pervasive in the Eastfjords [23], it was also mentioned in the Westfjords interviews, with interviewees voicing concern over corruption in marine industries and affairs. Several interviewees stated that corruption was a largely accepted part of many decision-making processes.

When asked why corruption is not reported to the authorities or to the local news, one interviewee replied: “Oh, you mean to Aquaculture News? That’s what we call it”, implying that local news outlets are part of the corruption and bias towards the unchecked development of the aquaculture industry. This code did not, however, always relate to marine industries only, and comments were also made that suggest some elected representatives and decision-makers at various levels are seen as corrupt.

One related topic that several people talked about concerns the perception that Iceland is, as has historically been the case for centuries, principally ruled by an Icelandic clan system of powerful families: “But in planning, there are always a few very influential family clans that have power”. This sentiment was voiced in relation to planning but also in relation to general politics and decision-making.

#### 4. Discussion

The findings from this study into the contextual factors surrounding MSP in Iceland illustrate that both environmental and societal factors play a part in its complexity. The Westfjords are a remote region just below the Arctic Circle and are already experiencing the effects of climate change in terms of rising temperatures, increased storm events, species shifts, and a decline in many marine species populations. Although the short-term effects of warming might be partially positive for Iceland, the long-term effects of disturbed ecosystems are concerning and require immediate action.

In the societal sphere, Iceland presents a unique case whereby decision-making in the remote marine space is presided over by national agencies, the national planning agency, and the Ministry of Infrastructure, both of which operate out of the capital. This contradicts the common municipal or intermunicipal approach that permeates terrestrial planning. Thus, it is not unsurprising that the residents of local municipalities and the municipal actors themselves wish for more inclusion in the decision-making process regarding their local marine areas. This presents challenges for MSP in Iceland as a unique societal context that is characterised by a lack of jurisdiction in marine affairs by local municipalities, a fast-growing aquaculture sector, and a politicised experience of previous planning.

The numerous instances of workshop participants and interviewees being unaware and uninformed of the entire MSP process echo a study by Flannery et al. [22], in which they warn of the dangers of exclusion potentially leading to irritation in local citizens. They describe barriers to participation, both from the top-down as well as bottom-up directions, which were also found in this study. Flannery et al. [22] conclude that in some cases, these barriers and non-participation can call into question the legitimacy and jeopardize the entire MSP process.

This study on the environmental and societal context of MSP in Iceland is part of a larger field of research on Icelandic maritime governance, which has historically placed a strong emphasis on fisheries management. It is within this context that this research and the societal aspects that are studied must be seen. In the years preceding 1990, the fishing quota system was revised to combat overfishing and increase the sustainability of Icelandic fisheries [9,56]. By allocating a total allowable catch (TAC) per species and making it possible to sell quota decoupled from a vessel or its port, fishing rights were de facto

privatised. While the individually transferrable quotas (ITQ) were deemed economically and ecologically successful, their socio-economic effects were widely felt. They included a concentration of fishing quota in urban rather than rural areas and left many remote coastal communities vulnerable [8], widening the gap between large and small fisheries and raising the perceived corruption risk [57]. In their study on the power dynamics of various stakeholders in Icelandic fisheries policymaking, Kokorsch, Karlsdóttir, and Benediktsson [58] found that the amount of power of local communities, in particular, had decreased after the implementation of the ITQ system. Gisladdottir et al. [59] discovered that in Icelandic fisheries, the enforcement of the regulatory legislation was thought to be insufficient, causing concerns about transparency. Further, Chambers and Carothers' study [56] highlights that small-scale fishermen in remote fishing communities lack influence over fisheries policy, mistrust institutions and feel discontent with decision-making processes. The remote coastal communities in the Westfjords, which are the focus of this study, are still impacted by the long-term effects of these earlier marine policies. It is, thus, in line with this earlier research on fisheries and marine governance that one of the prevailing themes that concern coastal communities is corruption in decision-making and the consolidation of power in the hands of a powerful few.

These sentiments have now come to light at a more public scale than before in marine affairs due to the publication of the National Audit's Office on the state of the aquaculture industry [51].

Inequalities are a serious barrier to participation in MSP, and several theories and case examples of participation flag trust as an important issue [20,22]. Tait and Hansen [60] describe a wide-ranging crisis of people's trust in governments as well as in planning. This crisis of trust is especially noticeable in regional planning because of the contested and ill-defined role of regions. When failing to engage communities, regional planning becomes biased towards powerful groups and fails to get citizens 'on board'. Hansen [61] emphasises the importance of local culture and identity in planning from case studies in Denmark, where he studied the differences in planning culture among different communities. Thus, top-down projects managed by central powers do not do justice to local planning needs and identities. These findings are similar to what was found in the present research in Iceland, with local community members and municipalities expressing discontent with being governed from afar and expressing mistrust in national authorities. The lack of regional governments and planning mechanisms in Iceland makes regional planning, as was conducted in the Westfjords marine areas, challenging.

Falleth and Nordahl [62] discovered that in Norway, specifically, municipal planning is based more on market-led processes rather than public participation and the deliberation of alternatives. They explain this tendency with the emergence of an informal planning process that establishes itself years before official planning even starts, with developers acquiring property, considering the market, and raising funds in collaboration with public planning authorities, thus establishing a position of power for influencing decision making and lobbying in future planning. Consequently, lobbying is perceived as more influential in planning than traditional participation [57]. Since this type of lobbying begins long before the official planning process, "it is unclear when the formal [planning] process begins and when the formal participation rights, such as information and announcements about the planning, come into play" [57] (pp. 98–99). This makes local governments dependent on private actors and their market deliberations, leading to a dilemma for politicians who end up "torn between their roles as elected representatives for their local inhabitants and their dependence on private actors" [57] (p. 100).

Although this example describes Norwegian municipal planning on land, this case can help explain the findings of the Icelandic MSP process in that market considerations seem to play a significant role in how the plans turn out, and many interviewees pointed towards the industry interests of aquaculture companies in particular. Although the marine space cannot be claimed in the same way as a land-based territory through ownership, aquaculture results in a comparable spatial occupation of marine areas because of their

fixed pens and installations. Once fish farms have been established, other uses cannot occupy the same marine space. This is in stark contrast to many other marine industries and uses present in the Westfjords of Iceland, such as cruise and cargo shipping and fisheries and recreation, which are all highly mobile activities that can accommodate one another in many ways even when using the same ocean space.

Coastal zone planning (CZP) in Norway has been long established and, similar to MSP, consists of a process of planning, mapping, and allocating zones of activities to coastal or marine areas. Norwegian CZP went from a process carried out by external professionals with little to no participation to a more democratic process over the course of numerous iterations: as an example, municipal coastal zone plans in the Tromsø region from the late 1980s focussed mainly on fisheries and were inadequate to accommodate the rapidly changing developments, particularly in the aquaculture industry. Hence, new plans were commissioned in the 1990s. However, these plans were rapidly created by consultation companies without public participation [63,64]. Subsequently, a full revision of the plans was conducted until 2015. In 2020, intermunicipal plans were updated again due to environmental and coastal zone use changes, for example, in the collaborating municipalities of Tromsø, Karlsøy, and Balsfjord [65]. Coastal planning and adaptation to the evolving marine ecosystem are important in northern Norway, with municipalities having significant authority over the process whilst simultaneously incorporating much more public participation than in previous decades. In the recent revision, municipalities led the planning, while a county-level co-ordinator facilitated communication among different actors, authorities, and participants [66]. Icelandic MSP might benefit from studying the Norwegian processes in depth, as aquaculture is a similar driver in marine governance and the pressures on the environment and process-related difficulties are comparable.

Another example of an MSP process that could be emulated is the marine plan partnership in British Columbia, Canada [67]. This approach emphasises the integration of Indigenous and traditional ecological knowledge (TEK) into MSP. The process started with the development of local-level First Nations plans, allowing their values and knowledge to guide the discussions before collaborative regional plans were initiated at higher governmental levels. This case study demonstrates the success of participation, but it also underscores the need for careful strategic planning to facilitate it. This nested approach, starting with local-level planning driven by local knowledge and values and then expanding to regional and national scales, could be adopted in other regions, including Iceland.

## 5. Conclusions

Coastal settlements form a large part of the landscape and the culture of Iceland, where they have developed on the shoreline around the exploitation of marine resources. The Icelandic coastal zones are, today, under increasing pressure from a multitude of activities, resulting in competition over the same space and resources for food production, tourism, and recreation, as well as biodiversity, infrastructure, and industry. MSP has been introduced to the Icelandic fjords due to the exponential growth of the aquaculture industry in particular and the pressure it puts both on ecosystems as well as on societies. In Iceland, MSP is especially unique and complex due to environmental and societal contextual factors. Its sub-Arctic location and the first observed effects of climate change indicate that urgent action is needed to better manage marine ecosystems. One of the first MSP processes conducted in the Westfjords of Iceland has been analysed through a literature review as well as through semi-structured interviews.

The MSP participation process has been characterised as passive and unclear by many, which has created feelings of exclusion and discontent towards the planning process. Future MSP processes need a more substantial and detailed participation strategy, and a general overhaul of the process is recommended to improve the creation of trust, establish objectives, including the voices of the local community, and improve the transparency and clarity of the process. Change is also required from the planning agency and their approach to MSP: a more proactive rather than reactive approach to planning the coast

and sea is essential to ensure that the legal framework for the establishment and monitoring of new industries is in place before their launch. The advent of aquaculture to the Icelandic fjords was one of the main contention points in many interviews and has now garnered nation-wide media attention. It will require further study on this ongoing issue to make nuanced recommendations; however, it would be prudent for the Icelandic government and the planning agency to re-evaluate the licensing and monitoring processes of aquaculture enterprises.

The results further indicate the presence of larger societal issues beyond MSP, especially corruption in politics, questioning the legitimacy of aquaculture licencing and industry standards and how MSP supported these tendencies. More research into the relationship between power, decision-making, and the marine environment is required at the various levels of governance and in society.

Further, it is recommend to take the best practice examples from countries with a longstanding history of MSP that have gone through many iterations of trial and error, and to implement those aspects that promise the best results, such as including local and traditional knowledge early on, ensuring transparent and early information and education, ensuring actual power-sharing in the affected communities, and perhaps taking a nested approach with creating local plans before regional and national plans.

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