



Sustainability conflicts in the blue economy: planning for offshore aquaculture and offshore wind energy development in Norway

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Abstract

Blue economy developments entail an industrialization of the world's ocean and coastal areas, placing growing pressures on the marine environment and ecosystems. Moreover, the competition for ocean space and resources increases the likelihood for social conflicts. Marine spatial planning has been presented as a tool that can avoid or mitigate conflicts. However, there is a need for a more thorough analysis of the conflicts linked to the blue economy. The objective of this paper is to analyze characteristics of blue economy conflicts and how they are shaped by the institutional context and sustainability discourses. This study also explores perspectives on conflict management and pathways toward sustainable transformations in marine planning. Empirically, we use two case studies of blue growth industries in Norway: (1) offshore wind energy development and (2) offshore aquaculture development. Through these cases, we take a close look at the established principles and procedures which regulate conflicts. Our study shows how current blue economy conflicts are framed and handled through institutionalized practices of conflict management. Our findings are twofold. First, blue economy conflicts are not easily categorized through common conflict typologies (i.e., user-user, user-environment) but increasingly appear to be sustainability conflicts in which all actors use sustainability as a frame of reference for discussing possible and desirable futures. Second, conflicts are not necessarily a negative social process. In fact, conflicts often uncover unsustainable practices and create potential positive pathways for sustainable transformations.

Keywords Conflict · Blue economy · Sustainability · Marine spatial planning

Introduction

The world's oceans cover more than 70 percent of the Earth's surface, and they are believed to hold vast untapped resources. Today, numerous coastal states and international organizations have formulated their visions for developing the ocean economy and promoting blue growth (AUIBAR 2019; European Commission 2017; FAO 2017; OECD, 2016). Blue economy developments entail an increasing industrialization of coastal and ocean areas, yielding growing pressures on the marine environment. Naturally, the competition for ocean space and resources also increases the likelihood of social conflicts (Voyer et al. 2018).

Therefore, social conflicts are a central theme in the critical literature on the blue economy. In recent years, much focus has been on ocean grabbing and privatization of ocean areas through an increasing number of fixed installations, such as aquaculture facilities, petroleum installations, or offshore wind parks (Bennett et al. 2021; Knott and Neis 2017; Owusu et al. 2023). Blue economy research attention has primarily been directed at implications for small-scale fisheries and fishery-dependent communities, with concerns about displacement, marginalization, and calls for blue justice (Barbesgaard 2018; Foley and Mather 2019; Jentoft and Chuenpagdee 2022; Schreiber et al. 2022).

Less attention has been paid to how marine conflicts play out and can be constructively managed. Yet, marine spatial planning (MSP) has developed as a field in marine policy and practice that could potentially play a central role in mitigating or avoiding conflict (Kyriazi 2018; Pataki and Kitiou 2022; Stelzenmüller et al. 2022). MSP has been framed as a rational tool to achieve coexistence of diverse ocean uses, strongly building on UNESCO-IOC's handbook (Ehler

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& Douvere, 2009) that offers a “step-by-step” approach to MSP. This work emphasizes early mapping of potential conflicts and broad participation so that all stakeholders can gain ownership of the plan. It also distinguishes between two types of conflicts: conflicts among human uses (user-user conflicts) and conflicts between human uses and the marine environment (user-environment conflicts). In the first type, conflicts emerge because of the incompatibility of different uses of ocean areas and resources. User-environment conflicts, on the other hand, emerge when use is in conflict with important environmental values. According to Douvere and Ehler, both types of conflicts can be addressed through MSP. The underlying premise seems to be that conflict is something negative that can and should be avoided through integrated planning and stakeholder engagement (Pomeroy and Douvere 2008).

We believe these assumptions should be questioned as conflicts are not necessarily negative. They can just as well be a prerequisite for, as an obstacle to, sustainable development. As Coser (1956) pointed out, conflicts are often a driving force for social change. They bring to light conditions and arrangements that are not perceived as viable or acceptable, and they prevent political and social institutions from being locked into the status quo. We also believe that the type of conflict may have an impact on the conditions for conflict management. In user-user conflicts, parties compete for scarce resources or space. Such conflicts may be characterized as conflicts of interest. User-environment conflicts often imply clashes between conflicting principles and beliefs. Hence, they may be regarded as value conflicts. Conflicts of interest can usually be resolved through negotiation and compromise, such as in the collective bargaining around salaries between employers and workers’ associations, but value conflicts may be more difficult to deal with, since compromise can be perceived as giving up on fundamental beliefs (Aubert, 1963; Willems 2015). While a good part of the MSP literature is about the conditions for effective and legitimate stakeholder participation (Gopnik et al. 2012; Ritchie and Ellis 2010), there is a need to expand the critical MSP literature (Flannery et al., 2016; Flannery et al., 2018; Saunders et al., 2020) with a focus on the characteristics of blue economy conflicts, the institutional settings in which these conflicts occur, and the institutional prerequisites for conflict management.

The main objective of this paper is therefore to analyze the characteristics of blue economy conflicts and how they are shaped by the institutional context and sustainability discourses. It also explores perspectives on conflict management and pathways toward sustainable transformation. Empirically, we examine two case studies of blue growth industries in Norway—offshore wind and offshore aquaculture—where we take a closer look at the principles and procedures established to regulate conflicts. These two

industries are interesting for several reasons. Firstly, they both represent attempts to avoid existing conflicts on land and in the coastal zone by moving activities offshore, thereby creating new conflicts. Secondly, they are emerging industries, where the institutional framework is partly developed in parallel with the new industries. Thirdly, the conflicts largely take the form of sustainability conflicts. That is, they appear to be a dispute about what and who represents the most future-oriented and sustainable solutions. These cases show the complexity of conflicts to be tackled in marine governance and address the need to more comprehensively analyze how the various dimensions of sustainability interact with each other in marine governance (Gilek et al. 2021).

In the next section, we put the concept of marine conflicts in a larger context and introduce the concept of “sustainability conflicts” related to the blue economy. Then, we describe how we selected our cases and outline our methodological approach. Subsequently, we briefly describe the policy and institutional settings in which these transitions are situated and explore the conflicts related to offshore wind and offshore aquaculture in Norway. Through providing in-depth insights into the conflicts that arise with the planning and promotion of new industrial activity, we highlight how conflicts are articulated and managed and reflect on pathways for sustainable conflict transformation in the blue economy. The study contributes to the Belmont Forum funded project OCEANS PACT, which aims to develop deep insights about various ocean conflicts and investigate the relationship between conflict and sustainability.

Sustainability conflicts

Conflict can be understood as “a continuum of interaction patterns among stakeholder groups” (Ratner et al., 2017) where “two or more parties *perceive* that their goals and/or interests are in direct contradiction with one another and *decide* to act on the basis of this perception” (Bar-Tal, 2011). Conflicts are thus dependent on interpretations and actions. At least one party must define the other as an adversary, determine the contested issue important enough to take action, and act in a way that makes the conflict visible. Conflicts can play out on many levels: between individuals, social groups, and nation-states. Conflicts can also vary in length, intensity, and fierceness. As conflicts are endemic, modern societies have been characterized as conflict societies (Fehmel, 2014). Differences of opinion, disagreements, new ideas, competition, and innovation create a high degree of dynamism, thus generating new social inequalities and challenging established arrangements and incumbent interests. This creates fertile ground for conflicts. Fehmel (2014) discusses conflicts in terms of the first and second order. While first-order conflicts relate to substantial issues,

second-order conflicts focus on procedures and decision-making systems.

Given their prevalence, all societies have developed institutions to domesticate and control conflicts. Important institutions in modern societies are the state's monopoly on legitimate violence, the rule of law, democracy (and the principle of popular sovereignty), the separation of powers, and the protection of basic human rights. Many potential conflicts are therefore avoided by clear and widely accepted rules, laws, norms, and procedures that provide predictability, accountability, and dispute resolution.

In this paper, we are concerned with marine conflicts, a broad field gaining increased amounts of attention (Alexander, 2019; Boonstra et al., 2023; Dahlet et al., 2023; Martins et al., 2023; Stepanova & Bruckmeier, 2013). Marine conflicts are related to oceans and coastal areas, such as disputes over resource access, development rights, and conditions for maritime operations. They may also arise around the distribution of benefits and burdens associated with these activities. In international and/or geopolitical settings, maritime conflicts often revolve around territorial sovereignty and control (Daniels & Mitchell, 2017). Undeniably, marine conflicts can thus be complex. The lines of conflict can run between different users, between use and protection, between different climate and environmental interests, between public authorities and organized societal interests, between different parts of public administration, between political parties, and even between nation-states. Blue economy conflicts typically arise when emerging ocean industries challenge existing resource uses or when stakeholder interests and values are perceived to be at stake. These conflicts can encompass the entire range of conflict types mentioned above.

The blue economy incorporates classic ideas around human control over nature, economic growth, and the ocean as a treasure trove of resources. At the same time, this vision is inextricably linked to the language of sustainability, a language that has been institutionalized before the conception of the blue economy vision. The blue economy vision was first introduced at the 2012 Rio+20 United Nations Conference on Sustainable Development (Silver et al., 2015). This conference dove into the development of the institutional frameworks for sustainable development and deliberated on pathways toward a greener economy. There, the coastal states, especially small island developing states (SIDS), were concerned with promoting the oceans as an essential part of the green economy; hence, the vision of a blue economy was born. They argued that like the green economy, the blue economy should foster human well-being, social equity, ecosystem health, and climate change mitigation. The World Bank (2017), FAO (2017), European Commission (2021), and others have therefore emphasized that the blue economy vision entails the sustainable use of ocean resources

spanning all three pillars of sustainable development—the economic, the social, and the environmental.

In the last decade, sustainability has become an increasingly hegemonic discourse. For example, new business plans, development projects, and political initiatives all need sustainability objectives. The same applies to personal consumption and lifestyle. Sustainable development goals (SDGs) are enshrined in the United Nations Agenda 2030, defining 17 SDGs and 231 unique indicators and envisaging “a world of universal respect for human rights and human dignity, the rule of law, justice, equality and non-discrimination”¹. Indeed, with such a variety of goals, blue economy conflicts can easily transform into sustainability conflicts. When actors are in dispute, they confront each other with sustainability arguments, emphasizing different aspects of sustainability, as seen in many marine conflicts currently unfolding in Norway.

Case selection and methodology

We argue that how conflicts are managed depends on the institutional context as well as on the framing and interpretation of the conflicts by actors in dispute (Hajer, 1995; Van Assche et al., 2022). This understanding of conflict has methodological consequences, as we are interested in the sustainability frames around the emerging blue economy. For the purpose of this paper, framing refers to the collective struggles over meaning that draw from a range of resources, such as media and experience, and works out differently for individuals, groups, and institutions (Vliegenthart & Van Zoonen, 2011).

We use a case study approach to understand sustainability conflicts within the blue economy. Our research approach was iterative and included several steps. The first step consisted of a mapping exercise to chart marine conflicts in a Norwegian context. To pursue this, we established a *dialogue forum*, which consisted of the research team and stakeholders representing eight public and private organizations from the following sectors: offshore energy, aquaculture, fisheries, and delegates representing environmental interests. The first meeting of the dialogue forum provided a basis for the identification of conflicts related to offshore development of three key resources: (1) oil and gas, (2) aquaculture, and (3) wind energy, all *vis-à-vis* fisheries and environmental interests. The latter two (i.e., aquaculture and wind energy) are the focus of this paper, as these can be seen as emerging blue economy industries strongly connected to sustainability objectives, especially in Norway.

¹ <https://unsdg.un.org/2030-agenda/universal-values>

The second step consisted of an analysis of central strategic and policy documents, background studies, and impact assessments. A document analysis is well suited for this study as it enabled us to follow and analyze changes in how issues in marine governance are defined, formulated, and prioritized (Asdal & Reinertsen, 2020). We analyzed written consultation inputs which are a central part of the institutionalized processes of developing new offshore activities in Norway. These publicly accessible consultation inputs provided rich insights into different sustainability framings. Furthermore, we highlighted arguments concerning environmental sustainability, socio-economic sustainability, and equity aspects. Occasionally, actors referred to sustainability explicitly, but more often sustainability characteristics were implicit in their arguments.

As our third step, we conducted six in-depth interviews with various representatives of the offshore energy, aquaculture, and the fisheries sectors, as well as one fishery and aquaculture management agency. The goal of the interviews was to gain insights about perceptions regarding the following phenomena: the drivers and origins of marine conflicts, conflict management, the legitimacy of the consultation process, the possibility to influence outcomes, and the prerequisites for *peaceful coexistence*—a key phrase in Norwegian ocean management. The *dialogue forum* assisted with the identification of relevant interviewees, whom we selected based on their knowledge of and experience with the (spatial) planning of these industries and the procedures to reduce and mitigate conflict, specifically through consultation processes. The *dialogue forum* also provided input on the draft interview guide. The interviews lasted approximately 90 min and were conducted digitally over Zoom by the first two authors in March and April 2022. The interviews were recorded, and extensive notes were written for each. Representatives from the authorities responsible for offshore wind energy did not answer our interview requests which could bias our results. However, the first author participated at an offshore wind conference in March 2022² and at two additional webinars on the topic, which provided additional insights into the framings of the energy sector and authorities, and we argue that this partly fills the gap in the interviews.

Planning for offshore wind and offshore aquaculture in Norway

Norway has jurisdiction over maritime areas that are approximately five times the size of its land area. Due to this large maritime jurisdiction, ocean industries account for more than 30% of all value creation in the country's private sector (Norwegian Government, 2019). For instance, oil and gas, shipping, and seafood are particularly vital to the Norwegian economy. Owing to the heavy reliance on these industries, regulatory systems are in place for these established sectors, implemented through sector agencies and legislation. Moreover, Norway has a well-established framework for ecosystem-based management with its integrated ocean management plans for the North Sea and Skagerrak, the Norwegian Sea, and the Barents Sea-Lofoten area (Knol, 2010; Ministry of Climate and Environment, 2020; Sander et al., 2022). Although this ecosystem-based management framework provides a context for the spatial planning of petroleum activity (Knol, 2011), it does not include a system for cross-sectoral MSP. In the coastal zone³, municipalities have the responsibility to manage coastal space in accordance with the Planning and Building Act (Johnsen & Hersoug, 2014).

Political ambitions

Norway has been a latecomer to offshore wind energy partly due to a surplus of hydro-electric energy (Mäkitie et al., 2019; Steen & Hansen, 2018). In recent years, however, the Norwegian government developed an ambitious policy to electrify the transport and oil and gas sectors and increased its target for offshore wind energy production to 30 GW by 2040. In fact, offshore wind is expected to play a key role in electrifying offshore oil and gas installations on the Norwegian Continental Shelf (NCS). The electrification is necessary to fulfill nationally determined contributions to reduce CO₂ emissions under the Paris Agreement. New power-demanding industries, such as battery production, will also require more electricity. Other drivers of offshore wind developments include conflicts around wind energy development on land (Schütz & Slater, 2019) and the expected competitive advantage with regard to technology development building on decades of experience in the petroleum sector, specifically for floating wind (Winje et al., 2020). The first floating wind demonstration project in Norway, Hywind Tampen, started production late 2022⁴. In 2020, the government presented its decision to open the

² <https://www.stavanger.kommune.no/Stavangerbusinessregion/nyheter/high-wind-2022/>

³ The coastal zone is defined as areas within the baseline + one nautical mile.

⁴ <https://www.equinor.com/news/20221114-first-power-from-hywind-tampen>

first two regular fields for offshore wind development, Utsira North and Southern North Sea II. The deadline for license applications is in the fall of 2023⁵.

Over the past fifty years, coastal aquaculture has evolved from pioneering approaches to becoming the most significant seafood sector in Norway, by measurements of value, volume, and export (Hersoug et al., 2021; Osmundsen et al., 2020). The government has embraced a vision of a doubling of aquaculture production by 2030, to be followed by a five-doubling by 2050 (Ministry of Trade Industry and Fisheries, 2015; Reinertsen & Asdal, 2019). The realization of this vision requires fundamental changes in production systems to address environmental concerns that constrain aquaculture expansion, most notably sea lice, escapements, and pollution (Osmundsen et al., 2020). Competition for space in the nearshore areas has also intensified (Hersoug et al., 2021). These challenges are major drivers for developing offshore aquaculture. So far, one large demonstration project has been planned to test the technology for offshore aquaculture production (*Smart Fish Farm*). The initiators of this project have applied for an area license located approximately 50 nautical miles off the coast in Trøndelag County in mid-Norway. The application was approved by the Directorate of Fisheries (FD) in 2023. Vast investments are made in the development and large-scale testing of aquaculture facilities for exposed nearshore areas. Though the testing is primarily for nearshore developments, this testing and development will still prepare the sector for future offshore developments⁶.

The development of regulatory systems

As both offshore wind and aquaculture sectors are new, there has been a need to develop their regulatory systems. These systems build on the governance system developed in the 1960s for petroleum activity (Arbo & Thüy, 2016). The focus so far has been on rules for the opening of new areas and for licensing. Planning for the emerging industries occurs through intensive and collaborative processes of identifying suitable areas, knowledge production, strategic assessments,⁷ and public consultations. The Ministry

⁵ For Utsira North, the deadline for license applications for prospective operators has been postponed to November 2023, while for Southern North Sea II, operators need to apply for prequalification by November 2023.

⁶ Investments in testing offshore concepts were encouraged through a program of so-called development permits. The FD's overview of granted and rejected applications for these permits offers an impression of ongoing technology developments. <https://www.fiskeridir.no/Akvakultur/Tildeling-og-tillatelser/Saertillatelser/Utviklingstillatelser/Status-ja-nej-antall-og-biomasse> (last visited 23.06.2023).

⁷ Norway has a system that accounts for all types of impacts in the same assessment process, including environmental impacts as required by environmental impact assessment legislation. This applies to strategic as well as project-oriented assessments.

of Petroleum and Energy (MPE) is the primary authority for offshore wind, with The Norwegian Water Resources and Energy Directorate (NVE) as the main regulatory body. The Offshore Energy Act, which entered into force in 2010, requires the government to open areas for renewable energy production before companies can apply for licenses. Prior to opening an area, central government authorities must carry out an impact assessment, which is subjected to a public consultation process. For demonstration projects, licenses can be awarded without a governmental opening process.

The Ministry of Trade, Industry and Fisheries (MTIF) is the primary authority for aquaculture. The key legislation is included in the Aquaculture Act. In November 2022, the MTIF adopted a framework for offshore aquaculture that established procedures for spatial planning and a specific type of aquaculture licenses. In line with the approach for offshore wind, the government can open areas for offshore aquaculture with a basis in a strategic impact assessment. Once an area has been approved, companies can apply for licenses within a specific sub-area based on a site-specific impact assessment. Public consultations are required in both processes.

The processes toward site selection

The process to select suitable sites for offshore wind energy started in 2009. MPE mandated NVE to coordinate the process, in collaboration with various sector authorities. Together, these agencies were tasked to screen the technological suitability of areas as well as their acceptability toward environmental and other interests (NVE, 2010). Fifteen sites were initially identified (Fig. 1). As a next step, a strategic assessment was carried out to consider the following: (a) technological aspects and costs, (b) impacts on the natural environment, and (c) impacts on economic and social interests (NVE, 2012). Areas were categorized as type A, B, and C, where “A-areas” were the most attractive from a technological and market perspective, also on the longer term, and where potential negative impacts could be mitigated through specific solutions (NVE, 2012). For seven out of the total fifteen areas, the impacts for fisheries were stated as very large, including a category-A area called Sandskallen-Sørøya Nord, which we focus on in more detail in the next section.

The process of identifying and evaluating areas suitable for offshore aquaculture started in 2019 under the leadership of the Directorate of Fisheries (FD)⁸. This process involved

⁸ The FD cooperated with the Institute of Marine Research, which provided inputs on oceanographic aspects for fish welfare, the spreading of diseases, environmental aspects, and knowledge about area specific stakeholder concerns.

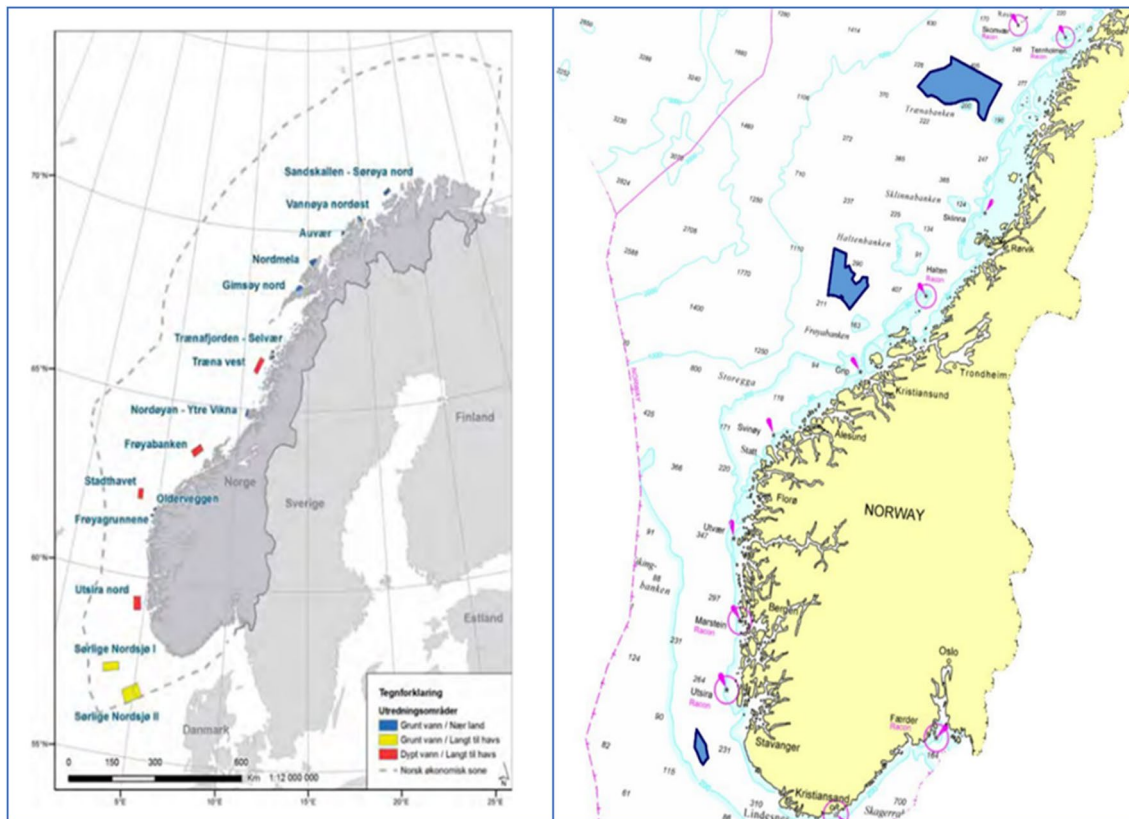


Fig. 1 Left: Initial map of proposed offshore wind areas by NVE (NVE, 2012). Right: The three areas selected for impact assessment for offshore aquaculture (Directorate of Fisheries, 2023)

several agencies that delivered information about environmental conditions and human activities. The number and location of areas changed significantly due to inputs provided during several rounds of public consultation. While 27 potential areas were identified at some stage, in the end, the Ministry decided to conduct impact assessments for three areas: Norskerenna sør, Frøyabanken nord, and Træna-banken outside Helgeland (Fig. 1). The boundaries of the two former areas were redrawn to delimit the areas further, mainly in response to concerns expressed by fisheries organizations and the Norwegian Environment Agency. In April 2023, the FD presented a proposal for a program of a general impact assessments of the three areas. The proposal noted that the assessments should cover impacts on the environment, on other commercial activities, on fish welfare, safety, on welfare for employees, on societal impacts, and on cultural heritage interests, reflecting a multitude of dimensions of a sustainable development. Accordingly, the proposed program for impact assessments was set up to mobilize available information on interest conflicts between commercial activities as well as environmental concerns. The MTIF emphasized the need to evaluate issues relating to co-existence between offshore aquaculture and other commercial activities.

Conflicts about opening new offshore sites

While actors articulated conflicting positions in relation to both processes, the conflicts for offshore wind areas appeared to be stronger than for offshore aquaculture. In several steps of the processes described above, stakeholders were invited to provide input in a public consultation which is the primary, institutionalized “action arena” to influence the process and pursue objectives (Di Gregorio et al., 2008; Ratner et al., 2013).

Offshore wind

For offshore wind, we focus our discussion on the “Sand-skallen-Sørøya Nord” area to understand how conflicts were articulated and handled. Sandskallen-Sørøya Nord is 260 km² with a minimum distance of 14 km to the coast. It is the northernmost area of the initial fifteen and located outside the baseline in the Tromsøflaket bank area, which has been identified as a “particularly valuable and vulnerable area” in Norway’s integrated ocean management plans (Knol, 2011; Ministry of Climate and Environment, 2020). The Sandskallen-Sørøya Nord area was prioritized due to its suitability for ocean energy development in terms

of costs and technology. The relevance of the area was originally connected to future electricity needs of nearby petroleum activities (NVE, 2010). Further, the area was considered suitable for both fixed and floating technology. The impact assessment emphasized economic value creation and relatively large regional spin-off effects (NVE, 2012). While the environmental impacts and conflicts of interests were evaluated to be low, impacts on fisheries were found to be large. However, NVE considered that “*the consequences can be reduced if only parts of the area will be used for wind power purposes, and if special consideration is given to fisheries in [...] detailed planning of an offshore wind park. NVE further assesses that the consequences for fisheries can be reduced if the use of passive fishing gear is permitted within the wind park*” (NVE, 2012: p. 166, own translation). After a long process,⁹ the Ministry presented a proposal to open three areas in 2019, including Sandskallen-Sørøya Nord. Like the initial reports and impact assessment, this proposal was subject to public consultation.

The gravest concerns were articulated by fishery organizations, including the Norwegian Fishermen’s Association (*Norges Fiskerlag*) and the Norwegian Coastal Fishermen’s Union (*Norges Kystfiskarlag*). The Norwegian Fishermen’s Association is a large, national organization for fishers, including boat owners as well as crewmen. The Norwegian Coastal Fishermen’s Union mainly represents the small-scale fishers operating in near-shore areas and is organized into six regional sub-organizations.

Although the fishery sector is not generally against the development of offshore wind, fishery actors strongly criticized the proposal to open Sandskallen-Sørøya Nord. Part of their concerns related to the potential ecological impact of a wind park, with particular focus on the uncertainties about the impacts on ecosystems and habitats. They were also concerned about negative impacts on fish behavior due to noise during the construction and operation of wind parks. One organization raised the issue that the wind park—dependent on its location—could increase the environmental footprint of fisheries by moving fishing activities further away from shore, thus forcing the fishing fleet to use more fuel.

Other arguments from fishery organizations combined both environmental and social concerns. For example, one organization argued that “the area is extremely productive [...]”. To destroy or limit such a rich and productive fishing

ground for another activity will be socio-economically irresponsible”¹⁰. These socio-economic concerns were elaborated on by stressing that a wind park would likely displace hundreds of fishing vessels, affecting all gear types. This displacement would have adverse effects on land, as it would change the landing patterns of a large share of the fishing fleet. The placement of a wind park could also cause additional conflict within the fishery sector, as less space would be available for the same number of vessels.

In terms of *equity*, the fishery associations argued that the proposed wind park would especially harm the small-scale fleet, which has a smaller activity radius. This equity dimension also involved perceptions of historical justice. For example, it was argued that in a region where coastal fisheries have operated over centuries and already experience a decreasing trend, a wind park would be “*socially irresponsible*.”

Finally, fishers framed the conflict in terms of the knowledge base upon which decisions are made. In relation to offshore wind development in other countries, limited inclusion of fishing data has been reported as a source of conflict, like in the UK when no vessel tracking data was available (Gray et al., 2005). While vessel tracking data has been available in the Norwegian context, this knowledge base was questioned and considered to be largely incomplete, with the argument that registrations only included vessels over 15 meters, thus excluding a part of the coastal fleet’s activities.

Environmental organizations stood divided in their responses. While some welcomed the opening of Sandskallen-Sørøya Nord if environmental values would be well considered (e.g., WWF Norway, Miljøstiftelsen ZERO), other organizations were reluctant and advised against the opening of this area due to the environmental impacts and socio-economic concerns related to fisheries (Friends of the Earth Norway). All environmental NGOs emphasized the need to produce more knowledge about impacts on seabirds, coral reefs, and other resources. Social concerns were also raised by the environmental organizations as some emphasized the need for strict measures to enable coexistence with the fishery sector.

A range of industrial actors supported the opening of Sandskallen-Sørøya Nord,¹¹ while some were more critical. For example, Equinor, the largest Norwegian energy company with extensive experience from wind projects abroad, advised against opening the park because of the limited size that could be developed, resulting in a costly project.

⁹ In 2018, the Ministry mandated NVE to re-address their conclusions of the 2012 report and to consider if significant changes had taken place that would influence the earlier recommendations. While no considerable changes had taken place for Sandskallen-Sørøya Nord, NVE now advised against opening that area. Still, the government decided to propose the opening of the area in 2019.

¹⁰ Fiskebåt, 2019. <https://www.regjeringen.no/contentassets/c241b941b2a48a5826961c53421681b/fiskebat.pdf?uid=Fiskeb%C3%A5t>

¹¹ Among others Nordic Wind AS, NORWEA (Norwegian Wind Energy Association)

Positions in the neighboring municipalities were divided. While in the nearest municipality (Hasvik) there was large political agreement *against* the opening of Sandskallen-Sørøya Nord due to the community's strong dependency on (small-scale) fisheries, a neighboring city (Hammerfest) with diverse economic activities that include a LNG facility was positive. While the former seemed to draw strongly on social, equity, and environmental sustainability arguments to promote its position, the latter supported its position with (socio-) economic arguments.

Offshore aquaculture

While conflicts around offshore wind were articulated in the media, concerns about offshore aquaculture received much less attention in the public discourse. Similarly, public consultations generated considerably less responses than for offshore wind. Developments around offshore aquaculture hence can be considered as less conflictual than those around offshore wind. This may in part be explained by the smaller spatial claims these industries will make compared to those of offshore wind. However, it may also be explained by differences in expectations about potential impacts or the fact that the process toward designating areas for offshore aquaculture remains at an earlier stage.

While fisheries are the main opponents of offshore wind, offshore aquaculture moved into spatial conflicts primarily with petroleum interests. In its initial consultation responses, the Petroleum Directorate pointed at the incompatibility of offshore aquaculture with petroleum interests in all the initial 27 areas, except parts of one. The Petroleum Directorate mainly pointed at spatial concerns as these areas are of interest for seismic surveying. The directorate also observed that the sites considered for offshore aquaculture overlapped with areas that had been identified as suitable for carbon storage, illustrating a potential tension between environmental sustainability considerations relating to climate mitigation and food production, respectively.

Fishery organizations raised diverse concerns. Partly, the concerns were of a spatial nature, as fishery organizations objected to locating aquaculture activities in areas where the presence of facilities may spatially obstruct fishing activities. The Norwegian Fishermen's Association argued that fishery activities are of a dynamic nature, which makes area planning difficult. Concerns were also raised about impacts on spawning areas. The Norwegian Fishermen's Association mentioned explicitly that environmental sustainability needs to be a prerequisite for further growth and that central elements of the Aquaculture Act, for example, when it concerns the use of chemicals, should also apply to offshore aquaculture. In addition, the Norwegian Coastal Fishermen's Association and the Norwegian Fishermen's Association recommended that aquaculture be carried out in closed facilities to

avoid pollution with nutrients and chemicals, thus pointing at concerns around the environmental sustainability of these activities.

The Norwegian Environment Agency argued that there is insufficient knowledge about wild salmon's vulnerability toward increases in sea lice prevalence, seabirds, and sensitive habitats that could come from offshore aquaculture developments. The agency argued that these issues should be addressed in the impact assessment and further research, and then, the area boundaries should be adjusted accordingly. The agency also expressed concerns about valuable areas, including coral reefs.

Actors representing the aquaculture industry emphasized a broad economic and social argument: namely, expanding the aquaculture sector is important for the Norwegian society and the leading role that Norway wants to play in global sustainable food production. Considering this, the aquaculture industry criticized the selection of merely three areas, illustrated in an interview with a representative of an industry organization who argued that there has been "a significant increase in interest" in the industry to position itself offshore and a political willingness to let the aquaculture industry grow. Selecting only three areas for further assessment, the interviewee noted, does not set the right conditions for growth. The respondent warned that if processes develop as slowly as with offshore wind, and if there is no more variety in proposed areas to test and develop technologies, the industry might look for other opportunities abroad.

Conflict management and transformation

The document review and interviews provided us with a rich source of information on current conflict management strategies. In this section, we present examples of how conflicts were handled in our case studies.

In the case of Smart Fish Farm, there was a *dispute* with regard to its proposed location. In this case, the dispute was relatively straightforward to settle. The site that the company had applied for was disapproved of by the Petroleum Directorate and two fishery associations. Before the application was formally evaluated, Ocean Farming AS submitted an addendum to their application in which they proposed to change the location eleven kilometers to accommodate the critique. This change in location settled the dispute, which thus can be characterized as relatively shallow.

The conflict around wind energy in Sandskallen-Sørøya Nord was more difficult to manage and can be characterized as deep-rooted (Tafon et al., 2021; Zimmermann et al., 2020). In 2020, the government presented its decision to open two areas: Utsira Nord and Sørilige Nordsjø II. Sandskallen-Sørøya Nord thus remained closed. The Minister of Petroleum and Energy argued that "*fisheries are*

an important sector and an active user of our ocean areas, and I have put large emphasis on their position”¹² (own translation). The Minister presented the decision against the opening of Sandskallen-Sørøya Nord on the basis of social sustainability arguments¹³ and the local dispute was settled, at least temporarily. However, many of the conflict articulations exceeded the local level and the arguments of the fishery organizations have wide relevance beyond Sandskallen-Sørøya Nord.

While concerns in these conflicts are about substantial issues, interviewees also identified procedural issues. All industry representatives interviewed argued that early participation in the process is crucial both to avoid and to mitigate conflict. The fact that Sandskallen-Sørøya Nord turned out to be of limited interest to the industry reveals that this conflict could have been avoided if the government had taken industry perspectives into account earlier and more significantly. Similarly, in the case of offshore aquaculture, an industry representative argued that conflicts could have been avoided through considering industry perspectives from the start. Fishery representatives also desired earlier involvement and argued that recommendations from FD should have been considered from the start to avoid the conflict, which is an issue connected to aspects of representation. In an interview with two FD representatives, the interviewees noted the agency’s their dual role representing both fishery and aquaculture interests. This may have reduced the conflict potential between these two interests, as in-house knowledge would be available to identify potential conflicting issues at an early stage.

To reduce conflicts between offshore wind and fisheries, the government initiated a new process in 2021 to identify additional areas suitable for offshore wind energy, resulting in a fully revised map with twenty new potential areas (Ministry of Petroleum and Energy, 2021). This time, much larger areas were identified to respond to the government’s highly increased targets for offshore wind energy production, and these areas were located further offshore to reduce conflicts with fisheries¹⁴. In parallel, a collaboration forum was established that included a group of public and private actors, tasked to establish principles and guidelines

for *coexistence*—a key term in Norwegian ocean governance—of fisheries and offshore wind¹⁵. The Deputy Minister for petroleum and energy described these meetings as follows: “*There is a lot of temperature in the meetings, and I am happy about that. If we pretend that everyone agrees, we won’t have good discussions. [...] I agree with that we must take unrest seriously - especially in the fishing industry.*”¹⁶ In the forum, actors agreed that offshore wind parks should not be established in important spawning and fisheries areas. We consider this forum as a step toward conflict transformation, which, rather than finding local solutions, targets constructive change in the quality of relationships (Draheim et al., 2015). The importance of coexistence is also emphasized in the recently announced impact assessments for the three areas that were selected for offshore aquaculture (Directorate of Fisheries, 2023).

Another pathway toward conflict transformation raised by several interviewees is the potential of ocean multi-use concepts. Multi-use concepts can reduce the pressure on space resulting from several emerging industries. To date, however, there is no regulatory framework for colocation or for the establishment of *marine industrial parks*¹⁷, although the concept is currently on the political agenda and is receiving increased scholarly attention (Hersoug & Mikkelsen, 2022; Schupp et al., 2019). The topic of ocean multi-use needs to find a place within the frameworks of integrated ocean management and marine spatial planning.

Discussion

Today, the seas and oceans are often referred to as the Earth’s last frontier, providing great opportunities and space for both economic activities and climate action. In Norway, public and private actors are investing heavily in offshore wind and offshore aquaculture developments. These investments are pivotal in realizing Norway’s vision for the blue economy. Wind development and aquaculture are not new industries in Norway. In fact, wind developments on land are common, and aquaculture has taken place in fjords and inshore areas

¹² <https://www.tu.no/artikler/apner-to-omrader-for-havvind-i-norge/494100>

¹³ Several other factors appear to have made the area less attractive for the offshore energy industry—aspects that most likely have influenced the decision without being articulated explicitly. Only a smaller part of the total area could be used for wind energy development, at least in an early phase. This made the prospects less interesting for the energy industry. It was also pointed out that Northern Norway is currently a power-surplus area, and there are obstacles to increase the grid capacity.

¹⁴ <https://nve.no/nytt-fra-nve/nyheter-energi/foreslaar-aa-utredning-20-omraadene-for-havvind/>

¹⁵ https://www.ntnu.no/documents/1284688443/0/Policybrief07_areal%2Bsameksistens_DJD.pdf/4c2068a4-c152-402a-8157-787bb1f47fe8?t=1665496020821

¹⁶ <https://offshorenorge.no/om-oss/nyheter/2023/06/enighet-om-havvind-kjoreregler/> own translation

¹⁷ Interestingly, representatives from the offshore wind sector did not submit inputs to the consultations about offshore aquaculture areas, despite that several of the proposed areas overlapped with proposed areas for offshore wind activities. An industry association argued that offshore aquaculture could be collocated with offshore wind farms, which could provide green electricity to the aquaculture facilities and provide an opportunity for logistical synergies between the two emerging offshore technologies.

since the 1970s. Both have led to conflicts in the past, and it is argued that their further expansion in nearshore areas (aquaculture) and on land (wind) is unsustainable. Technological innovations now enable their move offshore to areas where the proponents hope that they may incite less conflict. As can be expected, this offshore movement is also controversial and the marine activities have attracted opposition from fishery interests, petroleum interests, and environmental organizations. In both cases, the controversies can be considered conflicts in the sense that the aggrieved parties perceive their interests to be in contradiction with planned developments. The public consultation processes were the primary action arenas for actors to act and voice their opposition in both of our cases. Since the action was taken during public consultation processes, the conflicts in our two cases are considered tame, as they were managed through generally accepted conflict management institutions.

We began this paper by describing how MSP has been presented as a means to avoid or mitigate marine conflicts and distinguished between user-user and user-environment conflicts (Douve and Ehler 2009). Other conflict typologies distinguish between conflicts of interest versus value conflicts (Aubert 1963) or divisible versus non-divisible conflicts (Hirschman, 1994). The conflicts in this paper transcend such divisions in line with Aubert's recognition that "the classification of concrete cases as belonging either to the one or to the other, may be difficult or impossible" (p. 27). A conflict of interest is typically expected to be about the spatial (in)compatibility of various uses, where "multiple sectors [...] seek to use natural resources at the same time and in the same space" (Coccoli et al., 2018). The cases in this paper demonstrated that the perceived incompatibility is strongly linked to conflicting values and beliefs about potential environmental impacts, economic opportunities, historical rights, justice, and equitable distribution. The physical incompatibility of fishing activity in a wind park in Sandskallen-Sørøya Nord cannot be seen detached from the values that fisheries historically attach to this area. This is in line with Hirschman's (1994) point that self-interests rarely appear on their own, but are instead connected to questions of identity and genuine concern for the public good.

A common feature of the conflicts presented in our case studies is that they involve substantial and procedural issues simultaneously, designating them as conflicts of the first and second order (Fehmel, 2014). On the one hand, proponents articulated concerns about the access to sites, the impact of new activities, and the knowledge base supporting the planning process. Through their positioning, actors pointed at the wider environmental impacts and questioned the trade-offs made through the planning of new industry activities, as well as the acceptability of those trade-offs. On the other hand, many actors articulated that the planning and decision-making systems could be more effective and legitimate; these are

clearly procedural matters. Some arguments related to the timing and extent of stakeholder involvement in the institutionalized processes, while others concerned the representation of knowledge and uncertainties about future governance arrangements.

We argued that the conflicts in this paper manifest themselves as sustainability conflicts, as the focus of the conflicts is about what is, or is not, sustainable. Sustainability has become a frame of reference for discussing possible and desirable futures; they center on the choices that can be characterized as most sustainable. Hence, they cannot easily be categorized in common conflict typologies, but instead involve a combination of interrelated issues such as access to and use of coastal and ocean spaces and resources, the impacts of and responses to climate change and biodiversity loss, the conditions set for conducting particular activities, the legal and governance frameworks, the distribution of benefits and burdens, and the legitimacy of procedures for stakeholder engagement. For each of these themes, actors will have diverging ideas about risks and uncertainties, rights and duties, and about what is reasonable and fair.

It can be expected that the complexity of sustainability conflicts makes them difficult to settle. However, how sustainability conflicts unfold is highly dependent on the institutional contexts in which they play out. In our cases, the conflicts played out peacefully, with low levels of tension and in highly deliberative ways following the established rules of the game. Several factors can explain this. The first factor is that the institutionalized rules and procedures (including impact assessments, public consultations, and written responses to all inputs) ensure a high degree of openness and transparency. Concerns were mostly articulated through these public consultation processes and managed by the public administrative bodies coordinating the processes. With respect to offshore wind developments, fishery associations also articulated their strong dissatisfaction outside the public consultations, primarily through the media. This is unsurprising, as they argued that their views were not incorporated sufficiently through the governance procedures. The second factor relates to the well-organized nature of the interest groups, their resourcefulness, and the clear articulation of their views. The third factor is that in addition to the forms of direct representation through interest associations, the various interests and values in society are also represented through the public administration and its associated expert agencies. Resultingly, the state is on all sides of the table representing various interests. All groups have backing from parts of the public administration. Finally, due to Norway being a relatively small country, many actors meet each other in a variety of contexts. This creates a trust among the interest groups that are represented. Those who have opposing views in one matter may be allies in another. Indeed,

cross-cutting cleavages help to reduce the intensity of conflicts (Hirschman, 1994). Discussions in the Oceans Pact project, which includes countries such as Brazil and South Africa, have demonstrated that blue economy conflicts take different shapes and courses, depending on contextual and institutional factors.

We explored potentials for sustainable conflict transformation. Conflicts highlight unsustainability as they can put pressure on industries to reduce their footprint (Knol-Kauffman et al., 2020), emphasize inequities (Tafon et al., 2021), and/or highlight unjust or ineffective governance processes. In our case studies, the data emphasized that earlier engagement in arenas outside the institutionalized consultation processes could contribute to achieving a legitimate and efficient process. More timely and direct forms of engagement might contribute to avoiding conflicts and to develop alternative mechanisms for conflict transformation, as has been the case in the handling of conflicts between petroleum activity and fisheries (Sander, 2018; Thesen & Leknes, 2010; Uhre & Leknes, 2017). At the same time, direct industry engagement might help to speed up the processes toward identifying suitable areas for blue economy developments. We expect that the public-private forum on coexistence of offshore wind and fisheries has transformative potential. However, excluding environmental organizations from the forum may reduce its legitimacy.

The conflicts in our cases highlighted the fragmentation of marine spatial planning and revealed a need for stronger integration across sector authorities (Kelly et al., 2019). MSP is often presented as a cross-sectoral activity with many positive characteristics, including as a rational approach for conflict management (Ehler and Douvere 2009). However, the only cross-sectoral instrument in place in the Norwegian ocean areas are the ecosystem-based ocean management plans, which provide weak guidance for the allocation of ocean space except for petroleum activity. Thus, although the processes described in this paper are examples of marine spatial planning, the lack of cross-sectoral mechanisms results in parallel though fragmented processes managed by the respective sectoral administrations. This weakness is recognized by the government, which currently deliberates on how to build stronger mechanisms for spatial planning into the Norwegian ocean management system. Fully integrated ocean governance remains as an ideal scenario, but there is room to move toward a more “holistic, ecosystem-based and knowledge-based approach that aims to ensure the sustainability and resilience of marine ecosystems while integrating and balancing different ocean uses to optimize the overall ocean economy” (Winther et al. 2020). This, however, requires institutions that allow conflicts to be expressed and which balance interests and values in a way that all affected interests perceive as legitimate.

Conclusion

According to the World Bank, the blue economy concept “seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas” (World Bank, 2017). While it may be argued that these are incompatible goals, there will always be trade-offs that can lead to conflict. We have developed a perspective on blue economy conflicts that transcends the binary user-user versus user-environment divide and recognizes their complexity. To understand how conflicts play out and are managed, it is important to analyze the institutional and governance context. In Norway, marine conflicts are handled according to established rules and procedures in an interplay between a relatively stable set of organized interests. Public consultations about proposed areas for developing new marine industries appear to have helped to reduce conflict potentials. They have also mobilized knowledge in support of finding compromises that are acceptable to most parties.

We have characterized blue economy conflicts as sustainability conflicts, since all parties seek to legitimize their positions in terms of sustainability. With sustainability becoming something that everyone can relate to, some argue it loses its meaning (Bailey & Hopkins, 2023) while others recognize its value but emphasize the need for a better operationalization or clarification of core values. An alternative approach is to consider sustainability as a framework for a discussion of possible and desirable futures (Ratner, 2004). As such, the concept functions as a “boundary object” (Star & Griesemer, 1989) facilitating joint dialogue despite the fact that actors have different ideas about what sustainability entails. Hence, the term can have transformative power by helping to enact the future.

Blue economy industries emerge largely in response to the global call for sustainability transitions. These emerging industries themselves introduce new sustainability challenges, not only in social and economic terms but also with respect to environmental issues. Indeed, “the solution of former unsustainability issues creates new environmental conflict through a redistribution of environmental benefits and burdens” (Scheidel et al., 2018, p. 595). Offshore wind and offshore aquaculture developments in Norway represent examples where environmental sustainability arguments are mobilized by both opponents and proponents. In such sustainability conflicts, the different actors continually “contribute to reframing and questioning what sustainability means” (ibid) and challenge the visions of sustainability that are operationalized in marine planning and governance. In this context, sustainability constitutes a framework that all actors relate to in different ways, drawing on the interrelatedness of technological, social, political, and ecological systems and sub-systems (Benn & Baker, 2009).

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Declarations

Conflict of interest The authors declare no competing interests.

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