



Political lessons from early warnings: Marine finfish aquaculture conflicts in Europe



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ABSTRACT

The increasing demand for fish products and the stagnation of capture fisheries has promoted the growth of aquaculture globally, leading to a significant increase in socio-environmental conflicts mainly in relation with finfish aquaculture. Despite this significant global growth, the European aquaculture sector has instead experienced stagnation in the last decade. While European public authorities are currently encouraging the growth of the sector in order to change this trajectory, conflicts over finfish aquaculture have nonetheless already taken place in Europe. Based on peer-reviewed articles, gray literature, and 27 in-depth interviews, this article analyzes such conflicts in Europe in the last two decades by examining their localities, characteristics, the different actors involved, and the arguments of these actors. In this way, it explores the relation of these conflicts to environmental justice theory. Findings highlight that resistances to marine finfish aquaculture in Europe do not have a purely conservationist motivation, but rather entail a complex set of claims supported by various actors. These include demands for an even distribution of burdens and benefits resulting from marine finfish aquaculture, the right to be recognized as relevant stakeholders, an effective participation process where actors have access to adequate and transparent information and a real capacity to influence the decision-making, and to be able to maintain their social functioning. Based on this analysis, the article derives political lessons for future European marine policies.

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1. Introduction

The increasing demand for fish products and the stagnation of fish captures have boosted aquaculture at a global scale [1]. Yet despite significant growth of the sector at a global level, aquaculture in Europe has instead experienced stagnation in the last decade [2]. In order to reverse this trend, European authorities including the European Parliament, the European Council and the European Commission are encouraging the growth of the sector [3]. The recently approved Common Fisheries Policy (CFP) reform [4] and the associated European Maritime and Fisheries Fund (EMFF) are expected to set up a framework that changes the current pattern. At the national level, multiannual national strategic plans for aquaculture based on the EU Strategic Guidelines [5] will be approved in 2014 by the European Commission as a tool to overcome what have been identified as the most important

barriers for aquaculture growth: “limited access to space and licensing, industry fragmentation, limited access to seed capital or loans for innovation in a risky context, pressure from imports, long and time-consuming administrative procedures and red tape” [6].

What underlies most of the previous barriers is the “difficulty to integrate environmental policy with viable aquaculture economy, due to the concerns on the environmental impact of aquaculture in Europe” [7]. This integration is especially contentious in the case of marine finfish aquaculture. The experience in other parts of the world shows that accelerated growth of fish farms may lead to important socio-environmental conflicts that decrease, or even in some cases stop the expected growth in finfish aquaculture [8–10].

In the last two decades, European finfish aquaculture has also been embroiled in several socio-environmental conflicts, which to date have not been widely investigated. This is mainly because they have been considered either as spurious or as Not In My Back Yard (NIMBY) complaints, i.e. local actors' opposition against the establishment of aquaculture facilities only in their neighborhood, usually criticized for following “irrational and selfish” demands. However, it is well known that conflicts may arise when the

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institutional and political framework fails to address different actors' demands. Studying conflicts in this sense might become a way to unearth the issues that are not accurately covered in current European policies or that are not materialized in the implementation process.

Therefore, this article identifies the main finfish aquaculture conflicts that took place in the last two decades in Europe, and analyzes their characteristics by focusing on actors involved, their arguments, and their link to environmental justice. By doing so, it investigates whether these conflicts in Europe actually stem from NIMBY claims and hence are negligible and/or whether there are lessons that can potentially be incorporated into future European policies to ensure: (i) social acceptance of aquaculture activities and (ii) successful development of European aquaculture. This is especially relevant in a period in which new regulations and legislations on marine use are on the horizon.

The article is structured as follows. [Section 2](#) reviews the literature on socio-environmental conflicts and elaborates environmental justice theory in-depth, which is used as an analytical framework to study the identified conflicts [\[11,12\]](#). Subsequently, [Section 3](#) outlines the sources of information and describes the qualitative methods used in this study. [Section 4](#) illustrates all detected conflicts, their locations, actors involved and their arguments by analyzing their relation with environmental justice concerns. [Sections 5 and 6](#) highlight the lessons derived and underline the need to incorporate them into European policies.

2. Theory

Environmental justice as a term was first used in the US to draw attention to the unequal distribution of environmental risks and burdens, the so-called “environmental bads” [\[12\]](#) driven by policies discriminating “people of color” [\[13,14\]](#). Grassroots resistance movements, which led to the emergence of the concept, [\[12\]](#) were mainly against the dumping of industrial and toxic waste in marginalized neighborhoods.

With the concept's evolution, not only the distribution of environmental bads or risks, but also of environmental goods and services, including fairness in access to commons, alongside the recognition and participation in decision-making became central. All of these steps contributed to a wider and pluralistic understanding of environmental justice which goes beyond distributional aspects alone. Indeed, Schlosberg based the theorization of the concept on the analysis of different types of grassroots movements and their environmental justice claims, and thus defined four dimensions of environmental justice: distributive justice, recognition, participative (procedural) justice and capabilities (capacities) [\[11,12\]](#).

In the context of this study, distributive justice refers to how risks, benefits and costs – be it social, economic or ecological – of marine finfish aquaculture activities are distributed among various actors. Recognition is associated with the question of whether different actors are considered and consulted as relevant stakeholders for any decision related to fish farms. Participative justice means to be able to participate effectively in decision-making process. This is not only restricted to having the right to participate or being consulted, but also whether there are well-established inclusive participatory mechanisms through which actors can make their voices heard. The capabilities aspect [\[11,12,15\]](#) is linked to the extent to which aquaculture activities generate a risk (or support) to the integrity and proper functioning of individuals and coastal communities. This embraces a range of basic needs, sustaining one's livelihood, culture and socioeconomic activities, and social, economic and political rights.

Schlosberg's framework of environmental justice is employed to elaborate this analysis for several reasons. First, this analytical framework has already been successfully applied to conflict studies related to other sectors such as forestry and mining [\[16,17\]](#). Secondly, through a plural understanding of the concept, i.e. complementing the distributional aspect with recognition, participation and capabilities, it enables a comprehension of the wide range of demands encountered in these conflicts. Thirdly, this perspective emphasizes that theorizing from movement experience is suitable for studying conflicts since such an approach brings theory and practice together. Fourthly, the framework emphasizes justice both at individual and community levels. This is very useful for the article's purposes since the analysis includes different groups within various communities, who did not only have claims for individual justice, but also for the social cohesion and broader functioning of their communities. Finally, this approach helps to structure the information in a way that enables considering the transformative policy aspiration in these conflicts. In this way, based on the data and the methodology explained in the next section and with the following results, the paper underlines their significance for policymaking and the aquaculture-related research agenda.

3. Material and methods

Socio-environmental conflicts related to the use of nature and waste disposal have been widely studied [\[16,18,19\]](#). This body of literature includes studies on aquaculture-related conflicts from all over the world [\[9,10,20–23\]](#). This article builds upon such research in order to identify and explain socio-environmental conflicts related to marine finfish aquaculture in Europe over the last two decades because each information source pointed to an intensification of conflicts in this period. With this purpose, the research relies on three main sources of information, i.e. peer-reviewed articles obtained from the SCOPUS database – the largest abstract and citation database of peer-reviewed literature, gray literature, and 27 semi-structured in-depth interviews.

The investigation of peer-reviewed articles within the SCOPUS database was conducted through examining the entire text of articles – including the title and abstract – to detect the combination of the following two keywords: (i) aquaculture and conflict, (ii) aquaculture and Europe, (iii) aquaculture and the country name – Spain, France, Norway, Greece, and Italy. These five countries were selected for the keyword search because they have the greatest volume of marine finfish aquaculture production in Europe. Accordingly, 2597 articles have been reviewed, out of which 213 articles were selected due to their relation to socio-environmental or socioeconomic studies on aquaculture. The latter group was refined in order to identify studies providing specific information on marine finfish aquaculture conflicts in Europe. Additionally, corresponding references in these articles were incorporated into the analysis to have a wider coverage of the existing peer-reviewed literature. Although the most relevant articles studying socio-environmental conflicts in the SCOPUS database were limited in number and detail, they helped to identify 12 conflictive cases, their places, actors involved and their arguments.

Secondly, a review of gray literature including documents and statistics published by FAO and EU, reports and press releases of NGOs [\[24–27\]](#), EU legislation and guidelines, documents about Common Fisheries Policy, national or European strategy documents, websites of movements [\[28,29\]](#) opposing fish farms, and some local or regional newspaper articles were employed to complete the information obtained from peer-reviewed articles. Following the discussions held in meetings, congresses and

Table 1
Sources of information

<i>Scopus database</i>			<i>Gray literature</i>	<i>In-depth interviews</i>
<i>Keywords</i>	<i>Number of articles</i>	<i>Relevant articles</i>		
<i>Aquaculture+Europe</i>	792	53	<i>Reports of NGOs</i>	<i>Baltics/Sweden: NGOs, researchers</i>
<i>Aquaculture+conflict</i>	197	33	<i>FAO reports</i>	<i>Belgium/Brussels: NGOs, aquaculture sector representative, European public administration representatives</i>
<i>Aquaculture+Spain</i>	334	30	<i>EU reports</i>	<i>Cyprus: researcher</i>
<i>Aquaculture+France</i>	274	22	<i>EU Legislations</i>	<i>France: NGO</i>
<i>Aquaculture+Norway</i>	373	27	<i>EU Guidelines</i>	<i>Greece: researcher, NGO</i>
<i>Aquaculture+Greece</i>	113	15	<i>CFP reform</i>	<i>Ireland: NGO</i>
<i>Aquaculture+Italy</i>	234	13		<i>Netherlands: NGO</i>
<i>Aquaculture+UK</i>	280	20		<i>Norway: NGOs, activists, association of hunters and anglers, environmental agency</i>
				<i>Portugal: researcher, NGO</i>
				<i>Scotland: NGO</i>
				<i>Spain: researcher, NGO, sector representative</i>
				<i>United Kingdom: NGO</i>

conferences, in which many aquaculture sector representatives, public authorities and researchers participated, facilitated the comprehension of the most common discourses and up-to-date debates.

The third part of data collection was based on semi-structured in-depth interviews. In this phase, interviews were conducted with NGOs, researchers, activists, local people, aquaculture sector representatives, and European or national public administrations. They enabled the detection of other conflicts and provided a way to acquire more details about those already identified. Between February and September 2013, 27 semi-structured interviews were conducted with stakeholders from 12 countries (Table 1). The selection of countries for interviews aimed to cover the most representative countries in Europe in terms of marine finfish aquaculture production. The interviewees were individuals who were involved in conflicts or experts working on aquaculture in specific regions. The interviews were recorded whenever possible, and if not, detailed notes were taken for the transcription that followed. These enabled insights into different actors' arguments to uncover how they perceive problems related to marine finfish aquaculture. Fourteen conflicts were detected through interviews, two of which were already obtained from the literature review.

Information from these three sources was combined, rearranged and analyzed using the environmental justice framework proposed by Schlosberg [11,12], detailed in the theory section. Accordingly, several opposing actors were mapped out, and for each case, the connection of their demands with environmental justice concerns were examined.

4. Results

This section is organized under three subsections. The first illustrates all identified conflicts and their link to environmental justice dimensions, the second focuses on actors, while the third emphasizes actors' arguments and analyzes their environmental justice claims.

4.1. Conflicts

The research uncovered 24 cases of different intensities of conflicts related to marine finfish aquaculture in the following ten countries: Cyprus, France, Finland, Greece, Ireland, Malta, Norway, Scotland, Spain and Portugal. These are usually associated with the sector's expansion in terms of number and size of cages, increasing marine space allocation problems among different uses, and

technological and structural changes affecting marine environment and governance at the local scale [30–33].

A larger fraction of conflicts, i.e. 6 out of 24, were detected in Norway, followed by Greece, Ireland and Scotland with three cases each. They are illustrated below in Table 2 with actors involved in each of them and their arguments in relation to environmental justice dimensions (for explanations, see Section 4.3). The "species" column in the table indicates which species are produced in each fish farm, and another column gives information on when the conflict started.

The type of aquaculture implemented on site and the species produced in fish farms are important factors affecting conflicts. The examples in Table 2 refer to the two main categories of finfish production. In conflict cases detected in Scotland, Ireland, and Norway, the predominant marine finfish aquaculture species is salmon, followed by trout and codfish; while in Greece, Cyprus and Spain, sea bass and sea bream are the most common species.

The fact that aquaculture production and associated debates are concentrated on salmon production in Norway, Scotland, Ireland and Great Britain affects the mobilization of actors such as wild salmon anglers and river owners in that geographical space. Meanwhile, sea bass and sea bream production in Greece, Cyprus and Spain contributes to the opposition of small-scale fishermen, who have traditionally fished in the same area, and of local populations, a considerable part of which perceives coastal capture fisheries as an important source of their sociocultural life and livelihood and aquaculture as a risk for these practices.

4.2. Actors

A thorough analysis of the conflicts reflects the existence of various actors resisting marine finfish aquaculture in Europe. The most relevant actors are small-scale fishermen, local populations, environmental NGOs, tourism sector representatives, local or regional public administrations, researchers, fish consumers, energy sector representatives, producers of different aquaculture types, representatives of other sectors, and recreational users—including a wide range of activities like sailing, diving or recreational fishing. The most common actors involved in the cases analyzed are small-scale fishermen, local populations and environmental NGOs, as detected in 15, 14 and 14 (out of 24) cases respectively.

As the most frequently detected actor, small-scale commercial fishermen, appear in eight countries (Table 2). They usually claim that they are highly affected by fish farms since the marine area they use, the wild stocks they catch, or the ecosystem they depend on are subject to changes as a result of fish farms [27]. Moreover,

Table 2
Conflicts related to marine finfish aquaculture in Europe^a

Countries	Site	Actors									Species	Start of conflict	Arguments			
		Fisherm.	Tourism	Local pop.	Env'l NGOs	Public adm.	Researchers	AQC sector	Energy sector	Other			Distributive	Recognition	Participation	Capabilities
Cyprus (L.)	Liopetri	X		X							Sea bass, sea bream	1990s	X	X	X	X
Cyprus (L.)	Limassol				X							Early 2000s			X	X
France (L.) [30]	Charentais Sounds		X		X			X shellf.		X Indust.		End of 1990s, early 2000s	X			
Finland (L.) [38]	Aland Islands			X summ. houses		X					Salmon, rainbow trout	End of 1990s		X	X	X
Greece (L.) [31]	South Evoikos	X	X	X							Sea bream, sea bass		X			
Greece (L.)	Inousses Island	X		X	X						Sea bream, sea bass	2010s	X	X		
Greece (L.)	Chios, Lagkada	X		X	X	X					Sea bream, sea bass	2000s	X	X		
Ireland (L.)	Galway Bay	X	X	X	X	X				X	Salmon	2011	X		X	X
Ireland (L.)	Bantry Bay	X	X	X	X					X	Salmon	Early 1990s in general	X			
Ireland (L.) [32]	General/Ballyvaughan, Lough Swilly	X	X		X						Salmon, trout	1990	X			
Malta (L.) [40]		X	X						X Offshore windf.	X Bunkering		2009	X			
Norway (L.) [35]		X	X Recreational Fishing								Salmon		X			
Norway (L.) [33]		X		X							Salmon	Beg. 1990s	X			X
Norway (L.) [41]		X	X Anglers	X Anglers	X	X Municipalities				X Food Qualt. Mov.	Salmon	2000s	X		X	
Norway (L.)	Hardangerfjord	X		X	X		X	X		X	Salmon, trout	1990s	X	X	X	X
Norway (L.)	Floro, Osterfjord				X	X					Salmon	End of 2000s	X		X	X
Norway (L.)	Alta				X	X					Salmon	End of 2000s			X	X
Portugal (I. & L.) [42]	Sado Estuary				X	X	X				Gilt head bream, European sea bass, common sole			X		
Portugal (I.)	Algarve, Olhio	X											X	X	X	

Table 2 (continued)

Countries	Site	Actors			Local pop.	Env'l NGOs	Public adm.	Researchers	AQC sector	Energy sector	Other	Species	Start of conflict	Arguments		
		Fisherm.	Tourism											Distributive	Recognition	Participation
Scotland	General/ Scalpay and Skye, Western Isles	X	X		X						X Navigation	Salmon		X	X	X
Scotland	(L.) [32]											Salmon, trout			X	
Scotland	General/Loch Etive		X		X	X				X	X	Salmon, rainbow trout	2000s	X	X	X
Spain (I. & L.)	Garcia	X			X	X			X				End of 2000s	X	X	X
Spain (I.)	Canarias															X

^a The information source, through which the conflict is detected, is indicated with "I." for interviews and with "L." for literature review.

in some cases they feel that their livelihood and socioeconomic activity is under threat, whenever their fishing areas get restricted or they have to compete with cheaper aquaculture products.

Local populations include residents of towns close to a fish farm, local people who use the marine area for recreational purposes such as swimming, diving, angling or navigation, summerhouse owners, as well as young or retired people in villages who desire to enjoy the landscape and water quality. They were found to be active actors in seven countries (Table 2). In these conflicts, inhabitants that are mobilized with their local organizations usually led to a greater visibility of the opposition (e.g. the Norwegian Association of Hunters and Anglers, river owners, fishing cooperatives).

Environmental NGOs were detected in eight countries (Table 2). They generally base their opposition on environmental conservation objectives. In some cases, they do not work in collaboration with other social actors. These conflicts arose mostly due to the NGOs' perception of the incompatibility of fish farms' operation with ecologically valuable areas like natural parks and marine protection areas or with the habitat of vulnerable species (e.g. Sado Estuary, Limassol). However, in most cases, environmental NGOs were collaborating with other actors since generally social and environmental demands were intertwined and consistent with environmental protection objectives.

In many cases, various alliances consisting of several recreational and professional users take place. Different actors cooperate, although they may be mobilized with different motivations based on a variety of social and environmental concerns (see Section 4.3). These coalitions usually lead to a greater visibility of conflicts through remarkable organizations, petitions, surveys or demonstrations (i.e. conflicts in Galicia, Galway Bay and Loch Etive) that enable the actors to make their voices heard. For instance, the actors in Loch Etive conducted a local survey, the result of which found that 89% of people living in the closest neighborhoods to the proposed fish farm were against this project. Through their opposition webpage [34], they were able to amplify their demands by reaching more people through an improved transmission of information and the organization of petitions.

Moreover, the research demonstrated that in most cases small-scale fishermen and local populations adopt a similar attitude towards fish farms since fishermen are usually an integral part of the local community. In some conflicts in Norway, Greece and Spain, fishermen collaborated with the two other mostly detected actors, i.e. local populations and environmental NGOs. In general, the local tourism sector perceived aquaculture also as a risk; thus, its representatives positioned themselves on side of the opposing groups, in many cases entailing local people and environmental NGOs. Other alliances manifest the collaboration of environmental NGOs, scientists, local administrations, and actors that enjoyed the common use of the sea for fishing, sailing, kayaking, walking, photography, nature conservation, and tourism purposes (e.g. Bantry Bay).

In a nutshell, the research indicates that not only one specific group of people, but rather a diverse set of actors and organizations have come into conflict with marine finfish aquaculture activities in the past. Moreover, coalitions of actors imply that in some cases, they strongly react to existing fish farms or to their expansion. The next subsection elaborates actors' arguments and their link to aspects of environmental justice.

4.3. Arguments

Considering the diversity of cases and contexts, there is not a single argument around which opponents mobilize against marine finfish aquaculture. In general, a number of concerns are associated with the following extensive list of factors: nutrition load; chemical use; escapees facilitating disease transmission and genetic interaction with wild species; high amount of fish protein used for the production of carnivorous fish; negative physical

impacts of infrastructure; animal welfare and species' preservation; inappropriate selection of the location of fish farms; competition over the use of space; lack of a clear and participatory decision-making procedure; the absence of transparent information; the protection of local culture, social cohesion and tradition; and equitable access to natural resources and livelihood [24,25,31,43] (11, 19, 111, 113, 118).

The analysis of various actors' arguments showed that diverse aspects of environmental justice considerations arise in different conflict cases. The demand for distributive justice is the most commonly observed among opposing actors' arguments (in 19 out of 24 cases). However, all of the four dimensions of environmental justice emerge to a certain extent in different conflicts, as explained below with examples.

4.3.1. Distribution

Demands for distributive justice usually underline the need for an equitable distribution of environmental risks, burdens and benefits among different groups of society. In our study, this argument emerged in various forms linked to the uneven allocation of resources in terms of access to fish and marine space, and distribution of risks, burdens and benefits of fish farms. Demands include the restoration of marine environment, contribution to local economy and social development, and compensation for environmental damage or for income loss.

In cases where small-scale fishermen are important actors, the demand for distributive justice was present. For instance, in Inousses Island, Greece, fishermen and local people expect a greater contribution from fish farms to local development since, according to them, the amount paid by the company to the municipality for the use of the marine area is very low, and the export-oriented production does not benefit local people (112). The same complaint exists in some cases in Norway, where NGOs and researchers claim that local municipalities collect a very small amount of tax from fish farms, leading to an unjust distribution of benefits (115, 119).

Another common concern is that the aquaculture producers do not compensate the wild capture fishermen for the negative external costs imposed on them [35]. NGOs in Norway, for instance, mention that especially in the beginning of 1990s there was a drastic sea lice problem, because of which all angling and professional netting activities of wild salmon had to be stopped in Hardanger region (115, 119). This put an uneven social and economic burden on fishermen, recreational users and local people, while it did not affect fish farmers at the same amount. Consequently, many actors began to call for distributive justice in terms of compensation for the environmental damage the fish farms have done. After the pressure of angler societies, river owners and environmental organizations, Mattilsynet (The Norwegian Food Safety Authority) forced the sector to take measures in order to recover the damaged fish stocks by realizing sea lice treatment in the existing fish farms. However, compensation was insufficient, and was furthermore not distributed among all actors, but mainly paid to river owners (115).

The distributive justice aspect covers several NGOs' and local people's claims about the unequal distribution of risks as well [36,37]. Opposing groups, especially in salmon producing regions (see Norway, Scotland, UK and Ireland), use arguments about negative health effects of eating farmed salmon due to the poor quality feed, and the intensive use of chemicals and antibiotics that are transmitted into human body by eating farmed salmon [27] (115, 120, 127).

A shared argument in most cases is that distributive concerns and associated conflicts have been accelerated in Europe by structural changes in finfish aquaculture industry. The increase

in the scale of farms, export-oriented production, and the concentration of ownership are facts that exacerbate distributive conflicts because they are perceived to be linked to a significant decrease of the sector's contribution to local economies and connection to local communities [33]. This has been argued in different types of conflicts detected in South Evoikos Gulf in Greece, Charentais Sounds in France, Ireland, Scotland and Norway [30,31] (113, 126, 119).

4.3.2. Recognition and participation

The recognition aspect refers to whether some groups of society are considered to be relevant actors for decisions on the development of fish farms. The exclusion of some actors from decision-making or counting their opinion as inferior or irrelevant is considered as injustice. The participation dimension of environmental justice is closely related to recognition, since lack of recognition directly leads to injustice in participation. However, although some groups are recognized as actors, decision-making system may be established in a way that precludes some groups' participation, which depends on at what level and by whom the decision is made.

In the conflicts detected in Finland, Scotland, Greece and Spain, actors explicitly highlight their demands for recognition and participation. In Finland, summerhouse residents have been complaining about not being included in the stakeholder consultation process, while in Scotland, local fishermen, the tourism sector and local population felt that their opinions were ignored [38,32,34] (126, 127). In Greece and Spain, local people and fishermen claimed that local needs were not considered during decision-making, and injustices occurred through the absence of their recognition and participation (112, 124).

Socioenvironmental conflicts related to marine finfish aquaculture in Europe occur between different levels and bodies of public administration as well. Conflicts between public authorities, concerns on where the decision is made, and overruling of local decisions are perceived injustices related to participation, i.e. procedural injustice, as encountered in Greece, Ireland and Norway. In Greece, the local municipality of Lagkada came into conflict with the higher municipal authority of Chios, to which Lagkada belongs administratively (112). The Lagkada municipality and the inhabitants it represents feel that they were isolated, and that local public administration's view was not taken into account by the Chios municipality, although there has been a great opposition since 2000s against fish farms mainly because of environmental degradation. This implies that the local public authority is not recognized as a real decision-making body, and hence the available means of participation at the local level remain inadequate.

The marine finfish aquaculture projects in Galway Bay, Ireland, led to a quite visible conflict involving protests, marches and petitions. The Irish Sea Fisheries Board (BIM) – a public institution – applied itself to construct Europe's biggest salmon farm in Galway Bay in order to lease it out to other operators. NGOs argue that if instead of a government body, a private firm had applied for such a farm, it would never be able to receive the license for such massive production [29] (113). Hence, their claim indicates that direct involvement of public authorities for the implementation of fish farms risk weakening the procedural rights of other stakeholders and generates a debate on participative justice.

The Alta case, Norway, illustrates conflicts between different public administrations as well. The owner of one fish farm already possessed several farms, but still desired to double his production in these locations. Local politicians were against this intensification and rejected the proposal. Following that, the owner appealed to regional politicians, who also opposed the intensification.

Afterwards, the fish farmer applied to the directorate of fisheries, which overruled the local and regional political authorities and granted him the necessary permission. The NGO representative commented (I18): “when we put this in correlation with other cases, we see the difficulty to stop the fish farms’ expansion to new locations, and the impossibility to stop growth in already existing ones, as democracy has no way of stopping [them].” His comments clearly hint at the participatory and procedural problems and the lack of a clear, democratic and inclusive decision-making mechanism in which all actors’ opinions would count.

4.3.3. Capabilities

The environmental injustices related to capabilities occur in various ways. In the analyzed cases where especially small-scale fishermen are active actors, there are concerns regarding social functioning, that is, the capabilities of fishing communities as they become threatened with the gradual loss of their socioeconomic activity, culture and livelihood. Elaborating on the case of South Evoikos Gulf, Mente et al. [31] develop the argument that the aquaculture sector has expanded at the expense of other social and economic activities, negatively affecting the community structure. In this case, local people and fishermen claim a disruption of their activity and disturbance of their environment, which places greater costs on them while decreasing their capabilities and their coherent individual and collective functioning.

The capabilities approach is related to the extent to which actors are indeed able to influence decisions as well. In the case of information asymmetries, different levels of power are embedded in social and economic relations, and privileged people likely have a greater access to the means of influencing the final decision. Usually, socially and economically powerful organizations with greater experience and knowledge and “better informed, better educated citizens with good contacts and the time and money to devote to political involvement will dominate the process” [33]. In Greece, for example, environmental NGOs and fishermen argue that aquaculture is supported by politically powerful individuals, who are prioritizing economic benefits at the expense of social coherence and environment. However, local people do not possess the means to influence the process, i.e. they are not capable of directing the final decision (I11).

Related to previous concerns, some ‘silencing’ arguments are present in some conflictive cases in Ireland, Cyprus and Norway. In Galway Bay, the public body applying for the license of a fish farm was meanwhile responsible for issuing fishing licenses. Thus, NGOs claim that fishermen are not capable of showing their opposition since they are afraid that they could lose their licenses or would not be able to renew them if they come into conflict with the public authority (I13). In Liopetri, Cyprus, the interviewee reported that local newspaper’s coverage of related news and support for opposition sharply stopped when it was sold to the fish farm owner (I9). In Limassol, Cyprus, the aquaculture company opened a court case against the NGO representative since he publicly declared negative consequences of fish farm’s operation. The company lost the court case in the end, and the NGO representative was found innocent, but the company’s attempt remained as a pressure to silence voices. Moreover, in Floro, a local fish farm operator applied for permission for a new location. In this case, local authorities were against opening up another area. The owner of the fish farm then threatened the local fish slaughter with stopping the delivery of farmed salmon, which was reported by the local newspaper as involving a possible layoff of 100 employees. Local authorities thus felt obliged to grant the permission, although they were initially opposed (I18).

These cases demonstrate that owners of marine finfish aquaculture facilities are in some cases able to impose their own will,

and both the stakeholders and their official local representatives may become unable to implement their decisions. People’s discontent in these cases is related to the disruption of capabilities and participation aspects of environmental justice for two reasons. First, they are silenced whenever they are not able to express their position democratically and have a social and political stance on the debate. Secondly, their participation does not become real even if they have been recognized as participants in decision-making – whenever their official representatives cannot implement their decisions.

To sum up, the results indicate that the conflicts are not restricted to one or two local opposing actor groups that are against marine finfish aquaculture developments, but rather they include numerous stakeholders with varying perceptions and concerns. Furthermore, the demands are not solely based on ecological aspects, instead they are strongly linked to environmental justice dimensions and this might have significant policy implications.

5. Discussion

Higher stakes and increasing interest in the marine finfish aquaculture sector combined with recent European policies aimed at its growth imply a need for detailed socioeconomic, ecological and political analyses. In this context, shedding light on a considerable number of socio-environmental conflicts in Europe is of great importance, especially by focusing on their policy implications when new legislation and strategic plans are under development. This article illustrated that marine finfish aquaculture sector in Europe – just like its counterparts throughout the world – does not operate conflict-free, and unearthed the actors and their arguments in order to derive lessons for new policies and their coherent application.

The results first illustrated that numerous conflicts related to marine finfish aquaculture exist in Europe. Interestingly, most of these conflicts were not identified in the literature, and they could only be detected by carrying out interviews with the actors involved. While covering the biggest database of peer-reviewed articles enabled to detect 12 conflicts, 27 in-depth interviews with key actors pointed to 12 additional cases. This shows that the relevance of aquaculture conflicts in Europe remains under addressed in the peer-reviewed literature.

Secondly, the arguments employed in these conflicts demonstrated that conflicts are not a result of pure conservationist concerns, neither of purely local selfish complaints; rather, they are strongly related to environmental justice claims. Yet, some sector and public administration representatives usually consider these debates and opposition as NIMBY attitudes. This perspective labels local movements as NIMBY reactions and blame them for intending to block fish farm projects. This article instead asserts that this approach underrates local movements and ignores the significance of these conflicts with respect to their policy implications and their potential to include constructive and transformative proposals.

Indeed, opposition movements that are spotted often demand the use of best available techniques and practices such as the establishment of closed containers instead of open cages, sustainable sourcing of feed, labeling and monitoring systems, and an even, transparent and participatory governance [24,35,43]. Moreover, environmental justice arguments are used to call for a just distribution of burdens, benefits and risks generated by marine finfish aquaculture activities; for recognition of relevant stakeholders; for adequate access to information and tools to effectively participate and influence decision-making processes; and for an enhancement of the capabilities and social functioning of individuals and communities.

In fact, many debates are related to how decisions are made. This article underlines the existence of a variety of actors and points to the importance of a wide participation among all stakeholders – those who can affect or are affected by marine aquaculture activities. In some cases, the results showed that several stakeholders were ignored at the initial step of aquaculture planning which directly hindered participation. The lesson to be derived is that regional or national interest should never ignore the local level of decision-making – and instead directly jump to higher levels – since this is the level at which the projects will actually be implemented. These facts point to the need for designing and enabling inclusive participatory decision-making procedures that ensure: (i) timely and public provision of transparent, clear and adequate information so that each stakeholder can properly evaluate different development options, (ii) allocation of public funds for public research and for supporting best practices directed to environmentally and socially desirable outcomes serving collective needs, and (iii) prioritization of local needs and concerns.

All of the above transformative arguments are of paramount importance for forthcoming aquaculture policies as in some cases decision-making authorities tend towards eliminating any obstacle to aquaculture unless there are strong conflicts [31]. In line with this, the efforts to decrease the administrative burden of the sector have to be carefully analyzed. There are two issues related to this objective that shall be distinguished from each other. First, in many countries, several actors complain about the complex and unclear character of application and decision-making structure. In many cases, it is not clear where to apply for a new farm or for complaints about its impacts, neither which public body has what authority. Its clarification and simplification would be beneficial for each stakeholder in order to improve the discussion and participation. Secondly, there is the issue of long application periods necessary to obtain a license in Europe. These long periods can be a result of the former, i.e. they may be due to the complex set of bureaucratic requirements, which do not function properly. However, in many cases, it can also be a result of the need for public consultation, which is crucial to ensure participation and inclusion of several concerns, best practices and social acceptance.

Finally, the present study remarks that there are already notable conflicts with a potential to become even stronger, unless the policies encouraging the expansion of marine finfish aquaculture cover all social and environmental aspects. As a consequence, while avoiding the emergence of conflicts – through well-designed public policies – may not be seen as a priority for the European finfish aquaculture industry in the context of stagnation [39], it may become a very relevant issue also for the sector while following the growth objective. Therefore, early warnings made by these conflicts should be seriously taken into account in order to prevent the expansion and spread of conflicts and to derive lessons for developing appropriate policies.

6. Conclusions

This study aimed to contribute to debates related to European aquaculture development as well as to environmental justice literature by analyzing existing finfish aquaculture conflicts in Europe and by linking them to the policy level. It underlines that while establishing new strategies for European aquaculture, the focus should not be solely on economic growth, but rather on ecologically, socially and economically sustainable and just development of marine aquaculture. Integration of economic, social and ecological concerns into national and regional aquaculture strategy plans proves to be potentially challenging but necessary in order to ensure social acceptance of fish farms and to control the

impacts of new and already existing ones. The article concludes by emphasizing the significance of marine finfish aquaculture conflicts in Europe and the lessons to be learned in terms of their policy implications. An effective participatory decision-making mechanism should be designed that takes the views and perceptions of all relevant actors into account in order to determine whether or not to construct fish farms; and if yes, where to build them and how many. Best practices safeguarding environmental justice such as the establishment of inclusive decision-making mechanisms, ensuring access to transparent information and an equitable social distribution of burdens, benefits and risks resulting from aquaculture activities should be further investigated and incorporated into future policies.

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Appendix A. List of interviews

- 1) Baltics – NGO network representatives, 11.04.2013.
- 2) Brussels – NGO representative, 07.03.2013.
- 3) Brussels – NGO representative, 05.03.2013.
- 4) Brussels – NGO representative, 04.03.2013.
- 5) Brussels – NGO representative, 11.03.2013.
- 6) Brussels – Aquaculture sector representative, 22.04.2013.
- 7) Brussels – Public administration (DG Environment), 22.04.2013.
- 8) Brussels – Public administration (DG Mare), 23.04.2013.
- 9) Cyprus – Researcher, 28.08.2013.
- 10) France – NGO representative, 07.08.2013.
- 11) Greece – NGO representative, 07.02.2013, 30.07.2013.
- 12) Greece – NGO representative, 18.07.2013.
- 13) Ireland – NGO representative, 03.09.2013.
- 14) Netherlands – NGO representative, 01.03.2013.
- 15) Norway – Environment Agency, 13.09.2013.
- 16) Norway – Researchers, 18.09.2013.
- 17) Norway – Association of Hunters and Anglers, 16.09.2013.
- 18) Norway – NGO representative, 31.07.2013.
- 19) Norway – NGO representative, 25.07.2013.
- 20) Norway – NGO representative, 28.06.2013.
- 21) Portugal – NGO representative and researcher, 02.08.2013.
- 22) Portugal – Researcher, 08.03.2013.
- 23) Spain – NGO representative and researcher, 12.09.2013.
- 24) Spain – Sector representative, 04.02.2013.
- 25) Spain – Sector representative, 13.09.2013.
- 26) UK – Scotland – NGO representative, 08.02.2013.
- 27) UK – Scotland – Ireland – Norway – Researcher and activist, 11.04.2013.

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