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Building the Social Acceptability of Aquaculture through a Participatory Approach: An Experiment Conducted in Monastir Bay, Tunisia

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Abstract: Aquaculture development is a challenge for the economic growth of coastal territories and to promote the food security of their populations. Many efforts have been made by international, national, and local public institutions to develop this sector. Despite this political objective, the coastal zones of Europe and the Mediterranean in general are faced with problems that strongly limit this development. This is linked to several factors, including social opposition, which raises the question of the social acceptability of aquaculture development. Beyond understanding the factors that explain the social rejection of this sector or its products, the key question concerns the capacity of private and public institutions to deal with this social opposition in a practical way. Based on fieldwork and a participatory approach, this paper analyzes the constraints of aquaculture development in Monastir Bay, Tunisia, and in particular, those relying on social dimensions. Under this participatory approach, the authors propose a research–action framework allowing the building of bases for engaging stakeholders in a co-construction process of a shared vision of aquaculture development in Monastir, in accordance with the constraints and ambitions expressed by the local communities regarding territorial needs. This paper shows the value of building the transition from an individual or group vision to a collective vision through a participatory approach that is likely to form a consensus, as opposed to an aggregation of individual visions that can lead to social unacceptance. It also argues that involving citizens in the exploration of aquaculture development scenarios adapted to the territory is an essential prerequisite to exploring the conditions that question the social acceptability and its improvement.

Keywords: aquaculture development; social acceptability; Monastir Bay; participatory approach



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1. Introduction

Although there are a wide variety of definitions of the concept of social acceptability, this notion can be apprehended as “the result of a process in which stakeholders work together to establish the minimum conditions to be put in place to ensure that a project, a programme or policy fits harmoniously, at a given time, into its natural and human environment”. This definition proposed by Caron-Malenfant and Conraud [1] is particularly interesting because it considers it to be the result of a social process that leads to the acceptance or rejection of a private or public decision. This definition therefore incorporates the dynamic dimension of social interactions and the role of governance when it comes to collective goods or resources. The social acceptability of aquaculture is currently a major concern of the institutions in charge of aquaculture development. The General Fisheries Commission for the Mediterranean (GFCM) considers social acceptability a key priority to

ensure the sustainable development of the sector [2]. Correspondingly, the International Union for Conservation of Nature (IUCN) mentions social acceptability in its guide for the selection of aquaculture sites by defining it as the “objective of the site selection and management process” aimed at “ensuring achievement and long-term sustainability of the aquaculture project” [3]. Nevertheless, despite this interest, the approach commonly adopted by project promoters is often inadequate, mainly based on technical aspects, and does not sufficiently address the social dimensions of aquaculture development [4]. This leads to social conflicts, opposition to aquaculture, and failure of specific projects for the installation of new businesses. Social acceptability is often considered a technical issue to be acknowledged without adequately considering its influence on project development [5]. Frequently, project managers try to raise public awareness of aquaculture and its benefits to encourage acceptance. The scientific literature shows that information and communication can positively influence public opinion [6–9] but cannot solve all problems, such as conflicts of use involving aquaculture [10–12]. Some works highlight the importance of governance systems to manage difficulties relying on social acceptability [13,14]. According to the principles of participatory engineering, the way a project is designed and developed is decisive for its acceptance or rejection.

Participation is a central tool in improving the conditions that can lead to a situation of social acceptability [6,9,15,16]. IUCN [3] specifies that “the participatory approach, as a well-structured and correctly implemented strategy, applied to the selection and management of aquaculture sites, represents an opportunity to guarantee the acceptance and permanence of any aquaculture project, since it allows all actors to be involved in the definition and implementation of the process”. According to Yates and Caron [13], this allows stakeholders to take ownership of the project and therefore to be more favorable towards accepting it. In addition, participation promotes trust between actors and allows stakeholders to feel more respected and considered [17]. The top-down approach often used for the implementation of such projects should therefore be replaced by a more horizontal process [9].

Participatory processes vary based on stakeholder involvement and can include information sharing, consultation, conciliation, and co-decision [18]. Conciliation and co-decision are best for social acceptability, though co-decision can be challenging for large projects. Effective participation requires participants to influence decisions, clear objectives, inclusive representation, transparency, diverse viewpoints, and adaptability to local specifics [2,16,17,19]. If participation is not a panacea in itself [20], its success depends on the quality of implementation. While participatory mechanisms influence social interactions and stakeholder perceptions, they do not determine them [21]. The goal is to facilitate debate and compromise, not force the acceptance of decisions. This approach analyzes stakeholders’ views on aquaculture development, aiming to understand their acceptance or rejection and its impact on the community or territory. The goal is to build a shared vision of aquaculture development, highlighting the social dimensions of public policies and integrating them into regional and national plans. This method moves away from normative assessments based solely on context-dependent perceptions or attitudes. This normativity appears at the heart of harmonious social relationships [5]. It addresses the limitations of normative approaches to social acceptability of countries in the Global North through the formulation of highly inductive normative hypotheses about what social acceptability is and what factors promote it, but without integrating them into decision-making processes [22,23].

Numerous examples, especially within the Blue Economy, highlight the poor involvement of stakeholders in governance [24]. This issue initiated the participatory process within the H2020-MedAID European project (<http://www.medaid-h2020.eu>, accessed on 28 August 2023), particularly in the Bay of Monastir, Tunisia (Figure 1). The project experimented with a participatory approach to explore the conditions for social acceptability of aquaculture development in Tunisia’s main aquaculture production area. Despite political efforts to develop the sector, social opposition has caused stagnation.

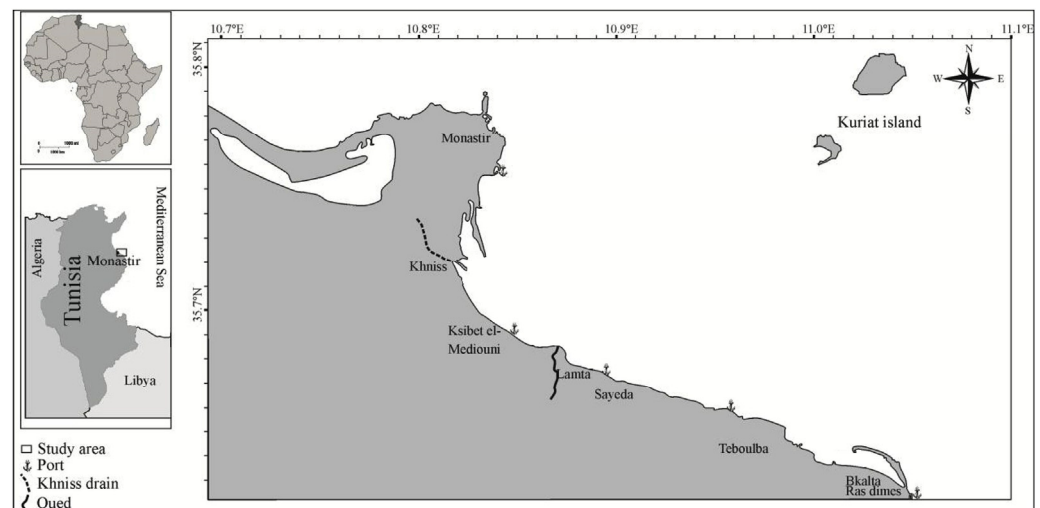


Figure 1. Map of the bay of Monastir in Tunisia, adapted from Damak et al. [25].

Marine aquaculture developed in Tunisia in the 1960s, but it was only with the adoption of floating cages for fish farming, facilitated by economic incentives, that the sector expanded. Among the aquaculture activities present on the territory, off-shore aquaculture is currently the most used system with a contribution of 92% to the production of marine fish farming. As in the majority of Mediterranean countries, marine fish farming in Tunisia is dominated by sea bream (*Sparus aurata*) and sea bass (*Dicentrarchus labrax*). This sector contributes approximately 21% to the production value of the overall fisheries and aquaculture production. The Tunisian territory currently hosts around 20 productive offshore aquaculture farms settled mainly in the governorates of Sousse, Monastir, and Nabeul located in the Sahel region of Tunisia. The majority of these farms were established between 2009 and 2011. Production thus increased from 3000 tons in 2006 to 14,000 tons in 2015 [26], i.e., an average annual growth rate of around 20% (all aquaculture activities combined). Since then, following the last data published, production has slightly increased to reach 20,500 tons in 2020. This same year, 11 productive farms were observed in Monastir Bay, which represents close to 50% of the national sector business, and the total production of fish from aquaculture is also around 14,000 tons [27].

Between 80% and 93% of the total quantity produced per farm is sold at the local markets. Moreover, half of the farms operate at a rate between 60% and 100% of their production capacity, suggesting they could meet the demand if exports were to increase. However, aquaculture farms are facing several constraints to exporting, such as higher quality standards and health requirements abroad, the presence of quotas, and a lack of competitiveness of their products due to factors like expensive imported inputs, the fall of the Tunisian dinar, high cost of transport, etc. [26]. As a result, the production of aquaculture businesses is mainly sold to wholesalers, and the rest, which represents 26%, is sold directly to supermarkets or wholesale markets [27].

Since the Tunisian revolution of 2011, the governance framework for aquaculture has significantly evolved. Various reforms have been implemented in legal and institutional frameworks, financial, tax, and accounting systems, and corporate law. The Ministry of Agriculture oversees aquaculture management, shaping political strategies and implementing development decisions. To promote decentralization, many responsibilities have been delegated to regional and local institutions. Aquaculture development is driven by private initiatives, supported by the state. Since 1996, the “Direction Générale de la Pêche et de l’Aquaculture” (General Directorate for Fisheries and Aquaculture) has collaborated with stakeholders to create several development strategies: The Aquaculture National Plan (1996–2006), the National Aquaculture Development Strategy (2007–2016), and the strategy for promoting the aquaculture sector by 2020 (2016–2020). The 2007–2016 strategy focused on encouraging private investment through financial incentives and establishing

a technical center for aquaculture technology transfer. The 2020 strategy aimed to ensure sustainable aquaculture development by improving sector management, fostering growth in aquaculture products, and increasing annual per capita consumption.

Recently, the General Directorate for Fisheries and Aquaculture, in collaboration with various actors in the industry, has actively worked on formulating the 2020–2030 strategy, drawing on the results of various studies conducted in recent years. This collaborative approach reflects ongoing efforts to shape the future of Tunisia’s aquaculture sector, which has usually been considered under the term “fixed fisheries” [26]. In light of the political will to develop Tunisia’s aquaculture sector and the economic and social constraints involved, this paper examines the social conditions necessary for fostering aquaculture development in Monastir Bay. Specifically, it analyzes the social dimensions of aquaculture, focusing on social acceptability issues. Using a participatory approach, the fieldwork conducted aims to explore the opportunities and challenges of aquaculture development in an area with significant growth potential. The goal is to determine the feasibility of this development and establish a shared vision for the region’s future in a consensus-driven manner that aligns with local needs and constraints. This participatory approach shifts the focus from merely evaluating perceptions and attitudes to understanding social acceptability as a means of operationalizing social processes to support governance [23].

2. Materials and Methods

2.1. *The Three-Step Approach for Assessing Social Acceptability*

Social acceptability can be assessed in various ways. Ruiz-Chico et al. [28] highlight the social carrying capacity as a measure of social saturation. Using a quantitative index is useful for comparing options like aquaculture versus traditional fisheries or product versus activity acceptance. While quantifying social acceptability is important, proactive project design that integrates social acceptability from the start is essential. Instead of traditional surveys to correct misperceptions later, the authors suggest a participatory approach, co-constructing projects with social acceptability considerations from the beginning. Fortin et al. [29] describe social acceptability as a political evaluation process involving multiple stakeholders, leading to legitimate institutional arrangements that reflect their vision of the territory and development. This underscores the need for co-construction in the process. Social acceptability is also dynamic; Gendron [8] notes that it changes with social debates, issues, and evolving values, highlighting the need for an adaptable process. The goal is to understand what causes the “social unacceptability” of aquaculture in Monastir Bay and to establish conditions for a functional social acceptability framework [30].

The approach built in this work to addressing aquaculture’s social acceptability [31] involved research–action fieldwork with stakeholders in 2018 and 2019, following three steps: (1) territory diagnosis to understand the issues and stakes in Monastir Bay affecting aquaculture’s social acceptability, which involved literature analysis and stakeholder interviews at national and regional levels to gather diverse perspectives, (2) participatory workshops to identify and share issues and action levers for aquaculture development through dialogue among stakeholders, and (3) debate on prospective scenarios through discussions of future scenarios to build conditions for social acceptability, adapting the project to local needs. This method aimed to co-construct a shared vision and framework for socially acceptable aquaculture development in Monastir Bay (cf. Figure 2).

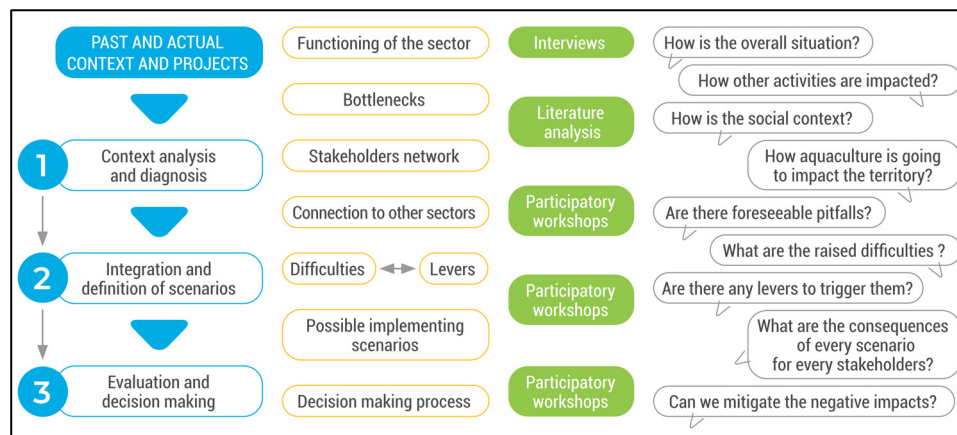


Figure 2. Process flow of the fieldwork carried out [31].

2.2. The Implementation in the Context of the Monastir Bay

An initial list of individuals to be interviewed was established, which was subsequently fed by recommendations from other actors met in the field. In total, 26 face-to-face interviews were conducted. Stakeholders targeted included public agents in charge of managing the activity at the national and regional levels (14), private agents involved in activities in the industry (2), professional fishermen (6), the main environmental NGO in Monastir “Notre Grand Bleu” (1), a representative of the tourism sector (1), and other local community participants (2). The interviews conducted were semi-directive, i.e., based on an open-ended interview guide that allowed the interviewees to focus on pre-defined themes, but with an openness to expound upon these pre-defined themes. The main themes of the interviews were (1) vision of the activity and links with aquaculture, (2) the aquaculture sector in Monastir Bay (technical and institutional dimensions), (3) specific features of Monastir Bay, including social, economic, and environmental aspects, (4) obstacles to the development of aquaculture, (5) responses in terms of governance, and (6) vision of the sector’s future.

The two other steps of the approach were based on the organization of two multi-stakeholder workshops to bring together different views to assess scenarios for aquaculture development in Monastir Bay, with a focus on social acceptability. The first workshop was devoted to the development of aquaculture activity in the Bay of Monastir and its impact on the various components of society. The aim of the workshop was to (i) produce a shared understanding of the issues involved in developing aquaculture in Monastir Bay, (ii) analyze the potential impacts of aquaculture development on the various components of society, and (iii) anticipate possible actions to minimize or even eliminate these impacts. This type of approach is particularly useful for working with stakeholders with divergent stakes and with a limited understanding of the situation as a whole. It facilitates communication between stakeholders and the exchange of perceptions and knowledge for better mutual understanding. It is also a means of improving stakeholders’ knowledge of a given phenomenon and awareness of the effects of their actions and mediating conflict over the use of resources. This facilitates coordination and negotiation between stakeholders and helps establish a shared action plan and collective rules [32].

Participants covered a large panel of stakeholders from the Tunisian National Tourist Office (ONTT), representatives of the fisheries value chain (GIPP), the fisheries training of Teboulba (CFPP), the Aquaculture Technical Centre (CTA), the Agency of Fisheries Ports and Facilities Agency (APIP), Notre Grand Bleu environmental ONG (NGB), the Regional Agricultural Development Commission of Monastir (CRDA), Directorate-General for Fisheries and Aquaculture (DGPA), the Agricultural Investment Promotion Agency (APIA), the Tunisian Union of Agriculture and Fisheries (UTAP), the Coastal Protection and Development Agency (APAL), and the National Institute of marine Sciences and Technologies (INSTM). Some of them are part of the Regional Advisory Committee, which

is in charge of the management of the sector, particularly examining applications for aquaculture projects in line with local needs and political priorities.

Fed by the first workshop, the second workshop aimed at considering the development of aquaculture from the point of view of social acceptability and to collectively build the conditions for this social acceptability. To achieve this, the workshop led participants to move from an individual perception of the problems of social acceptability of aquaculture to a collective perspective. Initially, the workshop brought out the priorities of each participant, and then confronted them within the framework of prospective scenarios designed to build a common issue. Finally, it allowed the participants to broaden their thinking to include the expectations of civil society, which was not part of the debate. The workshop was organized around three main activities. The first one consisted of ranking 10 criteria (from 1 as the most important to 10 as the least important) describing the role of aquaculture. Each participant had to rank criteria individually underlining each participant’s priorities for aquaculture. These criteria were defined on the basis of the issues that had emerged during the previous interviews and first workshop. These criteria are shown in Table 1.

Table 1. Criteria describing the role and importance allocated to aquaculture in Monastir Bay.

Criteria	Description
Increased economic wealth in Monastir Bay	Increased economic activity in the region, higher wages, lower unemployment, higher taxes paid, higher domestic product, etc.
Job creation	Number of jobs increases (more jobs created than destroyed)
Economic profitability of farms	Farms make profits and pay dividends to their associates (and pay taxes according to Tunisian law).
Fish at an affordable price for the local community	The price of fish is not too high today and aquaculture development allows locals to buy it.
Involvement of local stakeholders in decision-making	Local stakeholders can express their opinions, expectations and needs regarding a policy/project, and their words are considered (e.g.,: there is a local consultative commission, concertation processes are organized, before making a decision administrator sound out the field, etc.”).
Landscape quality	“What a beautiful bay Monastir is!” People will come from far and wide to see it and leave delighted.
A project easy to manage by the government	A project may look fantastic on theory, but if the government isn’t there to provide the legal framework for this activity, and to ensure that it’s respected, it can quickly become anything but.
Low environmental impact	Criterion indicating whether or not the scenario will degrade the environment.
Quality of life for locals	Step by step, things are improving. Monastir is a great place to live!
Preservation of traditional economic activities	Before the arrival of textile factories and aquaculture, there were already traditional economic activities in the governorate of Monastir.

Participants were divided into 3 groups, with the aim of reaching theoretical diversity of representatives in each group. Working in groups enabled participants to express themselves more easily. The participants ranked the 10 criteria according to how important they were to them and presented the most important criterion to the rest of the group.

The next activity was to move from an individual perception to a collective view. The aim of this work was to be able to discuss various issues linked to the development of aquaculture, such as the impacts induced by the development of this sector, the role of the State, the way in which the stakeholders are integrated, etc. This enabled each participant to confront his or her point of view with that of the other participants and to discover the diversity of points of view but also to start building a common issue. To that purpose, participants were asked to evaluate 6 scenarios attached to aquaculture development (Table 2). These scenarios were not designed to be all achievable, but rather to highlight one or more issues and have the stakeholders discuss them. The proposed

scenarios were based on information collected from fieldwork and interviews, highlighting the major issues attached to the development of aquaculture in Monastir Bay. This activity was again carried out in three mixed sub-groups. Each group was asked to characterize the 6 proposed scenarios on the basis of the 10 criteria set out above. For each criterion, participants had to agree on a score to give to each scenario, from 0 (does not characterize) to 5 (fully characterizes).

Table 2. Description of the 6 proposed scenarios.

Scenario	Main Assumptions of the Scenario
A multi-purpose offshore platform	<ul style="list-style-type: none"> - In this scenario, the sharing of space and the impact of aquaculture on the landscape are no longer issues, as aquaculture and other activities are located on an offshore platform. - Aquaculture and fishing do not develop, but are organized differently in space - Tourism is developing and the population of the Monastir region is growing.
Kuriat Islands Marine Protected Area	<ul style="list-style-type: none"> - The marine protected area of the Kuriat Islands is extended and the regulations governing the zone are tightened. As a result, the state of the environment is improving. - Aquaculture and fishing declined slightly in the area, but these activities became more profitable as fish stocks were in better condition and the bay was more favorable to fish development. - The governorate has been awarded the international “sustainable zone” label, and ecotourism is on the rise.
Aquaculture, an activity managed by the government	<ul style="list-style-type: none"> - Climate change and various pollution (urban, industrial, etc.) have a strong impact on marine fisheries resources, which are becoming rarer. Fishermen are forced to stop the activity. - The State is actively involved in the development of aquaculture (subsidies, regulations, etc.) - The price of fish is falling sharply, which makes it possible to offer fish to the consumer at an affordable price. - The aquaculture sector is becoming a pillar of the territory’s economy to the detriment of other activities but remains an activity well supervised by the state
Aquaculture declines in favor of other sectors	<ul style="list-style-type: none"> - For different reasons (aquaculture/fishing tensions, pollution, storms, etc.) aquaculture activity is declining in the area. - Fishing is also reducing and locally produced fish is becoming increasingly rare. The country therefore imports a lot of fish. - The tourism, agriculture and industry sectors are recovering this workforce and developing. - Urbanization in the territory is increasing and industry and agriculture are not without impacts on the environment.
Stagnation of aquaculture in favor of the textile industry	<ul style="list-style-type: none"> - The textile industry has grown significantly. This development is accompanied by significant jobs creation. - The local population grows significantly. - Local economy is developing thanks to their industries but its economy remains fragile due to the dependence on these sectors. - All marine sectors are impacted by the water quality degradation
Industrial fish farming in a liberal context	<ul style="list-style-type: none"> - Foreign investors are investing in the aquaculture activity in Monastir Bay. Large companies are installing in the area. - These investments in the aquaculture sector are leading to job creation throughout. - Fish is produced in large quantities and at a low price but the quality is declining. - The density of cages in Monastir Bay is becoming very high, which directly impacts the environment. - The government is not involved in the aquaculture sector

Following a multicriteria approach, a weighting was assigned to each criterion for each participant, calculated according to their ranking. For practical reasons, the normalized kernel was used to emphasize the importance of the first three criteria (which will account for 80%, 16%, and 4% of the final score, respectively). Since the idea was to bring out the preferences of the participants, it was important to avoid having scenarios that were good “on average”. Each criterion is therefore given a “weight”, which depends on the order of preference according to each participant and the normalized kernel that has been chosen. Based on the scores given for each criterion and each scenario by each group of participants,

a score was calculated for each scenario and each participant, from the most preferred to least preferred scenarios. The participants were able to give their opinions on their scores and indicate whether they agreed with which scenario they liked best and which they liked least. In this way, by having criteria that have a common evaluation for the group, each participant has his or her own score for each scenario. The aim was for everyone to be able to express their reasons for liking or disliking a scenario, in order to highlight the diversity of points of view and to debate these differences. This debate makes it possible to move from an individual vision to a collective vision of the issues and to develop this collective vision at the next stage.

The last activity aimed to broaden the debate by having the participants think about what could promote the social acceptability of aquaculture by civil society in the province (governorate) of Monastir. As civil society is at the heart of issues of social acceptability, participants were asked to think about the priorities that the inhabitants of Monastir would have in terms of aquaculture development by imagining themselves in the shoes of the inhabitants. This time, each group had to collectively rank the 10 criteria describing the role of aquaculture (Table 1), according to the importance they represent for the people of Monastir (one collective ranking per group). This ranking was then cross-referenced with the scores given to the scenarios in the second stage of the workshop. The result was the scenario that participants felt would be most 'acceptable' to the people of Monastir. The participants were then invited to discuss the scenario they considered most acceptable to the population. Each scenario was given a score between 1 (least preferred) and 10 (most preferred), with the expression out of 10 of the standardized score from 0 to 1 for each scenario. The main objective of this exercise was to have stakeholders think about what makes a project acceptable or not for the population by detaching themselves from their individual objectives and building a shared vision of the problems of social acceptability in the region.

3. Results

3.1. Analysis of the Diagnosis

The fieldwork conducted enabled the identification of several economic, environmental, and social constraints on the aquaculture sector in Tunisia. From an economic perspective, the Tunisian production of the aquaculture sector is below its potential capacity. This is due to the low added value of the fish produced. Fish farms are facing high production costs, which notably affects their ability to trade their production on national and international markets. Moreover, domestic demand is limited due to the high price of aquaculture fish for many households with low purchasing power and the competition from fisheries. The estimated mean production cost of aquaculture fish is around 10.17 dinars per kilo (the value of the Tunisian dinar is approximately one-third of a euro), whereas it was sold on the local market at around 10.5 dinars [26]. Margins are therefore very low, mainly due to the high costs of imported inputs. Furthermore, the lack of vertical integration in the aquaculture sector is a key factor. The sector is mainly focused on breeding processes, with little control over inputs or the market. As a result, companies can be considered price takers. The country has just two hatcheries and one feed production plant, requiring imports of fry and feed, which account for 80–85% of production costs. This leads fish farms to mainly import fingerlings and fish meal. This vulnerability has been exacerbated by the devaluation of the Tunisian dinar and the presence of market brokers in the market (referred to as "Gacharas"), which diminishes producers' bargaining power. Complex regulations, particularly regarding access to maritime zones, further limit the establishment of new enterprises locally. Exports are also weakened by taxes, heavy administrative procedures, sanitary standard requirements, and high transportation costs. Additional obstacles to aquaculture development reported by interviews include difficulties in accessing funding for businesses, the lack of high technical labor, and competition for space with other uses.

From an environmental perspective, the interviews frequently addressed the environmental impacts caused by aquaculture as an issue. According to a survey conducted in 2013 [33], aquaculture is considered one of the primary sources of pollution in the bay. The identified environmental impacts are numerous: water quality degradation, chemical pollution, and ecosystem alteration (increased eutrophication, destruction of *Posidonia* seagrass, and changes in genetic biodiversity), although some are visible and others remain to be proven. However, most stakeholders do not mobilize these arguments to contest aquaculture activity itself; they rather criticize the lack of measures taken by the government to prevent these impacts. Governance is a major emphasis point among the stakeholders interviewed and relies on the need to implement good practices in the monitoring and control of sector activities. While prior impact studies are mandated before farms are established in Tunisia, their reliability is questioned by stakeholders. These studies are carried out by a private consulting firm in Tunis, holding a monopoly, and are under the supervision of the National Environmental Protection Agency (ANPE). However, the lack of resources and transparency in results is an argument often put forward to limit the efficiency of this control. Moreover, the monitored indicators primarily focus on fish health and water quality (bacteriological and physicochemical aspects). Stakeholders demand more comprehensive monitoring and bay-scale studies to assess the carrying capacity of the area and the cumulative impacts of aquaculture on the environment. They would prefer such studies to be implemented by trusted entities and internalized by the government in collaboration with scientific institutions. Interviewed stakeholders recognize the environmental degradation trend of the bay, to which aquaculture may be contributing even if it is not the only activity responsible.

Beyond perceptions of aquaculture-related impacts, its development in Monastir Bay has led to significant conflicts with local fisheries. Tourism might also be affected, even though the activities do not currently occupy the same spaces. However, conflicts might potentially emerge if both sectors were to expand in the future. Fishing and aquaculture activities compete for the same spaces. Offshore cages have limited the available space for fishermen, forcing them to change their practices and relocate to other fishing areas. Fishermen argue that the cages have reduced their space, confining them to a polluted coastal area. Moreover, the cages predominantly extend with depth, with mooring areas covering areas up to 10 times larger than on the surface [34]. Fishermen point out that aquaculture operators have appropriated part of the fisheries resources by investing in fishing gear to exploit exclusive areas. Due to aquaculture's definition as fixed fishing, it is prohibited to fish within 500 m of concessions, rendering these zones highly productive for fisheries [35]. The cages operate as fish-aggregating devices (FADs). This means that cages can attract pelagic fish and act as a protective structure, thereby reducing the productivity of local fishermen who cannot work around them. Conflicts also emerge in harbors, primarily in Teboulba. The infrastructure was not designed to accommodate aquaculture, resulting in the chaotic use of docks. Lastly, stresses exist concerning labor. Fishermen argued that aquaculture operators employ skilled fishing labor instead of training new workers. Additionally, fishermen are unhappy that operators hire workers from Teboulba even though aquaculture facilities are located in Monastir and Békalta, where unemployment is high.

Some fishermen do not oppose aquaculture per se, but they are in favor of addressing aquaculture development to the detriment of the other activities in place. They request greater transparency in decisions, participation in site selection and marine concession allocation processes, and more consideration of specific issues relying on local fisheries. These claims have also been reported by most stakeholders interviewed. Therefore, while stakeholders are not entirely opposed to aquaculture, many issues must be addressed before considering aquaculture development at the local level.

The main concerns identified in the fieldwork are summarized in Table 3. These concerns have been compared with the eight categories of social acceptability criteria proposed by Batellier [6], which influence or determine the public's response to a project

or a political decision. Among these factors, some of them mainly affect the nature of the project/policy, while others concern the methods and negotiation mobilized [14].

Table 3. Participative assessment of social acceptability of aquaculture development in the Bay of Monastir, Tunisia (diagnostic of main difficulties in aquaculture development).

Main Difficulties Reported	Social Acceptability Criteria from Batellier [6]							
	Harmony between the Project and the Local Environment	Influence of Project Impacts or General Returns and Distribution on the Local Communities	Level of Risk/Novelty/Uncertainty	Project Management Practices of Proponents	General Knowledge and Information	Trust and Legitimacy of Actors	Decision-Making Processes and Procedural Justice	Governance-Institutional Framework and Factors
The activity develops in an ecologically saturated bay	X	X	X					
The environmental impacts are too numerous and some are irreversible		X	X					
The activity impacts the practices of fishermen		X						
The fishermen do not feel heard							X	X
The activity employs fishermen rather than locals unemployed		X		X				
People with limited means cannot invest in aquaculture								X
The activity does not employ people from the territory		X		X				
The activity does not provide cheap fish		X						X
The activity creates inconveniences for the inhabitants (quality of the water, smell of the nets on the port)		X						X
The operators are not sensitive to the environment				X				
The location is chosen by the operators							X	X
Regulations are not always respected by the operators								X
There is a lack of environmental monitoring and information on the state of the environment (state of the environment, global vision, ...)			X		X			X
There is no feedback on the studies about aquaculture impacts					X			

Table 3. Cont.

Main Difficulties Reported	Social Acceptability Criteria from Batellier [6]					
	Harmony between the Project and the Local Environment	Influence of Project Impacts or General Returns and Distribution on the Local Communities Level of Risk/Novelty/Uncertainty	Project Management Practices of Proponents	General Knowledge and Information	Trust and Legitimacy of Actors	Decision-Making Processes and Procedural Justice
The impact study and monitoring are carried out by a private company acting as a monopoly				X	X	X
The economic aspect is too important in the decisions					X	
The control of farming practices is not sufficient (impact study, control. . .)						X

The factor “Influence of project impacts or general returns and distribution on the local communities” has great importance in Monastir Bay. The way in which the benefits are redistributed seems to be an important factor for locals. In particular, they expect that aquaculture activity will provide job opportunities for local residents, as well as more affordable products for households. As argued in Section 3.1, environmental impacts are frequently pointed out, as previously argued, regarding the way in which these impacts are managed by public authorities. This refers to the “Governance-institutional framework and factors”. Indeed, local stakeholders request a higher involvement of the State in control and management assignments. These remarks are also shared by fishermen, who complain not only about the environmental impacts of aquaculture but also their insufficient consideration by the Administration. In their view, the existing constraints faced by local fisheries need to be taken into greater consideration in the aquaculture development process. Thus, in Monastir Bay, all the factors from the Batellier framework [6] are represented among the concerns reported in this fieldwork.

3.2. Ranking of Criteria Describing Aquaculture Development

The second part of the fieldwork consisted of implementing a participatory approach to discuss with stakeholders the possible future of aquaculture in Monastir Bay. Based on the approach described in Section 2, the results are outlined in Figure 3. Specifically, there is considerable heterogeneity in the ranking of criteria describing the role of aquaculture in Monastir Bay made by participants, but a few trends emerge. The highest criterion ranked relies on environmental concerns (“low environmental impact” selected by 12 from the 27 participants as the most relevant one). The next highest-ranked criteria are “job creation”, “quality of life for locals”, “economic benefits for the community”, and “preservation of traditional activities”. The criteria that are most frequently ranked in the top 3 are “Low environmental impact”, “Job creation”, “Local quality of life”, “economic benefits for the community”, and “Preservation of traditional economic activities”. The lowest ranked criteria were “Economic profitability of farms” and “Production of fish at an affordable price”, followed by “Sector growth easy to control by the government” and

“Preservation of traditional economic activities”. A few trends also emerge concerning the ranking of criteria according to stakeholder categories.

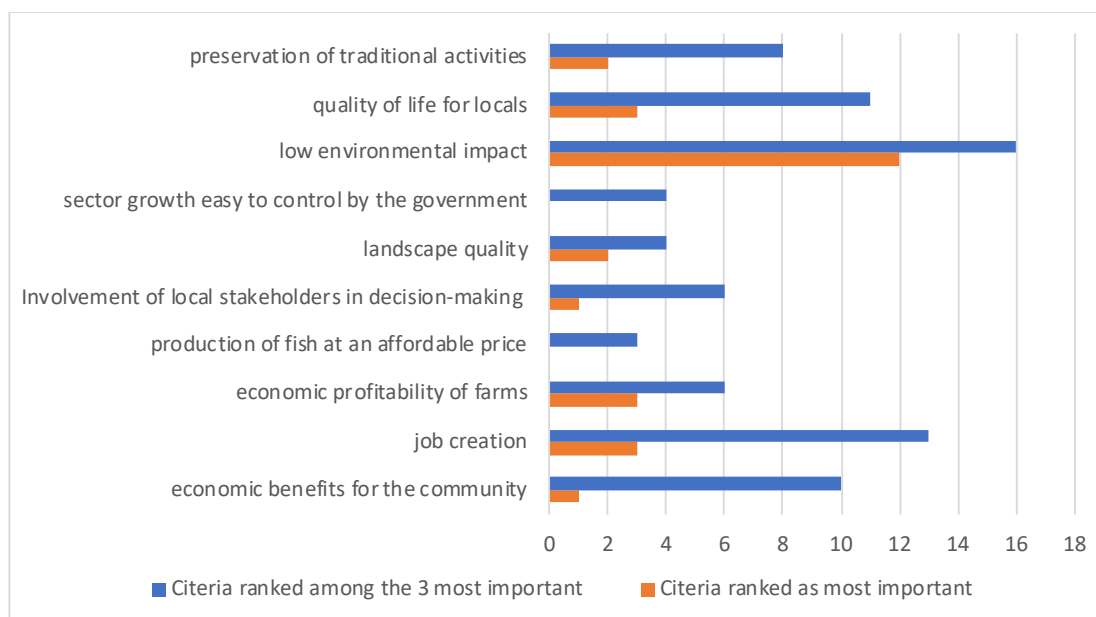


Figure 3. Ranking of criteria associated with aquaculture development.

Among the participants coming from the Regional Advisory Committee, the ranking of criteria is heterogeneous, suggesting that important discussions must take place when decisions are made. For government bodies, the main criteria concerned those related to environmental and economic issues. However, they gave less importance to the preservation of traditional activities and landscape quality. As a result, this focus on supporting new activities and providing new jobs and business opportunities is quite general compared to other specific contexts. Finally, as could be expected, the representatives of the fishery sector mainly support the “preservation of traditional economic activities”. Moreover, they suggest that the government must be fully involved in controlling the aquaculture extension. They also consider the environmental protection of the bay and the involvement of stakeholders in decision-making processes important. The fishery sector often complains of a lack of transparency and trust with the central government. They are less interested in the other economic criteria related to the aquaculture sector.

This heterogeneity of rankings shows the diversity of expectations with regard to aquaculture development. This highlights the importance of involving all stakeholders in the decision-making process to ensure that all concerns are considered in order to promote deliberation and compromises rather than conflictual positions based on bargaining power, mainly leading to immobilism and the status quo.

3.3. Evaluation of Scenarios in Sub-Groups and Social Acceptability Assessment

3.3.1. Collective Characterization of the Scenarios

The final activity of the participatory process consisted of comparing the perceptions of participants linked to the scenarios for the development of aquaculture in Monastir as described in Section 2. The first results are attached to the individual assessment of scenarios. Table 4 presents the collective characterization of the scenarios according to the 10 criteria within each group. Overall, the first three scenarios in the table (left-hand columns of Table 4) tend to be characterized by a low environmental impact through State-managed projects that contribute to the quality of life of local communities while preserving other activities. On the other hand, the other three scenarios (right-hand columns of Table 4) are more characterized by the three groups with high scores for economic criteria but

very low scores in terms of environmental criteria and State-led management involving stakeholders. They are even seen as a threat to other traditional activities in the bay. There are minor deviations between groups in terms of the qualification of scenarios according to criteria. Some differences could be related to the heterogeneity of certain groups being more or less environment- or industry-centered. This is, for instance, the case for the third group (G3) that perceives the multi-use offshore platform as a way of developing aquaculture and generating economic benefits, employment, and wealth, when other groups perceive such platforms as a way of mowing aquaculture away from the coast and other uses. This is also the case of the first group (G1), which perceives the decline in aquaculture scenario as having lower environmental impacts and an increase in the quality of life of locals, which is the opposite perception of the two other stakeholder groups. However, apart from these few exceptions, the rankings remain relatively homogeneous and consensual at the collective level.

Table 4. Characterization of the six proposed scenarios according to criteria (0 or dark red indicates does not characterize the scenario and 5 or dark green indicates fully characterizes the scenario) by each stakeholder group (G1, G2, and G3).

	A Multi-Use Offshore Platform			Kuriat Islands Marine Protected Area			Aquaculture, an Activity Driven by the State			Aquaculture Declines in Favor of Other Sectors			Stagnation of Aquaculture in Favor of the Textile Industry			Industrial Fish Farming in a Liberal Context			
	Group	G1	G2	G3	G1	G2	G3	G1	G2	G3	G1	G2	G3	G1	G2	G3	G1	G2	G3
Increased economic wealth in Monastir Bay		3	1	5	2	0	2	4	4	4	3	2	3	5	3	4	2	5	5
Job creation		3	0	4	1	0	1	4	5	4	2	2	3	5	5	5	4	5	4
Economic profitability of farms		4	4	5	5	2	3	5	4	4	0	0	2	2	0	1	4	5	4
Fish at an affordable price for the local community		2	4	4	0	0	2	4	5	5	0	0	1	1	1	1	4	5	5
Involvement of local stakeholders in decision-making		1	3	4	5	5	5	3	4	3	3	1	1	1	2	2	0	2	4
Landscape quality		5	4	5	5	5	5	3	3	2	3	2	2	1	0	1	0	2	2
A project easy to manage by the government		1	4	5	4	5	5	4	5	5	1	2	1	2	0	1	0	1	2
Low environmental impact		4	4	4	5	5	5	2	4	3	4	3	1	0	0	1	1	3	2
Quality of life for locals		4	3	5	4	3	4	2	4	5	4	2	1	0	0	1	1	3	3
Preservation of traditional economic activities		5	5	3	5	5	5	3	2	3	3	2	5	1	0	1	1	0	1

The cross-referencing of this collective work with the previous individual criteria ranking of each participant allows for providing each participant/stakeholder with his or her own most preferred and least popular scenarios, together with intermediate ones. In order to characterize his or her most and least popular scenarios, each participant could rank each scenario with colored stickers, with a green sticker representing the best scenario, a yellow sticker representing the second-best scenario, and a red sticker representing the worst, in accordance or not with the multicriteria analysis results for each participant (Table 5). Everyone was then able to express their reasons for liking or disliking a scenario in front of the other participants, in order to highlight the diversity of points of view and to debate these differences.

The expression of individual choices underlines that if there is a consensus about the most rejected scenario, the “Stagnation of aquaculture in favor of the textile industry”, it is much more difficult to obtain unanimity on the most wanted scenarios assessed. Even if some are more appreciated, such as aquaculture development driven and monitored by the State—underlining a choice not opposed to aquaculture but rather questioning the way the development is thought about and controlled—differences can appear between groups. Similarly, there seems to be a more positive trend toward aquaculture in the Kuriat islands’

MPA, but solely for two groups, with some differences in the degree of support. This also suggests the existence of a certain porosity between the preferred and intermediate scenarios. It underlines that the sum of individual choices does not make the collective choice and positions can evolve when moving to the collective level considering additional constraints and benefits and learning from mutual exchanges.

Table 5. Expressing individual scenario choices within each stakeholder group; (green = agreement, red = disagreement, and yellow = indeterminacy).

Group	A Multi-Use Offshore Platform	Kuriat Islands Marine Protected Area	Aquaculture, an Activity Driven by the State	Aquaculture Declines in Favor of Other Sectors	Stagnation of Aquaculture in Favor of the Textile Industry	Industrial Fish Farming in a Liberal Context
G1	●●●●●●●●	●●●●●●●●	●●●●●●●●	●●	●●●●●●●●	●●●●●●
G2	●●	●●	●●●●●●●●	●●	●●●●●●	●●●●●●●●
G3	●●●●●●	●●●●●●●●	●●●●●●●●	●	●●●●●●●●	●●●●●●

3.3.2. Collective Scenario Choices

In order to reach a collective choice, the 10 criteria characterizing the proposed scenarios are again ranked, but at the collective level within each stakeholder group (Table 6). This collective ranking was possible due to the continuous deliberation process in the former steps of the workshop and the mutual exchanges, something that would not have been directly feasible in the initial steps of the workshop. As explained in Section 2, this collective reclassification of the criteria was performed in terms of their importance for society.

Table 6. Collective ranking of criteria associated with aquaculture development in terms of their importance to civil society, from 1 or dark green as the most important to 10 or dark red as least important.

Group	G1	G2	G3
Increased economic wealth in Monastir Bay	5	5	6
Job creation	2	4	4
Economic profitability of farms	7	10	10
Fish at an affordable price for the local community	8	1	2
Involvement of local stakeholders in decision-making	4	6	9
Landscape quality	10	7	3
A project easy to manage by the government	6	8	8
Low environmental impact	1	9	5
Quality of life for locals	9	2	1
Preservation of traditional economic activities	3	3	7

The ranking of the criteria was quite different from one group to another, and the participants had difficulty reaching an agreement. According to the three groups, the economic profitability of farms is not a priority for local people, but job creation is an important criterion for the governorate’s residents. Lastly, job creation can also be seen as being linked to alternative activities to aquaculture and not just dependent on aquaculture, which can lead to differences in perception. For Group 2, people are not concerned about the state of the environment, but what counts first is the price of fish. For Group 1, prioritizing the first five criteria is fairly easy, but prioritizing the last five leads to a number of discussions. The agents in charge of developing aquaculture could not accept a poor ranking of the “Economic profitability of farms” criterion, which was tantamount to rejecting the activity and reintroducing the aquaculture versus environment debate, which had not really been tackled head-on. The “Quality of life” and “Landscape quality” criteria are already included in the “Low environmental impact” criterion, which also explains

their position at the end of the ranking. Lastly, the position in the ranking of certain criteria is completely opposite depending on the group. For example, the “Quality of life for the people of Monastir” is ranked first and second for Groups 2 and 3 and ninth for Group 1, while the “Low environmental impact” criterion is ranked first for Group 1 and ninth for Group 2. This can be explained in part by the fact that some groups were composed mainly of people in charge of managing or supporting aquaculture, despite the initial attempt to form more balanced groups in terms of stakeholder diversity.

There was a lot of discussion about what was important to local people. It was difficult for participants to detach themselves from their own perceptions and those of their institution when ranking these criteria. For some participants, the criteria to which they attached importance clearly led to scenarios that, intuitively, might not be conducive to social acceptability.

In a similar way to the assessment of scenarios at the individual level, the cross-referencing of the collective ranking of criteria (Table 6) together with the characterization of scenarios (Table 4) allows for providing the most preferred and least popular scenarios at the collective level, i.e., at the group level and for the population of the Bay of Monastir (Table 7). This builds the initial conditions for the social acceptability of aquaculture development and expresses the conditions for a project adapted to the territory.

Table 7. Expressing collective scenario choices within each stakeholder group, from 10 or dark green (most preferred) to 1 or dark red (least preferred or most rejected scenario).

Group	A Multi-Use Offshore Platform	Kuriat Islands Marine Protected Area	Aquaculture, an Activity Driven by the State	Aquaculture Declines in Favor of Other Sectors	Stagnation of Aquaculture in Favor of the Textile Industry	Industrial Fish Farming in a Liberal Context
G1	8	9	5	7	2	3
G2	8	1	9	1	2	9
G3	10	7	10	2	2	7

The scenarios that emerge are those that involve aquaculture in a regulated, monitored, and constrained context, such as (1) a multi-purpose platform that can design aquaculture development in a technical and integrated way; (2) aquaculture constrained by the preservation of environmental drivers such as marine-protected areas (MPAs); (3) aquaculture that is supported and highly supervised by the State, which ensures balances and trade-offs in support of sustainability; a liberal context is not accepted and, as a result, strong regulation is requested; (4) a scenario of stagnation or decline of aquaculture in favor of a dominant and impacting industry such as textiles is even more strongly rejected. An additional scenario (5) concerns an extreme proposal designing the extension of aquaculture under an industrial-intensive model, which is not realistic in the local context but discussing this model is a way of raising issues of social acceptability. The collective vision with regard to the issues of acceptability by society brings up the most important criteria for the implementation of the scenarios by changing the individual positions.

The results at the group level showed that in Group 1, the quality of life of residents was put forward as one of the important criteria to be considered in the scenarios, but a better understanding of their quality-of-life criterion was required for decision-making. The group’s concern was therefore to find a balance between environmental preservation, biodiversity, and jobs, which would define the quality-of-life criterion. The “Multi-use offshore platform” scenario reflects a desire to position aquaculture outside an impact perimeter. Placing aquaculture far from the coastline and integrating it with other activities likely to have environmental impacts on the coastal area is considered a good way to avoid the main issues associated with aquaculture development. This is also a way of preserving the economic interest of the activity, particularly in terms of jobs. The economic benefits of this platform scenario are nevertheless perceived as uncertain, given the physical distance from the activity to the coastline and the difficulty of assessing the feasibility of

such platforms. This is why the group was also in favor of the government-supported aquaculture scenario. This scenario is based on controlling the aquaculture extension to ensure compliance with regulations in line with the collective interests of locals. However, the capacity of the State to enforce and control the regulations was questioned and led the group to support the “Aquaculture in the marine protected area” scenario the most. Nevertheless, the marine-protected area was not seen as an opportunity for development, but rather as an efficient method of constraining aquaculture development. The composition of this group thus expressed a more environmentalist feeling but considered the necessity of support for economic development for Monastir.

Group 2 rejected any decline or stagnation in the aquaculture business. The multi-use offshore platform was seen as an opportunity for unconstrained development and innovation while reducing the environmental impact of the activity. The State was seen as the facilitator and guarantor of development through the State-led aquaculture scenario. The reasons for supporting this scenario differ from those of Group 1. The rejection of constraints on aquaculture development led to the rejection of aquaculture in protected marine areas and strong support for the scenario of industrial aquaculture in a liberal context, also seen as a context conducive to innovation. The exercise of positioning oneself as an inhabitant of the governorate of Monastir brought out the scenario of the multi-use platform more strongly, on which none of the participants had positioned themselves at the previous stage.

Group 3 was sensitive to the multi-use offshore platform scenario, but as the discussion progressed, especially from the moment they were asked to re-think the criteria of acceptability, the participants realized that the scenarios they preferred were not the right ones for the population as a whole. Consequently, they ended up supporting that the best scenarios (understood for the population and not for them) are “The Kuriat Islands Marine Protected Area” and “Aquaculture, an activity driven by the State” because these are median scenarios.

By getting stakeholders to think about what makes a project acceptable or unacceptable for the population and by breaking away from the exclusivity of their individual objectives, the collective expression of choices in terms of scenario evolves in relation to the sum of individual choices. This was the case for the scenario based on multi-use offshore platforms. This scenario, previously seen as more mixed in terms of individual choices, became more consensual at the collective level in terms of the importance it represents for the inhabitants of the governorate of Monastir. This a priori utopian scenario of a multi-use offshore platform, by integrating the concerns of individuals with different motives, makes it possible to reach a certain consensus. It reflects the important factors to be taken into consideration: economic development, multi-activity, mitigation of environmental impacts, and the distance of aquaculture from potentially conflictual areas. On the other hand, there is a consensus against the scenario of stagnation of aquaculture in favor of the textile industry. Finally, the preponderant role of the State is put forward or desired either as a facilitator, guardian, or guarantor of compliance with regulations, although there are fears about the effectiveness of its means of action and their insufficiency.

By integrating the criteria of social acceptability, the collective succeeded in changing its individual positions to define the conditions of this acceptability expressed through the scenarios. The aquaculture in MPAs, State-driven aquaculture, and a decline in aquaculture scenarios also score well but are not unanimously supported. While participants often expressed a preference for more environmental scenarios, they nevertheless chose or wished for stronger involvement of the State in aquaculture.

The scenarios thus fit together according to the groups to form typical aquaculture development stories that meet the criteria and conditions for the social acceptability of aquaculture developments. The scenarios proposed, not in terms of their feasibility but rather in terms of the panorama of conditions of acceptability that they express, thus take on their full dimension through the complementarity or exclusivity of the conditions for their development. They, therefore, make it possible to provide the basis for a development

project suitable to the specific context of Monastir Bay, which would incorporate the conditions of acceptability that they have revealed.

4. Discussion

Aquaculture development is on the political agenda of many countries, particularly in the European Union [36] and more widely around the Mediterranean [37]. This development faces a number of struggling issues, including social acceptability, which relies on the difficulty of finding new spaces to accommodate new businesses. In the context of aquaculture innovations, social acceptability is a crucial factor in the adoption and success of new technologies and practices. Understanding consumer perceptions can also help in designing better marketing strategies and improving public trust in aquaculture products. The community impact also influences community support for aquaculture projects, and social acceptability is also influenced by how regulations and policies align with public values and expectations. Effective policies that address environmental sustainability, animal welfare, and fair labor practices can enhance the social acceptability of aquaculture innovations. Finally, engaging with stakeholders is critical for the successful adoption of new practices, and work by Masi et al. [38] likely explores these dynamics to identify the best practices for fostering acceptance and collaboration.

The aim of this work is to understand how this abstract and multifactorial notion of social acceptability translates into the realm of a case study. In this specific work carried out in Tunisia, the factors at the root of social acceptability problems are fairly similar to those described in the literature [39]. The processes of social opposition, linked in particular to arguments put forward by fishermen, the main collective in the physical interactions with aquaculture, are also very similar to those encountered in other case studies [23]. Considering the social and cultural specificities of Tunisia has enabled the design of the participatory approach implemented in this exploratory academic experiment, without any particular institutional mandate. Such an approach enables us to adopt a neutral position with regard to all the stakeholders concerned with aquaculture development in this territory.

The results of this specific fieldwork highlighted a number of social issues related to the development of aquaculture that can also be generalized to other socio-cultural contexts. Firstly, it is important to emphasize that the constraints on aquaculture development are not solely related to social issues and conflicts between local stakeholders. Other economic or ecological factors can cause additional difficulties for such development. This interconnection of issues requires a holistic and integrated approach [31]. Furthermore, this work has also highlighted underlying issues linked to aquaculture development that are hidden, but emerge when they are discussed with stakeholders of the territory. As an example, the absence of apparent conflict between fish farmers and locals is due to the stability of the situation, in which the expansion of aquaculture is limited to the existing facilities. Their presence is not questioned. However, social acceptability issues arise when it comes to debating new facilities or production systems. The rights of traditional activities in a place often benefit from higher legitimacy compared to new users. Despite the standardization of coexistence between activities such as fisheries and aquaculture [40], when the question of aquaculture development is raised, reluctance arises. This was also the case in the Bay of Monastir. The aquaculture sector developed in the early 2000s, but at the same time, generated mistrust among other stakeholders for the reasons explained in Section 3. The resulting aggregation of difficulties inherent to the aquaculture sector, mainly economic, and an attitude of mistrust of some stakeholders, and even opposition to fishermen, lead to a status quo situation (stagnation or weak development of the sector) looking for social peace to be maintained in the short-term. However, in Monastir Bay, the stakeholders, mainly the triptych of fisheries, fish farming, and tourism sectors, have expectations and position themselves as legitimate players who retain an interest in the future use of collective resources and spaces [35].

This work also illustrates that social acceptability is not a dichotomous question of being for or against aquaculture development. NIMBY (Not In My Back Yard) syndrome is often put forward by developers to stigmatize people considered “selfish, solely concerned with the repercussions a project is likely to have on their personal well-being, and incapable of understanding its technical dimensions or collective interest” [8]. In contrast, in the experiment conducted, stakeholders described a priori as collectively hostile to any discussion on extending aquaculture and can nevertheless be mobilized to debate this issue. This is particularly true of the fishermen’s collective. Numerous conflicts between the sector and the central administration have complicated any dialogue, often based on bargaining power. In their opinion, the economic difficulties faced by fishermen are not sufficiently considered. While fishermen’s economic conditions have deteriorated, their role in the power game has changed recently. Tunisia’s 2010 revolution led to major political changes and has called into question the redistribution of common spaces and resources. In Monastir, the bargaining power between the fisheries and aquaculture sectors has shifted. Aquaculture development benefited from the support of the former regime, but after the revolution, this support was lost. At the same time, fishermen have, in the past, challenged the legitimacy of the Administration due to corruption allegations, which also provides fishermen additional power for negotiating fishing rights [35]. Moreover, the fishermen’s strong posture in favor of environmentally friendly aquaculture crystallizes the issue of the degradation of ecosystems and biodiversity in Monastir Bay in a certain way, which is not only caused by aquaculture but also by a gradual uncontrolled anthropization of the coastline [41]. Nevertheless, the participatory approach developed as part of this work shows that all fishermen are not opposed to aquaculture. Some of them expressed the wish that this expansion be carried out in a respectful manner with regard to other activities and that public decisions be made transparently, with the inclusion of stakeholders in the decision-making processes relating to site selection and the granting of marine concessions. These demands were also expressed by all the stakeholders interviewed as part of the assessment of the area. Not all stakeholders are opposed to aquaculture per se. Opposition is linked to certain forms of development (intensive, reducing space for other activities, high environmental impact, no economic benefits for local communities, etc.).

Furthermore, the experimentation carried out as part of the participatory approach implemented in this work shows the value of comparing participants’ perceptions to build momentum toward a shared vision. The individual assessments made of the key criteria defining the role of aquaculture in Monastir Bay were shaped by the exchanges between participants and enabled us to characterize more and less acceptable evolution scenarios. While this assessment is not, in fine, a definitive result on what to decide, it is a preliminary step on the basis of which it is possible to build a consensual political decision on the future of aquaculture in the territory. As Saucier et al. [21] argue, “participatory mechanisms can influence these interactions and stakeholder perceptions, but they do not determine them”. Thus, a consultation that leads to a negative response to aquaculture development should not be seen as a failure. Nonetheless, transparency creates a virtuous circle of trust and participation [17]. As a result, discussion of aquaculture development, with fishermen as the main stakeholders but also with other stakeholders in the area, is difficult to conduct without also addressing the bay’s economic and social problems. This brings us back to the question of integrated management, without which such aquaculture development would not be viable [23].

Lastly, this analysis of the social dimensions of aquaculture highlights the contradiction between the political vision of social acceptability, more understood or mobilized as a convincing tool based on communication than as an approach to participatory democracy. The very conditional essence of acceptability clashes with political strategies that are often constructed upstream, leaving little room for real co-construction of the decision. As a result, the absence of multi-stakeholder concertation arenas and the lack of tools and frameworks suggest that the stable situation in Monastir is likely to persist under a chimerical consensus in which stakeholders prefer not to address “the issues that make people angry”.

5. Conclusions

This paper highlights the importance of considering the social dimensions of aquaculture for current or projected new public or private projects. These aspects are generally neglected or considered at the end of the design process, as the main focus is on the technological innovation and technical–economic viability of new businesses, as well as environmental and regulatory constraints. The case study in Monastir Bay enabled us to analyze these social dimensions in light of the notion of social acceptability. The fieldwork carried out and the participatory approach mobilized addressed the main constraints to aquaculture development locally, associated with environmental, economic, and social aspects, to construct potential scenarios. The results achieved firstly facilitated the comprehension of hidden issues driven by the opposition to potential aquaculture development from local stakeholders. Secondly, the dialogue that has been built up, particularly with fishermen, demonstrates that social acceptability is not just a NIMBY response. Opposition to such development is reinforced by the lack of interaction between the administration and stakeholders, and the mistrust and lack of confidence associated with other political issues or other claims that may not be directly related to aquaculture but can have a negative influence when it comes to talking about this it. Finally, tackling aquaculture development requires addressing the difficulties experienced by fishermen and other local agents. While ecosystem approaches and maritime spatial planning promote the implementation of integrated management, this is not achieved in this realm. Sector-by-sector, top-down approaches that are not debated with stakeholders very often lead to social bottlenecks or status quo situations aimed at the maintenance of social peace but which are not efficient to progress the Blue Economy progress. While participatory approaches are no guarantee of success, they are nevertheless the best way of opening up a dialogue that will give us a chance to build a shared vision of the use of the territory's resources and spaces in a consensual and negotiated way.

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Institutional Review Board Statement: The approval from the Institutional Review Board was waived for this study. In fact, it did not involve experiments on animals or humans, nor did it include surveys or interviews on sensitive populations such as ethnic groups, minorities, or individuals with specific diseases, limiting to anonymizing qualitative analysis, and no vulnerable groups were involved. Additionally, this work is part of European MedAID project funded by the European H2020 program which is completely regulated by ethic norms to comply. Therefore, ethical approval was not necessary for this study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data mobilized concern quantitative or qualitative information obtained from face-to-face interviews or from the literature.

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