



Aquaculture stakeholders role in fisheries co-management

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ARTICLE INFO

Keywords:

Aquaculture
Co-management
Innovation
Traditional fishing
Common Fisheries Policy

ABSTRACT

Industrial aquaculture has become one of the main protagonists both on the coasts and in international policy aimed at regulating matters concerning the sea. This new role is reflected in the recently adopted Common Fisheries Policy of the European Union, where the need to promote the sector and the involvement with other local actors, specifically artisanal fishers, is highlighted. However, the official promotion of this activity could be overvaluing its benefits while, at the same time, undervaluing the new barriers that it is introducing in fisheries co-management. Centered in Valencian Community (Spain) and through a qualitative methodology, this paper examines the views and positions of stakeholders directly involved in aquaculture activity (biologists, aquaculture businessmen and policy managers) on the possibilities of joint participation. It is concluded, that eroding the detected mistrust among stakeholders through "hybrid forms of participation" would be a necessary prerequisite to setting up a common framework for involvement leading to an effective co-management.

1. Introduction

The European Union (EU), the Food and Agriculture Organization of the United Nations (FAO) and other international institutions are stressing the need to boost both marine aquaculture and local fishery as two important axes for attaining environmental and social sustainability [1–3]. Within this dynamic, there is an explicit recognition of the value of local stakeholders and their knowledge in contributing to the resolution of many coastal problems. Policies, recommendations and a rising body of literature highlight the importance of small-scale fishery and aquaculture for generating employment, obtaining food and, in general, for poverty alleviation and prevention [4–6]. It has come to be considered that the non-inclusion of them in a common strategy for fisheries management could block these contributions [7,8].

In this sense, especially the new Common Fisheries Policy (CFP) [9] has introduced very important changes in coastal regulation and governance. Previous reports had already admitted that "the centralised management frequently produces guidelines that are divorced from reality, poorly understood by the sector (which is not involved in discussing or developing them), and difficult to implement, producing results that are often the opposite of those intended" [10]. At the same time the recently adopted CFP showed "the importance of ensuring that all relevant interested parties are involved in the development of policies concerning small-scale coastal fishing and artisanal fishing"

[9]. Finally, it focused on strengthening the need to carry out a 'participatory strategy of local development', in which fishing communities and aquaculturists were included, but also on trying to promote it under the goal of innovation, that comes from the new European perspective based on the so-called knowledge economy. The idea appears very clearly on paragraph 56 of the European Maritime and Fisheries Fund, 2014–2020, which arises from this policy: "In the fishery and aquaculture sector, community-led local development should encourage innovative approaches to create growth and jobs, in particular by adding value to fishery products and diversifying the local economy towards new economic activities, including those offered by 'blue growth' and the broader maritime sectors" [11].

However, the matter is not simple and good intentions, of course, do not easily achieve the desired result: seas and coasts are characterized by multiple jurisdictions, multiple habitats and scales, and – above all – by many conflicting and/or competing interests. Very often, in the marine areas where fishers and aquaculture farmers operate, there is a controversial relationship where both compete for space, resources [12–15] and finally for customers in the market [16]. In fact, many of the experiences of collaboration between these activities have resulted in failure.

This situation can be related to how these co-management models – understood in a general way as "a resource management partnership in which local users and other stakeholders share power and responsibility with government agencies" [17] – do not explicitly consider the

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role of a more diverse set of stakeholders, or which roles different stakeholder types are best positioned to perform [18,19]. Moreover, it might be considered that most of the literature has been based on aquaculture from the fishers point of view. Some authors even suggest that it is easier to turn people with farming experience into aquaculturists than to do so with people who are highly focused on fishing [20]. This difficulty of involving fishers in aquaculture is considered not to be only because of economic reasons, but also – and in particular – to cultural ones, related to prestige, personal satisfaction [21,22] or to poor institutional interaction and cooperation [23–26]. In any case, it seems to be believed that failure is more related to fishers who resist collaborating than to other stakeholders, assuming, perhaps unconsciously, that legislation does promote co-management and that it is accepted by stakeholders involved in aquaculture.

Co-management literature has focused on barriers arising from characteristics and perceptions that guide the actions of fishers [27–29] but little on the perceptions of new actors linked with innovative aquaculture, especially those that are supposed to be related, theoretically, as a triple helix to push innovation: universities, industry and governmental agencies [26,30]. For all these reasons, this is what the paper focuses on, choosing the Valencian Community (VC), one of the most representative regions in Europe of both activities (local fishing and aquaculture), for field work purposes.

The paper is laid out in the following way: the next section (second) starts by justifying the paradigmatic context of the research. The third section shows the research method, which is based on the qualitative analysis of interviews with outstanding actors in the aquaculture world. The fourth section focuses on the perception that stakeholders directly involved in aquaculture activity (policy managers, biologists and businessmen) have about the possibilities and forms of joint involvement. Finally (section five), the main conclusions are presented.

2. Study area

Spain is a country with a great fishing tradition. Its coastline covers 5,000 km, there is a habitual presence along the entire continental shelf of fishers who, along with aquaculture, still play an important socio-economic role in some local communities.

Regarding aquaculture, Spain is the EU country with the highest volume of production: 284.9 thousand tonnes in 2014. However, when evaluating the value of the production, Spain is in third place, with 471.6 million Euros, behind the United Kingdom and France [31]. Within Spain, the Mediterranean region of Valencia led the production of fish from aquaculture in 2014, being the region with more production of gilt-head bream (*Sparus aurata*) and meager (*Argyrosomus regius*) and the second largest producer of sea bass (*Dicentrarchus labrax*) [32].

Since the nineties to the present, the value of the aquaculture production in the VC has been on an upward trend. In contrast, the sector's workforce has declined from 581 employees in 2008 to 424 in 2013, a trend that is repeated throughout the country [33]. This period coincides with an economic context of crisis in which the sector is reorganized through changes in ownership, corporate takeovers and the concentration of the marine facilities of the producers in the region.

To sum up, the production increase shown by aquaculture activity in the VC – which Valencia's government expects to double by 2030 [33] fuelled by the new CFP – contrasts with an inverse dynamic regarding employment. This is undoubtedly related to a process of business concentration that has led, since the beginning of the crisis, to only 13 marine fish aquaculture companies remaining, which are distributed among an even smaller number of business groups. Most of these are multinationals dedicated to various activities (gaming, construction, service stations, etc.) and sometimes linked to venture-capital business groups. Thus, aquaculture in the region has gone from average production units to big concentrations of more efficient production, demanding a higher level of technology and a less intensive

use of labour [34,35].

Aquaculture shares space in the harbours of the VC with local fishing, which represents the majority of fishing in the area. The number of boats and the value of catches follow a decreasing trend, which contrasts with aquaculture's productive growth. The reasons for these decreases are not only related to the scarcity of marine organisms, as a result of pollution and over-exploitation, but also to subsidies for scrapping vessels, to the oil crisis, and to other factors, such as difficulty in competing within an internationalized fish market [36,37].

This downward trend in the number of vessels and the value of catches is repeated for the fishing workforce in general, but it is noteworthy that traditional fishing has kept (and even increased) the number of workers since the crisis began [33]. Fishers themselves confirm the feeling that traditional fishing has behaved as an employment shelter. For years, many fishers left their profession to work in other less arduous and better-paid jobs (especially in construction); however, the crisis forced many of these workers to go back to their former profession.

In short, while in aquaculture there is a tendency towards higher production, but a lower demand for jobs, in traditional fishing the situation is the opposite: there is a declining trend in value of catches and vessels although, comparatively, there is significant stability regarding employment.¹

3. Materials and methods

Collaboration among different actors is conditioned, among other factors, by the exchange of knowledge. Knowledge is related to different perception and practices and the lack of trust can induce fear, which become a significant barrier to plan together long-term activities and to guarantee proportional distribution of benefits [38].

The rationales of government interventions are addressed in order to overcome those barriers. The provision of a regulatory framework establishes different approaches to drive the activities of the stakeholders. On the one hand, government can help to break rigidities between them (values and perceptions shaping behavioral and organizational barriers), as well as mitigate anticipatory myopia in order to reveal potential opportunities of innovations, especially when the agents should operate in a complex system in terms of political levels and multiple overlapping policy settings [39,40]. On the other hand, policies may favor “opening up” or “closing down” the processes of collaboration intruding actors with different perspectives and types of knowledge [41,42]. Therefore, it would be necessary to detect which factors are increasing mistrust of stakeholders and thus generating the closure of its feasibility.

The research seeks to detect these factors through qualitative analysis of the discourses of aquaculture protagonists. The goal is to uncover the perceptions assumed by actors, which guide their actions towards a situation of difficult collaboration. In order to do so, it has been performed 17 semi-structured interviews with scientists (marine biologists), managers with direct responsibility for aquaculture activities, and businessmen.² Interviewees were asked about their practices, following a brief survey but prioritizing their own rhythm, so that they could freely express their own symbolic universe – with minimal guidance. They were audio-recorded, transcribed and dissected into “meaningful statements” using Maxqda. A qualitative analysis was made, underpinned by a critical-discourse approach [43,44]. The issue of joint involvement was not explicitly raised in the interviews in order

¹ Both activities, in terms of employment, are not very significant but, hand-in-hand with tourism, they are the two main activities which shape the Valencian coast.

² Seven entrepreneurs engaged in marine fish aquaculture operating in ports where there is also fishing; six scientists linked to aquaculture production and four managers of public administration related to fisheries and aquaculture. Indeed, there are differences between these three groups but they are put to one side when referring to other stakeholders, like fishers.

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