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Social innovation for developing sustainable solutions in a fisheries sector

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Social innovation for developing sustainable solutions in a fisheries sector

In this paper, we explore how social innovation can provide a range of ecosystem services to local people while supporting public policies and private sector initiatives in delivering successful and innovative food distribution channels. In the Mediterranean basin, the status of commercial fish stocks is critical. In this sense, small-scale, low-impact fishing is a way to sustainably utilize socially innovative practices in the use of natural assets. and to provide support to rural livelihoods while having minimal impacts on the marine environment. We use an innovative evaluation method, based on the integration of qualitative information with quantitative indicators, to assess social innovation initiatives and their impacts. The use of the methodology is demonstrated on the example of the project *A Box of Sea*, Greece. The results obtained show that this social initiative provides a novel food consumption and distribution model aiming at making low impact fishing more economically viable, and therefore achieving a triple sustainability for the sector (environmental, social, and economic). We identify third sector social innovation schemes as key tools to develop novel distribution systems supporting local communities (providing employment, fostering new networks and collaborations across fishers), while improving governance practices of the current fishing sector by creating a fairer market that protects the marine environment. Our findings provide a foundation upon which future evaluations of similar projects can build and compare. Such comparisons are crucial in determining patterns related to the innovation transfer processes.

1. Introduction

Overfishing is a result of overexploitation and destructive fishing practices, and one of the most significant drivers of fish stocks depletion. According to the New Economics Foundation (2017), restoring 43 out of 150 stocks in the North-East Atlantic to their maximum sustainable yield could provide enough food for 100 million EU citizens. In the Mediterranean basin, the status of commercial fish stocks is especially critical with only 7.5 % of the stocks being in good status according to either fishing mortality or fish reproductive capacity criteria (European Commission, 2020b).

Sustainable small-scale fishing (SSF) is recognized as an option to mitigate the effects of overfishing, as it utilizes methods with minimal impacts on the marine environment, species, and habitats. According to EU regulations (No

508/2014), SSF is defined as fishing carried out by vessels of less than 12 metres and not using towed fishing gear (European Parliament and European Council, 2013). The term is usually used interchangeably with terms like “artisanal”, “local”, “coastal”, “traditional”, “non-industrial”.

The potential of SSF for improving social and environmental sustainability has been recognized in the Common Fisheries Policy (2014) that excludes SSF from transferable fishing concession schemes and includes a series of measures to support its financial viability. Despite that, the current high mean age of artisanal fishers and low profitability from most fishing activities threaten the next generation of fishers (Lloret *et al.*, 2018). In Greece, SSF provides 19,396 full-time positions, bringing Greece in the 3rd place in the EU in terms of employment. It also accounts for the largest share (23%) of the total European SSF (Macfadyen *et al.*, 2011).

While having a limited contribution to the Greek gross domestic product (about 3%), low impact fisheries represent a sector of paramount socio-economic importance for coastal areas. They are often the main source of income for many families highly dependent on fisheries (Tzanatos *et al.*, 2005). SSF is especially important for remote areas, such as the Aegean islands, where its activities can enhance social sustainability by promoting thriving coastal communities through the creation of small often family-run companies or self-employed workers (Lazou, 2014).

Securing sustainable SSF in the Mediterranean is a cornerstone for delivering the EU Green Deal targets on sustainable fishing (e.g., linked to the Farm-to-Fork and EU Biodiversity Strategies) and fulfilling UN 2030 Sustainable Development Goals (e.g., targets 2.3, 14.4 and 14.b; Zelasney *et al.*, 2020). Market-based innovations play an important role in improving SSF market access, valorising value-chains, harvesting, trade and commercialization operations. The role of social innovation is crucial in coastal and island regions facing socio-economic decline due to rural depopulation (Zelasney *et al.*, 2020), or marginalization of the fishing sector in front of growing tourism activities (European Parliament, 2016).

Integrated socio-ecological innovations can support SSF in dealing with coupled socio-ecological problems of overexploitation, economic sustainability, and social texture in coastal, island and outermost regions (Olsson and Galaz, 2012). These models provide novel ways of promoting SSF through sustainable job creation and retention, social entrepreneurship formulas, shorter market chains, deployment of new technologies in the promotion and sale of fishing goods and services while preserving traditional practices (European Parliament, 2016).

There are different definitions of social innovation (e.g. Edwards-Schachter *et al.*, 2017; Moulaert *et al.*, 2013; Neumeier, 2012; Pol *et al.*, 2009). In this paper social innovation is considered as a “*reconfiguration of social practices in response to societal challenges, which seeks to enhance outcomes on*

societal well-being and necessarily includes the engagement of civil society actors” (Polman *et al.*, 2017). Social innovation creates new social relationships/collaborations (e.g. processes, interactions, networks) which aim to reshape current practices and improve the collective wellbeing (SIMRA, 2016). Social innovation includes new institutional environments (e.g. of formal and informal rules) and arrangements (spatial and procedural), related actors’ interactions (e.g. new attitudes, values, behaviours, skills, practices and processes) and new fields of activity (e.g. social entrepreneurship, social enterprises) (Nijnik *et al.*, 2019).

An example of social innovation to ensure products diversification are fish boxes/baskets which deliver fresh fish, either directly to customers or to local collection points. The consumer typically agrees to receive a specific quantity and the content will ultimately depend on the catch. Fish boxes exist in Greece and other parts of the Mediterranean, e.g., in Italy (Brunori *et al.*, 2012) and Turkey. This social innovation promotes an alternative food consumption model raising environmental awareness and connecting consumers and producers in the fishing value chain. This model is particularly appropriate for the Mediterranean basin, thanks to the large array of species and the high degree of unpredictability of the catches and large presence of SSF. Despite the high relevance of social innovation, only few studies have insofar analysed its role within the fishing sector, and they focus predominantly on community regeneration in periods of economic crises (Eythórsson & Jóhannesson, 2019) or social clashes (Dacin & Dacin, 2019), and ecosystem restoration initiatives after overfishing (Andersson, 2017).

To fill this knowledge gap, this research focuses on a ‘fish-box’ model of social innovation named ‘*Ena Kouti Thalassa*’, or “A Box of Sea” (BoS). The research objectives are: i) to assess a case of social innovation; ii) to investigate its dynamics and iii) evaluate its impacts. A special focus is on the Mediterranean region and on the role played by non-governmental organizations in the development of social innovation. To reach these objectives, a recently developed innovative evaluation method is applied (Secco *et al.* 2017, 2019). The ultimate goal is on the example from Greece to show whether and how social innovation can support the improvement of the fishing sector by boosting its socio-economic and ecological sustainability, while contributing to advance the scientific knowledge of fishing-related social innovations in rural areas of Europe.

2. Methods

This section provides details on a) the Box of Sea (BoS) project (2.1); b) the case study areas (2.2), c) the sampling design, data collection methods and tools (2.3) and d) the data analysis methods (2.4).

2.1 Box of Sea (BoS) project

The BoS established in 2016 by Greenpeace (Kafetzis, 2016) brings together low impact fishers and citizens who want to take actions against overfishing. This producers-consumers coalition aims at creating a fairer market rewarding environmentally sustainable fishing, supporting small fishing communities, and providing better information to consumers regarding seafood. In short, BoS seeks to make low impact SSF more economically and socially viable.. The BoS coalition consists of a network between: i) the NGO of Greenpeace Greece; ii) fishers that are aligned with sustainable fishing practices and coastal society but find it difficult to channel their fish to the market; iii) consumers who are willing to actively participate in this social innovation and benefit from having fresh fish directly at their doorstep. The project focuses on an experimental step-by-step approach to create a novel consumption and distribution system to promote fishing practises that could become a paradigm for what a sustainable seafood market of the future could be like.

2.2 Study areas

The BoS project is developed on three main geographical areas: the predominantly rural, remote island of Lesvos and Leros, and the predominantly urban region of Attica (Eurostat, 2018). While Figure 1 geographically localizes the three areas, table 1 synthetizes relevant socio-economic data.

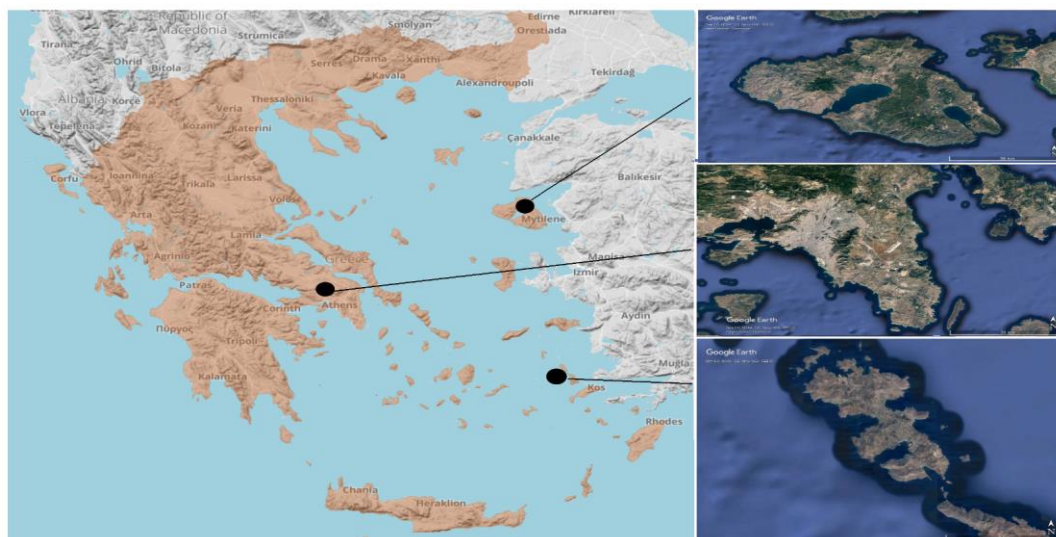


Figure 1. Location of the study areas, Greece. From the top right: Lesvos island, Attica region, and Leros island. Source: adapted from Google Earth Pro and MapBox.com.

Table 1 – Key data of the case study areas

	Lesvos island	Leros island	Attica region
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Total area	1,639 km ²	75.2 km ²	3,814 km ²
Inhabitants (number)	86,436	7,917	3,781,274
Mean population density (persons/km ²)	52.73	105.3	997
Economically active population	38%	39%	46%
Unemployment rate	15%	16%	18%
People at risk of poverty or social exclusion (%) (NUTS 2 level)	22.7%	22.7%	16.5%
Gross Domestic Product/capita	€12,800	€18,000	€22,000

Source: own elaboration based on ELSTAT, 2011

The fishers are mainly located in Lesvos and Leros islands, where respectively 17% and 6% of total employment is in agriculture and fishing (ELSTAT, 2011). Attica is the most highly populated region of Greece (ca. 35% of the overall country population, with 1% of total employment in agriculture and fishing).

2.3. Evaluation framework, sampling design and data collection

The research applied the innovative framework and set of data collection methods developed by the Horizon 2020 project SIMRA (2016)¹ for the evaluation of social innovation initiatives and their impacts in marginalized rural areas (Secco *et al.*, 2017; 2019; Ravazzoli *et al.*, 2021). A detailed presentation of the methodology is beyond the scope of this paper, where the overall approach and how it has been applied to the BoS case-study are reported.

A simplified version of the evaluation framework is visualized in Figure 2. It includes nine key dimensions, which can be used for the specific purpose of assessing the social innovation along with its various phases of development and involved actors (Table 2). The process typically starts when one or few people (“agents” with their capacities, willingness, ideas, etc. that are able to act together as an agency of change – i.e., innovators) decide to react to a situation that they perceive as uncomfortable or undesirable. Their actions for a potential change are pushed by a trigger (e.g., lack of employment, low income) and related to individual and collective needs (e.g., employment, quality of life). They decide to act in a certain ecological, economic, social, cultural and institutional context, which might be supportive or hindering to their ideas (i.e., their perceived context). The initial innovators start preparatory actions to explore the feasibility of their idea, to find resources, etc. and in this process of change (reconfiguring of social practices) they attract others (followers and project partners) and influence the emergence of new networks, new attitudes and new governance arrangements that lead to a new situation (reconfigured social practices). When the new situation is mature enough, the innovators together with the followers and project partners

¹ The SIMRA (Social Innovation in Marginalised Rural Areas) project seeks to advance understanding of social innovation and innovative governance in agriculture, forestry and rural development, and how to boost them, particularly in marginalised rural areas across Europe and the wider Mediterranean region. <http://www.simra-h2020.eu/>

are typically able to design and implement social innovations, which determine immediate outputs and, later, deliver project outcomes to direct beneficiaries along with impacts to indirect beneficiaries. Learning processes derive from the social innovation process as well as project implementation and results, and can provide feedback to improve the initiative at a local level as well as information useful to up- or out-scale the social innovation (Secco *et al.*, 2019).

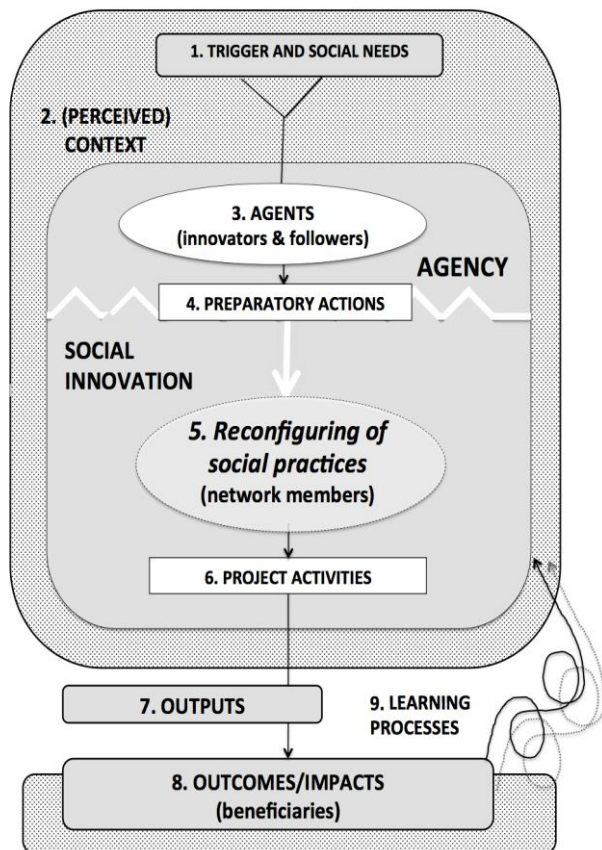


Figure 2. A simplified version of the SIMRA evaluation framework (based on Secco *et al.* 2019)

Adopting a mixed approach (Shorten 2017; Shooneneboom and Johnson, 2017), the method provides a set of quantitative and qualitative data collection tools targeting each type of social innovation actors involved in the various steps of the initiative (Secco *et al.* 2017, 2019). These data collection tools included four questionnaires, respectively targeted to the innovators, followers, project partners and beneficiaries. Depending on the target, the questions were formulated differently, but with the same final goal of aggregating and calculating quantitative indicators (see Tables in the appendices). The tools included also two semi-structured interviews and report sheets for the collection and analysis of qualitative information. These were designed for collecting information about the same aspects explored with

the quantitative questionnaires, to facilitate the triangulation and validation of the results based on different sources.

Finally, focus groups is an effective collective interview tool used to gather complex information about the process of development and timeline of the initiative, as well as its impacts, as perceived and prioritized all together by the actors, in a relatively limited time slot. The set of data collection tools was applied in the field from May until August 2018. The sampling design to identify the actors to be interviewed followed the SIMRA evaluation method (Secco *et al.* 2017, 2019); Table 2 shows the sample size for each actor's category with respect to the actor's population and the data collection tools that have been used for each category. For the focus group, we invited 1 innovator (a member of the NGO), all 13 followers (fishers) including the project manager (also a member of the NGO) and 3 project partners (members of the NGO). From those invited, all members of the NGO and 5 out of 12 fishers showed up for the focus group.

The focus group lasted about four hours and the purpose was to capture the characteristics of the case study area, identify actors, and set up an overall context and timeline for the social innovation. In addition, the group jointly identified and prioritised both positive and negative impacts of the social innovation. Two semi-structured interviews and 27 structured interviews to fill in the questionnaires were performed. Ad hoc adaptations to the originally suggested sampling strategy (Secco *et al.* 2017, 2019) were applied, to better fit with the local conditions.

Table 2. The five categories of actors involved, their population and sample sizes

Actors	Definition and sampling requirements ^a	Population size	Sample size
Innovators	Key leaders and first drivers of innovation. Innovators are identifiable individuals who had the idea, invented it, discovered or were attracted to it. Sampling requirements: Census Data collection tools: semi-structured interview, questionnaire and focus group	2	2
Followers	The first to adopt or support the idea of the innovator, they can be co-creators or identify a good idea and identify a practical approach to carry it forward. Sampling requirements: Census Data collection tools: semi- structured interview, questionnaire and focus group	13	12
Project partners	Individuals, enterprises, organisations, institutions or networks that contribute technically to the social innovation project and are responsible for the implementation of one or several project actions.	<15 ^b	4

	Sampling requirements: non probabilistic sampling (Judgement sampling) Data collection tools: questionnaire and focus group		
Direct Beneficiaries	The people benefiting directly from the outputs and outcomes of the social innovation. Sampling requirements: random sampling Data collection tools: questionnaire	60-100 ^c	9
Total interviews			29^d
^a Source : Secco <i>et al.</i> , 2019 ; Secco <i>et al.</i> , 2017 ^b The total number of project partners involved is not available as it includes both internal project partners (those interviewed) and external logistics companies. ^c Beneficiaries reached in the first phase of the BoS project. ^d Total number of interviews does not match the individual components as two informants have been interviewed twice with both structured and semi-structured interviews.			

In particular, we included only those project partners who were internal to the social innovation (4 persons from Greenpeace Greece and 1 from the island of Leros, helping local fishers with logistics) and not external sub-contractors (e.g., logistics companies) who had almost no knowledge of the project. Moreover, two respondents (a project partner and a follower) were not interviewed, due to time and location constraints.

Finally, BoS consumers were randomly chosen from a list provided by the project manager. Secondary quantitative data on the three local contexts/ areas were also collected, by searching databases such as Eurostat, Hellenic Statistical Authority and World Bank and focusing on Indexes on level of rurality, physical geography marginality, access to infrastructure as well as social and economic conditions, to complete the analysis.

2.4. Data analysis

The two main types of data (qualitative and quantitative) were analysed differently but merged/triangulated for the purpose of a more comprehensive interpretation (Yin, 2009). On the one hand, qualitative data, extracted from the focus group and the two semi-structured interviews, were audio recorded, and the synthesis was done using an ad hoc sheet reporting tool (Secco *et al.*, 2019). Focus groups and semi-structured interviews were conducted in Greek and the main findings and quotes included in the paper are exact translations from the audio recording.

Qualitative information was used for: (i) reconstructing the history behind the origin and further development of BoS and describing the initiative (e.g. timeline and chronology, the agents involved – with a focus on the role of the NGO, etc. - presented in the Annex), and (ii) corroborating or contrasting the information based on quantitative findings. All statements reported in italics within section 3 are extracted from the qualitative tools. Concerning individual interviews, actors that reported them are indicated with an alphanumeric code.

Quantitative data was retrieved from the 27 structured interviews (targeted questionnaires) and elaborated and interpreted using a pool of innovative ad

hoc designed indicators (Secco *et al.* 2017; 2019), which specific meanings and calculated values are reported in the technical Annex². All questionnaires were translated into Greek, and back. Raw data collected were translated into English and digitalised using the online survey System OPINIO, managed by Eurac Research (Górriz-Mifsud *et al.*, 2018). Excel sheets extracted from the online survey system (Secco *et al.*, 2019) where used to calculate the value of each quantitative indicator to evaluate the initiative and its impacts.

The indicators used have been empirically tested in 11 case studies in European and North-African countries (Secco *et al.* 2019). The rationale of input data and calculation varies indicator by indicator. For example, the indicator on governance improvement (I10) is based on an average calculated amongst different actors' assigned scores (perception of improvement) over 13 different pre-listed aspects of governance³. While quantitative indicators are able to provide a synthetic, numerical representation of the situation, and can be used to easily keep under control changes or communicate results to policy-makers, it is recognized that they need to be complemented with qualitative information to deepen the understanding (Secco *et al.*, 2017).

3. Results

In this section, we present the results in relation to the two research objectives of the study: i) to assess the BoS project as a case of social innovation (3.1) and ii) to investigate its dynamics and impacts (3.2). The reconstruction of the history behind the origin and further development of BoS, is provided in the Appendix.

3.1. Identification of BoS as a social innovation initiative

The characteristics of the BoS initiative have been evaluated with respect to the key elements of the social innovation definition by Polman *et al.* (2017). In particular, we checked whether BoS: (i) has determined a process of reconfiguration of previously existing social practices (e.g., new networks, new attitudes, new governance arrangements), (ii) provides responses to existing societal challenges, (iii), has positive outcomes on social well-being, and (iv) engage the civil society. Appendix A reports the calculated values of the

² Although we make reference to the numerical value and the code of the relevant indicators, we point the interested reader to Secco *et al.* (2019) for details on the range of each indicator, the sampling tools used for each indicator and other detailed information.

³ Each respondent (innovators, followers and project partners) scores the improvement for 13 aspects of governance: (i) Options for citizen engagement; (ii) Stakeholder consultation; (iii) Voice of minorities; (iv) Gender balance; (v) Transparency; (vi) Bureaucracy; (vii) Capacity of public administrations; (viii) Policy initiatives; (ix) Legal framework; (x) Conflict of interests and corruption; (xi) Quality of public services; (xii) Market and economy; (xiii) other. Respondents have 3 possible options for their answers: [0] = no improvement, [1] = to some extent, [2] = to a great extent. Averages are calculated in two steps, for each respondent and an overall mean for all respondents (Secco *et al.* 2019, p.226).

329 indicators used (Tables A.2, .4) and their meanings (Tables A.1, .3), while
 330 Tables 2 and 3 refer to interviews' contents.

331 i) Reconfiguration of existing social practices

332 The first indicator (SIR1)⁴ represents the actors' individual perception of the
 333 effectiveness of the social innovation process to determine a reconfiguration,
 334 i.e., its capacity to determine a change with respect to previous conditions in
 335 terms of networks, attitudes and governance arrangements. The individual
 336 perception of respondents about the effectiveness of BoS to reconfigure social
 337 practices, i.e., new relationships established, changed attitudes and
 338 empowerment, is moderate (6.6 in a range 1-10). The collective perception
 339 of actors of the improvement in social practices due to the social innovation
 340 process (SIR2) is a bit lower (5.9 in a range 1-10). This concerns the level of
 341 inclusiveness of actors of the network who are normally not included in the
 342 community initiatives, the improvement in actions of actors who are members
 343 of the public, and the improvement in the attitudes of the actors of the social
 344 innovation. Both these indicators have quite good values, showing that BoS
 345 has determined changes in the social practices that have been perceived by
 346 the actors.

347 The extent of the reconfiguration process can be seen in terms of number of
 348 changes perceived within the network, in attitudes, in internal mechanisms of
 349 governance and in members of the public (SIR3): the higher the number of
 350 changes per actor, the more the social innovation process can make a
 351 difference compared to the normal social practices used in the local context.
 352 Less than one out of three changes is associated with the BoS project (0.7 in
 353 a range 0-3). Table 1 details the most common changes as derived from
 354 qualitative questions included in the structured interviews, and stated during
 355 the semi-structured interviews and focus groups, with some quotations.

356 **Table 1.** Summary of the main changes perceived by BoS actors (in brackets,
 357 the code assigned to quoted respondent, if individual)

Changes observed in..	Most common
...the innovative network	<ul style="list-style-type: none"> - Direct contact between fishers and consumers in Athens - Proactiveness and increased enthusiasm (also of consumers) - Stronger collaboration and cooperation of the fishers' network <p><i>"Also, I learnt that the collaboration among fishers is feasible"</i></p>
...attitudes	<ul style="list-style-type: none"> - Learning process (fishers are now aware of low impact finishing practices, and consumers of the difficulties fishers face in their daily life) - People believe now in the BoS project and want it to continue in the future - Willingness to risk and invest

⁴ In brackets are reported the codes of the indicators as listed in the Tables of the Technical Annex.

	<i>"we [innovators] wanted to support other ways of fishing less harmful for the sea while supporting their marketing in Athens."</i>
....innovative governance arrangements	<ul style="list-style-type: none"> - New system of online orders - Direct communication between fishers and consumers without intermediaries - Home delivery in Athens <p><i>"I believe that it (BoS) is a good channel of communication between consumers and producers. It helps consumers trust producers and be sure that they will receive fresh fish"</i> (SEA003, Focus Group)</p>

The indicator on perceived level of innovation in the process (SIR4) established in Leros and Lesvos islands reached a high score (8.8 in a range 1-10). This shows that respondents perceived it as innovative for the current development of the region. This is reflected in the focus group discussion, from which the following quotations are taken:

"The idea was not unique in the world, but it was something new for Greece."

"Moreover, we wanted consumers to get to know the variety of fish that sea can offer except from the known fish that consumers used to buy in stores"

"Consumers got to know a new model of fishing and a new way that they could buy fish and really embraced this initiative"

The last quantitative indicator used to evaluate the reconfiguration of existing social practices refers to the level of improvement resulted from the social innovation process (SIR5). In the BoS initiative, its value is moderate-high (2 in a range 0-3) and it highlights two major improvements: (i) an increased density of the collaborations when comparing the density of the collaborations amongst actors before the social innovation process (i.e., before 2011) and during it. This refers to an increased number of relations (new contacts) established amongst fishers, and between fishers and consumers; (ii) an improvement in the internal governance arrangements, which mainly refers to the creation of direct communication channels between fishers and consumers, and new systems to manage and deliver orders.

ii) Responses to societal challenges

The capability of the social innovation to simultaneously tackle multiple societal challenges, as identified in the Europe 2020 strategy (European Commission, 2020c), has been evaluated (indicator SIS1). With an indicator value of 29.6 (in a range 0-100), BoS appears capable to tackle about one third of the different challenges present in the territory. The most frequently mentioned challenge was *income, jobs and education*. Other additional challenges only supported by a few participants were *sustainable agriculture and food security; smart, green and integrated transport; environment and climate change*, and

inclusive and innovative societies. The improvement in the societal challenges due to the social innovation, as perceived by the main actors (SIS2) is limited (18.2 in a range 0-100), as expected, considering the small size of the initiative. However, if the beneficiaries' perspective is taken into consideration (SIS3), the perception of improvement due to the initiative increases (43.9 in a range of 0-100) and includes other challenges, such as *health*.

iii) Outcomes on social well-being

The effect on *social cohesion and well-being* of BoS, as perceived by the beneficiaries of the project (SIO1), is positive and high (1.1 in a range from -2 to +2). The idea behind the BoS project is to promote and illustrate a new business model that is both financially and environmentally sustainable. As a result, its impacts are expected to benefit society as a whole more than through its "localised" implementation in a specific territory. To achieve this greater impact, however, the project seeks to improve fishers' ability to compete in a business environment where sustainable practises are not properly rewarded and at the same time to inform consumers regarding sustainable fishing and consumption practises, enabling them to enjoy its merits (fresh fish) and giving them the opportunity to show their support. This latter impact is also considered limited in this first phase of the project, given that the fraction of fishers' sales going through the market channel is low, while the number of fishers and consumers participating is relatively limited (less than 150 in total). The contribution of the social innovation initiative to good governance (SIO2) is perceived as quite limited (25.5 in a range 0-100), and mainly focused on giving more options for citizens engagement, and transparency.

iv) Engagement of the civil society

In terms of involvement of a well-diversified set of members of the civil society (SIE1), BoS is well positioned (0.7 in a range 0-1), with a large majority of citizens (consumers in Athens), and for-profit business entrepreneurs (fishers). However, the role played by the local community for the success of the initiative (SIE2) is rather minimal (0.7 in a range of 0.1-10) if weighted with the other success factors identified, such as the support of the core group, of members of the network, and project partners. This indicates the important role of the Greenpeace team in establishing and running the initiative, as confirmed by the interviews:

"Many people from Greenpeace office were involved for this project to run with success"

Amongst the reasons for being engaged (SIE4), "*serving a good cause*" is the main reported factor, with about 67% of the respondents agreeing with it (66.7 in a range 0-100). This is also reported by Greenpeace Greece (the innovators):

431 *"We [innovators] wanted to support other ways of fishing, less*
432 *harmful for the sea, while supporting their marketing in Athens"*

433 In terms of participation of network members to the meetings (SIE5), in BoS
434 they were moderately active (41.8 in a range of 0-100). The percentage of
435 voluntary work done by the members (SIE7) is 31%. This is mainly because
436 voluntary work was not necessary for the implementation of the initiative: the
437 majority of actors (fishers) continued to do their business-as-usual work. The
438 voluntary work has been mainly done by actors outside of the network, i.e., by
439 Greenpeace volunteers, as supported by the following statement:

440 *"In every delivery, 4-5 people from Greenpeace Greece used their*
441 *own cars and delivered the boxes throughout the city for several*
442 *hours. So, in the first phase of the project, delivery was based*
443 *solely on us."*

444 **v) Overall assessment**

445 The overall level of innovativeness, as perceived by its actors (SII1) and by
446 external experts (SII2) was considered respectively as moderate-high (8.8 in
447 a range 1-10), and moderate (58.3 on a scale from 1-100). In the focus group,
448 external experts mentioned that BoS was a new idea for the Greek context:

449 *"the idea was not unique in the world, but it was*
450 *something new for Greece."*

451 Experts also believe that this social innovation generates new attitudes both
452 of consumers, who feel now safer regarding products and trust fishers much
453 more due to the direct selling, and of fishers who got to know sustainable
454 fishing techniques and their benefits for the society and the environment.
455 Additionally, consumers feel more secure with regards to products' freshness
456 and cleanness, and get an increased utility from eating more seasonal fish
457 and from different species and increase their environmental awareness.

458 *"Consumers attitudes changes and now they know that they*
459 *have different options for their food and where they can find it."*

460 As a social innovation, BoS is reported to provide new solutions, such as the
461 direct communication of fishers-consumers without intermediaries or the
462 development of a new and sustainable economic model. Fresh fish to
463 consumers and fish harvested were considered as new (improved) products.
464 Additional innovative elements of BoS were the increase of the market shares
465 of fishers from remote communities.

466 **3.2 Evaluation of BoS outcomes and impacts**

467 The perceived impacts of BoS are diversified. In terms of ability to reduce the
468 marginalization (I3), the initiative got 2.1 (in a range 1-10). Other relatively
469 limited improvement on constraints concerned the island connectivity (2.3 in

470 a range 1-10), mountain areas (1.5 in a range 1-10), and aridity (1.5 in a range
471 1-10). This relates to the better position fishers and remote communities have
472 in the market, thanks to the linkages developed within the initiative. Even if the
473 values of indicators are relatively low, there is a positive perception. The
474 perceived governance improvement (I4) was 69.4 (in a range of 1-100) with a
475 specific focus on citizens' engagement, transparency, bypassing the
476 bureaucracy arising from inflexible public administrations, and inefficient
477 public services. Other mentioned positive effects were the data, knowledge
478 and experience sharing:

479 *"to develop the idea of "Box of sea" we had to work on it for many hours all*
480 *together to see how this idea can be implemented and what we need to do.*
481 *So, we had to search and get ideas and rethink how we can implement this in*
482 *Greece: from the laws to logistics and many other details."*

483
484 *"For us [Greenpeace], this was a very positive element as the whole idea was*
485 *based on creating and sharing knowledge for similar future actions."*
486

487 No impacts on socially excluded citizens from the local community (I5) have
488 emerged, as the primary focus of BoS was fishers. The initiative reached a low
489 number of final indirect beneficiaries (an average of 4, I6), which are largely
490 identified as being the relatives of the interviewed beneficiaries. In relation to
491 the perceived improvement concerning the European societal challenges
492 (I7), BoS appears well positioned (66.7, in a range 1-100), especially for
493 *income, jobs, education, sustainable agriculture and food security,*
494 *environment and climate change; and to a minor extent for health, smart,*
495 *green and integrated transport, inclusive societies, and innovative societies.*

496 The initiative has been evaluated in terms of its perceived impact on four
497 domains (i.e., environmental, economic, social and institutional) (I10). Positive
498 impacts are the greatest for the social domain (100%) were no negative
499 impacts have been identified, followed by the economic and
500 institutional/governance domains (85.7%), and by the environmental domain
501 (75%). The more cited positive elements were: (i) the support to traditional
502 and sustainable ways of fishing and the environmental and sea protection
503 (environmental domain); (ii) the improved fishers 'and wider local
504 communities' income (economic domain); (iii) the direct support to
505 marginalized fishers and local communities (social domain); (iv) improved
506 networks, social cohesion and community solidarity (social domain) and (v)
507 the improved connections between urban areas and rural communities
508 (institutional/governance domain). Examples of quotations are:

509 *"I would suggest [consolidation of the network] to be strongly positive, as we*
510 *never before had such a strong collaboration with fishers."*

511 *"... some of the most important achievements of the "Box of sea" are [...] the*
512 *network and the collaboration among fishers [...] I learnt that the collaboration*
513 *among fishers is feasible...."*

A negative element identified was the consolidation of existing activities in the economic domain, as shown by the following quotations:

“ ... some of the fishers faced problems with local retailers that held the knife in their throats[sic] to leave the project or to keep the high-quality fish for them ... ”

“ ... [the business-as-usual activity] is common practise for all retailers ... ”

“ ... I think their trying to take advantage of the project and threaten to get lower prices... ”

4. Discussion

Social innovations can introduce temporary or long-term changes affecting communities and the territory where they are initiated (and can have spill-out effects) (Kluvankova *et al.*, 2020). As seen in relation to the forest sector, impacts of natural resources-based social innovations can be seen from improved living conditions of people and can result in providing a range of services/benefits for the local, natural resources-dependent, communities (Nijnik *et al.*, 2019; Nijnik *et al.*, 2020); can add to the prevention of unsustainable use of natural resources; improve the quality of social, economic, and environmental assets and enhance sustainability of natural resource management; or/and contribute to the improving of environmental situation (Nijnik & Sarkki, 2019). We believe that these observations are valid also in relation to sea-based natural resources and related activities and products, such as fishing and fish. In the following, we discuss these issues in relation to the two main guiding research questions of this paper.

4.1 BoS as a social innovation

Our results show that BoS is a social innovation. First of all, it determined the reconfiguration of existing networks. The perceived response of the project to the social needs is deemed as satisfactory, especially for consumers. Therefore, the outcomes benefit society more than even its “localised” implementation in the specific territory. Due to the small scale of the project and the low numbers of fishers and areas involved, the contribution of BoS in this very broad context is perceived as limited (Harris, 2016). Whether it can grow in size or become a dominant model remains dependent on the success and viability of the project over the next years, since this is the first attempt made in the Greek seafood sector (Greenpeace, 2018).

As shown by Nijnik *et al.* (2020) for other types of natural resources (forest) in Ukraine, success depends on the supportive conditions, including: i) political and public support; ii) adequate institutional/regulatory landscapes; iii) human capital (knowledge, ability) and social capital (networking opportunities combined with trust, shared values, etc., collective actions linked to effective collaboration and cooperation across actors, their engagement and social

learning) combined with strong civic engagement of motivated actors with adequate capabilities and the presence of a social innovator with characteristics of strong and competent leadership; iv) adequate financial resources (practical and accessible), and others.

In Greece, although there has been an upsurge in sustainable and ethical consumption in the organic and fair-trade food sector in the last years, the adoption of bottom-up initiatives/movements in fisheries are not widespread. This is mainly due to the lack of consumer awareness and producer's capacity to drive such movements. Greenpeace (2018) provides several examples of fair fisheries initiatives from other EU countries but the literature has not explored the effects of the adoption of these models in terms of supporting local economies.

Regarding governance, the main contribution of BoS is increasing the power of low-impact SSF within the supply chain, also enabling consumers to control the sea-to-fork process, in a clear and transparent way. This is consistent with the EU policy and "Farm to fork" strategy, thus providing creative solutions from the civil society which are able to positively contribute to solve emerging societal challenges (e.g., food security, short value-chains).

We observe how the project includes diverse representatives of the civil society, thus touching upon issues of engagement and favouring alliances and intra-stakeholder groups with the aim to promote common goals and foster the development of collaborative solutions (Fassin *et al.*, 2017). These collaborations include at first the entrepreneurs; then - a growing body of citizens, involved as consumers/supporters, making orders through the platform and helping in shaping this project and its promotion. The members of Greenpeace Greece (NGO) acted as innovators at the beginning and as project managers to this day.

NGOs have been found to play a central role in the development of social innovations, either as innovators or followers, working in partnership with local community members, government agencies or private organisations (Murray *et al.*, 2009; Butzin and Terstriep, 2018). NGOs are uniquely placed to bring together key actors who might not otherwise find avenues to mobilise for the greater good. One such case is WWF spearheading other initiatives around sustainable fisheries in the region, playing the role of bringing together SSF from 14 fishing communities in Italy, Croatia, Greece, Algeria, Tunisia and Turkey to generate ideas and actions to transform SSF in the Mediterranean putting it at the centre of the solution (WWF, 2020).

The combination of external and internal knowledge was an important factor for the development of the innovative activities, in line with Kluvakova *et al.* (2020). Local knowledge was crucial for development of the social innovation to deal with overfishing and reduction in community incomes. The viability of the activities is based on both civic engagement and novel market approaches, which were integrated into the existing system. This model of development can be characterised as neo-endogenous (Ray, 2001), where

extra-local factors are regarded as essential (e.g., the intervention of a national-level NGO) but where endogenous-based development is based on the belief in the potential of local areas and resources to shape their future (e.g., the fishers and the local community).

A key element of the innovation is the continuous engagement of fishers and consumers. The BoS model adopts a short food supply chain (SFSC) which increases levels of traceability and transparency and creates strong relationships, and generates deeper levels of trust on the part of the consumers (Vitterso, 2019; The Food Tank, 2020). Conscious consumers are willing to pay 10% more for products sourced from more transparent supply chains (Bateman and Bonanni, 2019). The benefits of SFSCs extend beyond building trust with consumers, and include the generation of new avenues of engagement between partners both within and outside of traditional supply chains, e.g. creating synergies with complementary activities, such as touristic fishing tours or culinary workshops in partnership with the local community (Greenpeace, 2018).

4.2 BoS's outcomes and impacts

The impact of BoS on the marginalized areas involved in the innovation is considered limited but associated with an improvement of the island connectivity to the mainland, through the creation of new market opportunities for fishers. As witnessed in other social innovations (Westley and Antandze, 2010; Mongelli and Rullani, 2017; Fahrudi, 2020), the socio-economic impacts of BoS are associated with income (Greenpeace, 2018). Although one of the drivers of the social innovation is environmental protection, it seems there is minimal impact of the kind, because the initiative is at its infancy, and relatively small, compared with the total dimension of fishing activities in the area.

Furthermore, whilst SSFs make up 84% of the total Mediterranean fishing fleet, they account for 20% of the revenue generated in the sector (WWF, 2021). However, SSFs have a wider scope (e.g., of sustainable development, consumer-producer education). Fishers taking part in BoS were operating sustainably, and that was a reason they have attracted the attention of an environmental NGO. Thus, the project was never meant to have large environmental benefits, at least in the short term. However, it showcases a need for balancing economic growth and precautionary principles concerning critical natural capital, and the possibility that this will become a new standard in terms of a strategy towards blue growth.

These principles are also embraced in the discourse around the EU Blue growth strategy with emphasis placed on sustainability in policies such as the EU Green Deal, Marine Strategy Framework Directive (MSFD) and the wider EU maritime strategy, which aim to incorporate the preservation of natural capital accumulated in European seas (European Commission, 2008; 2016; 2020a; 2021).

Social and economic effects are easier to measure in the short term, and they can be an effective vehicle to achieving a wider adoption of sustainable fishing practices, thus triggering the attitudes against fish stocks overexploitation and destructive fishing practices.

At the planning stage, i.e., at the beginning of the social innovation process, the objectives set were production-driven and economic-oriented, namely protecting the sea (the common pool resource), using sustainable fishing practices, and improving the income opportunities of SSFs. Later, as beneficiaries came along, the need for a more holistic approach that included their needs for fresher fish, healthier nutrition, etc., emerged. This recognition did not lead to abandoning the original sustainable production principles, but rather to making them more profound and aligning them with the beneficiaries' profile, and consumption needs (Greenpeace, 2018).

The BoS project is being on track in meeting the objectives set in terms of production. However, there is a need to scale it up to achieve the long-term impacts intended by the innovators (improved marine ecosystem health, establishment of a new sustainable model for fisheries and wider awareness of the public – and subsequent behavioural changes – on related environmental issues). Since the size of the social innovation is important for guaranteeing its success, all involved parties expect that it should grow fast. This is essential for fishers, as a higher number of orders will make a difference in their income, but also will make them less dependent on traditional food chains. A larger number of deliveries is also expected from beneficiaries to satisfy a perceived increasing demand. By internalizing this demand for fresh fish, BoS could achieve a higher level of welfare through higher production.

Finally, the innovators believe that the way the objectives of the social innovation can be accomplished is through awareness of the initiative's output on a larger scale. The intention of the actors is to scale up the operations of, involving more fishers and islands, thereby allowing for more deliveries to a larger pool of consumers. In addition, the innovators (Greenpeace Greece), intend to eventually hand over the operation of A Box of Sea to the fishers (potentially structured as a fishers' cooperative).

5. Conclusions

European small-scale fisheries (SSF) are facing numerous challenges from an economic, social and environmental point of view. To this respect, this paper presents an understanding of the key characteristics of and the process through which a social innovation that promotes low-impact fishing can emerge and evolve with positive outcomes. We assessed the reconfiguration of social practices and provided empirical evidence that SSF based on social innovation can be a sustainable, fair and ethical model of seafood production and consumption while at the same time support the local communities. The research also highlights the multiple facets of the beneficial role respectable

non-governmental organizations (NGOs) (such as Greenpeace Greece) can have at enhancing outcomes on societal well-being. Such NGOs can mobilise local resources attracting other actors but also help in nurturing initiatives, by hedging initial concerns and financial constraints.

Also, they can have a key role in bypassing the existing fundamental gaps in governance structures until enough pressure is put on the policy makers to adapt existing policy frameworks. Governance structures seem to be a key area of concern, as highlighted by many actors relevant to the social innovation. While ineffective governance structures could contribute towards triggering social innovation (Moulaert *et. al.*, 2017; Sarkki *et. al.*, 2021), in this particular case, the governance-related hindering factors (such as a lack of clarity and awareness of the relevant policies, as well as considerable bureaucracy associated with the establishment of the initiative) could pose a potential barrier to the future expansion of BoS or to the establishment of other similar initiatives, and should be prioritized in governance and policy reforms at EU and regional levels. The social innovation is currently at a crucial stage, as it undergoes expansion long term plans and structures are being developed to safeguard the future operation of the initiative. The success stories behind this “experiment” are believed to help in spreading the knowledge about this social innovation and urging other territories/fishers/supporters to engage in similar initiatives.

Finally, using a novel evaluation framework, this paper provides a foundation upon which future evaluations of similar initiatives can build and compare. Such comparisons among multiple cases are crucial in determining patterns related to the social innovation transfer process.

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1012 **Appendix**

1013 **Project's chronology in relation to phases of the development of a social** 1014 **innovation and perceived context.**

1015 The BoS project emerged as a response of multiple positive and negative
1016 triggers which may take the form of a disaster (e.g., drought, natural resources
1017 depletion), financial crises or a new policy (Secco *et al.* 2019). In our case, the
1018 trigger was first and foremost the decline in fish stocks in the islands of Lesvos
1019 and Leros that led to lower catches for local fishers and consequently declining
1020 incomes. Fishers' needs and environmental issues (individual and social)
1021 came into the attention of Greenpeace Greece during 2011-2013, when they
1022 started working together to grasp the issues related to SSF, as part of their
1023 involvement in The Low Impact Fishers of Europe (LIFE) platform. The idea
1024 behind was helping fishers to get motivated and politically involved, through
1025 the creation of a low impact fishers group that could potentially put pressure
1026 on the Common Fisheries Policy reform taking place at that time.

1027 Additional negative triggers emerged in 2013. The first (negative) trigger came
1028 from the effects of the economic crisis on fisher communities' incomes. The
1029 combination of lower catches with reduced demand and the intensification of
1030 competition from additional labour force that turn into the primary sector due
1031 to the rise in unemployment was detrimental. This was aggravated by
1032 increasing foreign trawlers crossing the Greek sea borders, taking advantage
1033 of the reduced sea patrolling by the coastguard. This was due to a rising
1034 refugee's influx crossing from Turkey to the Aegean islands, a pattern that
1035 started in 2013 and continued in the years to follow (Triandafyllidou, 2015).

1036 However, the refugee crisis was also a positive determinant (trigger) for the
1037 emergence of BoS. On multiple occasions, Greenpeace Greece members and
1038 fishers worked together, building refugee shelters and saving refugees when
1039 sea accidents occurred. This situation deepened the trust between the two
1040 parties and amplified the feeling of gratitude from the NGO towards fishers. At
1041 this point, Greenpeace Greece had decided that something should be done to
1042 help local fishers' communities, and initiated the idea based on social
1043 innovation – thus being the innovator (according to Secco *et al.* 2019).

1044 The idea behind BoS emerged in 2015, followed by a series of meetings (3-4)
1045 where several groups of SSF from both islands were introduced to the concept

and invited to join the initiative. Those who accepted the invitation can be seen as the initial followers. The BoS concept can be articulated in four main steps. The project would provide an online platform for purchasing boxes of fish from both islands (Greenpeace Greece, 2020). Consumers in the Attica area would receive fish caught daily by low impact fishers to their doorstep. Final consumers would help to test out different tools and logistic details to establish a novel distribution system that will be operated in the future exclusively by the fishers. Even if they partially contributed to test and refine the project, consumers are its final beneficiaries (according to Secco *et al.* 2019), receiving the main outputs (boxes of fresh fish). Finally, an ordering process would allow consumers to visit a dedicated website to place an order for a box, with 2 options, select a delivery date based on available time slots, and make payments.

The core group of the initiative (made up by innovators and the initial followers) was formed in a short period and it immediately started recruiting additional fishers up until June 2016 when the project finally built a network of 11 local, low impact SSF from the islands of Lesbos and Leros (including one woman) and officially started. According to the applied evaluation framework (Secco *et al.* 2019), this network is part of reconfigured social practices: a new network created after a reconfiguring process, in which many changes occurred, including the emergence of new attitudes and governance arrangements. In the first 6-months, about 200 boxes (project outputs) were delivered to consumers (beneficiaries), marking the end of the first phase of the project that was followed by its internal evaluation in a joint meeting with Greenpeace, the fishers, and the consumers.

The evaluation was necessary for the design of the 2nd phase that included the development of a new, more user-friendly platform, the design of more attractive and eco-friendly boxes/packages with printed information on the fisher and type of vehicle used for the delivery, the recruitment of a van for delivering the boxes to consumers and diversification of. The second phase started in October 2017, based on a learning process that allowed to up-scale the project. By the time we conducted the focus group and the interviews (May 2018), it was close to a successful completion.

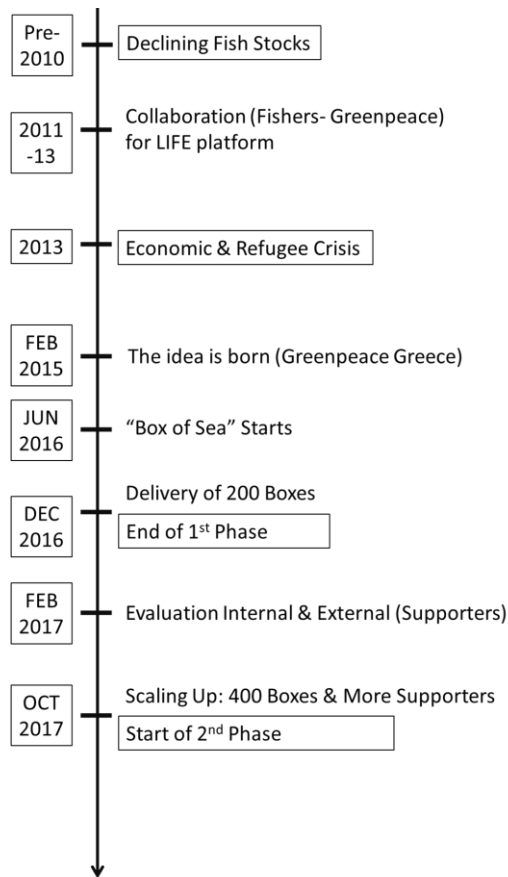


Figure 3 the timeline of "A Box of Sea" project.
(own elaboration)

1082 Perceived context

1083 Perceived opportunities and threats existing in the context that BoS faced in
 1084 its early establishment are balanced, as about four threats identified compared
 1085 to five opportunities, highlighting the structural crisis of the local territory but
 1086 also the active engagement of the early local actors (the Greenpeace Greece
 1087 team) to react. The main enabling factors identified were the funding
 1088 availability from Greenpeace Greece (economic), the solidarity for the islands
 1089 and the good organization of the team (social) and the new institutional
 1090 framework regarding fishing. The main constraining factors were the limited
 1091 financial resources (economic), the negativity/pessimism of some actors
 1092 (social), overfishing (environmental) and uncertain market system
 1093 (institutional).

1094
 1095 The importance of supportive policies in contributing to the success of the
 1096 initiative is low (Tools 3 and 4, Bb2=3.4 in the range 1-10). The project started
 1097 without any reference to enabling policies. Also, as long as the Greenpeace
 1098 NGO is involved, policies that might have acted as barriers are bypassed
 1099 without posing any threat to the social innovation. As a result, the role played
 1100 by the existing governance system in the establishment of BoS is perceived
 1101 as low (Tools 3 and 5, Bb3=42.9 in the range 1-100). The main positive

1102 elements mentioned were open stakeholders' consultation and new policy
 1103 initiatives, both of which reflected the participation of Greenpeace Greece and
 1104 some of the social innovation members in The Low Impact Fishers of Europe
 1105 (LIFE) platform, who actively took part in the consultation regarding the CFP
 1106 reform at the infancy of the social innovation.
 1107

1108 **Table A.1.** Quantitative indicators employed in this study – social innovation
 1109 assessment.

Indicator	Indicator explanation ^a	Range	Data source (actor type)
Reconfiguration of existing practices			
SIR1	Actors' individual perception on the effectiveness of the social innovation process. The higher are the individual perceptions, the greater is the capacity of the process to determine a reconfiguration.	[1-10]	Innovators, followers, transformers
SIR2	Actors' collective perception on the effectiveness of the social innovation process. Some rationale as SIR1, but with a focus on collective perception.	[1-10]	Innovators, followers, transformers
SIR3	Actors' perception of the extent of the reconfiguration process. Number of reconfigured practices perceived per actor. The higher is the number of perceived changes, the greater is the reconfiguration of the social innovation.	[0-3]	Innovators, followers, transformers
SIR4	Perceived level of innovation in the social innovation process. The higher is the innovation perceived, the greater is the reconfiguration capacity of the social innovation.	[1-10]	Innovators, followers, transformers
SIR5	Level of improvement determined by the social innovation process. The higher is the level of improvement, the greater is the likelihood for the social innovation to generate changes.	[0,1,2,3]	Innovators, followers, transformers
Responses to societal challenges			
SIS1	Capacity of the social innovation to tackle multiple European societal challenges. The higher is the capacity of the social innovation the greater is the possibility that it will spread effects to multiple domains.	[0-100]	Innovators, followers, project partners

SIS2	Improvement in European societal challenges thanks to the social innovation: the actors' perception. Same as SIS1, but with a focus on actors' perception.	[0-100]	Innovators, followers, project partners
SIS3	Improvement in European societal challenges thanks to the social innovation : the beneficiaries' perception	[0-100]	Beneficiaries
Outcomes on social well-being			
SIO1	Beneficiaries' perception on social cohesion and well-being. The higher is the beneficiaries' perception the greater is the possibility that the social innovation has generated outcomes on the social well-being.	[-2;+2]	Beneficiaries
SIO2	Contribution of social innovation to the improvement of governance. The higher is the improvement in governance, the greater is the likelihood the initiative will generate positive governance and institutional changes.	[0-100]	Innovators, followers, project partners
Engagement of the civil society			
SIE1	Equal distribution of actors and beneficiaries in different social, institutional, and economic categories. The more equal is the distribution of social innovation actors, the higher is the capacity of the initiative to produce multiple impacts.	[0-1]	Innovators, followers, transformers, beneficiaries
SIE2	Success attributed to local community. The higher is the perceived success of social innovation thanks to the community, the greater is the capacity of the initiative to produce effects on multiple actors.	[0.1-10]	Innovators, followers, transformers
SIE4	Motivation for engagement linked to a good cause. The higher is the motivation to engage, the greater is the ability of the initiative to produce results.	[0-100]	Innovators, followers, transformers
SIE5	Concrete engagement in network meetings. The higher is the actors' participation in meetings, the greater is the overall level of engagement.	[0-100]	followers, transformers
SIE6	Engagement of civil society in results sharing. The higher is the engagement in result sharing, the higher is the likelihood of the initiative to produce effects.	[0-100]	Project partners

SIE7	Voluntary work of network members. The higher is the voluntary time, the closer is the social innovation to its SIMRA definition	[0-100]	Innovators, followers, transformers
Overall assessment			
SII1	Internal validation of the innovativeness of social innovation. The higher is the internal validation of innovativeness of the initiative, the higher its likelihood to produce innovative results	[0-10]	Innovators and focus group participants
SII2	External validation of the innovativeness of the social innovation. The higher is the innovativeness perceived externally (by participants of the focus group), the higher is the likelihood in producing innovative results.	[0-100]	Innovators and focus group participants
^a Source: Secco <i>et al.</i> , 2019b.			

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1116 **Table A.2.** Indicator results – social innovation assessment

Indicator	Results	Indicator	Results	Indicator	Results	Indicator	Results
SIR1	6.6	SIS1	29.6	SIE1	0.7	SIE6	34.4
SIR2	5.9	SIS2	18.2	SIE2	0.7	SIE7	30.6
SIR3	0.7	SIS3	43.9				
SIR4	8.8	SIO1	1.1	SIE4	66.7		

SIR5	2	SIO2	25.5	SIE5	41.7		
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1118 **Table A.3.** Quantitative indicators employed in this study – impacts.

Indicator	Indicator explanation ^a	Range	Data source (actor type)
I3	Proportion of marginalisation problems improved by the initiative, as perceived by stakeholders. The higher the proportion marginalisation problems improved, the greater the perceived impact of the social innovation in the territory	[1-10]	Project partners, project manager
I4	Proportion of the number of impacts of the initiative in the four domains which were positive. The higher is the proportion of elements positively impacted by the social innovation of the total number of elements impacted, the greater is the impact, according to the stakeholders	[0-100]	Project partners, project manager
I5	Balance of positive to negative significant impacts of the social innovation in the four domains. The more the positive impacts exceed the negative ones, the greater is the perceived positive impact of the social innovation , according to the stakeholders.	[0-100]	Project partners, project manager
I6	Level of effects in the four domains. The higher is the level of effects of the social innovation inside and outside the territory in the four domains, the greater is its perceived positive impact, according to the actors.	[0-inf]	Beneficiaries
I7	Level of effects inside the territory in the four domains. The higher the level of effects of the social innovation inside the territory in the four domains, the greater is its perceived positive impact, according to the actors.	[0-100]	Beneficiaries
I10	Perceptions of actors of the level of improvement in governance aspects. The higher is the level of the perceived improvement in governance aspects, the greater is the perceived impact of the social innovation .	[0-100]	Focus Group participants
^a Source: Secco <i>et al.</i> , 2019.			

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1120 **Table A.4. Indicator results - outcomes and impacts.**

Indicator	Results	Indicator	Results	Indicator	Results
		I5	0	I10	<i>Overall</i> 85.7
		I6	3.9		<i>Environmental</i> 75
		I7	66.7		<i>Economic</i> 85.7
I3	2.1	I8	0		<i>Social</i> 100
I4	69.4	I11	2.1		<i>Institutional/ governance</i> 85.7