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Original Article

The power of collaboration in multifishery improvement initiatives

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Abstract

Addressing diverse and complex socio-ecological challenges is crucial for achieving ocean sustainability. This is especially true for effective fishery management, which is vital for the sustainability of marine resources. One way of overcoming barriers to fisheries reform is through interdisciplinary collaboration and innovative management and policy approaches. One such approach is market incentives offered by eco-certification against sustainability standards, such as those set by the Marine Stewardship Council (MSC). Complementary interventions that support sustainability improvements are fishery improvement projects (FIPs) and MSC pathway projects. These interventions have clear intermediary and final objectives, and monitoring impact throughout the implementation process remains important. We interviewed participants of a pathway project from five fisheries in South Africa and Mexico using semistructured interviews designed to capture the nonmonetary impacts of these projects as they progress. Our results show that interventions can play a role in facilitating broader collaboration within a fishery and across stakeholder groups, increasing sustainability awareness. Emphasizing the importance of stakeholder engagement and collaboration, we highlight how the project implementation process can lead to communication changes that lead to improved understanding and collaboration. Importantly, we reflect on the suitability of the survey in monitoring progress in such projects.

Keywords: Fisheries; marine sustainability; fishery improvement projects; monitoring and evaluation; stakeholder perceptions

Introduction

Most of the world's fisheries need improved management to address their direct impacts on stocks (FAO 2022) and ecosystems (e.g. De Fontaubert et al. 2003) and to ensure they remain sustainable for future generations. However, fisheries are complex adaptive social–ecological systems (Ostrom 2009, Berkes and Ross 2013), which include complicated power dynamics, social conflicts, and competing interests within and between fishing sectors. Additionally, market drivers are often connected to complex and often far-reaching trade networks, making governance and management challenging (e.g. Cochrane 2000, 2020). Owing to this complexity, ocean governance problems have no single solution. Instead, it is necessary to develop a diverse toolbox of approaches that can be adapted to address challenges (e.g. Gammage and Jarre 2021, Garlock et al. 2022).

Eco-certification is one approach that can be used to promote sustainable fisheries and management (Roheim et al. 2011, Maesano et al. 2020). Approximately 15% of the world's marine catches, equating to ∼16 million metric tonnes, come from fisheries that operate under the Marine Stewardship Council's (MSC) fisheries standard (MSC 2022), hereafter referred to as "standard." The standard is grounded in scientific research and principles aimed at ecological sustainability (Roheim 2003, Ponte 2012, MSC 2022). Benefits from certification can include economic gains and indirect social, institutional, reputational, risk reduction, and environmental enhancements (Arton et al. 2018, van Putten et al. 2020). However, certification is only available for those fisheries that meet sustainability standards and has traditionally been out of direct reach for many fisheries.

Fishery improvement projects (FIPs) offer another avenue toward better fishery management and performance (Bush and Oosterveer 2015, Cannon et al. 2018, Travaille et al. 2019a). A FIP is a strategic plan that relies on market incentives and is used by fishery stakeholders (e.g. fishers, NGOs, governments, retailers, and funders) to bring a fishery closer to their sustainability goals, guided by the performance indicators of a chosen sustainability certification standard (e.g. MSC, Marin Trust, and FairTrade) (Samy-Kamal 2021). Participating in an FIP can lead to certification, but this is not always the goal (Daly 2020, MSC 2023). Though FIPs were

initially intended as an intermediate step, with market benefits expected to accrue once the fishery completes the necessary improvement and receives a sustainability certification (Ponte 2012, Taufique et al. 2016, Arton et al. 2018, Crona et al. 2019), they have also helped participants gain market access before this process is complete (Travaille et al. 2019a) as a "plan B" for retailers when sufficient certified seafood is unavailable. Notably, several nonmonetary benefits are also realized through participation, although these remain difficult to measure.

Monetary benefits such as improved market returns are only realized in the medium or longer term, requiring upfront investment in fishery improvement that can be financially challenging, particularly for small-scale fisheries in developing countries (Pérez-Ramírez et al. 2016, Roheim et al. 2018) and the additional investment of stakeholders' time and effort (Travaille et al. 2019a). Monitoring progress toward the intended goals has been recognized as crucial for FIPs. Although this is traditionally done by publicly reporting progress on the milestones in the FIP action plans, it is crucial that participants themselves can measure the progress of and within the project, given their investment. This not only facilitates their continual engagement through creating buy-in (i.e. the process of gaining agreement, acceptance, or support) but also strengthens the collaborative effort. These monitoring processes can also better understand the nonmonetary benefits participants derive through participation, which could further incentivize continued participation.

Pathways for improving sustainability

The improvement of fisheries can also be enabled through an approach termed by MSC as "pathway projects" (we will also refer to them as "projects"). Pathway projects aim to generate enabling conditions for implementing a successful FIP and, through a multifishery approach, scale-up these results to foster wider improvements that may benefit other fisheries in the region. Pathway projects typically entail four stages (Fig. 1) before reaching the optional step of certification (stage 5). The first stage entails "mapping" the characteristics and key actors involved for a large set of fisheries in a region to identify a subset with promising stakeholder engagement who will actively participate in the project to take forward into the project. At this point, a subset is selected to take forward in the project, key stakeholders across all the fisheries, including industry, NGOs and managers (e.g. government staff and fisheries authorities), are brought together through a steering committee. At this stage, a "pre-assessment" is conducted for each fishery (stage 2). An MSC preassessment consists of a rapid version of a full fisheries performance audit against the MSC Fisheries Standard (see clause 7.1 in MSC 2018a). As such, it provides a gap analysis highlighting focal issues for sustainability improvements. Simultaneously, the participants in the pathway project are also offered training on MSC standards and certification processes. This capacity-building activity aims to create a shared knowledge of fisheries' sustainability principles and "best practice" fisheries management. It also serves the purpose of enabling participants to interpret preassessment results easily. These outcomes help build buy-in for the next

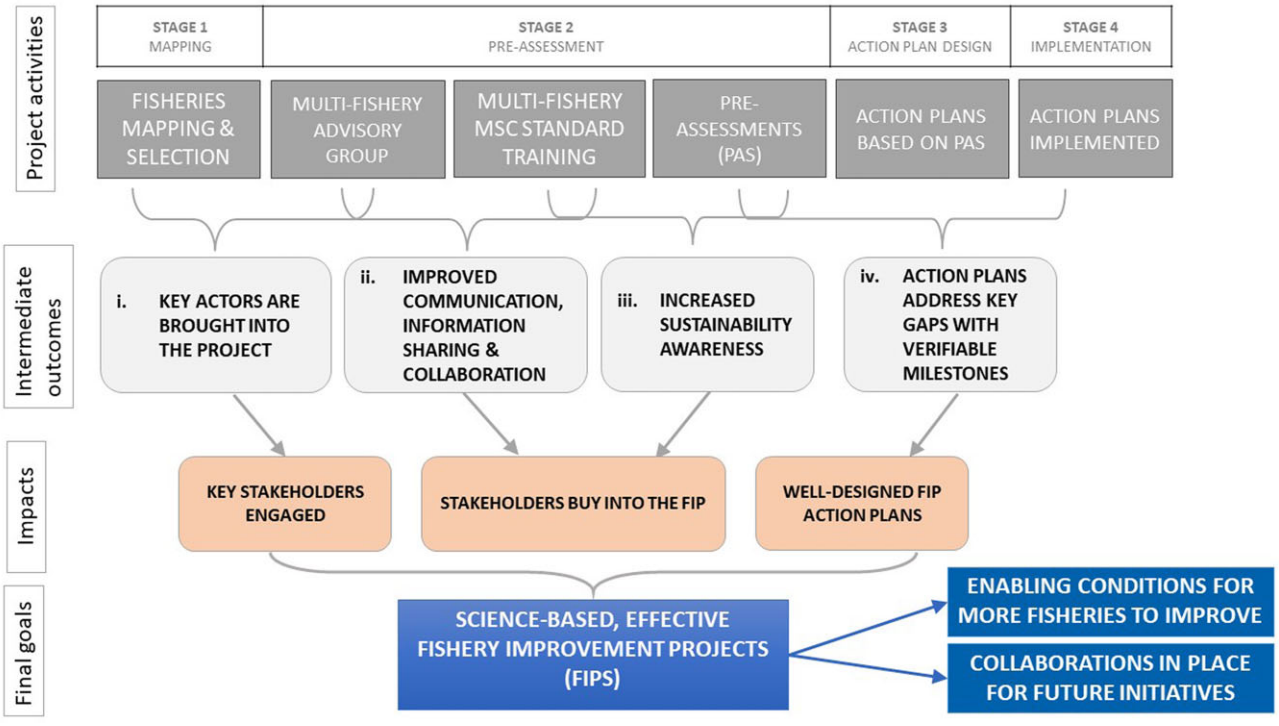

Figure 1. Conceptual diagram illustrating actions taken within the Fish for Good project, their expected outcomes, resulting impacts, and how these all contribute to the objectives of MSC's pathway projects. From top to bottom: the white blocks illustrate the stages that form MSC's generic pathway projects approach. The dark grey blocks, at the top of the figure, represent the specific actions taken in the Fish for Good pathway projects. The rounded boxes at the second level show intermediate outcomes that are expected out of the actions resulting in associated impacts (3rd level). These, in turn, deliver the final main goals (last level, in blue) of creating effective inclusive science-based improvement and the derived goals of creating enabling conditions for future outcomes.

phase, in which participants develop an action plan to address, and thus start building buy-in into the next stage, in which participants develop an action plan to address critical issues identified in the preassessment (stage 3).

Moreover, the plan explicitly assigns responsibilities to the actors who should be implementing different activities. Progress on the activities laid out in the action plan can be tracked by comparing whether there have been changes in relevant performance indicators compared to the preassessment, thus facilitating the monitoring of explicit milestones. Throughout the implementation process, the steering committee is expected to meet regularly (often annually) to enable information exchange and help build trust among participants, including across different fisheries, to capitalize on peer learning and synergies (Travaille et al. 2019b). The expectation is that having fostered a shared knowledge base regarding sustainability goals, strong communication and collaboration opportunities, and using a clearly structured system for building action plans and monitoring progress, their implementation will be effective (stage 4), and engaged stakeholders will remain motivated and committed to lead the project to completion (Fig. 1).

In sum, pathway projects are designed to deliver: (i) engagement and meaningful participation of key actors, (ii) buy-in into the action plans, and (iii) action plans that are science-based, relevant and with clear milestones for which progress can be tracked whilst addressing critical gaps with verifiable milestones. Ultimately, environmental outcomes are achieved through the implementation of effective and inclusive science-based projects, which create the enabling conditions for more fisheries to improve whilst establishing collaborative relationships for future initiatives (Fig. 1).

Although participation in a pathway project does not necessarily lead to entering a FIP or eventually to certification, it is intended to foster critical enabling conditions for buy-in, trust, regulatory compliance, and collaboration, such as awareness of the need for sustainable management, transparent information exchange, inclusive representation, and sense of being heard (e.g. Cramer and Kittinger 2021, Oloruntuyi et al. 2023). These conditions may also help drive changes in other fisheries, which can be transferrable to driving changes in other fisheries in the region that involve the same institutions or actors. Pathway projects, e.g. can allow fisheries to identify their common challenges, creating critical mass, and momentum to support reform across a region.

Monitoring genuine progress in FIPs and whether the purported sustainability gains are being realized have become increasingly important topics (Cannon et al. 2018, Sampson et al. 2018.). FIPs are not without their critiques, and there is a strong recognition of the need to monitor fishery changes/improvements better to demonstrate effectiveness. Monitoring genuine progress on improvement outcomes

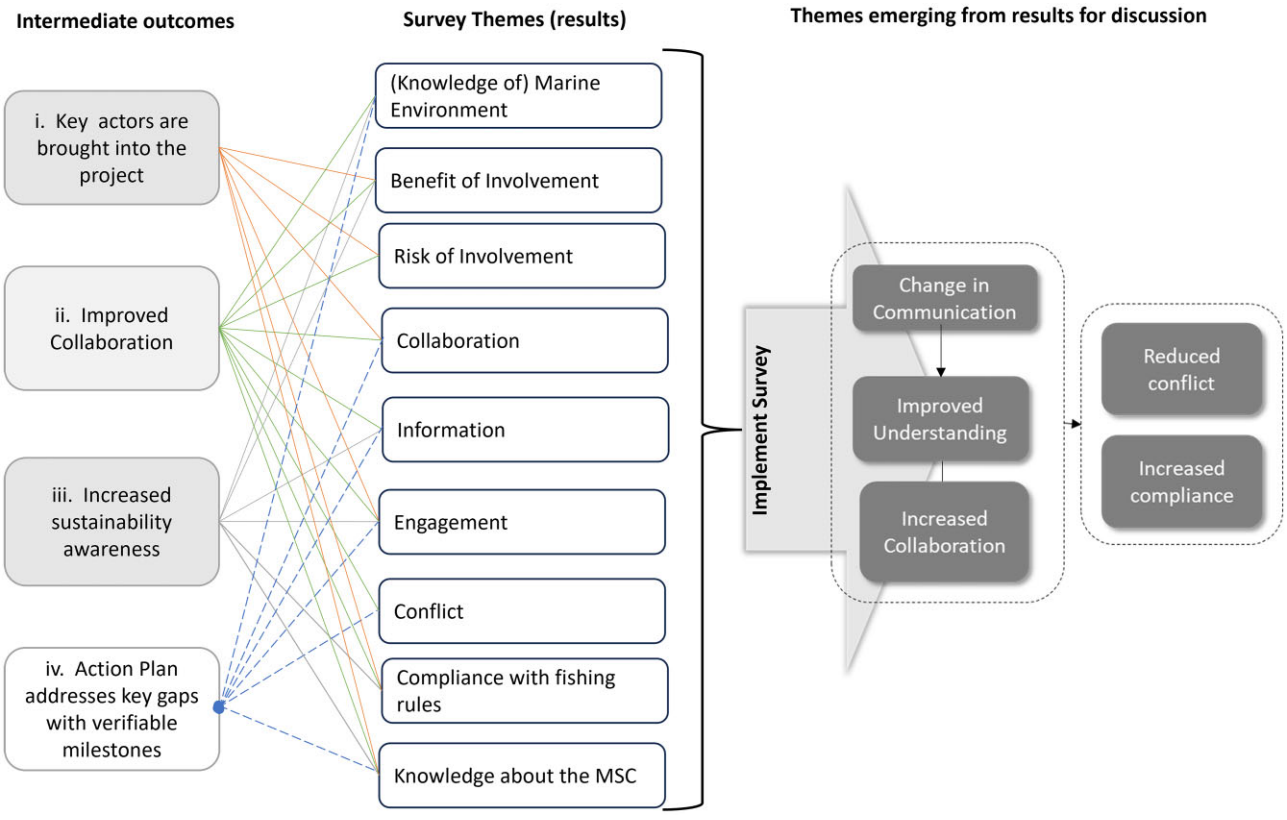

Figure 2. The relationship between the intermediate outcomes (shown in Fig. 1), the Survey themes (see Supplementary Material S1) and the emerging themes discussed in the section "Impact of the COVID-19 pandemic." Intermediate outcomes (i), (ii), and (iii) (light grey boxes) are explicitly addressed in the survey. Each survey theme addresses multiple Intermediate Outcomes simultaneously. Whilst Intermediate Outcome (iv) (white box) is not explicitly addressed due to the project stage at which the interviews took place, the survey themes address elements that contribute to stakeholder buy-in and, as such, can provide some insights into whether Outcome (iv) will be realized (shown by the blue broken lines). Thematic analysis of the survey results reveals how the project facilitated changes in communication, improved understanding, and increased collaboration, leading to a perception of reduced conflict and increased compliance (dark grey boxes).

is important both for the credibility of the project and to inform the efforts of the participants themselves.

Methods

Evaluating the impacts of participation in pathway projects

It can be challenging to assess the benefits of participating in improvement initiatives, such as FIPs and pathway projects, due to the diverse nature of fisheries involved (Samy-Kamal 2021) and the intangible aspects, like trust, that are difficult to quantify. Social recognition of improvement efforts and the benefit of fisheries improvement in the precertification space has not been formally analysed (Daly 2020).

We set out to explore the development of a replicable, robust methodology for assessing project impacts by designing a key informant-based survey instrument to determine the delivery of the intermediate outcomes and impacts expected because of pathway projects. Measuring project impacts is important not only to organizations implementing a project (such as the MSC) and funders but also for project participants to take stock of some of the more intangible benefits derived from their participation. Such a survey approach should also support a more transparent and collaborative process by promoting stakeholder involvement and nurturing knowledge exchanges, fostering reflexivity in project management, and ensuring ongoing commitment (e.g. McClenachan et al. 2022).

This survey was designed to capture the expected benefits and risks of participation, knowledge of the fishery and sustainable concepts, and perceived change in information sharing, influence, and collaboration among stakeholders (Fig. 1). Impacts were assessed for five different fisheries (on two continents) through an MSC pathway project called "Fish for Good" (FFG).

Figure 2 provides a graphical overview of the relationships between the intermediate outcomes (shown in Fig. 1) and the themes of the survey questions (Supplementary Materials S1 and S2). Specifically, it shows how questions around benefits and risks of involvement, and how these changed during the implementation of FFG, help identify whether incentives have been created for participants to become and remain engaged in the project (outcome i) to ensure buy-in into the FIP activities; whether changes in the modes of collaboration, in sources of conflict, information-sharing, and participants' perceived influence on decision-making might be contributing to increased collaboration (outcome ii); how changes in understanding and compliance to regulations, and knowledge of sustainability issues and fisheries management principles might be improving awareness and buy-in for the need for sustainability improvements (outcome iii). It is important to note that all aspects have some degree of interaction and contribute to broader social change (for further details, see Supplementary Material S1). Figure 2 also synthesizes emergent themes from our results, further discussed in the "Discussion" section.

FFG was implemented in Mexico, South Africa, and Indonesia between 2017 and 2022. It was funded through the Dutch Postcode Lottery and led by the MSC. Initially, 16 fisheries from Mexico and South Africa were selected for preassessment against the MSC fisheries standard, with 13 subsequently moving on to the preassessment phase and beyond. We selected three Mexican fisheries (Octopus, White snook, and Chocolate Clam) and two South African fisheries (Albacore Tuna Pole and Line and Rope-grown Mussel) from this group of case studies. These case studies were chosen to

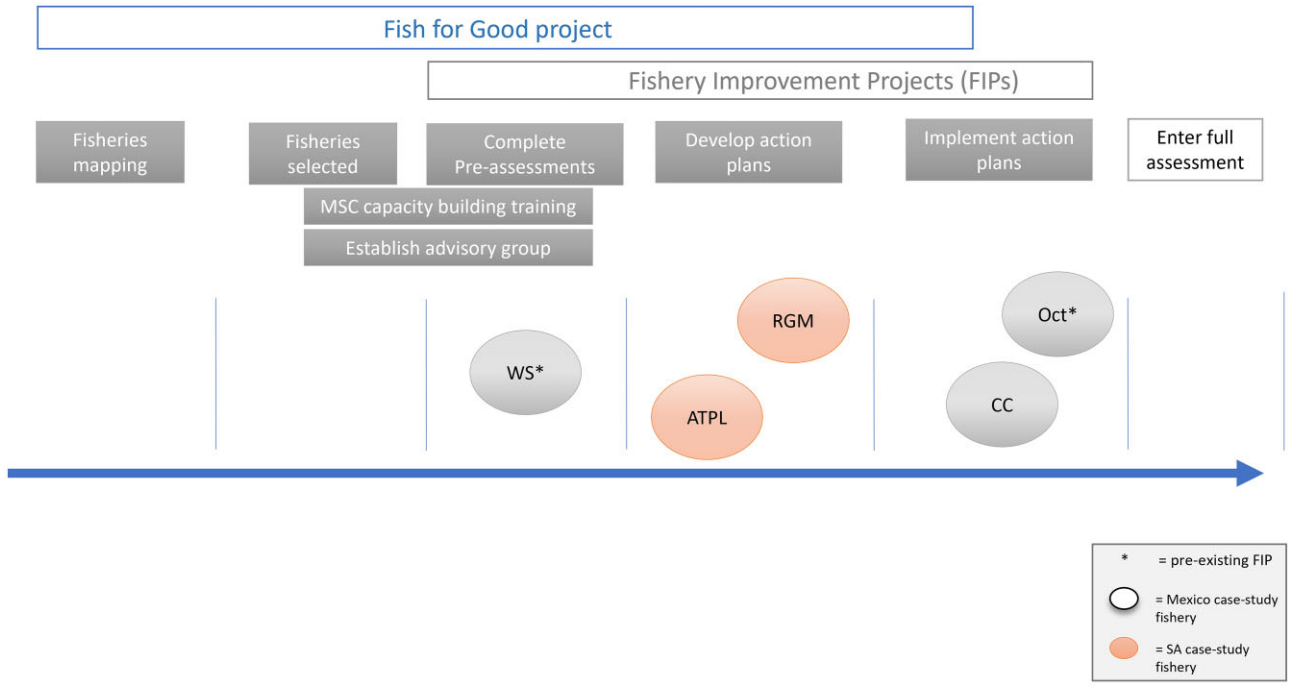

Figure 3. Diagram illustrating the pathway project stage each case study fishery was in when they were interviewed. Fisheries marked with ∗ were already in a FIP at the start of FFG, but they revised their preassessment and/or action plan as part of this project. Case-study fishery acronyms: WS = White Shook; CC = Chocolate Clam; Oct = Bahia de Los Angeles Octopus; RGM = Rope Grown Mussels; and ATPL = Albacore Tuna Pole and Line.

capture a range of different types (i.e. different fishery types, sustainability issues, and pathway project stages) and based on required characteristics (i.e. experts available for interviews, having at least completed the second pathway project stage) to have enough experiences to share.

Figure 3 shows the process from the start of the project in 2017. Notably, there was an overlap between FFG and existing FIPs for two Mexican fisheries, whilst the remaining Mexican fisheries and all the South African fisheries were exclusively working toward implementing an FIP through their participation in the FFG project.

Here, we present insights into the case study areas before describing our methods. Our results are shown along the broad themes emerging from the survey results. We discuss the results in terms of the synthesized themes as they relate to Intermediate outcomes (i)–(iii) and reflect on the associated caveats around the survey implementation process (see Fig. 2).

Case study areas

The survey was implemented to measure the perceived benefits of project participation in the precertification phase in five case studies: three from Mexico and two from South Africa (Fig. 4a and b).

Mexico

The Octopus (*Octopus bimaculatus; O. hubssorum*) fishery (referred to as the Mexican Octopus fishery) is in the Bahia de Los Angeles region on the east coast of the Baja California peninsula, northwest Mexico (see Fig. 4a). The fishery occurs in Bahia de Los Angeles marine protected area (MPA), covering about 3875 km^2. This MPA generates 87% of the octopus Landings in Baja, California Peninsula, comprising 85% *O. bimaculatus* and 15% *O. hubssorum*. Two federal agencies comanage the fishery: the National Commission for Aquaculture and Fisheries (CONAPESCA) and the National Commission for Natural Protected Areas (CONANP). Octopus is harvested using pots, diving, and, to a lesser extent, manual collection from the shore. It is estimated that 128 fibreglass vessels called "pangas" propelled by oars or outboard motors, operate in the fishery (Torreblanca 2008). The fishery gradually grew since the 1970s but experienced a large increase in landings in 1998. This could be attributed to a permanent ban on sea cucumber (*Isostichopus fuscus*), which likely caused fishers to shift target species. Currently, the fishery annually produces ∼100 tonnes and is not overexploited, with the unfished biomass fluctuating around the maximum sustainable yield (DOF 2022).

There is an FIP in place comprising two fishing cooperatives and government agencies responsible for fisheries research and managing protected natural areas, with NGOs providing support. Though the FIP was already active when FFG began, the preassessment used to build the FIP plan was revised as part of FFG, updating the action plan accordingly. The main objectives of the FIP have shifted gradually to enhance the landings' quality and put social responsibility policies in place (https://fisheryprogress.org/social-responsibility/our-approach).

The White snook (*Centropomus viridis*) fishery (referred to as the Mexican Snook fishery) also takes place in an MPA called Marismas Nacionales, which covers 2100 km^2 in the states of Sinaloa and Nayarit, Mexico (see Fig. 4a). The same two federal agencies (CONAPESCA and CONANP) manage the fisheries, including through issuing fishing permits in line with the National Fisheries Charter, a binding instrument for the fisheries authority to make formal management decisions, based on fishing effort, minimum catch size, gear regulation, temporary reproductive closure, and fishing refuge zones (CNP 2023). The White snook is caught "pangas," with 579 pangas registered in this fishery. The main fishing gear is gillnets (90% of the fishermen); about 8% use hand lines, and 2% use spearguns and freediving. The annual historical catch of snook in the Mexican Pacific is ∼3000 mt, of which ∼1300 come from Nayarit. The consensus is that the White Snook fishery is likely operating close to maximum sustainable yield (DOF 2021). Still, there is a downward trend in the estimated biomass.

A FIP has been set up that brings together diverse stakeholders from the fishing industry, the supply chain, government agencies, and civil society. Several challenges have been identified for improvement in a data-limited, multispecies finfish fishery. As was the case for the octopus fishery, the FIP was already in place when FFG started. The preassessment was reviewed to improve its quality and the action plan revised accordingly. Part of the improvement efforts have been focused on evaluating the stock status and understanding the fishery interactions with other species. Also, the improvement action plan includes implementing several critical regulations of the fishing effort in the harvest strategy alongside a system for monitoring, control, and surveillance.

The Chocolate clam (*Megapitaria squalida*) fishery (referred to as the Mexican Clam fishery) is in the Lagunar-estuarine complex of Altata Bay-Ensenada of the Pavilion (LEABEP), located in the north-central portion of the Sinaloa coastal plain (Fig. 3a). LEABEP comprises ∼450 km^2 of mangrove-lined lagoons. The Chocolate clam fishery is regulated through fishing permits and a Fisheries Management Plan (DOF 2019). There are 17 permits for clam fishing in the lagoon system, covering 37 vessels in total (SmartFish 2019). Manual fishing occurs in shallow areas with sandy bottoms. Transport to fishing grounds uses pangas and a team of three fishers (one skipper and two divers) (Figueroa et al. 2016). This stock has not been formally assessed, though the fishing yield declined from a 200-tonne harvest in 2005 to three tonnes in 2014. It is now considered overexploited, leading the cooperatives with the fishing authorities to implement a moratorium to recover stocks (Figueroa et al.2016).

As part of the FFG activities, this fishery is now in a FIP. The FIP involves actors from different sectors, including the fishing industry, supply chain, government, and civil society. The intent of the FIP is to address several environmental sustainability challenges, and its action plan includes implementing seasonal closures during the spawning season and developing a stock assessment to calculate the stock status, designing a monitoring program to improve the landing records, and implementing a surveillance committee to discourage unregulated fishing.

South Africa

The Albacore Tuna Pole and Line fishery in South Africa targets the highly migratory albacore tuna (*Thunnus alalonga)*. The fishery operates off the south and west coasts of South Africa, with most fishing effort focused along the continental shelf between Lamberts Bay (on the west coast) and the southern tip of the Agulhas Bank (Sink et al. 2012, DFFE 2020)

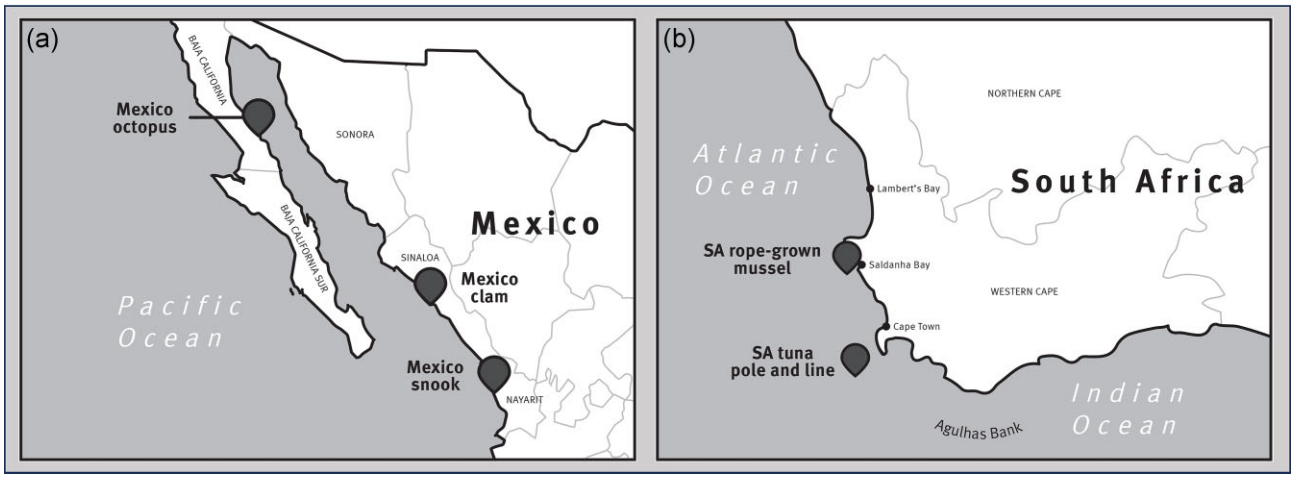

Figure 4. The left panel (a) shows the location of the Mexican case study fisheries (Mexico octopus—clam and snook), and the right panel (b) shows the location of the South African fisheries (Mussel and Albacore Tuna).

(see Fig. 4b). The fishery targets juvenile and subadult albacore tuna, with catches amounting to 3490 tonnes in 2021 (ICCAT 2023). In addition, yellowfin tuna (*Thunnus albacares*) is caught if encountered (with landings of 209 tonnes in 2021) (ICCAT 2023). The International Commission for the Conservation of Atlantic Tunas (ICCAT), of which South Africa is a member, is the regional fisheries management organization (RFMO) responsible for managing albacore tuna stocks in the southeastern Atlantic Ocean. The ICCAT is responsible for stock assessments, setting total allowable catches (TACs), allocating catch quotas to cooperating countries or RFMO members, and developing compliance and control measures. The South African fishery depends on country allocations from the RFMO, with the Department of Forestry, Fisheries, and the Environment (DFFE) allocating the quota to in-country rights holders. The Albacore Tuna Pole and Line fishery is highly selective with little impact on other species. Since the interviews were undertaken, this fishery has progressed to the action plan implementation stage, with operators actively participating in the project and having a strong desire to make the necessary improvements toward MSC certification. Other strongly engaged stakeholders include WWF (who have assisted fishers with implementing environmental improvements such as quantifying encounters with endangered, threatened, or protected species and mitigating any potential impacts) and DFFE (who engaged in fisheries management actions). The action plan implementation is near completion, and the fishery has committed to entering a full assessment against the MSC standard.

The Rope-grown Mussel fishery in Saldanha Bay (Fig. 4b) harvests mussels grown on suspended ropes in the water column seeded with naturally occurring wild spat (MSC 2018b). Two mussel species are harvested: the indigenous black mussel (*Choromytilus meridionalis*) and the invasive but widely distributed and established Mediterranean mussel (*Mytilus galloprovincialis*). The spat that settles on the ropes is spawned from naturally occurring mussel beds and from maturing mussels on the rope, and with the ropes increasing extra habitat for mussels, the mussel population biomass is increased (MSC,2018b). Current production is ~2000 tonnes per year, potentially doubling that capacity to 4000 tonnes per year (Ferreira 2016). DFFE grants them the right to culture in terms of the Marine Living Resources Act (MLRA) No. 18 of 1998. A permit is issued to activate the with strict environmental conditions for the environmental impact assessment of operations (MSC, 2018b). Since the interviews were undertaken, the fishery has worked with the DFFE to implement a monitoring programme collecting baseline information to improve understanding of the potential impacts of the fishery on the seabed. A management strategy was developed to minimize potential ecosystem impacts occurring from the cleaning of biofouling organisms from mussel ropes. Action plan implementation is near completion, with the fishery yet to decide whether to enter a full assessment against the MSC standard.

Developing the survey

We developed a semistructured survey tool (see Supplementary Materials S2) to measure the expected benefits and perceived changes in stakeholder knowledge and relationships due to project participation. We used purposive sampling, focusing on key informants (e.g. Patton 2014) across project stakeholder groups (e.g. fishers, NGO Saff, and government officials). This approach allowed us to evaluate the intangible outcomes of the pathway project by collecting Respondents' viewpoints on each project's triumphs, setbacks, and related matters.

The survey instrument, designed for implementation across all case study projects, was initially tested in Mexico with two respondents known to the authors. Some minor wording changes were made to the survey, after which it was translated into the local language (Spanish). The final survey (English version implemented in South Africa) can be found in Supplementary Material S2

During the survey pretesting phase, it became apparent that, for those fisheries engaged in an FIP (i.e. the octopus and white snook fisheries in Mexico), not all respondents were fully aware of the exact role of the pathway project (FFG). This confusion is not necessarily surprising given the overlap between the FFG activities and those undertaken as part of an FIP, such as, e.g. developing a preassessment and based on that, an action plan or hosting stakeholder meetings to discuss necessary improvements (see Fig. 1). The incomplete understanding of respondents in these Mexican fisheries means

that some of the effects cannot be clearly attributed to either FFG or the FIP, and we note this in reporting our results. Some respondents also struggled to distinguish the pathway project from other initiatives that might have had overlapping organizers and related content but were sponsored through parallel initiatives (by other NGOs, government, businesses, and so on). Where possible, this was resolved at the interview, or it is noted in our results.

The survey contained 72 qualitative and quantitative questions that included demographic information, experience in the fishery, knowledge of pathway project activities, assessment of intended and unintended effects, and awareness of MSC and sustainability issues (Supplementary Materials S2).

Data collection and analysis

Interviews were conducted by two coauthors with key informants in five case study fisheries. Ethics clearance was obtained from the University of Cape Town Faculty of Science Research Ethics Committee for the South African case study. The Mexican case study was not affiliated with higher learning institutions, so no ethical clearance was obtained. Care was taken to adhere to the principles of ethical engagement with all stakeholders. All respondents provided informed consent to participate in this study in writing.

Before the implementation of the survey, information was gathered by the interviewers about the fishery (users, management, regulations, process, and market), different FFG activities, including information regarding the existing FIP for the octopus and white snook fisheries in Mexico, and any relevant preassessment details to ensure that interviewers were able to engage knowledgeably with the interview content and context. The interviews in Mexico took place from September to November 2019, and in South Africa from 10 February to 13 March 2020. The selection of key informants was based on a combination of factors, including their knowledge of the fishery, their involvement in the FFG Steering Committee and FFG (and FIP) projects, their understanding of the time before and after the project, and whether they represented a stakeholder group such as fishers, government officials, researchers, fish buyers, or NGOs.

Interviews were arranged by e-mail and phone. All South African and most Mexican interviews were conducted face-to-face in a location of the respondent's preference, and the remainder were conducted by phone. Before the interview, respondents were given an information sheet with an overview of the research and its aims (Supplementary Materials S3), an explanation of the survey and the level of participation involved, respondents' risks and benefits, confidentiality, and information use. The respondents were asked to sign a consent form if they agreed to participate. The survey took 45–60 minutes per interview, although some took longer.

The bilingual South African researcher provided *in situ* translations between Afrikaans and English for one of the research respondents. In Mexico, the researcher conducted the interviews in Spanish and later translated responses into English. Both researchers were independent consultants with experience in stakeholder engagement and no formal affiliation with the MSC, projects, or fisheries. This was important because it mitigated potential respondent bias and the key informants feeling that they needed to answer favourably towards the MSC.

Quantitative and qualitative data were collected using the survey instrument as an indicative guide, with specific wording adapted for context by the interviewer to make them understandable by the respondent. The questions were generally asked in the same order in all case study sites unless the respondent had already covered them in a previous response. Not all questions are analysed and reported here, and we have specifically omitted questions (especially Questions 51–57) around the period following the implementation of the action plan as they did not apply to all case study fisheries.

Data analysis

For the closed questions (rating scales, yes/no, and multiple choice) that are reported here, we used proportional representation. Using Microsoft Excel, a count function was employed to analyse the data (further referred to as quantitative data) and determine the percentages associated with various responses. Due to the limited number of responses overall ($n = 48$), and for each fishery ($n = 8$ for South African Rope Grown mussels, $n = 9$ each for Mexican Snook and Chocolate Clam, $n = 10$ for Mexican Octopus, and $n = 12$ for South African Tuna Albacore Pole and Line), we do not undertake a statistical analysis to test differences between fisheries, as these would likely not return a generalizable or meaningful indication of the robustness of the results. We are careful not to over-interpret our sample results in the discussion and highlight limitations where relevant.

There were several open-ended (qualitative) survey questions about the benefits and concerns of participating in a Project (questions 21–27). These qualitative questions provided a rich source of information (providing additional insights not directly obtained in the quantitative questions) because of the interviewer's ability to probe the respondents for additional information and reasoning. The interviewer recorded the responses to these open-ended questions at the time of the interview. The interviewers in both Mexico and South Africa took notes to record the respondents' responses, which were subsequently summarized and captured in an Excel spreadsheet together with the answers to the other (quantitative) questions.

The first step in analysing these qualitative questions was to take the interviewer notes for each of the open-ended questions and follow a grounded theory approach (e.g. Glaser and Strauss 1967) to code each question iteratively. The survey questions were the starting point and formed a broad theme (e.g. benefits and enablers of conflict). The subtheme for the respondent's statement was then identified inductively and coded according to the iterative process within broader themes. For example, the interviewer may have noted down "industry associations within fishery (can be a double-edged sword)" in relation to a concern related to conflict (Question 23a). The coded subthemes (as they fitted under the broad themes), therefore, emerged directly from the respondents' words as they were recorded by the interviewer (Glaser and Strauss 1967, Charmaz 2006, Saldaña 2015). The coded subthemes were revisited as more surveys were coded, providing a comparative reevaluation of themes (Braun and Clarke 2006).

In presenting our results, we sometimes cannot attribute the findings clearly to one or the other. Therefore, the Respondents' responses were interpreted as reflecting the impacts of the pathway project, the FIP, or the pathway project and/or FIP (where it is unclear).

Table 1. Overview of the number of respondents per fishery and their roles.

Fishery	Number of respondents	Roles
Mexican Octopus Fishery	10	NGO–2 fisher/fishing organization–6 government–2
Mexican White Snook Fishery	9	NGO–1 fisher/fishing organization–5 government–3
Mexican Chocolate Clam Fishery	9	NGO–3 fisher/fishing organization–4 researcher/expert/consultants–2
South African Albacore Tuna Albacore Pole and Line Fishery	12	NGO–4 researcher/expert/consultants–4 fisher/fishing organization–2 government–2
South African Rope Grown Mussel Fishery	8	NGO–1 fisher/fishing organization–4 government–3

Results

A total of 48 people were interviewed (28 in Mexico and 20 in South Africa). For all fisheries, Respondent reflected a range of roles within the fisheries (e.g. fisher and/or fisher organization representative, Government, NGO, Researcher/expert/consultants; Table 1).

In all five case studies, fishery respondents were predominantly male (over 80%) and aged between 25 and 54 years. This reflects the gender distribution within the five fisheries where project respondents are predominantly male. Respondents had different lengths of experience, ranging from 5 to > 20 years in the South African fisheries and between 3 and 44 years in the Mexican fisheries. In both countries, respondents from the fishing sector often had more experience than other respondents (e.g. from government or NGOs). The level of education varied among the respondents, with a relatively high level of education in the South African Albacore Tuna Pole and Line fishery (e.g. university and postgraduate) and lower education levels (e.g. up to high school) in the other fisheries.

Awareness of the pathway project

All respondents in South Africa knew that their fishery was part of the pathway project "Fish for Good" and correctly identified FFG as an umbrella project and vehicle for the fishery to achieve sustainability goals and enable eventual FIP implementation. They were familiar with the timelines associated with the pathway project. In the words of one of the South African respondents:

> *"One is a vehicle for the other. FFG is a way to get fishery sustainable. They follow a similar process".*

However, respondents found it more challenging to define the exact stage of the project, as it was between the "action plan completed" and "ready for implementation" (see Fig. 1). South African respondents readily recognized the intention to move the fishery forward in terms of sustainability, toward a FIP (recognition was higher than in Mexico) although 3 out of the 20 (15%) respondents indicated they did not know.

Mexican fisheries had lower awareness of "Fish for Good" and the project stage—with only 12 out of 28 (43%) respondents indicating an awareness of the project. Particularly in the Mexican Octopus fishery, which had already been in an FIP, 7 of the 10 respondents (70%) were not familiar with FFG and the specific contributions and aim of the pathway project more generally. The lower awareness could be due to some respondents no longer being directly involved in the project, whereas others joined after the project started. There was a better awareness of the existing FIPs and associated activities.

Knowledge of marine environment and sustainability issues

One of the goals of pathway projects is to improve the environmental sustainability of fisheries; consequently, assessing respondents' understanding of sustainability issues and their observations about sustainability in their fisheries was crucial to their buy-in into the implementation activities (Questions 40–50).

Respondents were asked about abundance changes they may have observed in their fisheries (questions 40, 41, and 42). Respondents in South Africa considered their fisheries to be generally sustainable, and the abundance of both South African target species has remained healthy over the past year. However, some had concerns over seabird impact in the South African Albacore Tuna Pole and Line fishery. In contrast, the abundance of chocolate clams in Mexico was low (five out of nine respondents, 56%) due to perceived overexploitation since 2009, leading to closures from 2017–2019. Octopus abundance fluctuated over the last 10 years, mainly attributed to changes in ocean temperature and greater fishing pressure due to the creation of new fishing associations. The abundance of Mexican snook was perceived to have increased by most respondents (six out of eight, 75%).

When asked about the meaning of sustainability (Question 45), respondents in South Africa indicated that sustainability was the shared common goal of preserving the fishery and environment for future generations. In Mexico, sustainability was interpreted somewhat differently, with a greater emphasis on economic benefits and higher catches among fishers. NGOs and government representatives (11 out of 28, 39%) in Mexico emphasized the long-term benefits for future generations.

All respondents (in both countries) recognized the importance of sustainability and understood the impact of reduced abundance on the fishery (Question 44). A total of 18 out of 28 respondents (64%) in the three Mexican fisheries (seven of the clam, five of the snook, and six of octopus) selected *reduced profit* as the most pressing consequence of decreased abundance, with *increased conflict* being the second most mentioned factor. *Difficulty making a living* and *increased conflict* among fishers were mentioned first by 7 out of 20 respondents (35%) in South Africa. Other consequences identified in South Africa were reduced revenue for the *DFFE* (lower abundance reduced catch levy collection), *knock-on effects in related industries*, *decreased employment*, *adverse effects on vessel maintenance*, *reduced albacore tuna TAC allocation for South Africa from the RFMO ICCAT*, *bankruptcy*, and *negative impact on the seafood market*. Similarly, in Mexico, the reduced abundance of octopus was perceived to lead to *reduced profit*, *increased conflict between fishers*, and *pressure to find other employment*.

It was challenging for respondents to estimate the project's impact on sustainability and environmental practices at this

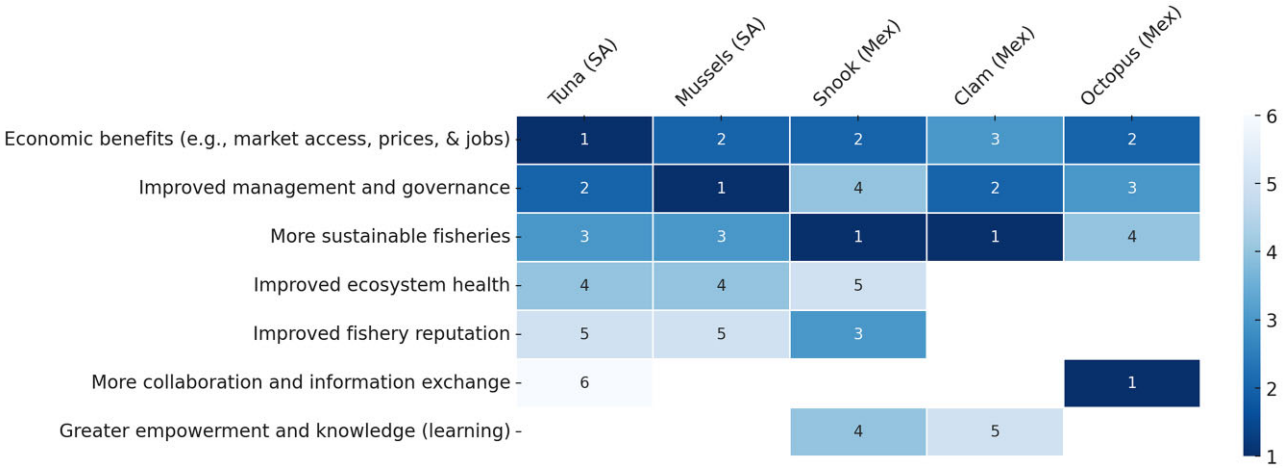

Figure 5. Perceived benefits in order of relevance across all five case studies (with one being the most mentioned) from participating in a pathway project or FIP.

early stage of the project (Questions 47 and 49). However, respondents in South Africa, who already felt that the target species was relatively abundant, expected that the project would contribute to an increase in abundance and positively impact environmental practices in the future. Even though the abundance of Mexican snook was perceived to have increased, this was not attributed to the project's activities.

Expected benefits of participation

Respondents were asked to identify the top three benefits of participating in the project (Question 21) to identify their motivation and commitment to support improvements. The main benefits were categorized into seven categories (Fig. 5). The order of perceived benefits differed between the fisheries (with 1 being the most mentioned benefit).

Economic benefits, improved management, and more sustainable fisheries were mentioned for all five fisheries. These can be seen as the more traditional outcomes that might be desired and expected from any sort of fishery improvement program. For example, one of the South African respondents indicated that their top three benefits were:

> *"Market incentives (ability to export fish); better management and labour practices; and ecosystem health – promoting sustainability (for people stock and environment)"*

Even though not mentioned in the top three in all the fisheries, the Mexican Clam and Octopus fisheries also focused on more community-based benefits such as empowerment and knowledge creation. Market-based benefits were also mentioned, such as e.g. by a participant in the Clam fishery (translated from Spanish):

> *"Greater profitability of the fishery by having an eco-label (sustainable clam capture)".*

Collaboration and networking benefited the South African Albacore Tuna Pole and Line and Mexican Octopus fisheries; in the latter, it was the primary benefit.

Transparency, information exchange, and collaboration appeared to be inextricably linked. For example, in South Africa, one of the respondents' top three benefits of involvement in the project was:

> *"Improved training, skills and sustainable practices; Additional monitoring data and information to inform better practices; Marketing and awareness – retailers and consumers".*

Empowerment and knowledge were considered the result of greater transparency. However, transparency alone was not perceived to be able to solve issues of mistrust where they already existed in a fishery.

Respondents were asked to speculate on the benefits of participating in FFG on their own well-being (Questions 25 and 26). Most indicated that they felt that the project could make a difference to their wellbeing at some level (23 out of 28, 82%, in Mexico and 16 out of 20, 80%, in South Africa). Those who indicated their well-being was positively impacted obtained personal and professional satisfaction, where they had already invested a lot of time and effort in helping a fishery move toward long-term sustainability, species preservation, and improvement in management and compliance. In addition, participation improved interpersonal relationships and generated friendships and support among fishers. The collective benefits, such as learning, gaining knowledge, and collaborating, were also personal.

Risks

In both countries, the potential benefits of participation in a project had some risks as corollaries, i.e. if the expected benefit (Question 27) were not to be realized, this would represent a negative outcome. Thus, lack of benefit realization was seen as a risk. For example, there was a sense of uncertainty and concern if species abundance were to fall (or not increase). Most of the concerns were focused on not achieving sustainability of the fishery and not improving stock status and, as a result, living conditions (economic aspects).

The risk of not achieving certification also translated into personal concerns (Question 27) related to the stress of the additional costs of participating in the project and the stress of not achieving the project's ultimate objective. However, these concerns are mostly related to the "ability to implement" the required activities in the action plan rather than the actual certification audit.

In South Africa, four themes emerged regarding concerns raised by respondents. The first was related to the possible cost

of implementing an action plan (and potential later certification). The second was related to the ability to balance multiple objectives, specifically those related to the interests of (sometimes diverging) stakeholder groups. For example, a South African respondent indicated they were concerned about the following:

> "Fishery taking a direction based on certain organisations – organisations have their own goals. Must not take WWF shape, must take a "FIP" shape. Power dynamics are important and must always be balanced."

Thirdly, there were concerns regarding the ability of the DFFE to fulfil its role in the improvement actions. Moreover, lastly, the potential of action plan implementation not being successfully complete, i.e. it did not lead to a successful FIP completion and eventual certification.

In Mexico, there were concerns regarding the role of government and institutions and successive government turnover of staff, which would need to support the project and continue involvement in the FIP. One fisher in the clam fishery mentioned (translated from Spanish):

> *"Not having enough time and resources to be permanently in the process".*

In Mexico, fishers were also worried about additional fishing restrictions, such as implementing a seasonal closure in the snook fishery and changes in fishing practices in the Octopus fishery. Additionally, changing government regulations could make access to certifications more challenging. There was also a perceived risk to the reputation of the fisher organization in Mexico and an indirect effect on the reputation of nongovernmental organizations with donors.

Collaboration

Although not commonly mentioned as a benefit to participation, collaboration was recognized to play a crucial role in the projects. When explicitly asked about the anticipated benefits or concerns regarding collaboration (Question 22), the theme that emerged across the sample is that the project promoted better collaboration and that these benefits were already being felt, which was one of the outcomes of the project we set out to monitor. A Mexican fisher indicated that (translated from Spanish):

> *"Strengthen the participation and collaboration of fishermen with the government and civil society organisations, as well as other entities".*

A general view by one of the SA respondents indicated that:

> *"Collaboration gives you a much wider view of everything e.g., potential funding, market access."*

Another South African respondent indicated the following when asked about the benefits of collaboration.

> *"More hands-on management; better communication – people more on the same page, better understanding of resource; better potential for country negotiations for more quota"*

The respondents in South Africa and Mexico held similar views on the main benefits of collaboration within their projects, such as a perception of improved relationships between institutions through increased interaction with multiple stakeholders (particularly industry and government but also within the wider community). The project was perceived as providing a common purpose. This seems to have given impetus to multiple stakeholders, who often had competing interests, to work closer together than before.

At the time of the survey, it was felt that there was still significant progress in collaboration, with increased involvement from diverse stakeholders, particularly partners from institutions such as government and NGOs, which could result in greater information sharing and transparency. Respondents in Mexico suggested that involving more organizations in the activities would increase participation, respect, and pride in the fishery.

Specifically, the project was viewed as a vehicle that could open new avenues of collaboration, and all the respondents agreed that it was required for better governance. For example, in Mexico, it was mentioned that due to the project's activities, Pronatura Noroeste (the Mexican FFG implementation partner) was assisting SEPESCA (Secretaria de Pesca y Acuacultura de Baja California) to process and analyse e-logbook data. This collaboration was seen as a win–win situation in which strategic alliances meant more could be achieved within the fishery.

However, collaboration also had negative aspects (Question 22). For example, some concerns were raised in South Africa regarding managing multiple stakeholders' expectations and competing interests. For example, one respondent from South Africa mentioned:

> *"Stakeholders often have diverging interests – balancing various interests will be challenging (e.g., requirement for observers is problematic on small vessels)."*

In Mexico, there were concerns regarding potential unequal commitment to collaboration (and free riding). For example, there was a perceived need for "equal" and balanced participation in collaboration if improvements were to be achieved (that benefited everyone).

An issue that was only raised in Mexico was that collaboration was hampered by the divisions between fisher federations and by limited financial resources, which reduced authorities' ability and commitment to collaboration. In addition, existing institutional issues regarding information sharing are perceived to exist in Mexico and, if not solved, could negatively influence (or even cease) any advancement in collaboration. Moreover, there was a concern that if fishers saw no evidence of economic and social benefits from the project in the short term, a decrease in interest and collaboration could be expected. Notwithstanding this, some improvement in collaboration was noted.

Information sharing

Central to the concept of collaboration is the notion that it serves as a conduit for information transfer and sharing, although information transfer and sharing is at the same time, essential for successful collaboration. Across all fisheries, the projects were acknowledged for facilitating the generation and dissemination of information and assisting in identifying the required information types (Question 22). This led to increased information exchange among NGOs, fisheries officials, researchers, and the MSC. The primary information shared pertained to aspects of the fishery, such as markets, species caught, and logbook data. Fisheries benefitted

from the availability of more information, but importantly, increased information exchanges were seen to lead to greater transparency in both countries. Respondents commented that project involvement had necessitated the open sharing of information between various stakeholders to allow working towards the common goals set within each fishery. This is, e.g. evidenced by the following two statements of a South African respondent.

> *"Get information you wouldn't normally get; Fisheries have gaps – FIP allows to address these gaps. Improves the benchmark data which makes better management possible".*

> *"Resolve issues of mistrust – leads to open and transparent communication and exchange of information".*

In South Africa, respondents recognized that improved information sharing would improve data collection and management practices. While Mexico also reported benefits from more timely information provision and sharing, issues with the standardization of methods persisted. Improved access to up-to-date knowledge of the resource, including information on its status, bycatch, technical fishing data, environmental factors, and fishery statistics, contributed to the improved management of the fishery. Furthermore, due to the nature of the fishing market, improved information exchange could help fishers better control the prices obtained by their catch in Mexico.

Despite observed benefits, there were still challenges to information exchange. These included insufficient funds to effectively produce and distribute information and language barriers, with some information in Mexico communicated in English rather than Spanish. In the Mexican Octopus fishery, concerns about sharing information include competition for fishing areas and potential theft of fishing gear if locations are disclosed.

Increased influence through improved engagement

Many respondents indicated that they felt that their opinions were being heard more (congruent with greater collaboration and information sharing). There were personal benefits from this, as indicated by a South African participant is:

> *"Better understanding of fishery and stakeholders in the fishery; Foster better collaborative relations".*

Although information was shared, there was variability between fisheries and whether this sharing came with decision-making power. For example, some South African respondents indicated no change in their say in decision-making. Still, most South African Mussel fishery respondents felt that they had had a bigger say in decision-making since the start of the project. In Mexico, some respondents only had intermittent involvement in the project and felt no change in their decision-making power. Constant involvement appeared critical for respondents to feel they had a decision-making voice they could exert. However, involvement requires time, energy, and interest, which are not available in equal parts to all respondents.

Conflict

Respondents were asked to identify the relationship between their involvement in a project and the potential for conflict in that fishery (Question 23). In the South African fisheries, there appeared to be low levels of conflict. However, in the South African Rope-grown Mussel fishery, conflict with the public had been problematic in the past, and the project was seen as a vehicle to solve this long-standing problem. There was a recognition that the project could have a beneficial impact on resolving conflicts. An example of this is one industry respondent who commented:

> *"May help to ease the conflict with environmental activists; improve the relationship with other operators (industry)."*

> *"More awareness created around the muscle sectors should reduce conflict; negating mistrust in government; involvement of other role-players brings in more credence (breaking down barriers)."*

In Mexico, the project was thought to generate a sense of union among the community regarding decision-making about the fisheries. Because it improved the active participation of authorities in managing the fishing while collaborating with the broader community, it was perceived as avoiding or reducing the potential for conflict. In Mexican fisheries, other aspects also perceived to minimize the potential for conflict were greater compliance with seasonal closure rules, improved labor rights in fisheries, and greater cooperation between fishers who shared the same fishing areas.

Increased information sharing and collaboration appeared to support conflict avoidance, reduction, and resolution. For instance, the facilitation (by the project) of a greater exchange of information and increased collaboration led to an increased perception of transparency and potentially contributed to resolving issues of mistrust. Additionally, better data collection practices resulted in more credible data and the ability to benchmark against international best practices.

Areas of potential conflict that were identified included the competing interests (e.g. between implementing NGOs and fishers) often seen toward the end of projects when fisheries need to decide when to transition from the FIP to certification; concerns about the risk of sharing proprietary information, which could lead to conflict; and in Mexico, disagreements between institutions and project respondents igniting latent conflicts.

Awareness and compliance with fishing rules

Awareness and understanding of existing rules developed from participation in a project can be an enabling condition for willingness to comply with future governance decisions (e.g. Arkorful et al. 2022). The survey revealed a substantial difference in respondents' knowledge and awareness of formal and informal rules, addressed by two separate questions (questions 28 and 29, respectively). Most respondents in South Africa (19 out of 20, 95%) and the White Snook fishery in Mexico (eight out of nine, 89%) indicated that they were (well) informed about the formal governance rules of their fishery. However, in the Mexican Chocolate Clam and Octopus fisheries three respondents in each fishery (32%) indicated they did not know the formal rules like regulations such as minimum size, fishing gear specifications, and so on. However, fishers interviewed mentioned that due to the FIP process they were informed during meetings with PRONATURA and others about all applicable regulations. Informal governance rules are "rules" that fishers have among themselves or within their fishing communities (noting that informal rules may equally fulfil governance requirements set by the MSC Fisheries

Standard requirements, provided it can be shown they ensure the expected sustainability outcomes). In Mexico, respondents of the White Snook fishery felt well-informed about the informal governance rules since they were adopted within the organizations and derived from the project's activities, such as the voluntary adoption of seasonal closures and no-take zones. In the other two Mexican fisheries (clam and Octopus), the majority felt (well)informed about informal rules, one, but one out of nine respondents (11%) in the Clam fishery and 2 out of 10 respondents (20%) in the Octopus fishery indicated they did not know the informal rules. One reason that was raised for noncompliance was the inadequacy of information regarding the relevance of complying with fishing rules. In South Africa, most respondents were not well-versed in the informal governance rules (13 out of 20, 65%). However, it could be that there are not many informal rules within the case study fisheries, as formal rules are well-established and accepted.

Some respondents across both countries could not comment on the change in compliance with formal and informal fishing rules. This was attributed to the fact that their fishery's action plan had not yet been fully implemented, and thus no change could yet be observed, or they did not identify compliance issues in their fishery.

Other respondents whose fisheries had been participating in the project no longer recognized that the project positively impacted the proportion of people who complied with informal and formal fishing rules. The reason for the improvement in compliance was related to greater participation of fishermen, more available information increased awareness and knowledge of the fishery, and more inspection and surveillance. One participant from the TAPL fishery commented:

> *"Quite a self-regulated fishery. Haven't had many compliance issues. The association keeps an eye on their members as well. Highly competitive."*

In addition, the depletion of some species, such as the Mexican chocolate clam, created some attitudinal changes in society and caused people to care more about the resource and, therefore, more likely to follow the rules. Octopus fishers mentioned that social media campaigns had been launched within their communities to inform the community about seasonal closures to increase compliance.

Awareness of the MSC

Awareness of the MSC is considered a useful enabling condition for future engagements with stakeholders in other projects (K. Longo, personal communication). In South Africa, all respondents were aware of MSC before being involved with the project (Questions 59–69). While the majority knew the MSC eco-label, some were unclear regarding the steps and costs associated with the certification process. More respondents expressed uncertainty regarding the Chain of Custody Standard and certification process. In Mexico, there were generally the same respondents being aware of MSC, except in the Octopus fishery, with six of the nine respondents unaware of MSC. The Mexican Octopus fisheries also had lower awareness of the certification process. All three Mexican fisheries had low awareness of the Chain of Custody Standard and the approximate costs of yearly audits and recertification—with, e.g. only eight respondents knew little or more about the cost. This was attributed to the fact that no mention was made of the MSC and its role in the FIP during the FIP or working group meetings by the meeting organizers. This may also be because some of the respondents from fisher organizations or other authorities as they were not participating in the FFG process.

In South Africa, many respondents had received training about MSC, with all respondents expressing an interest in the various courses facilitated by MSC. In Mexico, all respondents indicated they would like to receive training about the MSC.

Discussion

Our study was designed to evaluate the progress made in implementing Intermediate outcomes (i) to (iii) using a survey instrument (see Fig. 2 and Supplementary Material S1). Five possible nonmonetary benefits emerge across the results. The first three—change in communication, improved understanding, and increased collaboration, are more direct, whilst reduced conflict and increased compliance are made possible by achieving the first three. Given the cross-cutting nature of these five themes, they are discussed under the umbrella of perceived nonmonetary benefits to project participation.

Understanding emerging and expected nonmonetary benefits and their importance

Deriving benefits from participation in sustainability initiatives is an important initial driver of stakeholders' active engagement (Moser and Bader 2023). Although the more traditional benefits are at the top of respondents' minds and are easily recognized (economic benefits, improved governance, and more sustainable fisheries), multiple nonmonetary benefits are vital to achieving improvement project goals and, eventually, continued sustainable fisheries management. Whilst certification is one way to incentivize a shift toward sustainable practices, collaboration, knowledge, and active participation of different stakeholder groups have been acknowledged as important factors contributing to change (Steins et al. 2020). However, from our results, it is also clear that these contributing factors are also viewed as essential potential benefits in themselves. These include greater collaboration, communication, and information-sharing.

It is unquestionable that collaboration and information sharing go together (Feeney et al. 2010, Dedual et al. 2013, Obregón et al. 2020). However, most say that collaboration results from information sharing, but perhaps the opposite is also true. If fishers have the common goal of achieving sustainability, they must work together to achieve it (e.g. May 2008). This study found that the project encourages collaboration, with all respondents agreeing that new avenues for collaboration were required for better governance. From our results, we see that perhaps the strength here is that the appropriate space and opportunity for collaboration and information sharing is created through the project.

Nevertheless, some issues exist around information-sharing in some Mexican fisheries where there are perceived institutional issues regarding information-sharing. If these are not solved, this could negatively influence (or even cease) any advancement in collaboration. An example is the perception that the involvement of regulatory authorities is a risk factor for nonparticipation. This is often because authorities do not regard engagement as important. The spectre of changes of government that can prompt changes in the policy

direction and the subsequent impact on the future of such projects, along with future implications for the credibility of NGOs and donors. One option to resolve this issue would be to formalize relationships with governing authorities (e.g. through memoranda of understanding) as much as possible.

Interestingly, all benefits arising from project involvement also have perceived risks. Generally, despite best efforts, these lie in the endpoint (goal) not being achieved. Additionally, if fishers see no evidence of economic and social benefits from the project in the short term, a decrease in interest and collaboration can be expected. Moreover, fishers being unaware of where the responsibilities lie within the project also poses a risk. Perceptions matter, and a lack of clarity on the role of the project will jeopardize implementation and eventual certification (if desired). Finally, if fishers compound the lack of successful certification with a lack of success in the project, this might be troublesome.

Access to more and better information was a clear benefit of participation. Effective communication approaches are essential for transferring information. Effective communication creates trust between stakeholders (e.g. Calderwood et al. 2023) (although trust was not perceived to have changed as a direct consequence of the project). Greater information access through communication and information sharing that leads to learning is essential. Still, collaboration in managing the fishery may be more difficult with a potential information overload (Peters 2013). Nevertheless, comanagement requires good information regarding the resource (Caddy and Seijo 2005) and misunderstandings and false expectations must be avoided. Important efforts are being made to fill essential data gaps to improve fishery transparency [e.g. A Healthy Ocean Depends on Sustainably Managed Fisheries (nature.org)].

A key component underpinning the realization of these benefits is the concept of "transparency"—transparency in the management approach, prices, environmental indicators, monitoring, and compliance. Transparency is recognized as a key ingredient in improving fishery governance. Transparency is one of the several principles of "good governance" (Lockwood et al. 2010) that creates inclusivity and legitimacy. It allows data scrutiny by all parties, thus, greater decision-making power and fairness (Grigorescu 2007). Transparency has also been linked to increased compliance and accountability (Guggisberg et al. 2022). Several variables, including capability and variation of fishing capacity and policy transparency, lead to the greatest difference in fishery sustainability (Mora et al. 2009). Normatively, transparency is a good governance principle, but proving a causative link or correlation between the two is not straightforward (e.g. Walton et al. 2022 and others). Our research showed that transparency lies at the foundation of many benefits but is not a panacea for all. For example, transparency was unlikely to be able to solve issues of mistrust where they existed in a fishery.

Conflicts in fisheries emanate from many sources, including power inequality, institutional failure, differences in values, and overexploitation (Pomeroy et al. 2007). Effective and inclusive communication is crucial for managing conflicts (Murshed-e-Jahan et al. 2014). Improvements in communication are particularly important to ensure that management decisions are implemented to settle disputes. In this study, it was perceived that reduced abundance would lead to increased conflict among fishers.

Notably, despite very different contexts, there were some key similarities in the responses of the various fisheries. South African and Mexican respondents shared the goal of preserving fisheries and the environment for future generations. They recognized the benefits of collaboration, information sharing, and transparency in achieving this goal. The main benefits mentioned were economic benefits, improved management, and more sustainable fisheries. The pathway project and/or FIP was perceived as a vehicle for promoting better collaboration and improving relationships between institutions and multiple stakeholders. However, concerns associated with managing expectations, competing interests, and the potential for unequal commitment to collaboration exist, particularly in Mexico. Managing expectations is crucial as many fishers enter the project for the potential market benefits without realizing the long-term nature of this goal. At the same time, competing interests may give rise to conflict within fisheries, hampering the achievement of project goals. However, both fisheries perceive the potential for conflict reduction and avoidance through increased transparency, compliance with rules, and improved data collection practices. However, fisheries share concerns about the cost of implementing the action plan and potential certification, the potential risks of not achieving sustainability, and not improving stock status and living conditions. The main differences between fisheries include awareness and knowledge of the MSC and its certification process and levels of understanding of formal and informal governance rules.

Learnings and limitations

Although implemented to gain insights about project progress in the case study site, we also sought to test the survey instrument in a real-world context. In doing so, we have gained important insights that can be applied in future.

In some cases, the survey instrument could not draw conclusive results regarding the effect of the FFG project, where it could not differentiate between the wider impacts of FIPs and those of pathway projects specifically. This seemed linked to respondents' awareness of the FFG project and the simultaneous presence of multiple initiatives. The criteria for selecting respondents and case studies may not have adequately considered this aspect, and the use of a nonrandom sample of fisheries may limit the generalizability of the findings. To address these shortcomings, we suggest updating case studies and respondent selection criteria to ensure tailored questions that are specific to the objectives of pathway projects and FIPs independently and that surveys are implemented after the project or FIP has been active for some time.

The involvement of coauthors from the MSC presents both advantages and potential biases. On the one hand, their familiarity with the fisheries sectors within the studied country and their expertise in the applied methodology enriched our understanding of the situation and informed the design of our research tools and analysis of the results. Our experience underscored the need for MSC staff to collaborate closely with scientists to clarify the project's intricacies, elucidate MSC processes, and discuss the assumptions that underpin the research. However, the presence of MSC coauthors could also potentially influence the interpretation of the findings, given their vested interests. Independent consultants were appointed to develop and implement the survey to maintain objectivity. The surveys provided valuable insights that can support project monitoring. Having a non-MSC individual establish a trusting relationship with respondents facilitated an

unbiased collection of perspectives and fostered an environment conducive to honest discourse. MSC coauthors were not directly involved in conducting interviews or providing specific advice to fisheries, thus maintaining objectivity.

We gained valuable insights from surveys that can support project monitoring. Referencing standardized results was advantageous, providing a consistent, measurable baseline for assessment and comparison across diverse projects. An expert-designed replicable approach supported reliable and comparable data generation. The success of the surveys was highly dependent on the interviewer's ability to conduct, report, and summarize the results in a balanced manner while simultaneously understanding the context of the research. Having a non-MSC individual establish a trusting relationship with respondents facilitated an unbiased collection of perspectives and fostered an environment conducive to honest discourse. Finally, based on these findings, the MSC plans to incorporate this monitoring methodology into future projects, leveraging these lessons to enhance their research outcomes and effectiveness.

For monitoring purposes, the effectiveness of the survey approach depends heavily on stakeholder awareness of the specific activities associated with their respective projects. This can become complicated when multiple donor projects overlap, and various initiatives are seamlessly integrated, as observed in Mexico. Such integration can make isolating effects attributable to the specific pathway initiative challenging. This aspect underlines the significance of maintaining clear communication channels and ensuring that all stakeholders are well-informed about their project's specific activities. These findings can guide the design and implementation of future projects and surveys.

These results highlighted what intangible benefits of pathway projects can bring even before the final objectives are met. These benefits often relate to creating the conditions required for achieving sustainability goals within a fishery, regardless of the certification eventually taking place—as highlighted in the intermediate outcomes where engaging stakeholders, improving communication, and creating sustainability awareness are foregrounded. Participating in the survey provided respondents with the opportunity to reflect on short(er) term progress. In doing so, we see the potential value of adopting multifishery approaches in facilitating peer learning whilst encouraging a sense of achievable improvement for participants. Reflecting on short-term gains is an important tool for keeping stakeholders engaged, especially as they invest a lot personally, as it may take years for the project to realize its ultimate goals. At the same time, these results can inform the project management process, promoting active engagement as respondents feel that they have a decision-making role and fostering but also fostering inclusivity where a diversity of viewpoints can be heard and valued. By doing so, we move toward the practical implementation of transdisciplinary approaches, which are crucial for addressing sustainability challenges (e.g. Satterthwaite et al. 2022, Shackleton et al. 2023).

Impact of the COVID-19 pandemic

Reporting on this work was inadvertently delayed by the COVID-19 pandemic, with the South African surveys being completed just before a national lockdown was imposed in March 2020. As such, the situation within all the case study sites has changed since (and due to) the pandemic. In Mexico, the Octopus FIP is inactive because of community social problems and increased insecurity, leading stakeholders to lose their commitment to the project. In contrast, the Chocolate Clam FIP has achieved significant progress, including a community agreement with authorities to implement a 3-year moratorium to recover the Chocolate Clam banks and a community surveillance program to enforce the moratorium. This FIP has also since expanded its activities. This includes the Human Rights and Social Responsibility policy of fishery progress. The Snook FIP is now multispecies, and the number of cooperatives involved has increased to 15. However, conducting a stock assessment using limited data on finfish species remains challenging.

The SA Albacore pole, line fishery, and Saldanha rope-grown mussel fishery in South Africa are all in stage 4 of the pathway project framework, implementing the improvement actions identified through the action plan developed collaboratively by fishery stakeholders. Both fisheries have shown their commitment to sustainability improvements by entering the MSC's In Transition to MSC (ITM) program in 2020 and receiving third-party verification of their progress since then. Both fisheries are progressing toward achieving sustainability goals and have been registered on the FisheryProgress.org platform. The South African Albacore Tuna Pole and Line Pole and Line fisheryPole and Line Fishery intend to undertake a full assessment against the MSC's Fisheries Standard in 2024.

Pronatura, the FFG implementing partner in Mexico, has faced setbacks due to the COVID pandemic, with in-person meetings being suspended, leading to delays in project implementation. The fishing industry in South Africa was considered an essential service and was exempt from lockdown. The impact of COVID-19 on these fisheries was relatively limited. The mussel fishery switched to producing frozen products for the international market. In contrast, the albacore pole and line fishery were seasonal, avoiding the height of the COVID-19 lockdowns.

Political and social contexts, such as the example of the Octopus fisheries, will impact the capacity to achieve desired outcomes. Our South African example epitomizes a success story, underscoring the value of structured, well-documented procedures.

Conclusion

The results of this study show some of the intangible benefits, such as collaboration, engagement, and awareness, that could be derived from projects driving sustainable fisheries management reform, such as pathway projects and FIPs. This was made possible through an interview-based data collection approach that was designed to capture the qualitative outcomes expected of pathway projects. They highlighted the value of adopting multifishery approaches to facilitate peer learning and foster a sense of achievable improvement. Initially powered by monetary incentives and an expanding consciousness of sustainability on the part of the respondents, the results show how a pathway project implementation process can cultivate active stakeholder engagement, yielding intangible benefits related to collaboration, and the realization of attainable progress through clearly demarcated incremental steps. This study demonstrates the value of tracking these types of outputs and the other kinds of monitoring already in use in FIPs. Improvement projects typically require signifi-

cant time and effort invested upfront by fishery respondents, managers, and other stakeholders before expected benefits can be accrued. Therefore, monitoring effective progress is crucial to justifying and motivating continued engagement. While the importance of collaboration in enhancing fisheries may be recognized, actualizing it presents challenges; our findings assert that pathway projects and associated FIPs can create enabling conditions to promote such collaboration. In this context, implementing a survey can help with monitoring and has the potential to be a catalytic agent able to stimulate successful and sustainable outcomes.

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Author contributions

Louise C. Gammage (Conceptualization, Analysis, Investigation, Writing - original draft, Writing - review & editing), Catherine S. Longo (Conceptualization, Development of survey Methodology, Analysis, Writing - original draft, Writing - review & editing, Visualization, Project administration), Ingrid van Putten (Conceptualization, Development of survey Methodology, Analysis, Writing - original draft, Writing - review & editing), Edaysi Bucio (Analysis, Investigation), Andrew Kenneth Gordon (Writing - review & editing, Visualization, Project administration), Amanda Lejbowicz (Writing - review & editing), Francisco Vergara-Solana (Analysis, Writing - review & editing).

Supplementary data

Supplementary data is available at *ICES Journal of Marine Science* online.

Conflict of interest: The Marine Stewardship Council (MSC) employs A.K.G., A.L., C.S.L., and F.V.S. L.C.G. and E.B. were contracted to complete the survey in the respective case study sites.

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Data availability/ethics statement

The data underlying this article cannot be shared publicly due to (describe why the data cannot be made publicly available because of restrictions imposed by ethics requirements and agreements with research respondents). However, selected data that does not breach any ethics requirements are available on reasonable request from the corresponding author.

References

Arkorful H, Hilton SK, Awaah F. Community engagement in development projects: government versus private funded projects in Ghana. *J Enterp Commun People Places Glob Econ* 2022;**17**:708–27. https://doi.org/10.1108/JEC-09-2021-0138.

Arton A, Leiman A, Petrokofsky G *et al.* What do we know about the impacts of the Marine Stewardship Council seafood ecolabelling program? A systematic map protocol. *Environ Evid* 2018;**7**:29. https://doi.org/10.1186/s13750-018-0143-1.

Berkes F, Ross H. Community resilience: toward an integrated approach. *Soc Nat Resour* 2013;**26**:5–20.

Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;**3**:77–101. https://doi.org/10.1191/1478088706qp063oa.

Bush SR, Oosterveer P. Vertically differentiating environmental standards: the case of the Marine Stewardship Council. *Sustainability* 2015;**7**:1861–83. https://doi.org/10.3390/su7021861.

Caddy JF, Seijo JC. This is more difficult than we thought! The responsibility of scientists, managers and stakeholders to mitigate the unsustainability of marine fisheries. *Philos Trans R Soc Lond B Biol Sci* 2005;**360**:59–75. https://doi.org/10.1098/rstb.2004.1567

Calderwood J, Pedreschi D, Ó Cuaig M *et al.* Reflecting on the importance of open communication and social capital for the co-creation of knowledge in Irish fisheries. *Front Mar Sci* 2023;**9**. https://www.frontiersin.org/articles/10.3389/fmars.2022.1081616

Cannon J, Sousa P, Katara I *et al.* Fishery improvement projects: performance over the past decade. *Mar Pol* 2018;**97**:179–87. https://doi.org/10.1016/j.marpol.2018.06.007.

Charmaz K. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*. SAGE, 2006.

CNP. Actualización de la Carta Nacional Pesquera. Cuauhtémoc: Diario Oficial de la Federación, 2023. https://www.gob.mx/cms/uploads/attachment/file/842686/Carta_Nacional_Pesquera_2023.pdf. (23 November 2023, date last accessed).

Cochrane KL. Reconciling sustainability, economic efficiency and equity in marine fisheries : Has there been progress in the last 20 years?. *Fish Fish* 2020;**22**:1–26.

Cochrane KL. Reconciling sustainability, economic efficiency and equity in fisheries: the one that got away?. *Fish Fish* 2000;**1**:3–21.

Cramer KL, Kittinger JN. Reef conservation off the hook: can market interventions make coral Reef fisheries more sustainable?. *Front Mar Sci* 2021;**8**. https://www.frontiersin.org/articles/10.3389/fmars.2021.675274.

Crona B, Käll S, Holt TV. Fishery Improvement Projects as a governance tool for fisheries sustainability: A global comparative analysis. *PLOS ONE* 2019; **14**:e0223054. https://doi.org/10.1371/journal.pone.0223054.

Daly N. Fishery improvement projects address new challenges on the water and in the supply chain—But face novel obstacles in the marketplace. Portland: SeaFoodSource, 2020. https://www.seafoodsource.com/educational-resources/seafood2030-issue-brief-vol-1. (26 June 2020, date last accessed).

De Fontaubert C, Deere C, Downes DR *et al. Achieving Sustainable Fisheries : Implementing the New International Legal Regime*. Gland: IUCN, 2003. https://portals.iucn.org/library/node/8199 (4 July 2023, date last accessed).

Dedual M, Sague Pla O, Arlinghaus R *et al.* Communication between scientists, fishery managers and recreational fishers: lessons learned from a comparative analysis of international case studies. *Fish Manag Ecol* 2013;**20**:234–46. https://doi.org/10.1111/fme.12001.

DFFE. *Status of the South African Marine Fishery Resources 2020*. Cape Town: Department of Forestry, Fisheries and Environment, 2020. https://www.dffe.gov.za/sites/default/files/docs/publications/statusofsouthafrican_marinefisheryresources2020.pdf. (4 July 2023, date last accessed).

DOF. *Acuerdo por el Que se Da a Conocer el Plan de Manejo Pesquero Ecosistémico del Sistema Lagunar Altata-Ensenada del Pabellón ubicado en los municipios de Navolato y Culiacán, del Estado de Sinaloa*. Cuauhtémoc: Diario Oficial de la Federacion, 2019.

DOF. *Plan de Manejo Pesquero de pulpo de la costa oriental de Baja California*. Cuauhtémoc: Diario official de la Federan-

ció, 2022. https://www.dof.gob.mx/nota_detalle.php?codigo=5642776&fecha=15/02/2022#gsc.tab=0. (14 July 2023, date last accessed).
DOF. *Plan de Manejo Pesquero de robalo garabato (Centropomus viridis), Pargo Colorado (Lutjanus colorado) y Curvinas en Marismas Nacionales. Nayarit y Sur de Sinaloa*. Cuauhtémoc: Diario official de la Federanció, 2021. https://www.gob.mx/cms/uploads/attachment/file/628491/DOF_-_Diario_Oficial_de_la_Federaci__n_PLAN_DE_MANEJO_ROBALO.pdf. (14 July 2023, date last accessed).
FAO. The State of World Fisheries and Aquaculture 2022. Rome: FAO, 2022. http://www.fao.org/documents/card/en/c/cc0461en. (4 July 2023, date last accessed).
Feeney RG, La Valley KJ, Hall-Arber M. Assessing stakeholder perspectives on the impacts of a decade of collaborative fisheries research in the Gulf of Maine and Georges Bank. *Mar Coast Fish* 2010;**2**:205–16. https://doi.org/10.1577/C09-038.1.
Ferreira J. Mussel farming on the West Coast. Craighall: farmer's weekly, 2016. https://www.farmersweekly.co.za/agribusiness/agribusinesses/mussel-farming-on-the-west-coast/. (5 July 2023, date last accessed).
Figueroa E, Pérez M, Cabrera J *et al*. Informe final para la "implementacio´n de una zona de refugio pesquero en la bahía de altata-ensenada del pabellón, navolato, sinaloa". *ISAPESCA* 2016.
Gammage LC, Jarre A. Scenario-based approaches to change management in fisheries can address challenges with scale and support the implementation of an ecosystem approach to Fisheries Management. *Front Mar Sci* 2021;**8**:1–16.
Garlock T, Anderson JL, Asche F *et al*. Global insights on managing fishery systems for the three pillars of sustainability. *Fish Fish* 2022;**23**:899–909.
Glaser BG, Strauss AK. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: AldineTransaction, 1967.
Grigorescu A. Transparency of intergovernmental organizations: the roles of member states, international bureaucracies and nongovernmental organizations. *Int Stud Quart* 2007;**51**:625–48. https://doi.org/10.1111/j.1468-2478.2007.00467.x.
Guggisberg S, Jaeckel A, Stephens T. Transparency in fisheries governance: achievements to date and challenges ahead. *Mar Pol* 2022;**136**:104639. https://doi.org/10.1016/j.marpol.2021.104639.
ICCAT. ICCAT statistical databases. Madrid, 2023. ICCAT.int/en/t1.asp (1 March 2023, date last accessed).
Lockwood M, Davidson J, Curtis A *et al*. Governance principles for natural resource management. *Soc Nat Resour* 2010;**23**:986–1001.
Maesano G, Di Vita G, Chinnici G *et al*. The role of credence attributes in consumer choices of sustainable fish products: a review. *Sustainability* 2020;**12**:10008. https://doi.org/10.3390/su122310008.
May CK. Achieving sustainability in US fisheries: community engagement in co-management. *Sustain Dev* 2008;**16**:390–400. https://doi.org/10.1002/sd.355.
McClenachan L, Record NR, Waller J. How do human actions affect fisheries? Differences in perceptions between fishers and scientists in the Maine lobster fishery. *FACETS* 2022;**7**:174–93. https://doi.org/10.1139/facets-2021-0030.
Mora C, Myers RA, Coll M *et al*. Management effectiveness of the world's marine fisheries. *PLoS Biol* 2009;**7**:e1000131. https://doi.org/10.1371/journal.pbio.1000131.
Moser S, Bader C. Why do people participate in grassroots sustainability initiatives? Different motives for different levels of involvement. *Front Sustain* 2023;**3**. https://www.frontiersin.org/articles/10.3389/frsus.2022.994881
MSC. 2018a. MSC fisheries certification process ver 2.1. https://www.msc.org/docs/default-source/default-document-library/for-business/program-documents/fisheries-program-documents/msc-fisheries-certification-process-v2.1.pdf (13 July 2023, date last accessed).
MSC. 2018b. Fish for good project south africa; stage 1b deeper mapping report. Unpublished Report. *Marine Stewardship Council*.
MSC. MSC Fisheries Standard v3.0. London, 2022.
MSC. Pathway to sustainability. London, 2023. https://www.msc.org/what-we-are-doing/pathway-to-sustainability#:~:text=Pathway%20Projects%20are%20a%20collaboration,against%20the%20MSC%20Fisheries%20Standard. (14 July 2023, date last accessed).
Murshed-e-Jahan K, Belton B, Viswanathan KK. Communication strategies for managing coastal fisheries conflicts in Bangladesh. *Ocean Coast Manag* 2014;**92**:65–73.
Obregón C, Admiraal R, van Putten I *et al*. Who you speak to matters: information sharing and the management of a small-scale fishery. *Front Mar Sci* 2020;**7**. https://www.frontiersin.org/articles/10.3389/fmars.2020.578014
Oloruntuyi O, Barendse J, Marriott M *et al*. Pathway to sustainability: the Marine Stewardship Council certification standard as an improvement framework for African fisheries. *Front Mar Sci* 2023;**10**. https://www.frontiersin.org/articles/10.3389/fmars.2023.1042736
Ostrom E. A general framework for analyzing sustainability of social-ecological systems. *Science* 2009;**325**:419–22. https://doi.org/10.1126/science.1172133.
Patton MQ. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. Thousand Oaks: Sage Publications, 2014.
Pérez-Ramírez M, Castrejón M, Gutiérrez N *et al*. The marine stewardship council certification in latin america and the caribbean: a review of experiences, potentials and pitfalls. *Fish Res* 2016;**182**:50. https://doi.org/10.1016/j.fishres.2015.11.007
Peters A. Towards transparency as a global norm. In: *Transparency in International Law*. Cambridge: Cambridge University Press, 2013.
Pomeroy R, Parks J, Pollnac R *et al*. Fish wars: conflict and collaboration in fisheries management in Southeast Asia. *Mar Pol* 2007;**31**:645–56. https://doi.org/10.1016/j.marpol.2007.03.012.
Ponte S. The Marine Stewardship Council (MSC) and the making of a market for 'sustainable fish': the MSC and the making of a market for 'sustainable fish.'. *J Agrarian Change* 2012;**12**:300–15. https://doi.org/10.1111/j.1471-0366.2011.00345.x.
Roheim C, Bush SR, Asche F *et al*. Evolution and future of the sustainable seafood market. Nature Sustainability. *Nature Sustainability* 2018;**1**:392. https://doi.org/10.1038/s41893-018-0115-z
Roheim CA. Early indications of market impacts from the Marine Stewardship Council's ecolabeling of seafood. *Mar Resour Econ* 2003;**18**:95–104. https://doi.org/10.1086/mre.18.1.42629385.
Roheim CA, Asche F, Santos JI. The elusive price premium for ecolabelled products: evidence from seafood in the UK market. *J Agric Econ* 2011;**62**:655–68. https://doi.org/10.1111/j.1477-9552.2011.00299.x.
Saldaña J. *The Coding Manual for Qualitative Researchers*. SAGE Publications, 2015.
Sampson G. Economic spillovers in spatial harvest behavior. *Ecol Econ* 2018;**145**:57–74. https://doi.org/10.1016/j.ecolecon.2017.08.016.
Samy-Kamal M. Fishery Improvement Projects (FIPs): a global analysis of status and performance. *Fish Res* 2021;**240**:105987. https://doi.org/10.1016/j.fishres.2021.105987.
Satterthwaite EV, Komyakova V, Erazo NV *et al*. Five actionable pillars to engage the next generation of leaders in the co-design of transformative ocean solutions. *PLoS Biol* 2022;**20**. https://doi.org/10.1371/journal.pbio.3001832.
Shackleton S, Taylor A, Gammage L *et al*. Fostering transdisciplinary research for equitable and sustainable development pathways across Africa: what changes are needed?. *Ecosyst People* 2023;**19**:2164798. https://doi.org/10.1080/26395916.2022.2164798.
Sink K, Holness S, Harris L *et al*. National Biodiversity Assessment 2011: technical report. In: *Marine and Coastal Component. 4*. Vol. **4**. Pretoria: South African National Biodiversity Institute, 2012.
SmartFish. Smartfish Annual Report 2019. Oslo, 2019. https://www.calameo.com/oxp/read/005482886f2edf58ca572 (4 July 2023, date last accessed).
Steins NA, Kraan ML, van der Reijden KJ *et al*. Integrating collaborative research in marine science: recommendations from an evaluation of evolving science-industry partnerships in Dutch demersal

fisheries. *Fish Fish* 2020;**21**:146–61. https://doi.org/10.1111/faf.12423.

Taufique K, Vocino A, Polonsky A. The influence of eco-label knowledge and trust on pro-environmental consumer behaviour in an emerging market. *J Strat Mark* 2016;511. https://doi.org/10.1080/0965254X.2016.1240219

Torreblanca RE. *Bases para el Manejo de la Pesquería del Pulpo (Octopus bimaculatus, Verril 1883) en la Reserva de la Biosfera Bahía de los Angeles, Canales de Ballenas y Salsipuedes*. Baja California: Universidad Autónoma de Baja California, 2008.

Travaille KT, Crowder LB, Kendrick GA *et al.* Key attributes related to fishery improvement project (FIP) effectiveness in promoting improvements towards sustainability. *Fish Fish* 2019a; **20**:452–65. https://doi.org/10.1111/faf.12357.

Travaille KT, Crowder LB, Lindley J *et al.* The market for sustainable seafood drives transformative change in fishery social-ecological systems. *Glob Environ Chang* 2019b; **57**:101919. https://doi.org/10.1016/j.gloenvcha.2019.05.003.

van Putten I, Longo C, Arton A *et al.* Shifting focus: the impacts of sustainable seafood certification. *PLoS ONE* 2020;**15**:e0233237. https://doi.org/10.1371/journal.pone.0233237.

Walton GW, Keen M, Hanich Q. Can greater transparency improve the sustainability of Pacific Fisheries?. *Mar Pol* 2022;**136**:104251. https://doi.org/10.1016/j.marpol.2020.104251.

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