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EDITED BY

Yaisel Juan Borrell Pichs,
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REVIEWED BY

Antonella Rivera,
Coral Reef Alliance, United States
Silvia Gómez,
Autonomous University of Barcelona, Spain

*CORRESPONDENCE

Catherine Dale Ward

✉ cward@cwssconsulting.com

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Moving beyond fish: working towards integrating human dimensions into sustainable seafood guides from South African perspectives

Catherine Dale Ward^{1*}, Pavitray Pillay² and Marieke Norton³

¹Independent Researcher, Moka, Mauritius, ²Southern African Sustainable Seafood Initiative, World Wide Fund for Nature, Cape Town, South Africa, ³African Climate & Development Institute, University of Cape Town, Cape Town, South Africa

Traditionally, seafood assessments and subsequent ratings have guided choice and responsible sourcing of sustainable seafood based primarily on environmental concerns, with limited to no consideration to multi-faceted human dimensions that form an integral part of these complex social-ecological systems. For wild-capture marine fisheries around the world, and particularly in developing countries, human dimensions remain underrepresented in sustainability ratings, where the focus has traditionally been on larger, data-rich commercial fishery components that report predominantly on ecological and management considerations. Yet, addressing the diverse and complex nature of marine social-ecological systems remains critical to achieve global sustainable seafood systems that balance ecological and societal needs to benefit both nature and people. This paper champions the integration of human elements into seafood sustainability guides, building on work reviewing how best to integrate human dimensions into traditional seafood assessments under the World Wide Fund for Nature (WWF) – drawing on examples from South Africa. While the paper does not prescribe a blueprint for implementation, this review highlights challenges and opportunities to include human rights violations and small-scale fisheries in existing sustainable seafood guides from a South African perspective. There is a need for sustainability considerations to move beyond fish to better represent how these social-ecological systems feed into oceanic cultural norms and nutrition. This translates to shifting from an ecological focus to include human dimensions to better represent complex marine social-ecological systems and drive equitable change within local and global seafood industries.

KEYWORDS

human dimensions, human rights, small-scale fisheries, South Africa, Southern African Sustainable Seafood Initiative (SASSI), sustainable seafood guides, wild-caught marine fisheries, World Wide Fund for Nature (WWF)

1 Introduction

Responsibly sourcing and choosing sustainable seafood should benefit both people and nature around the globe. Yet, as oceans are increasingly viewed as a new frontier to capitalize on marine resources, people and the environment are increasingly placed at risk (Bennett et al., 2021). Fisheries, from small-scale to industrialized enterprises, have been adversely impacted by ocean-based economic development through a myriad of injustices ranging from human rights abuses to the exclusion of the livelihoods of small-scale fishers (Bennett et al., 2021). Sustainability in wild-capture marine fisheries continues to lag across the world and the relationship between sustainable consumption and sustainable resource governance remains patchy and inadequate (Penca, 2020). Sustainability concerns in fisheries have largely been confined to rating instruments that capture dimensions limited to product information and ecological sustainability – typically under voluntary ecolabeling schemes and/or seafood labeling that vary across jurisdictions (Penca, 2020). This trend is evident in established seafood certifications, ratings, standards, and assurance programs that traditionally focus exclusively on environmental sustainability, where human dimensions are largely absent or only partially considered (Teh et al., 2019). And yet, sustainability in fisheries is not only an ecological consideration, but rather involves complex and multi-dimensional aspects that balance both ecological and human (i.e., economic, sociocultural, and governance) dimensions (Stephenson et al., 2018; Foley et al., 2020).

Fisheries form part of complex, social-ecological systems (Ostrom, 2009) – where, at its core, a system's thinking approach has the understanding that everything is connected, either directly or indirectly, depending on the framing of the opportunity in question (for example, see Blasiak et al., 2021). The complexity of natural systems, such as the oceanic, is what makes it so biodiverse, abundant, and critical to human well-being (Jarre et al., 2018). In turn, it is the complexity and variability of human dimensions that allows for growth and innovation – in ways that humanity has proven homogeneity, uniformity, and the pursuit of ordered control, cannot do. Efforts to flatten out these complications in an attempt to govern human interactions with fishery systems have historically led to blind spots in the understanding how these systems function (Jarre et al., 2018). The complexities in fishery systems are not something to be solved in a linear manner, but rather crucial features to account for when designing sustainability paths that are inclusive and representative of these marine social-ecological systems (Norton and Jarre, 2020). Here, we work with social-ecological systems in order to work towards full-spectrum sustainability that encompasses ecological, economic, sociocultural, and governance aspects of fishery systems to be best representative of desired futures for our oceans (Stephenson et al., 2018; Foley et al., 2020).

While full traceability of seafood products that include social considerations have recently moved into the spotlight – particularly in developed countries – there are risks associated with

transforming sustainability ratings in terms of how this impacts equity (Penca, 2020). The importance of human dimensions when considering sustainability in existing sustainable seafood guides is therefore imperative: firstly, a fishery cannot improve if there are human rights abuses taking place and/or if there is labor exploitation present (Blasiak et al., 2021) and secondly, small-scale fisheries require economic, social, and cultural emphasis due to the important livelihood component they embody (Teh et al., 2019). This aligns with the growing movement towards blue justice (Blythe et al., 2023), recognizing social justice in processes (such as fisheries) where resources and spaces are being allocated along with the resultant distribution of benefits and harms to different groups of people (Bennett et al., 2021). The shift towards sustainable seafood can be seen as an evolving social-ecological issue, largely underpinned by fisheries ecolabels and sustainable seafood initiatives (Barendse et al., 2018). In South Africa, the movement towards sustainable seafood was only initiated post democracy, largely driven by the global ecolabel Marine Stewardship Council (MSC) and the World Wide Fund for Nature's (WWF) Southern African Sustainable Seafood Initiative (WWF-SASSI) – see Barendse et al. (2018) for a detailed chronology of events.

Prominent ecolabels for wild-capture fisheries (such as the MSC) have concentrated efforts in European and North American fisheries with few long-term examples from developing contexts, where knowledge gaps have been identified in the human dimension of standard-setting of the MSC (Arton et al., 2020). As an exception, the MSC certification of the South African hake (*Merluccius paradoxus* and *capensis*) trawl fishery over the past two decades has improved this fishery's local and international market position, bringing economic benefits to, and generating livelihood opportunities in, the country (Lallemand et al., 2016). While the MSC certification process traditionally focuses on environmental and management aspects of fisheries, it also includes labor eligibility requirements as part of their assessment requirements, where (for example) fisheries and at-sea certificate holders in the MSC program are required to report on forced and child labor considerations, including regulatory mechanisms in place to protect fishing crew (MSC, 2023). However, these requirements have traditionally been for information purposes and are typically self-reported by wild-capture marine fisheries, where revised MSC labor policy requirements with independent auditing guidelines have only recently been implemented (MSC, 2023).

While sustainable seafood initiatives have played a role in connecting traditional fishing industry and formal scientific management structures with the market and consumers, the implications of these initiatives have received less attention than ecolabels (Barendse et al., 2018). Furthermore, research efforts on these initiatives have focused on examples from European and North American countries (Barendse et al., 2018), such as the Monterey Bay Aquarium Seafood Watch program (Seafood Watch, 2023). Important user groups, such as small-scale fishers from developing countries, are at risk of being misrepresented in traditional sustainability rating systems that cater primarily for larger commercial fisheries due to the limited scope of current

seafood sustainability initiatives, which focus on ecological and management considerations (Smith and Basurto, 2019; Stassen et al., 2019). For example – the Southern African Sustainable Seafood Initiative (SASSI), first established in South Africa in 2004 by the World Wide Fund for Nature (WWF) to drive change in the local seafood industry, has traditionally focused on ecological and management aspects when assessing the sustainability of fish species (WWF-SASSI, 2023). There are a number of reasons why so many, if not all, of South Africa's small-scale fishing communities are suffering under conditions of precarity. There are the common features of the South African life from insufficient provision or maintenance of infrastructure, resources, and services; relatively high levels of crime; inflation; and insufficient social security (Norton, 2020; Gammage and Norton, 2022). For coastal fishing communities these are compounded by a range of fisheries-specific issues that make fishers and their families vulnerable – such as the continued marginalization of the traditional small-scale fisheries sector in South Africa (Sowman and Sunde, 2021).

To draw attention to the importance of including human dimensions in sustainable seafood assessments through a social-ecological lens, we review the experience of WWF's sustainable seafood guides in South Africa, specifically the WWF-SASSI process. Generally, WWF's seafood guides are well established within the ecological sphere (WWF, 2020), which remains an important priority to ensure that assessed fisheries are not adversely impacting marine ecosystems. Uniquely, the WWF-SASSI program offers an opportunity to explore how to bring human dimensions into dialogue with sustainable seafood initiatives from a developing country perspective that have traditionally focused on ecological aspects. This paper reviews the steps taken by WWF South Africa to champion the integration of human elements into WWF's seafood sustainability guides, drawing on experiences from South Africa. As part of our review process, we look at a series of steps taken by WWF South Africa to contextualize challenges and opportunities to integrate human dimensions into sustainability ratings, where we review options to include human rights violations and small-scale fisheries within existing methodologies underpinning these assessments. Firstly, we provide an overview of existing methodologies underpinning WWF's seafood guides and document the steps taken by WWF South Africa to shape the WWF-SASSI assessment process. Secondly, we review the steps taken by WWF South Africa to test the possibility of including social criteria into WWF's common assessment methodology and the associated challenges arising from this process, specifically focusing on the conflicting realities of small-scale fisheries in South Africa. Thirdly, we review guidance frameworks proposed for the inclusion of social questions into existing WWF methodologies according to two primary criteria identified under the second step, namely human rights violations and equitable access (to resources and markets). This paper does not prescribe a strategy for implementation but rather advocates for the integration of human dimensions in sustainable seafood guides representing developing country contexts, where the majority of the world's seafood production occurs (FAO, 2022; FAO, Duke University and WorldFish, 2023).

2 Overview of the marine common assessment methodology

In this section, we begin by providing an overview of the current methodologies underpinning the sustainability rating assessments used by WWF's seafood guides, focusing on WWF-SASSI to highlight experiences from South Africa. This first step in our review process serves to provide background on WWF's processes and build an understanding of the steps taken by WWF South Africa to advance the WWF-SASSI process in South Africa since its inception in 2004. Sustainable seafood guides developed by WWF assess the environmental sustainability of seafood species from wild-capture fisheries and aquacultures (WWF, 2020). These seafood guides are underpinned by risk-based methodologies that are regularly updated to remain scientifically robust and relevant under WWF's Common Assessment Methodology (CAM). Here, we focus on wild-capture marine fisheries, which are assessed using the Marine Common Assessment Methodology (MCAM) that examine the status of the stock, environmental impacts of the fishing gear, and how the fishery is managed in terms of environmental sustainability (WWF, 2020). To add a layer of context, WWF offices in participating countries develop fish guides that are relevant to their location based on market relevance for individual countries – such as the WWF-SASSI list for South African fisheries. All country-specific seafood guides draw on recommendations from a shared pool of WWF assessments to provide consistent messaging for the same seafood species to customers (WWF, 2020).

2.1 Southern African Sustainable Seafood Initiative

Over the past two decades, WWF-SASSI has promoted responsible fishing practices and sustainable seafood in South Africa through voluntary compliance with the law – specifically the South African Marine Living Resources Act (WWF-SASSI, 2023). Under WWF-SASSI, the WWF office in South Africa (WWF South Africa) conducts science-based sustainability assessments for key marine species that are of conservation concern or relevant to local and/or international markets. These assessments are used to inform and drive consumer awareness programs in South Africa and globally (WWF-SASSI, 2023). To date, WWF-SASSI is unique as it is one of the few programs of its kind on the African continent – making it an important initiative representing sustainable seafood programs from an African context (WWF-SASSI, 2023).

The WWF-SASSI assessment process is underpinned by the MCAM, which traditionally focuses on ecological and management components of wild-capture fisheries, where these scientific-based assessments are undertaken by marine fishery experts. The current design of the assessment process is better suited to assess larger, regulated, and structured fisheries and the associated management measures in place. This impacts the

assessment outcomes as small-scale fishing communities in developing contexts, such as South Africa, typically experience high levels of marginalization, inequality, and poverty that stem from brittle government systems rather than communities themselves (Norton, 2020; Sowman and Sunde, 2021; Gammage and Norton, 2022). The underlying methodology and how these sustainability assessments are conducted often produce outcomes that are disputed by small-scale fishers in South Africa, as this approach does not adequately account for human dimensions (Stassen et al, 2019). This in turn fuels a distrust of the scientific assessment process of their seafood products and reduces specific stakeholders within the seafood supply chain's willingness to support sustainable seafood initiatives such as the WWF-SASSI list (Stassen et al, 2019).

To improve stakeholder buy-in from fishers, WWF South Africa implemented a number of initiatives from the mid-2000s to engage the fishing sector of South Africa – including a public participation and external review process as part of WWF-SASSI assessments to build understanding and trust (Barendse et al., 2018; Stassen et al, 2019). While the WWF-SASSI program has successfully engaged with the formal seafood supply chain in South Africa as it has been strongly based on a market-based-approach to sustainability (Ouardien et al., 2014), the engagement and incorporation of small-scale fishers in sustainability programs has lagged due to market access barriers faced by these highly marginalized fishing communities (Stassen et al, 2019). Therefore, WWF South Africa began to engage with small-scale fishing communities through an ongoing fishery improvement project (FIP) from 2013 and in specialized training programs on sustainable fishing practices tailored for small-scale fishery communities of South Africa (Stassen et al, 2019; WWF South Africa, 2023). In recent years, the South African small-scale fishing sector has increasingly challenged WWF SA on the outcomes of the WWF-SASSI assessment based on the lack of human dimension considerations. An added layer of complexity is that a single fish species assessed under the WWF-SASSI guide¹ may have multiple sustainability ratings depending on how the fish was extracted based on fishing gear type and fishing sector (commercial or small-scale), which can contribute to additional contention (for example, see Duggan et al., 2020). Given the importance of small-scale fishers and the complex social, ecological and governance aspects of this multi-faceted livelihood dimension (FAO, Duke University and WorldFish, 2023), sustainable seafood assessments should account for complexity within human fishery systems to allow for meaningful inclusion of small-scale fisheries.

1 The WWF-SASSI guide rates seafood using a 'traffic light' system, where 'green' represents species assessed by SASSI as being sustainably harvested, 'orange' species are of moderate concern and 'red' indicates that the species are overexploited and thus urges consumers to avoid purchasing (WWF-SASSI, 2023).

3 Engaging human dimensions in existing WWF methodologies

In this section, we review the steps taken by WWF South Africa to test the possibility of including social criteria into existing assessment methodology, as part of a broader initiative under WWF² examining the adaptation of small-scale fisheries to climate change (Monnier et al., 2020). In response to the gaps highlighted in Section 2, particularly the lack of human dimension considerations under the WWF-SASSI assessment process, WWF South Africa undertook a mini literature review³ [for example, see Donaldson et al. (2011)] on how other ecolabels and sustainability initiatives address social dimensions in their fishery ratings – see Stassen et al. (2019). The following initiatives were reviewed as part of this process: Aquaculture Stewardship Council (ASC) (ASC, 2023), Marine Stewardship Council (MSC) (MSC, 2023), Monterey Bay Aquarium Seafood Watch (Seafood Watch, 2023), and Social Responsibility Assessment (SRA) Tool (Conservation International, 2021) (see Table 1).

Following the mini literature review, WWF South Africa drafted a series of criteria that could potentially form the basis of additional social questions within the MCAM (Stassen et al, 2019). Drawing on an Ecosystem-Based Management (EBM) approach, alongside guidelines on the Ecosystem Approach to Fisheries (EAF) under the Food and Agriculture Organization of the United Nations (FAO) and Fair Trade principles, these draft criteria included: access to resources, child labor, co-management, economic self-sufficiency, food security, forced labor, gender equality, and local ecological knowledge (see Table 2). From these draft criteria, two over-arching themes were identified, namely human rights violations and equitable access (to resources and markets). Once WWF South Africa started formulating these criteria into MCAM questions with associated scores,⁴ it became apparent that these questions may cause more harm than good in the current methodology format as they assessed how well management dealt with issues such as food security and access to resources.

These criteria were then discussed in South Africa at a series of community-based workshops held between 2019 and 2020.

2 Participants included WWF Austria (lead), ANPI/WWF, Environmental Justice Foundation, WWF European Policy Office, WWF Mediterranean Program, WWF Adria (Croatia/Slovenia), WWF Bulgaria, WWF Denmark, WWF Germany, WWF Greece, WWF Italy, WWF Poland, WWF United Kingdom, WWF India, WWF Philippines, WWF South Africa, and WWF Turkey.

3 Mini literature reviews can be defined as "direct, concise, and timely review articles that tackle emerging issues and are of broad interest to fisheries managers, scientists, legislators, policymakers, and stakeholders" (Donaldson et al, 2011: Box 1).

4 Refer to methodology explanations at WWF (2020) and the supporting MCAM version 5.0 (MCAM, 2023) for examples on how assessment questions are scored between 0 to 100 and weighted under existing WWF methodologies.

TABLE 1 A summary of selected ecolabels and sustainable seafood initiatives reviewed [adapted from Stassen et al (2019)].

Ecolabel/ Sustainable Seafood Initiative	Social Dimensions
Aquaculture Stewardship Council (ASC) (ASC, 2023)	The ASC is a third-party certification scheme for farmed sustainable seafood. The ASC certification system has been evaluated against ISEAL's Codes of Good Practice, a globally recognized framework for effective, credible sustainability systems. Social impacts have been a key feature in the ASC since its inception and are integrated into its certification process (ASC, 2023).
Marine Stewardship Council (MSC) (MSC, 2023)	The MSC is a third-party certification scheme for wild-caught sustainable seafood. The MSC certification process includes labor eligibility requirements as part of their assessment requirements, where (for example) fisheries and at-sea certificate holders in the MSC program are required to self-report on forced and child labor considerations, including regulatory mechanisms in place to protect fishing crew (MSC, 2023).
Monterey Bay Aquarium Seafood Watch (Seafood Watch, 2023)	The Monterey Bay Aquarium Seafood Watch program assesses how fisheries and aquaculture operations perform against science-based standards for environmental sustainability, where these ratings are used to create sustainability recommendations for wild-caught and farmed seafood (Seafood Watch, 2023). In 2018, Seafood Watch, in partnership with Liberty Asia, Seafish and Sustainable Fisheries Partnership, launched the Seafood Slavery Risk Tool (http://www.seafoodslaveryrisk.org). The Seafood Slavery Risk Tool complemented the Seafood Watch sustainability assessments and informed buyers of the likelihood of human rights violations occurring within the fishery. This program has since ended (2023) and is waiting for the final to be publicly released.
Social Responsibility Assessment (SRA) Tool (Conservation International, 2021)	The SRA Tool is a risk assessment or benchmarking tool to conduct human rights due diligence in the seafood sector. This tool was designed to inform the development of a Fishery Improvement Plan (FIP) workplan. At present, the SRA Tool is a voluntary protocol and is not a certification (Conservation International, 2021).

Following discussions on the draft criteria with fishers, local scientists and decision-makers at these workshops, the likelihood of a low score was very high (i.e., poor or ineffective management) for small-scale fisheries, which ultimately led to a more negative assessment outcome. Yet, regulated and structured fisheries were more likely to receive positive assessment outcomes as the assessment process relies on credible and verifiable data, management, and governance. Under the current format of the MCAM, workshop participants indicated that this may further perpetuate the divide between fisheries and deepen the (mis)perception that sustainability organizations favor larger, commercially orientated fisheries. While many small-scale fishers participating in the workshops agreed that ecological sustainability was important, the importance of meeting immediate basic needs such as food availability and to a limited extent financial stability was highlighted as the over-riding priority. It is therefore essential to be cognizant that many of these fishing communities are *fishing to put food on the table* and are disproportionately affected by disruptions and/or shifts in their systems (for example, see Gill et al., 2023 and Mbatha, 2021). In this format, these draft social criteria were not appropriate for small-scale fisheries, as these fisheries require a focus on the importance of the livelihood dimension that typically operates to meet basic needs such as food security, rather than market-orientated profit or formal market access.

In the South African context, food insecurity and resource mismanagement typically stem from a failing of government rather than the communities themselves (Norton, 2020; Norton and Jarre, 2020). For over a decade, there have been severe delays and problems facing the implementation of the Small Scales Fishers' Policy and this has meant the de facto exclusion of many small-scale fishers from the South African fishing sector (Sowman and Sunde, 2021). Inefficient governance of the inshore sector has also created

conflict between small-scale fishers and the inshore commercial fishery sector at the local scale over targeted resources (Martins et al., 2019; Belhabib et al., 2020). Governance structures have not fully considered all opportunities for the sector, such as uptake on data from the ABALOB program⁵ (Abalobi, 2021), though this is currently based on anecdotal field experience and could be usefully further investigated. For many of these small-scale fishers, alternatives have been limited and while some have sought employment on commercial inshore boats, spaces on these vessels are limited and the sector is characterized by "under-employment" – access to employment but at a wage-rate or frequency that does not equate to a sustainable livelihood (Mbatha, 2021).

4 Reimagining sustainable seafood assessments

Following the feedback from the community-based workshops on the draft social criteria proposed in Table 2, a revised approach

⁵ ABALOB is a South African-based organization that strives to elevate small-scale fishing communities for social, economic, and ecological sustainability. This hybrid social enterprise works with small-scale fishing communities to record their catch data to develop thriving and equitable livelihoods, which are underpinned by community-led data and Technology For Good. ABALOB aims to protect small-scale fishing communities and nurture their ocean stewardship, while providing seafood customers with better information to develop fair and transparent markets for ecologically responsible and socially fair seafood (ABALOB, 2021).

TABLE 2 A summary of draft indicators for the inclusion of social criteria in the MCAM [adapted from Stassen et al (2019)].

Criteria	Indicator(s)	Definition
Human Rights Violations		
Child labor	No child labor in fishery/species under assessment	“Work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development” (ILO, 2018)
Forced labor	No forced labor in fishery/species under assessment Fishing must not be at the expense of human health	“...the recruitment, transportation, transfer, harboring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation” (UN, 2000)
Equitable Access		
Access to resources	All fishers have equal rights to resources Marine spatial planning incorporates all fisheries	“Refers to the policy of giving everyone the same opportunities for employment, pay, and promotion, without discriminating against particular groups” (Collins English Dictionary, 2023)
Co-management	Co-management approach established in the community	“...an arrangement where management responsibility is shared between the government and fishing communities. It can be viewed as a set of institutional and organizational arrangements (rights and rules), which define the co-operation among the fisheries administration and relevant fishing communities.” (Nielsen et al., 2004)
Economic self-sufficiency	Communities are economically self-sufficient Majority of the community has received financial/business support and training	“...ability of individuals and families to consistently meet their needs with minimal or no special financial assistance from private or public organizations.” (Gates et al, 2017)
Food security	All fishers/communities are food secure	“...when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2008)
Gender equality	All women and men in the fishing communities have equal ability and access to resources	“Implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men” (OSAGI, 2001)
Local ecological knowledge	Local knowledge of fishers (e.g., climate and/or species observations) incorporated into management policies	“...refers to the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings. For rural and indigenous peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life” (UNESCO, 2021)

was considered for the inclusion of social questions in existing WWF methodologies. Guided by the emergent themes identified under Section 3, the suitability of including social questions dealing with human rights violations and equitable access (to resources and markets) was reviewed through the development of guidance frameworks. Here, the focus is to (i) ensure that no fishery recommended on a WWF seafood guide is engaged in human rights violations; (ii) fisheries are building resilience in the face of social, economic, and ecological change; and (iii) for fisheries where inequity exists, either in the past or present, it is acknowledged, and steps are being taken to address it. In this section, we review viability and practicality of incorporating human dimensions into the ecologically centered MCAM, which underpins the WWF-SASSI rating guides, to create assessment outcomes that are more inclusive and better representative of complex fishery systems.

4.1 Human rights violations

Given the global nature of human rights violations associated with fisheries that move across multiple boundaries and

jurisdictions, particularly within industrialized fishing fleets, it is prudent to integrate this theme under the current format of the MCAM assessing management aspects of global fisheries. Despite global marine fish catches steadily decreasing from the mid-1990s, fishing effort has steadily increased, resulting in intensified competition, declining catches and profits, decreasing catches for increased effort, and over-exploitation across many stocks (Tickler et al., 2018; FAO, 2022). As customer and customer demand for fish has grown over this period, these competitive pressures and declining catch rates, coupled with insufficient regulation and minimal oversight, have driven an increase in the exploitation of fishers and illicit fishing activities – leading to a myriad of human right violations in marine fisheries (Tickler et al., 2018; Selig et al., 2022). The exploitation of fishers has been exacerbated by the increased reliance on marginalized migrant workers in global industrialized fisheries (Marschke and Vandergeest, 2016) and the continued marginalization of small-scale fisheries in favor of large-scale fisheries across the world (Schuhbauer et al., 2020). Documented cases through projects such as the Ocean Outlaw continue to highlight modern slavery as a contemporary blight within marine fisheries around the world (Urbina, 2023).

To align with the current assessment methodology, WWF is currently piloting a social question under the management component that examines “*How likely is the fishery involved in any kind of human rights violations?*” under the current MCAM version 5.0 (MCAM, 2023). To allow for improvements or breaches to be reflected in human dimensions of assessed fisheries, it is recommended that findings from the last three years are assessed. Given the complexity of assessing this human dimension in global fisheries, it was recommended that a guidance framework be developed, tested, and refined – drawing on the Social Responsibility Assessment (SRA) Tool (Conservation International, 2021). Here, key indicators to assess human rights violations include human trafficking, forced (slave) labor and child labor. The core definitions for these indicators draw on relevant International Labour Organisation (ILO) conventions and United Nations (UN) protocols, and are expanded to include other key terms (such as abuse of vulnerability, abusive living and working conditions, debt bondage, deception, excessive overtime, hazardous child labor, intimidation or threats, isolation, minimum age for employment, physical and sexual violence, restriction of movement, retention of identity documents, and withholding of wages) (see Supplementary Tables 1, 2). These indicators are examined alongside risks that can drive human rights violations, such as migrant labor, IUU fishing activities, transshipment, and the use of Flags of Convenience (Selig et al., 2022). Other risk drivers include extended periods at sea, port avoidance, and gaps in vessel tracking (McDonald et al., 2021). These drivers are also linked to policy and compliance by nations participating in assessed fisheries (McDonald et al., 2021; Selig et al., 2022).

The recommended framework is guided by a two-step decision tree process using a risk-based approach (Figure 1). The first path directly assesses whether there are human rights violations taking place in the profile fishery (Supplementary Figure 1). If there is insufficient information on the profile fishery, the second path can be used to indirectly assess the likelihood of human rights violations taking place in the profile fishery operating on the (a) high seas (Supplementary Figure 2) and/or (b) exclusive economic zones (EEZ) (Supplementary Figure 3). These two decision tree paths are assessed using multiple guideposts to determine risk categories, where different risk categories are determined based on criteria met (or not). The decision tree outcomes are based on low, medium, and high risk categories. This guidance framework is underpinned by a precautionary approach in the absence of information to err on the side of caution as no reported human rights violations do not necessarily translate to low risk if the profile fishery is active in a region with known rights violations in other fisheries. An unknown path can be assigned within strategic parts of the decision tree to highlight significant gaps of data availability that hinder the assessment outcome.

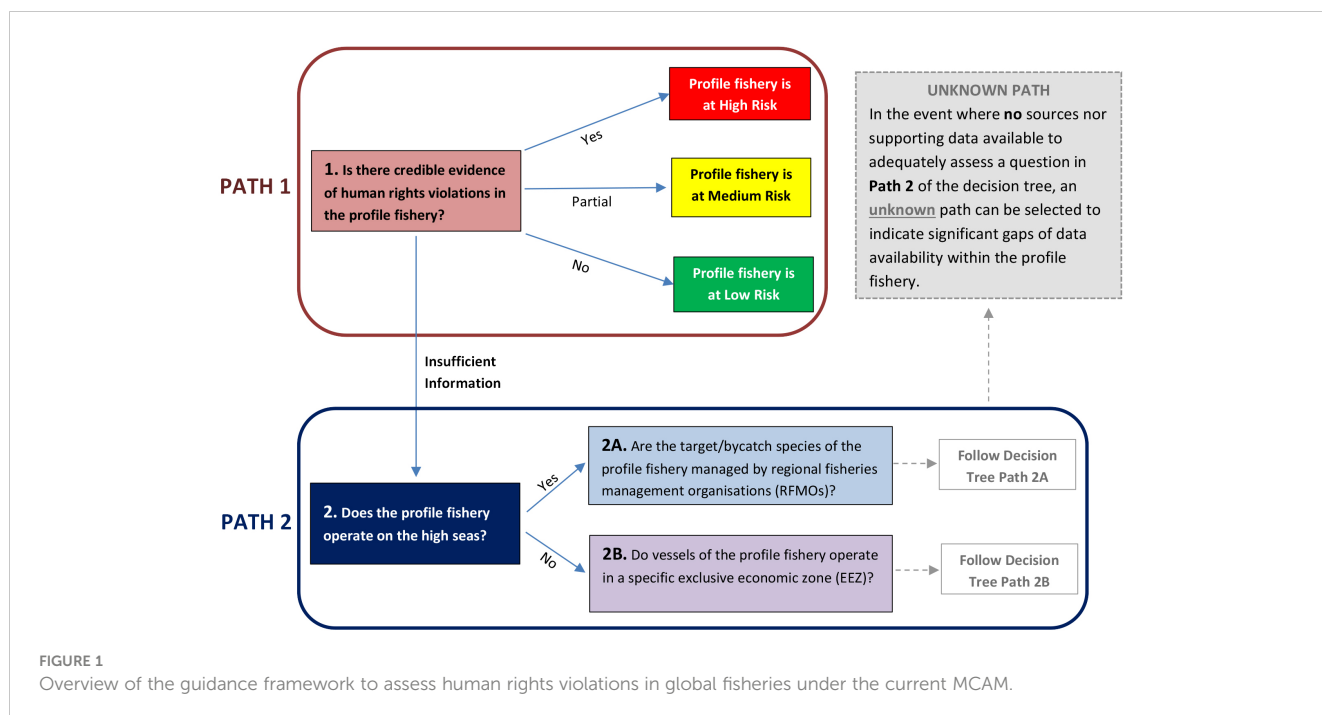
To strengthen the assessment outcomes for including this social question under the MCAM, it is recommended that the assessment team include evaluators who have research experience in relevant social and interdisciplinary sciences, including human rights and/or well-being protocols. Depending on the geographic location associated with the unit of assessment, this expertise may need to be region- or country-specific to best understand local context and navigate language requirements. Currently, the suggested framework follows international conventions and protocols, including guidelines set by the ILO for minimum age of employment. This approach therefore needs to be carefully tested and refined alongside real-world situations experienced in human dimensions of fisheries so that livelihood norms across different cultures are not undermined.

4.2 Small-scale fisheries

The critical role of small-scale fisheries cannot be understated and when considered from an integrated, complex systems perspective, these fisheries make up a significant and diverse segment of humanity in terms of livelihoods, nutrition, and culture. Globally, small-scale fisheries account for an estimated 40 percent of the global catch from capture fisheries and employ approximately 90 percent of the total number of people participating in fisheries around the world – the vast majority in developing countries (FAO, Duke University and WorldFish, 2023). However, the contribution of the small-scale fisheries sector is poorly understood universally, as reliable and representative data on the role of small-scale fisheries in global markets (i.e., catch), employment, poverty reduction, and nutrition are scarce. This has led to the ongoing marginalization of small-scale fisheries in policy spheres and created blind spots to the complexity and variability of human dimensions that could nurture social-ecological sustainability in seafood systems (FAO, Duke University and WorldFish, 2023). Increasingly, the social injustices arising from the exploitation of the oceans that impact fishing communities has driven a dialogue around blue justice (Blythe et al., 2023) – highlighting the ongoing exclusion of livelihoods of small-scale fishers and associated access barriers encompassing both resources and markets (Bennett et al., 2021).

These highlighted issues are reflected in small-scale fisheries of South Africa, where over 200 vulnerable coastal fishing communities depend on the marine environment for food and livelihoods (WWF South Africa, 2023). When WWF-SASSI was started 20 years ago, there were no formally recognized policies for small-scale fisheries in South Africa that included rights allocation or data collection. Today, small-scale fisheries in South Africa are characterized by marginalization due to access barriers through historical inequalities, uneven policy considerations, predatory behavior from markets, market gatekeeping by middlemen and competition from industrial fishing fleets (Van Sittert, 2017; Isaacs and Witbooi, 2019; Norton, 2020). This fishery sector currently operates in a data-poor environment and is not well represented in scientific assessment processes such as the WWF-SASSI, where these sustainability ratings are often contested by small-scale fishing

6 It should be noted that there are small-scale fisheries organizations, such as Coastal Links South Africa (CLSA) and its partner Masifundise, which are mass based community organizations established to secure livelihoods and human rights for South African small-scale fishers (Masifundise, 2023).



communities based inadequate consideration for human dimensions (Stassen et al, 2019). Many small-scale fishers in South Africa are not self-organized,⁶ for multiple reasons and to no fault of their own and are therefore unable to contribute to the formal WWF-SASSI stakeholder assessment review and commenting process.

Complexity in small-scale fisheries is driven by context-specific elements that are prominent in South Africa, where many small-scale fishing communities are historically disadvantaged through discrimination by race, gender, age, culture, and language barriers (Sowman et al., 2013; Isaacs and Witbooi, 2019; Norton, 2020). The current MCAM assessment process, which underpins the WWF-SASSI ratings, is limited as it is better suited to assess larger, regulated, and structured fisheries and their associated management practices. To adequately account for the uniqueness of small-scale fisheries and the important livelihood components they represent, a new approach should be considered to better align the current WWF-SASSI assessment process to small-scale fishery realities. Here, we recommend that a parallel approach be piloted to assess small-scale fisheries (only) that consider livelihood dimensions by addressing equitable access to resources and markets. Drawing on relevant themes from the SRA Tool (Conservation International, 2021), we provide preliminary examples of guiding questions in Table 3 to support the suggested criteria of (a) equitable access to resources and (b) equitable access to markets. The aim of this approach is to ensure that the framing of this social question under the larger MCAM assessment process is fit for purpose and draws on the best available information and expertise. Furthermore, given the global significance of small-scale fisheries in terms of global catch, employment, and food security,

this parallel approach needs to consider the viability of integrating small-scale fishery assessments directly into existing global methodologies – or whether a separate assessment process should be developed to adequately account for the complexity of human dimensions at local scale within the small-scale fishery sector (for example, see Blasiak et al., 2017).

Given that a social question on equitable access for small-scale fishers will depend heavily on country context, it is recommended that this parallel approach initially be developed and trialed under the WWF-SASSI assessment process, as this rating system is well-established within the South African context. This process can build on the community-based workshops led by WWF South Africa that took place in South Africa between 2019 to 2020 (Stassen et al, 2019), drawing on a co-development approach between WWF South Africa and participating fishing communities to assess the suitability of revised criteria through a series of participatory workshops. In addition, a wider group of small-scale fishery experts (e.g., practitioners, researchers, and academics) and community leaders and representatives from South Africa can be consulted within this co-development process to add value to the selection of criteria or indicators that underpin this question. Other contextually relevant criteria for consideration within this co-development process include gender equality, marginalized groups, and discrimination factors. This also raises an important consideration of whether the assessment only considers wild-capture fisheries in relation to sea-based harvesting efforts, or whether the larger supply chain of post-harvest activities in terms of workers processing fish should also be assessed. This requires further research based on country context, as the fishery workforce under assessment may be dominated by men; however, women do

TABLE 3 Revised social criteria and supporting guiding questions to assess equitable access to resources and markets for small-scale fisheries.

Criteria	Preliminary Guiding Questions
(a) Equitable access to resources	<ol style="list-style-type: none"> 1. Is the allocation of domestic fishing rights inclusive of, and make adequate provision for, small-scale fisheries (inclusive of fishers, cooperatives and/or associations)? 2. Is there credible evidence of fishing rights allocation disputes between small-scale fishers and government and were the outcomes in favor of the fishers? 3. Is there credible evidence of industrial and/or commercial fisheries obtaining (either directly through rights allocation processes or purchasing permits from awarded rights holders) fishing rights permits reserved for small-scale fishers? 4. Is there credible evidence of industrial and/or commercial fisheries operating offshore the marine resource-dependent community or fishing for the same resource (or fish stock) as the small-scale fishing community (either directly as target catch or indirectly as bycatch)? 5. Are all affected and relevant stakeholders (i.e., small-scale fishers) free to engage in all aspects of fishery governance including decision making, monitoring, enforcement, and conflict resolution? 6. Are appropriate grievance mechanisms in place that are both procedurally and substantively effective at remediation of conflicts and complaints in a time-bound manner with no reoccurring grievances, where these remediation processes (corrective action plans) are publicly disclosed?
(b) Equitable access to markets	<ol style="list-style-type: none"> 7. Are small-scale fishers paying off debt to the cooperative, association, buyer, or permit holder (for equipment, permit fees, fuel costs, ice, etc.) and is most of their income (or share of catch) used to pay back their debts or has their debt increased over time proportional to their income (or share of catch)? 8. Are fishers organized into groups to better negotiate with buyers and/or are fishers price setters? 9. Is there more than one local fish buyer or middleman, and are harvesters free to sell to whomever they wish without retribution and there is no price collusion among local buyers? 10. Are small-scale fishers allowed to witness the product being weighed or graded to calculate their income (or share of catch)? 11. Do fishers have access to competitive credit markets or are recipients of investment opportunities? 12. If applicable, can fishers access loans from at least two types of lenders at interest rates not exceeding government rates or lender's borrowing rates?

play important roles in post-harvest activities (du Preez, 2018; Fonto, 2021).

5 Discussion

The current global discourse on seafood sustainability has centered on ecological and management considerations in wild-capture marine fisheries – including the underlying methodology developed for WWF's sustainable seafood guides. While the environmental impacts and how these are managed remain critical to the well-being of marine ecosystems, the complexity and variability of human dimensions also require attention in the sustainable seafood dialogue as these form an integral part of fishery systems, particularly where human rights and local livelihoods are

concerned (for example, Bennett et al., 2021). Globally, integrating human dimensions into seafood certification processes has lagged due to the “normative aspects of social justice and the lack of universally accepted external reference points for some social issues such as what constitutes fair pay or underage labor” (Blasiak et al., 2021, p. 13). However, as social responsibility and social justice conversations have increasingly added a voice to the sustainable seafood dialogue (Nakamura et al., 2018; Tickler et al., 2018; Teh et al., 2019), alongside improved monitoring and traceability applications leveraged to expose human rights violations within the marine fishing industry (McDonald et al., 2021; Selig et al., 2022), the opportunity to integrate human dimensions into sustainable seafood ratings can no longer be overlooked.

The sheer complexity of human dimensions in fisheries also demands attention in seafood sustainability ratings – specifically small-scale fisheries and associated livelihood and food security considerations. While ecological sustainability remains a priority so that diverse, thriving marine ecosystems can continue to support people – long term sustainability in marine social-ecological systems (particularly in developing countries) may be best achieved through supporting small-scale fisheries that are managed through responsible, low-impact practices and, in turn, sustain livelihoods and elevate human well-being (Gammage and Norton, 2022; FAO, Duke University and WorldFish, 2023). There is a delicate balance to consider between commercially orientated, industrialized fisheries and livelihood-intensive small-scale fisheries in the sustainable seafood dialogue in terms of equity and market access, where a one-size-fits-all assessment approach risks being out of sync with local context and may perpetuate scale mismatches (Blasiak et al., 2017). For example, the large retail chains that dominate the seafood market in developed countries have come under increasing customer pressure to showcase that their products are environmentally sustainable through eco-certification schemes, which has resulted in positive outcomes for many of the world's largest industrial fisheries (Pita and Ford, 2023). However, this trend has adversely impacted small-scale fisheries, where little is known about small-scale fisheries' access to retailer markets and prohibitive costs of eco-certification have created monetary barriers few small-scale fishers can afford (Pita and Ford, 2023). When looking at developing country markets, we need to promote both sustainable and responsible trends.

As highlighted by small-scale fishers in South Africa challenging the sustainability ratings under the WWF-SASSI assessment, the current WWF-SASSI ratings are not inclusive of livelihood dimensions and risk deepening disparities between industrial and small-scale fisheries, particularly as the small-scale fisheries policy implementation rolls out. As sustainable seafood assessments are designed to drive change in consumer behavior and related market forces, the real-world consequences for the livelihoods of fishing communities impacted by sustainability ratings cannot be understated – as coastal communities are at risk of losing their way of life and being pushed deeper into poverty. For example, the ramification of red-listing (i.e., “don't buy”) seafood species under the current WWF-SASSI assessment for small-scale fishing communities in South Africa can have significant repercussions on the livelihood chain of a community – from skippers to their

crew members, to community members (typically women) involved in post-harvest activities. The methodology underpinning the WWF-SASSI rating outcomes therefore needs to carefully balance ecological and social considerations in a way that aligns with realities of small-scale fisheries, whilst creating a market demand for green-listed seafood, thus adequately accounting for human dimensions within these complex social-ecological systems.

Human dimensions require improved representation in the sustainable seafood guides of WWF to create assessment outcomes that better characterize the sustainability within fishery systems, moving beyond ecological and management spheres. WWF is currently reviewing the MCAM approach underpinning its seafood guides to better align with the complexity of fishery systems – recognizing that *“a fishery is sustainable where the ecological basis of the fishery is being maintained and restored, thereby ensuring future generations are not disadvantaged; so that the benefits of the fishing activity strengthen community/societal resilience, and where the management and governance actions reflect the precautionary approach, facilitating necessary adjustments in catch, effort and gear with transparency and public reporting”* (WWF Baltic, 2022). Sustainable seafood guides under WWF provide a unique platform to capture a holistic outlook of sustainability assessments for wild-capture marine fisheries. Working towards ensuring that no fishery recommended on a WWF seafood guide is engaged in human rights violations, this social question may be best suited to be integrated into the existing methodology used to assess WWF’s seafood guides. Given the global reach of human rights violations such as human trafficking, forced (slave) labor and child labor within fisheries, this human dimension should be assessed in equal measure alongside ecological and management considerations. As social justice is still a relatively new voice within the sustainable seafood dialogue, a risk-based approach using a series of decision paths (including unknown outcomes) is best positioned to assess how likely human rights violations occur within assessed fishery systems. This approach can be altered and updated accordingly as publicly accessible information and research data become more readily available over time, and as the current framework is assessed and adjusted in context to the realities of fisheries operating across the world.

We also emphasize that fisheries are complex, diverse, and critical to human well-being – where special attention is required for small-scale fisheries and their essential roles in terms of livelihoods, nutrition, and culture in developing contexts. Here, we focus on fisheries building resilience in the face of social, economic, and ecological change and, where relevant, that historical and present inequalities are recognized and addressed – as supported by work done on blue justice concepts and associated movements (for examples, see Bennett et al., 2021; Blythe et al., 2023). Human dimensions in small-scale fisheries are extremely complex, in some cases controversial (e.g., fishery rights), and highly dependent on local context. While global issues such as human rights violations can be aligned with the existing methodology underpinning WWF’s sustainability ratings for seafood, the WWF-SASSI program in South Africa offers an opportunity to further explore how to meaningfully include small-scale fisheries in sustainability assessments that accounts for

their vital livelihood and food security dimensions. Approaches to sustainable seafood assessments developed at a local scale can serve as powerful tools to create more inclusive dialogue to uncover underlying challenges and build consensus among fishery stakeholders (Blasiak et al., 2017). Here, WWF-SASSI is well placed to lead this undertaking given its long-standing engagement with small-scale fishery communities in South Africa to create sustainability ratings that are more inclusive and better representative of human dimensions in developing countries. As sustainable seafood labelling programs look to expand beyond South Africa into neighboring African Small Island Developing States (SIDS) with significant marine resources, it is critical that sociocultural and economic aspects inform the design and implementation of seafood guides alongside environmental considerations (Glass et al., 2022).

Sustainable seafood assessments that recognize the highly linked and interdependent nature of fisheries as complex social-ecological systems, will be better placed to provide meaningful outcomes to inform consumer choice. For sustainable seafood guides, this translates into shifting from an ecological focus to include human dimensions to give a holistic snapshot of these complex systems. Importantly, for both global and local fishery assessments, we advocate for a diversity of disciplines to be reflected within assessment teams in recognition that social-ecological systems of fisheries belong not only to ecological areas of expertise, but also social and interdisciplinary sciences, to adequately account for human dimensions. Furthermore, the diversity of fisheries can be better represented in sustainability assessments through recognizing livelihood-intensive small-scale fisheries operate under very different realities in comparison to commercial, large-scale fisheries, which need to be reflected in an equitable manner within sustainable seafood guides. This is particularly important for assessments reflecting realities of fishery systems operating in developing countries, which requires careful attention to ensure that sustainable seafood guides do not marginalize data-poor fisheries and/or misinterpret diverse small-scale fishery systems under linear approaches that do not reflect contextual realities at scale.

6 Conclusion

There is no denying that the sustainable seafood dialogue has come a long way over the last two decades for wild-capture marine fisheries – with the biggest strides made in ecological and management considerations for sustainable seafood assessments. Yet, to continue to evolve and aspire towards sustainable seafood systems that benefit both people and nature around the globe, we need to cast the net wider to include human dimensions and advocate for equity within these complex social-ecological systems. As the global demand for seafood continues to rise, the importance of human dimensions as an integral part of fishery systems cannot be excluded from sustainability assessments. Sustainability considerations need to move beyond fish and embrace human dimensions of these social-ecological systems and how these feed into oceanic cultural norms and nutrition. Building on the work undertaken by WWF South Africa to better represent human

dimensions within WWF's sustainable seafood guides, we review options to include human rights violations and small-scale fisheries within existing methodologies underpinning these assessments. We highlight a series of challenges and opportunities for traditional sustainable seafood assessments to integrate human dimensions into their sustainability ratings, specifically in the context of developing countries, where this paper champions the integration of social elements into sustainable seafood guides. The inclusion of human dimensions in current sustainability seafood assessments requires a complex system's approach that accounts for the nuances and context in which different types of fisheries operate – engaging social, ecological management, and ecological impact aspects. Careful consideration is required to delicately balance ecological and societal needs to ensure that marine social-ecological systems can thrive under increasing anthropogenic and environmental pressures into the future.

Author contributions

CW: Conceptualization, Data curation, Investigation, Methodology, Visualization, Writing – original draft. PP: Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing. MN: Conceptualization, Resources, Writing – original draft.

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Conflict of interest

The World Wide Fund for Nature WWF employs PP. CW was contracted by WWF to develop and report on the guidance framework to include social questions into the sustainable seafood guides.

The remaining author declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fmars.2023.1305068/full#supplementary-material>

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