frontiers in Sustainable Food Systems

ORIGINAL RESEARCH
published: 17 March 2022
doi: 10.3389/fsufs.2022.843184

Promoting Sustainable Seafood Market in Japan: Perspectives From MSC and ASC Applicants

Hiroe Ishihara[1], Abigayil Blandon[2], Juri Watanabe[3] and Nobuyuki Yagi[4]*

[1] Graduate School of Frontier Sciences, The University of Tokyo, Chiba, Japan, [2] Stockholm Resilience Centre, Stockholm University, Stockholm, Sweden, [3] Graduate School of Science and Technology, Niigata University, Niigata, Japan, [4] Graduate School of Agricultural and Life Sciences, The University of Tokyo, Tokyo, Japan

Japanese seafood market has witnessed a slow but steadfast increase in the amount of certified seafood circulated on the market despite the fact that there are few incentives to apply for certification schemes such as the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC). This is because it is difficult for the producers to reap benefits from the price premium as the retailers are unwilling to charge the consumers with a higher price for the certified seafood; at the same time, there are no sourcing codes set by the retailers to ban the access of uncertified seafood. By conducting semi-structured interviews with the applicants of MSC and ASC, this study reveals the motivation of the applicants such as the desire of producers to differentiate their seafood products from similar products on the market and to establish stable distribution channels with large retailers. We argue that this type of motivation poses a unique challenge in promoting sustainable seafood in Japan, that is the certified product needs to remain a small proportion of circulated seafood products.

Keywords: sustainable seafood market, certification schemes, MSC, ASC, market-based approach, Japan

Edited by:
Erick Ochieng Ogello, Maseno University, Kenya

Reviewed by:
Satoshi Yamazaki, University of Tasmania, Australia
Nicholas Outa, Maseno University, Kenya

****Correspondence:***
Hiroe Ishihara
a-hiroe@g.ecc.u-tokyo.ac.jp

Specialty section:
This article was submitted to Aquatic Foods, a section of the journal Frontiers in Sustainable Food Systems

Received: *25 December 2021*
Accepted: *31 January 2022*
Published: *17 March 2022*

Citation:
Ishihara H, Blandon A, Watanabe J and Yagi N (2022) Promoting Sustainable Seafood Market in Japan: Perspectives From MSC and ASC Applicants. Front. Sustain. Food Syst. 6:843184. doi: 10.3389/fsufs.2022.843184

INTRODUCTION

There is increasing global concern about seafood sustainability. According to an FAO report in 2020, per capita seafood consumption has doubled from 9.0 kg in 1961 to 20.3 kg in 2018 (FAO, 2020) while the human population has doubled over the same period of time (Roser et al., 2013), leading to a quadruple increase in the total volume of global seafood consumption. On one hand, it is obvious that the current level of consumption cannot be supported by wild catch alone. On the other hand, the increase of aquaculture production, at an average of 5.3% per year in the period 2001–2018 (FAO, 2020), raises concerns about its negative impact on the ecosystem, such as discharges of untreated effluents, spreading of aquatic pathogens and invasive species (Diana, 2009).

In addressing these concerns about seafood sustainability, seafood certification schemes, both for wild-catch and aquaculture, has become one of the popular methods of promoting seafood sustainability since the 1990s (Ward and Phillips, 2009). Sutton and Wimpee (2008) say that there are more than 140 certifications covering the wide range of seafood products. Among the most well-known seafood certification schemes are the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC), both established by international environmental NGO

the World Wide Fund for Nature (WWF). MSC, which certifies seafood products produced from wild-catch fish, was launched in 1997 by WWF and Unilever and certified its first two fisheries in 2000 (Sutton and Wimpee, 2008; Gulbrandsen, 2009; Ponte, 2012). ASC, which certifies seafood products produced from farmed fish, was also developed by WWF with the collaboration of Dutch social enterprise The Sustainable Trade Initiative (IDH), to establish "species-specific" standards. The first standards to be developed were for tilapia and the first farm was certified in 2012 (Bush et al., 2013a; Kalfagianni and Pattberg, 2013; Vince and Haward, 2019). Both MSC and ASC are established as third-party certification schemes[1] (Bush et al., 2013b; Vince and Haward, 2019). Currently, 15.0% of wild-catch landings have been certified by MSC (MSC, 2020), while there are 1,142 ASC certified farms in 82 countries producing two million tons of farmed seafood (Holmyard, 2020).

These certification schemes are considered as part of demand-driven or market-based approaches based on neoclassical economic discourses (Jacquet et al., 2010; Pirard, 2012; Vatn, 2015). Certification schemes reward the fisheries and farms by allowing retailers to sell fish or seafood products distinguished by an ecolabel with a price premium (Overdevest et al., 2006; Pirard, 2012). The original efforts to promote seafood sustainability were made by international environmental NGOs like Earth Island Institute and Monterey Bay Aquarium (Kemmerly, 2009; Jacquet et al., 2010; Roheim et al., 2018) in areas where the implementation of state-centered "command-and-control" policies were difficult (Pirard, 2012). The seafood market, where 36% of total fish production is exported and traded globally (FAO, 2020), can be considered one of the areas in which it is especially difficult for government policies to implement conservation (Groeneveld et al., 2017). Certification schemes were seen as an egalitarian way of promoting seafood sustainability because they do not discriminate against specific social groups, countries, or regions and they require both the producers and the consumers to bear the cost of environmental conservation (Gulbrandsen, 2014).

However, there is a discrepancy between the theory based on neoclassical economic discourse and the reality of certification schemes (Stoll et al., 2020). Various studies have shown that rewards through the price premium of certified seafood do not materialize (Overdevest et al., 2006; Stoll et al., 2020). These studies show that consumers often show their willingness to pay (WTP) for certified seafood during the survey (Jaffry et al., 2004; Uchida et al., 2014; Wakamatsu et al., 2017; Blomquist et al., 2020), but are unwilling to pay more when they go shopping in real life (Jonell et al., 2016), or they prefer to buy locally produced seafood (McClenachan et al., 2016). Some critics argue that certification schemes are promoted through "penalties" (the fear of being excluded from the market *via* NGO-led campaigns) not "rewards" (the price premium) (Barclay and Miller, 2018; Stoll et al., 2020). They conclude that it is not the consumers' awareness of sustainability that matters but the retailers' awareness of campaigns run by international environmental NGOs. These NGOs are willing to "name and shame" the retailers if they do not commit to promoting seafood sustainability (Cashore et al., 2004; Auld, 2006; Gulbrandsen, 2006; Bartley et al., 2015). Some have even argued that these certification schemes are not voluntary standards but a "naked extortion" by these NGOs to transform the market to meet the sustainability that they desire (Wilson, 2011). The claim that "certification is based on penalty not on reward" is true for US and EU seafood markets where many retailers have sourcing codes. For example, Walmart in the US and Sustainable Seafood Coalition in the UK have stipulated in their sourcing codes that they will only purchase seafood products that assure sustainability, such as MSC, ASC, Global GAP, and Fisheries Improvement Project (Walmart, 2017; Sustainable Seafood, 2018).

However, if we turn our eyes to seafood markets in other parts of the world, where there are no sourcing codes to limit the access of uncertified seafood or price premium for the certified product, we also observe the proliferation of certification schemes. In such markets, it begs the question: what motivates producers to apply for certification schemes? The Japanese seafood market is a good example of this. According to the Japanese Fisheries Agency, 500,000 tons of certified seafood are produced domestically (∼10% of domestically produced seafood) (Fisheries Agency, 2020). These 500,000 tons include fisheries and aquaculture certified by domestic certification schemes like Marine Ecolabel Japan (MEL) (for details of certification schemes in Japan see **Table 1**). However, in the Japanese seafood market, on one hand, there are no "rewards" because the retailers are unwilling to charge consumers a price premium for eco-labeled products due to low public awareness of sustainability (Swartz et al., 2017; Blandon and Ishihara, 2020; Hori et al., 2020).[2] On the other hand, there is no "penalty" either because retailers have not pledged their commitment to seafood sustainability through their sourcing codes as Walmart did in the US. Even AEON, which is considered as the pioneer for sustainability policies, has only pledged to get all their branches Chain of Custody (CoC) certified by 2020; not to procure 100% of seafood from sustainable sources like in the case of Walmart (AEON., 2014).

By conducting a case study in Japan, this research reveals motivations for producers who apply for certifications schemes other than the pursuit of price premium or the avoidance of NGO-led campaigns. It focuses on costly certifications like MSC and ASC. By revealing these motivations, the research aims to understand how these certification schemes are leading, or not leading to the establishment of sustainable seafood markets, especially in the non-Western part of the world.

[1]In third party certification schemes, an independent certification body (CB) checks whether the applicant is meeting the certification standard set by the scheme owner. The independent CB is, further, checked by accreditation body (AB), in the case of MSC and ASC, Assurance Service International (ASI). AB checks whether the CB is following the procedures stipulated by the scheme owner (Hatanaka and Busch, 2008).

[2]There is research that reveals that Japanese consumers have the Willingness To Pay (WTP) to pay a price premium after being notified of the decline of fish-stock and the significance of sustainability (Uchida et al., 2014).

TABLE 1 | List of certification schemes present in Japan.

Scheme owner	MEL (Marine Ecolabel Japan)	MSC (Marine Stewardship Council)	ASC (Aquaculture Stewardship Council)
Background of establishment	Established by Japan Fisheries Association (JFA) (2007) Became independent MEL Council (2016)	Established by WWF and Unilever (1999)	Established by WWF and IDH (2010)
Scope of certification	Fisheries, Aquaculture (since 2018), and Chain of Custody (CoC)	Fisheries, and Chain of Custody (CoC)	Aquaculture (since 2018), and Chain of Custody (CoC)
Global Sustainable Seafood Initiative (GSSI) Recognition	Recognized in 2019	Recognized in 2017	Recognized in 2018
Number of certified fisheries or aquaculture in Japan	Fisheries:7	Fisheries: 10	Aquaculture: 13
	Aquaculture: 41		
	CoC: 58	CoC: 300	CoC: 151
Cost of certification (Initial audit for fisheries or aquaculture)	Fisheries: From 7,500 USD	15,000–120,000 USD	N.A.
	Aquaculture: 6,600 USD		
General description	Aquaculture Ecolabel Japan (AEL), established in 2014 by Japan Food Association, was merged with MEL in 2018.	MSC certified first fisheries, Kyoto Danish Seine fisheries in Japan in 2008.	ASC certified first aquaculture, Miyagi Prefecture Fisheries Cooperative Oyster aquaculture in 2016.

Source: Amita Co., 2016; Marine Ecolabel Japan, 2018; Fisheries Agency, 2021; Japan Fisheries Recource Conservation Association, 2021.

TABLE 2 | Details of key informants interviewed for each case study and their role within the MSC certification process.

Name of key informant's institution	Associated case study	Role in MSC certification process
KDSFF	Kyoto Danish seine fishery	Applicant
Kyoto Prefectural Agriculture, Forestry and Fisheries Technology Centre (prefectural agency providing scientific advice to local FCAs)	Kyoto Danish seine fishery	Scientific advisor to MSC during assessment processes
Ishihara Marine Products	Ishihara Marine Products skipjack and albacore pole and line fishery	Applicant
Maruto Suisan Company	Maruto Suisan rope grown Pacific oyster fishery	Applicant
Okucho FCA	Maruto Suisan rope grown Pacific oyster fishery	FCA subject to assessment
Seafood Legacy (consulting firm specializing in sustainable seafood in Japan)	Maruto Suisan rope grown Pacific oyster fishery	Consultant (separate from the assessor) before and during MSC assessment

METHODS AND BACKGROUNDS

Methods

Semi-structured interviews were undertaken with the key informants, i.e., the applicants of MSC and ASC in Japan. Regarding MSC applicants, we chose three applicants out of the five MSC certified fisheries in Japan, considering a variety of fisheries (inshore oyster farming, offshore seine net fishing, and high seas pole and line) as well as different time periods of MSC certification (first fishery certified as well as more recent).[3] Regarding ASC applicants, the research chose four applicants out of the 11 ASC certified farms focusing on the yellowtail aquaculture.[4] Yellowtail aquaculture was the focus for this research because it is fed aquaculture production with ASC standards specifically developed for the Japanese aquaculture farmers. For the MSC applicants, interviews were conducted during May 2019 (see **Table 2** for details) by AB and HI from the

[3]The two cases that were excluded from our studies are Hokkaido Scallop Fisheries and Japan Pole and Line Skipjack and Albacore Fisheries (Meiho). These were the only other MSC certifications in Japan at the time of interview. The Hokkaido Scallop Fisheries was excluded from the sample because the applicant, Hokkaido Federation of Fisheries Cooperative Associations, is an outlier considering its scale of business. Japan Pole and Line Skipjack and Albacore Fisheries (Meiho) was excluded because Ishihara Marine Product conducts same type of fisheries (Pelagic fisheries managed by a Regional Fisheries Management Organizations).

[4]The 11 certified farms were assessed against five different farm standards, Seriola and Cobia (Yellowtail), Bivalve (non-fed Oyster), Salmon, Seabass and Seaweed, as ASC has different farm standards for different species. Out of these five different farm standards, five farms were certified against Seriola and Cobia (Yellowtail) standards, composing the largest number of farms. Only two farms each were certified against Bivalve and Salmon standards: and one farm each for Seaweed and Seabass standards. Thus, the study chose to focus on farms certified against Seriola and Cobia (Yellowtail) standard, however, it excluded one farm because its certified status was in the process of cancelation leaving four interviewees in the end.

TABLE 3 | Details of key informants interviewed for each case study and their role within the ASC certification process.

Name of key informant's institution	Associated case study	Role in MSC certification process
Azuma-Cho Fisheries Cooperative Association (FCA)	Azuma-Cho Fisheries Cooperative Association	Applicants
Kurose Suisan	Kurose Suisan	Applicants
Nippon Suisan Kaisha Ltd (Nissui)	Kurose Suisan	Parent company of Kurose Suisan
Global Ocean Works	Global Ocean Works	Applicants
Maruha Nichiro Corporation	Maruha Nichiro Corporation	Applicants
ASC Japan Office	N.A.	N.A.

author list and for ASC applicants, interviews were conducted from October to November 2020 (see **Table 3** for details) by JW and HI. All interviews, which lasted from an hour to an hour and half, were conducted in Japanese, and recorded. The key informants were identified either through known contacts or through MSC Japan and ASC Japan, which allowed the most relevant informants to be contacted with low time investment. For MSC the interviews were conducted face-to-face by AB and HI visiting interviewees production sites and offices, whereas for ASC the interviews were conducted virtually using Zoom by JW and HI due to the COVID-19 related travel restrictions.

The interview questions varied depending on the case study and the informant being interviewed. The same interview protocol (in **Appendix A**) was used for both MSC and ASC interviews, which was developed using previous papers investigating similar questions (e.g., Potts et al., 2011; Pérez-Ramírez et al., 2012; Pristupa et al., 2016). However, questions were added and taken away *ad libitum* during the interviews depending on the type of case study and what emerged from the conversation with the interviewee. In general, the informants were asked about the motivation behind applying for the certification, the perceptions of the assessment process, how applicants managed costs, the benefits that emerged and what problems remained. The recorded interviews were then transcribed and coded in Japanese to minimize potential bias using open coding method (Skjott Linneberg and Korsgaard, 2019). The codes centered around three themes that were drawn out inductively: (1) Motivation, (2) Problems, and (3) Impacts. Codes were developed underneath these themes, picking out sections of text that pointed to similar factors, and were refined iteratively over three rounds of coding, until additional attempts did not change the resulting codes. The results, the most common codes for each case study, are listed, discussed, and expanded upon using material from the interviews.

Background

MSC Applicants

Kyoto Danish Seine Fishery

The Kyoto Danish seine offshore fishery operates in the Sea of Japan, off the coast of Kyoto prefecture, currently with 11 vessels of 14–20 tons licensed to use a seine net (15 vessels were in use at the time of certification). The fishery is a mixed fishery, catching snow crab, flatfish species, Japanese sandfish, and deep-sea smelt. The total landing value for 2008 (when MSC was awarded) was 542 million JPY (∼4.8 million USD[5]) and has fluctuated downwards by around 100 million JPY in more recent years. [6] The fishery is co-managed through a complex system of top-down measures from the national and regional authorities and bottom-up measures from the local association. The local Fisheries Cooperative Association (FCA) for the Kyoto offshore seine fishers [Kyoto Danish Seine Fisheries Federation (KDSFF)], is known for its thorough local management measures such as regulation of the fishing season and limitation of catch per trip (TQCSI, 2008). The snow crab and flathead flounder gained MSC certification in 2008 (TQCSI, 2008).

Ishihara Marine Products Skipjack and Albacore Pole and Line Fishery

Ishihara Marine Products is a seafood processor based in Yaizu, Shizuoka prefecture in Japan. Although originally a boat owner which both caught and processed its own fish, the company no longer owns boats but buys from other fishermen in Yaizu and produces processed seafood, mainly from skipjack and other tuna species. It had a revenue of 6,063 million JPY (∼52 million USD[7]) in 2017 (Ishihara Marine Products, 2017). The skipjack and albacore pole and line fishery operates in the high seas, within the Japanese Exclusive Economic Zone (EEZ) and, through a fisheries agreement, within the Micronesian EEZ. The fishery is managed by international Regional Fisheries Management Organizations (RFMOs): the Western Central Pacific Fisheries Committee (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC). It is also controlled within Japan through ministerial fishery licenses. Ishihara Marine Products applied for and was awarded the MSC certification in 2019 for one of its own supplier boats Eiseimaru, which catches skipjack and albacore in the Western Central Pacific Ocean and Northern Pacific Ocean using pole and line. Eiseimaru is 65 m in length and has a crew of 25–30 people (Control Union Pesca Ltd., 2019).

Maruto Suisan Rope Grown Pacific Oyster Fishery

Maruto Suisan is an oyster processing company based in Fukuyama, Hiroshima prefecture in Japan. Its two main products are raw oysters during the winter and steamed oysters during the spring and summer months, distributed to supermarkets. Maruto Suisan applied for and was awarded the MSC certification in 2019

[5] According to xe.com currency exchange rates in 2008.

[6] Personal communication, Kyoto Prefectural Agriculture, Forestry and Fisheries Technology Centre, August 2020.

[7] According to xe.com currency exchange rates in 2017.

for the Okucho FCA based in Mushiage, Okayama prefecture, which has been farming oysters in the Seto Inland Sea since the 1960s. There are 67 oyster fishermen in the Okucho FCA (Ministry of Agriculture, 2018), and they supply around a third of the oysters Maruto Suisan handles.[8]

ASC Applicants

Azuma-Cho Fisheries Cooperative Association

Azuma-cho Fisheries Cooperative Association (FCA), which was awarded the ASC certification in 2019 (Amita Co., 2019a), is the largest yellowtail producer in Japan, established with an investment of 664 million JPY (∼6 million USD[9]) (Azuma-cho Fisheries Corporative Association, n.d.). This FCA has ∼370 regular members[10], out of which around 120 members are conducting yellowtail aquaculture, and about 250 associate members (Ministry of Agriculture, 2018).[11] Most yellowtail farms are owned and run by family. The Azuma-cho FCA provides various services to the producers like technical guidance, joint purchase of feeds, and marketing strategies for farmed fish. It also owns processing facilities which have obtained MSC/ASC CoC certification. Currently, all the ASC certified yellowtail is produced on consignment and purchased by the Azuma-cho FCA. The total number of yellowtails produced by the FCA is about 2.3 million fish annually (including both certified and uncertified yellowtail).

Kurose Suisan Co., Ltd.

Kurose Suisan Co., Ltd. (Kurose Suisan) employs about 220 people. This company is 100% owned by Nippon Suisan Kaisha, Ltd. (Nissui). Kurose Suisan was awarded ASC certification in 2017 (SCS Global, 2017). Out of four ASC certified yellowtail producers, Kurose Suisan is the only one that has obtained multi-site ASC certification. The company owns 200 cages in Kushima, Miyazaki Prefecture, 84 cages in the Kimotsuki, Kagoshima Prefecture, and 140 cages in Nobeoka, Miyazaki Prefecture, for a total of 424 cages. The company's processing facility in Kushima has obtained MSC/ASC CoC certification (SCS Global, 2017).

Global Ocean Works Co., Ltd. and Fukuyama Fish Farm

Global Ocean Works Co., Ltd. (GOW), established with the capital of 10 million JPY (∼900 thousand USD[12]), has a group company in charge of aquaculture, Kagoshima Suisan Co., Ltd., and a company in charge of seafood export, International Marine Products Inc.; however, GOW itself does not farm yellowtail (Global Ocean Works, n.d.). GOW and Fukuyama Fish Farm was awarded ASC certification in 2017 (Amita Co., 2017). Like Maruto Suisan and Okucho-FCA, Fukuyama Fish Farm is engaged in aquaculture production and GOW process and distributes the farmed fish or seafood product. GOW has processing facilities, with the capacity to produce frozen filets, which have MSC/ASC CoC certification. Fukuyama Fish Farm, which operates 11 cages of yellowtail aquaculture, is managed by one president and one employee (Amita Co., 2017).

Maruha Nichiro Corporation

Maruha Nichiro Corporation (Maruha Nichiro), founded in 1943, is established with capital of 20 billion JPY (∼180 million USD[13]) (Maruha Nichiro, n.d.). This company is considered one of the "keystone actors" or companies which dominate global seafood scene through the volume of seafood they distribute. They are also globally connected through subsidiaries and other networks of operation (Österblom et al., 2015). Maruha Nichiro has pledged to commit to sustainability through their mid-term management plan (2018–2021) and the promotion of MSC/ASC certified seafood is part of this plan (Maruha Nichiro, 2018).

The scope of their ASC certification is the farms owned by Aquafarm Co., Ltd. in Saiki, Oita Prefecture, which is a subsidiary of Maruha Nichiro. The farms are managed by Aquafarm under the supervision of Maruha Nichiro. The annual production of yellowtail at Aquafarm is 350,000 fish. The farmed yellowtail is transported to the processing plants owned by Maruha Nichiro group companies for processing. Aquafarm employs 26 people (22 men and 4 women). Maruha Nichiro was awarded ASC certification in 2018 (Amita Co., 2019b). The locations of MSC/ASC applicants are shown in **Figure 1**.

RESULTS

This section describes the motivation for applying for the certification schemes, both economic and non-economic, and the outcomes of obtaining the certification. Further, it describes the problems and challenges that were faced by the applicants. The results of coding the interviews with the key informants pertaining to motivation and outcome are presented in **Table 4**. This table shows the codes mentioned during the interviews (AB and HI have already published the result of MSC applicants as Blandon and Ishihara, 2020).

Economic and Non-economic Motivations and Outcomes

All the applicants except for GOW mentioned that raising awareness of their product was one of their main motivations for applying for MSC and ASC. For example, one of the MSC applicants said:

> *"Even if we can get one product certified by MSC, then that will raise awareness of everything from the bottom - brand recognition [of our company] will rise."*

Even for those who mentioned the price premium amongst their motives for application this was secondary compared to the other motives mentioned. For example, for KDSFF, who were not aware of the fact that it was difficult to benefit from the price premium in the Japanese seafood market as they were pioneers, their main motivations were to communicate their work on sustainable fisheries management to their consumers,

[8] Personal communication, Maruto Suisan, August 2020.
[9] According to xe.com currency exchange rates in 2021.
[10] Regular members are those who fish for more than 90–120 days annually depending on the FCA regulations.
[11] Associate members are those who fish for less the FCA regulated days.
[12] According to xe.com currency exchange rates in 2021.
[13] According to xe.com currency exchange rates in 2021.

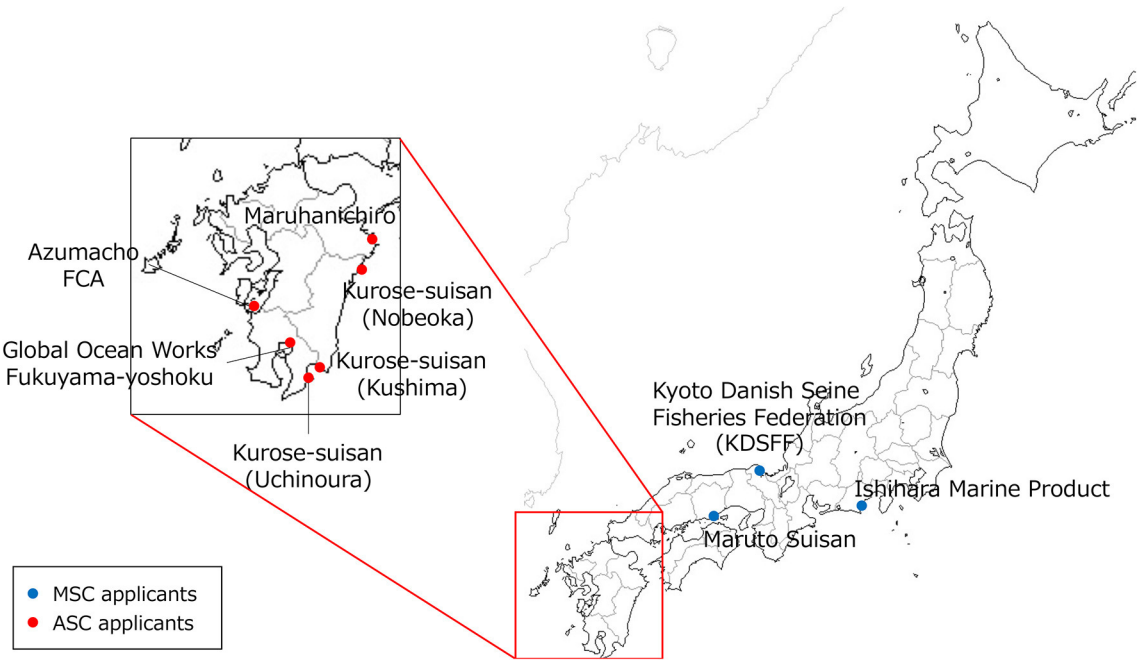

FIGURE 1 | Location of MSC/ASC applicants.

and to push neighboring fisheries to step up their management strategies. As for Maruto Suisan, they were expecting to gain benefit from the price premium through exporting their seafood to international markets. These latecomers who applied for both MSC and ASC were more aware of the fact that it is nearly impossible to obtain a price premium in the domestic market. For these applicants, obtaining certification is considered as part of the branding strategy to raise awareness of their product and their brand recognition.

Another major economic motivation for the applicants to obtain the certification was the possibility of increasing their distribution channel or establishing a stable distribution channel to both domestic and international markets. For example, one of the ASC applicants mentioned that:

> *"We thought that we could gain an advantage in terms of sales… The biggest merit [of ASC] is that they [retailers] continue to buy through ASC [certified products], enabling us to have stable sales. Aeon is currently trying to differentiate itself by selling certified products. They don't want to deal with uncertified producers. They also buy uncertified yellowtail from us."*

This shows that top retailers like AEON and Coop are looking for producers with MSC and ASC certification as they are committed to sourcing sustainable seafood. Establishing a distribution channel with these major retailers could add market power to the producers, even when they are not willing to pay the price premium for the certified product. One applicant, who was initially approached by AEON to obtain certification, thought that if they obtained certification, they could gain an upper hand in price negotiation with their retailers. The expectation was that they would be able to diversify their distribution channel not just to domestic markets but also to international markets if domestic retailers did not agree to pay the price premium. In order to penetrate the international markets, the applicants knew that having MSC or ASC certification was critical.

For non-economic motivations, some applicants considered that their application for MSC or ASC was part of their contribution to their community or local environment, or responsibility as an industry. One MSC applicant stated,

> *"Just to say that it's not just about [the economic gains], but as you can find in the founding philosophy [of the company], we wouldn't exist if it weren't for the fishermen and the fish. It was a certification that matched that [philosophy] perfectly."*

In similar manner one ASC applicant mentioned that:

> *"For feed companies and aquaculture producers, certification is an obligation, not an added value. We strongly agree with ASC's philosophy [of sustainable aquaculture]. Sustainable aquaculture is something that all stakeholders in the industry needs to strive for."*

The response of ASC applicants may be natural considering the fact that some of the applicants, or the parent company of the applicants are the leading seafood distributors in Japan. These companies have Cooperate Social Responsibility (CSR) policies that states their commitment to sustainability. At the same time, although MSC applicants do not have CSR policies *per se*, they still aim to fulfill their social responsibility to their local community by contributing to environmental conservation and promoting their efforts (for the details of CSR policy see **Table 5**).

TABLE 4 | Results of coding the semi-structured interviews pertaining to motives.

	MSC			ASC			
	KDSFF	**Ishihara Marine Product**	**Maruto Suisan**	**Azuma-cho FCA**	**Kurose Suisan**	**GOW**	**Maruha Nichiro**
Economic motivations							
Increased product awareness	✓	✓	✓	✓	✓		✓
Price premium	✓		✓				
Requested from consumer facing retailer			✓	✓	✓		
Increased international distributional channel (export)			✓		✓		✓
Increased domestic distributional channel		✓	✓	✓	✓		
Non-economic motivation							
Part of Corporate Social Responsibility (CSR)					✓		
Part of contribution to local community/environment	✓	✓					✓
Outcomes							
Not enough or non-price premium for the certified product	✓	✓	✓*	✓	✓	✓	✓
Increased/stable distribution channel	✓	✓		✓		✓	✓
Increase fishermen/producers' capacity/awareness	✓		✓	✓			
Improved system for fisheries/aquaculture management	✓		✓				
Improved human resource management				✓		✓	

**At the time of the interview, Maruto Suisan was still under assessment. They had no experience of distributing certified products to the domestic markets. However, the interviewee did mention that they knew that it was difficult to benefit from price premium in the domestic market.*

Moving on to the outcomes of the MSC and ASC certification, all the applicants except Maruto Suisan, which was still under assessment at the time of interview, agreed that it is difficult to gain price premium to cover the cost. A couple of applicants mentioned that Japanese consumers were unwilling to pay the price premium or care about certifications schemes when shopping. Even in cases like GOW, which managed to sell their ASC certified product to the US market with 50% price premium, mentioned during the interview that the price premium was not enough to cover the cost. According to them, ASC certified product costs twice as much as non-certified product due to increased feed price and reduced fish density per cage. They do not think it worth applying for certification if it is only for the price premium.

At the same time, both MSC and ASC applicants mentioned that they were able to have a stable channel for domestic distribution, with AEON especially, which provided some economic returns for the applicants. For example, some applicants mentioned that AEON was willing to purchase not just the certified product but the uncertified product from the certified producer, as mentioned previously in the quotation above, which seems to bring additional benefits. Others also mentioned some non-economic benefits of certification such as capacity building for producers, improved environment and human resource management, and improved knowledge of the workers.

Problems and Challenges

Some of the major differences in the results between the ASC and MSC applicants are seen in the problems and challenges that they faced during the certification process and how they perceive the cost of certification. MSC applicants like KDSFF faced challenges because their fisheries are co-managed by the Fisheries Cooperative Association (FCA) at the local level and the prefectural and the national government at the higher level (Makino, 2011). Some part of the management rules can be changed by the fishers and the FCAs themselves, but others are determined by the national government. It was unfortunate for them that in order to meet MSC standards that focus on governance at the fish stock level, they were required to change the management rules at the higher level that were implemented by the national government. As a regional FCA, KDSFF did not have the power to persuade the national government which led to their withdrawal in 2019. However, this was not the

TABLE 5 | Summary of CSR policy of MSC and ASC applicants.

Name of institutions	CSR policy documents	Contents of CSR	Website
KDSFF	No CSR policy		
Ishihara Marine Products	No CSR policy		
Maruto Suisan	No CSR Policy		
Azuma-Cho Fisheries Cooperative Association (FCA)	Corporate social responsibility	• Environmental survey • Cleaning activities • Promotion of seafood diet • Nature conservation	https://www.azuma.or.jp/aboutus/sdgs/
Nippon Suisan Kaisha Ltd (Nissui) (Parent company of Kurose Suisan)	Code of conduct for CSR Environmental Constitution	• Participation to SeaBOSS • Sustainable use of fish stock • Promotion of aquaculture • Promotion of certification schemes like ASC, MSC, BAP and MEL	https://nissui.disclosure.site/ja/themes/126 https://nissui.disclosure.site/ja/themes/170
Global Ocean Works	No CSR policy		
Maruha Nichiro Corporation	Midterm Sustainability Business Plan	• Promotion of Ocean conservation • Obtaining sustainable certification • Combat against IUU fishing • Realization of complete aquaculture • Promotion of eco-friendly aquaculture	https://www.maruha-nichiro.co.jp/corporate/sustainability/management/system/csr/

case for the other MSC applicants, Maruto Suisan and Ishihara Marine Product. Maruto Suisan, who applied for Okucho FCA's non-fed oyster aquaculture, had management rules that were decided at the local level and thus it was easy to change if they did not meet MSC standards; whereas for Ishihara Marine Product, which applied for a pelagic skipjack and albacore fishery, their management rules were decided by Regional Fisheries Management Organizations (RFMOs) as mentioned above. Many more fisheries have previously been certified under RFMO management rules, which made the certification process much smoother (for details see Blandon and Ishihara, 2020).

All four ASC applicants faced similar challenges which can be categorized into two issues: one related to feeds and other related to fish density per cage. Firstly, it was difficult to source feeds that met ASC standards. To meet ASC standards the applicants had to increase the ratio of seafood residue in the feed in order to reduce Forage Fish Dependency Ratio (amount of fish meals or fish oil used to produce farmed seafood). At the same time, increasing the seafood residue meant that the applicants were required to establish a traceability for all the fish species present in the residue, and to ensure that the feeds do not include any species that are listed in the IUCN red list. This increased the cost of production, as applicants were required to develop a new feed with the domestic feed company or to purchase a feed from an international supplier. Secondly, the applicants had to take additional precautionary measures to avoid the occurrence of Streptococcal disease. To meet ASC standards, some applicants opted to reduce the number of seedlings per cage which meant the increased production cost for ASC certified seafood.

Another difference between MSC and ASC applicants is how they perceived the cost of certification, especially the payment to the certification body which conducts the assessment against MSC and ASC standards. MSC applicants found it quite expensive to apply for MSC. For example, KDSFF, which is composed of 16 boat owners, felt that the cost of certification was especially high.[14] All the MSC applicants used some kind of financial support from NGOs, like Sustainable Seafood Foundation (SSF), in their application process. Further, some MSC applicants suggested that they would reconsider the continuation of MSC certification if it did not result in profits.

However, this was not the case for ASC applicants. They considered the payment to the certification body as a necessary advertisement cost. Except for Azuma-cho FCA, all applicants said they would continue with ASC certification despite the problems and challenges that they faced. During the interview, even the Azuma-cho FCA interviewee responded,

> *"Regarding certification, we did not apply for subsidy because it is too troublesome. Considering the amount of fish that we sell, the cost of certification is cheap. It's about half the price of a fish per cage."*

This quotation is in stark contrast with the way the MSC applicants perceived the application cost and the fact that the MSC applicants applied for financial support from NGOs.

DISCUSSION: "REWARD" OR "PENALTY": WHICH IS EFFECTIVE FOR SUSTAINABLE SEAFOOD MARKET?

Our results show that the proliferation of certification schemes in the Japanese seafood market is promoted through "rewards" not "penalty." "Rewards," such as enhancement of the product brand and the product competitiveness and improvement in the corporate image and reputation, are enough to motivate the applicant to obtain MSC and ASC certification even when the

[14]This is partially due to the fact that KDSFF thought the cost of certification would be 1,600,000 JPY (around 16,000 USD) but in reality it was 2,800,000 JPY (around 28,000) (for details see Blandon and Ishihara, 2020).

price premium is elusive. Similarly, Vormedal and Gulbrandsen (2020), who studied the global distribution of farmed salmon, argue that the spread of ASC must be explained by these kind of strategic business motives that go beyond NGO constructed retailer demand based on sourcing codes. These types of strategic business motives are also observed in other sectors such as the garment industry (Merli et al., 2015; Oelze et al., 2020).

At the same time these "rewards," ironically, pose serious challenges to the establishment of a sustainable seafood market in Japan. Firstly, this type of strategic business motive exists only when the certification scheme has the ability to differentiate their certified product from other products on the market as long as the price premium continues to be elusive. This means that once MSC or ASC certified products saturate the market, as in the US or EU markets, their ability to differentiate products dissipates. For example, some applicants were asked about applying to Marine Ecolabels Japan (MEL), the domestic certification scheme established in 2007 with standards catered for Japanese fisheries (Foley and Havice, 2016). Compared to MSC and ASC, the certification cost of MEL is much cheaper, and its certification process is less-time consuming for the majority of Japanese fishers and aquaculture producers (Japan Fisheries Recource Conservation Association, 2021). However, one of the respondents said, "*We did not apply for MEL because everyone (in Japan) can obtain MEL.*" These responses imply that the MEL was not attractive to these MSC and ASC applicants because MEL did not have the ability to differentiate their product on the market or enhance their brand image. For certification schemes to be attractive in a market which does not have "penalties," the certified product needs to remain a small proportion of all distributed products.

Secondly, the common practice for nation-wide retailers, like AEON, to purchase uncertified seafood products from the certified producers, poses another problem for the establishment of a sustainable seafood market in Japan. This practice disincentivizes the producers to increase the certified fish species or the proportion of certified product. For example, the percentage of ASC certified yellowtail in the total production remains low, around 3% for each of the ASC certified applicants (for details see **Appendix B**).[15] Similar issues are observed with Fisheries Improvement Project (FIP), especially in developing countries (Deighan and Jenkins, 2015; Sampson et al., 2015; Travaille et al., 2019). This research shows that many FIPs do not achieve improvement in the fisheries management or the status of fish stocks as it guarantees access to EU or US markets at the early stage of the FIP (Stage 2[16]). Once given market access, the applicants lose motivation to improve their management and remain at the same level (Sampson et al., 2015). The fact that the certification schemes are promoted through "rewards" other than price premium may mean that it is not possible to establish a sustainable seafood market through the promotion of certification schemes alone.

Does this mean, then, that it is better to set up a "penalty," prohibiting or limiting the access of uncertified seafood product, in order to establish a sustainable seafood market in Japan? Prohibiting market access when the seafood product is not certified by MSC or ASC standards is unrealistic as many wild-capture fisheries and aquaculture in Japan may face the same problems and challenges as mentioned in section Problems and Challenges. Further, if retailers are not able to supply certified product from domestic producers, they may opt to buy MSC and ASC certified product from abroad, thus increasing the ecological or carbon footprint which may cause other environmental issues.[17] Another solution to this problem is to set a seafood certification scheme with a fair price composed of a minimum price and a social premium as in the case of Fairtrade coffee (De Janvry et al., 2015). However, studies show that even when the price premium is fixed it does not trickle down to the producers; rather, it is concentrated in the hands of the middle men in the supply chain (Valkila and Nygren, 2010; Naegele, 2020). Considering the fact that seafood markets, especially the Japanese one, have long and complex supply chain structures (Wessells and Wilen, 1994; Swartz et al., 2017), it is unlikely that the price premium paid by the consumers will trickle down to the producers. To this end, alternative modes of promoting sustainability are needed in the Japanese seafood market.

One of these alternatives may be to shorten or streamline the seafood supply chain through the promotion of a "relational seafood supply chain" (Stoll et al., 2020). Baines and Edwards (2018) distinguishes between production systems based on "relational" and "transactional" connections. Relational connections refer to relationships based on personal ties, trust, and direct connections. A relational seafood supply chain is a production system of consumers and producers well-connected *via* geographical proximity and other means (Stoll et al., 2020). This enables consumers to recognize social and ecological costs associated with fisheries and aquaculture that are often "masked, diluted, and drowned out" in the current complex seafood supply chain (Crona et al., 2016). Various relational seafood supply chains are emerging around the world (e.g., Witter and Stoll, 2017; Salladarré et al., 2018; Pascual-Fernández et al., 2019). Japan is no exception as it has a movement to promote "locally produced product to be consumed locally ('*chisan-chisho*')" (Kimura and Nishiyama, 2008; McGreevy and Akitsu, 2016) along "ownership programs ('*ona-seido*')" (Maeda and Nishimura, 2001; Yamamoto et al., 2001). These movements aim to promote relational connections between the producer and the consumer by posting specific information about the producers or about how the product was produced when they are displayed or hosting events for the consumers to visit the site of production. This is one way to shorten the seafood supply chain; however, there may be other ways, especially with the development of new technologies like traceability systems through blockchain. It is

[15]This low percentage is partially due some technical issues mentioned in section Problems and Challenges such as the lack of feed that meets ASC standards; however, if there were enough 'rewards', the producers are willing to invest on overcoming these problems/challenges.

[16]Stage 2 is right after the scoping. It involves stakeholder meetings to develop work plans (Sampson et al., 2015).

[17]As Madin and Macreadie (2015) rightly mentions, current seafood certification does not factor in the carbon footprint despite the fact that both wild-catch fisheries and aquaculture has significant impact on carbon emissions.

our sincere hope that new research will be conducted to reveal the possibilities of these relational supply chains to promote sustainability in Japanese seafood market.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The study involving human participants has followed ethics guidelines provided by the University of Tokyo. The participants provided their written informed consent to participate in the study. Written informed consent was obtained from the individual(s) for publication of any potential identifiable images and data.

AUTHOR CONTRIBUTIONS

HI was in charge of construction and writing of this paper as well as supervising the interviews conducted by AB and JW. AB conducted the interview with the MSC applicants and wrote the corresponding sections Background and Results. JW conducted the interviews with ASC applicants and wrote the corresponding sections Background and Result. NY supervised AB and JW as they conducted their research. All authors contributed to the article and approved the submitted version.

FUNDING

Stockholm University funded AB as a guest researcher at the University of Tokyo (Grant Number: SU FV5.1.2-0300-18).

ACKNOWLEDGMENTS

The authors acknowledge all interviewees who kindly gave their time to contribute.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsufs.2022.843184/full#supplementary-material

REFERENCES

AEON. (2014). *AEON Sustainable Sourcing Code*. Available online at: https://www.aeon.info/sustainability/procurement/ (accessed November 18, 2021).

Amita Co. (2016). *ASC Farm Certifciation Audit Report*. Shizugawa: Miyagi Prefecture Fisheries Cooperative.

Amita Co. (2017). *ASC Farm Certification Audit Report (GOW)*. Audit Report ASC-AMITA-F-1002.

Amita Co. (2019a). *ASC Faarm Cetification Audit Report (Azuma-Cho Fishries Coporative Assocation)*. ASC-AMITA-F-1005.

Amita Co. (2019b). *ASC Farm Certifciation Audit Report (Maruha Nichiro Corporation)*. ASC-AMITA-F-1006.

Auld, G. (2006). Choosing how to be green: an examination of Domtar Inc.'s approach to forest certification. *J. Strat. Manag. Educ.* 3, 37–92.

Azuma-cho Fisheries Corporative Association (n.d.). *Buri-Oh ('King of Yellowtail')'*. Buri-Oh. Available online at: https://www.azuma.or.jp/burioh/ (accessed August 6, 2021).

Baines, J., and Edwards, P. (2018). The role of relationships in achieving and maintaining a social licence in the New Zealand aquaculture sector. *Aquaculture* 485, 140–146. doi: 10.1016/j.aquaculture.2017.11.047

Barclay, K., and Miller, A. (2018). The sustainable seafood movement is a governance concert, with the audience playing a key role. *Sustainability* 10, 180. doi: 10.3390/su10010180

Bartley, T., Koos, S., Samel, H., Setrini, G., and Summers, N. (2015). *Looking Behind the Label: Global Industries and the Conscientious Consumer*. Bloomington, IN: Indiana University Press.

Blandon, A., and Ishihara, H. (2020). Seafood certification schemes in Japan: examples of challenges and opportunities from three Marine Stewardship Council (MSC) applicants. *Marine Policy* 123, 104279. doi: 10.1016/j.marpol.2020.104279

Blomquist, J., Bartolino, V., and Waldo, S. (2020). Price premiums for eco-labelled seafood: effects of the MSC certification suspension in the Baltic Sea Cod fishery. *Euro. Rev. Agric. Econ.* 47, 50–70. doi: 10.1093/erae/jby047

Bush, S. R., Belton, B., Hall, D., Vandergeest, P., Murray, F. J., Ponte, S., et al. (2013a). Certify sustainable aquaculture? *Science* 341, 1067–1068. doi: 10.1126/science.1237314

Bush, S. R., Toonen, H., Oosterveer, P., and Mol, P. J. A. (2013b). The "devils triangle" of MSC certification: balancing credibility, accessibility and continuous improvement. *Marine Policy* 37, 288–293. doi: 10.1016/j.marpol.2012.05.011

Cashore, B. W., Auld, G., and Newsom, D. (2004). *Governing Through Markets: Forest Certification and the Emergence of Non-State Authority*. New Haven: Yale University Press.

Control Union Pesca Ltd. (2019). *Marine Stewardship Council (MSC) Public Certification Report Ishihara Marine Products Albacore and Skipjack Pole and Line Fishery*. Lymington: Control Union Pesca Ltd.

Crona, B. I., Daw, M. T., Swartz, W., Norström, V. A., Nyström, M., Thyresson, M., et al. (2016). Masked, diluted and drowned out: how global seafood trade weakens signals from marine ecosystems. *Fish Fisheries* 17, 1175–1182. doi: 10.1111/faf.12109

De Janvry, A., McIntosh, C., and Sadoulet, E. (2015). Fair trade and free entry: can a disequilibrium market serve as a development tool? *Rev. Econ. Stat.* 97, 567–573. doi: 10.1162/REST_a_00512

Deighan, L. K., and Jenkins, L. D. (2015). Fishing for recognition: understanding the use of NGO guidelines in fishery improvement projects. *Marine Policy* 51, 476–485. doi: 10.1016/j.marpol.2014.10.009

Diana, J. S. (2009). Aquaculture production and biodiversity conservation. *BioScience* 59, 27–38. doi: 10.1525/bio.2009.59.1.7

FAO (2020). *The State of World Fisheries and Aquaculture*. FAO. doi: 10.4060/ca9231en

Fisheries Agency (2020). *Overview of Seafood Certification Schemes*.

Fisheries Agency (2021). *Overview of Seafood Certification Schemes*.

Foley, P., and Havice, E. (2016). The rise of territorial eco-certifications: new politics of transnational sustainability governance in the fishery sector. *Geoforum* 69, 24–33. doi: 10.1016/j.geoforum.2015.11.015

Global Ocean Works (n.d.) *Global Ocean Works*. Available online at: http://gow-g.com/global-ocean-works/ (accessed January 5, 2021).

Groeneveld, R., Bush, R. S., and Baily, M. (2017). "Private governance of ocean resources," in *Handbook on the Economics and Management of Sustainable Oceans*, eds P. A. L. D. Nunes, L. E. Svensson, and A. Markandya (Edward Elgar Publishing).

Gulbrandsen, L. H. (2006). Creating markets for eco labelling: are consumers insignificant? *Int. J. Cons. Stud.* 30, 477–489. doi: 10.1111/j.1470-6431.2006.00534.x

Gulbrandsen, L. H. (2009). The emergence and effectiveness of the Marine Stewardship Council. *Marine Policy* 33, 654–660. doi: 10.1016/j.marpol.2009.01.002

Gulbrandsen, L. H. (2014). Dynamic governance interactions: evolutionary effects of state responses to non-state certification programs. *Regul. Govern.* 8, 74–92. doi: 10.1111/rego.12005

Hatanaka, M., and Busch, L. (2008). Third-party certification in the global agrifood system: an objective or socially mediated governance mechanism? *Sociol. Ruralis* 48, 73–91. doi: 10.1111/j.1467-9523.2008.00453.x

Holmyard, N. (2020). *ASC's First Decade*. Available online at: https://fliphtml5.com/vqbmk/rgku/basic (acessed November 18, 2021).

Hori, J., Wakamatsu, H., Miyata, T., and Oozeki, Y. (2020). Has the consumers awareness of sustainable seafood been growing in Japan? Implications for promoting sustainable consumerism at the Tokyo 2020. Olympics and Paralympics'. *Marine Policy* 115, 103851. doi: 10.1016/j.marpol.2020.103851

Ishihara Marine Products (2017). *Ishihara Marine Products Company Profile 2017*. Available online at: https://www.ishiharasuisan.co.jp/company/ (accessed August 13, 2021).

Jacquet, J., Hocevar, J., Lai, S., Majluf, P., Pelletier, N., Pitcher, T., et al. (2010). Conserving wild fish in a sea of market-based efforts. *Oryx* 44, 45–56. doi: 10.1017/S0030605309990470

Jaffry, S., Pickering, H., Ghulam, Y., Whitmarsh, D., and Wattage, P. (2004). Consumer choices for quality and sustainability labelled seafood products in the UK. *Food Policy* 29, 215–228. doi: 10.1016/j.foodpol.2004.04.001

Japan Fisheries Recource Conservation Association (2021). *Application process for MEL*. Available online at: http://www.fish-jfrca.jp/04/procedure_and_application.html (accessed November 18, 2021).

Jonell, M., Crona, B., Brown, K., Rönnbäck, P., and Troell, M. (2016). Eco-labeled seafood: determinants for (blue) green consumption. *Sustainability* 8, 884. doi: 10.3390/su8090884

Kalfagianni, A., and Pattberg, P. (2013). Fishing in muddy waters: exploring the conditions for effective governance of fisheries and aquaculture. *Marine Policy* 38, 124–132. doi: 10.1016/j.marpol.2012.05.028

Kemmerly, J. D. (2009). "Monterey bay aquarium's seafood watchr programme," in *Seafood Ecolabelling: Principles and Practice*, eds T. J. Ward and B. F. Phillips (West-Sussex: Wiley-Blackwell), 403–15.

Kimura, A. H., and Nishiyama, M. (2008). The Chisan-Chisho movement: Japanese local food movement and its challenges. *Agric. Human Values* 25, 49–64. doi: 10.1007/s10460-007-9077-x

Madin, E. M. P., and Macreadie, I. P. (2015). Incorporating carbon footprints into seafood sustainability certification and eco-labels. *Marine Policy* 57, 178–181. doi: 10.1016/j.marpol.2015.03.009

Maeda, M., and Nishimura, I. (2001). *The Consciousness of the Urban and Local Inhabitants at* Interaction *between Urban and Rural Areas: Case of the Rice Terraces Ownership System in Asuka Village*. *Association for Agricultural Planning* 20.

Makino, M. (2011). *Fisheries Management in Japan : Its Institutional Features and Case Studies*. Dordrecht: Springer.

Marine Ecolabel Japan (2018). *Merger Agreement Between MEL and AEL*. Available online at: https://www.melj.jp/news/mel?ael????????? (accessed November 18, 2021).

Maruha Nichiro (2018). *Conservation of Marine Resources*.

Maruha Nichiro (n.d.). *Overview of Maruha Nichiro*. Available online at: https://www.maruha-nichiro.co.jp/corporate/outline/data/ (accessed November 18, 2021).

McClenachan, L., Dissanayake, T. M. S., and Chen, X. (2016). Fair trade fish: consumer support for broader seafood sustainability. *Fish Fisheries* 17, 825–838. doi: 10.1111/faf.12148

McGreevy, S. R., and Akitsu, M. (2016). "Steering sustainable food consumption in japan: trust, relationships, and the ties that bind," in *Sustainable Consumption : Design, Innovation and Practice, The Anthropocene: Politik—Economics—Society—Science*, ed A. Genus (Cham: Springer International Publishing), 101–117. doi: 10.1007/978-3-319-29665-4_7

Merli, R., Preziosi, M., and Massa, I. (2015). Social values and sustainability: a survey on drivers, barriers and benefits of SA8000 certification in Italian firms. *Sustainability* 7, 4120–4130. doi: 10.3390/su7044120

Ministry of Agriculture, Forestry and Fisheries (2018). *National Fisheries Census*. Available online at: https://www.e-stat.go.jp/stat-search/database?page=1&layout=datalist&toukei=00500210&tstat=000001033844&cycle=0&tclass1=000001132724&tclass2=000001136323&tclass3=000001137889&tclass4val=0 (accessed August 5, 2021).

MSC (2020). *Celebrating and Supporting Sustainable Fisheries: MSC Annual Report 2019-2020*. Available online at: https://www.msc.org/about-the-msc/reports-and-brochures (accessed February 25, 2021).

Naegele, H. (2020). Where does the fair trade money go? how much consumers pay extra for fair trade coffee and how this value is split along the value chain. *World Dev.* 133, 105006. doi: 10.1016/j.worlddev.2020.105006

Oelze, N., Gruchmann, T., and Brandenburg, M. (2020). Motivating factors for implementing apparel certification schemes—a sustainable supply chain management perspective. *Sustainability* 12, 4823. doi: 10.3390/su12124823

Österblom, H., Jouffray JB, Folke, C., Crona, B., Troell, M., Merrie, A., et al. (2015). Transnational Corporations as "Keystone Actors" in Marine Ecosystems. *PLoS ONE* 10, e0127533. doi: 10.1371/journal.pone.0127533

Overdevest, C., Mark, G., and Rickenbach, G. M. (2006). Forest certification and institutional governance: an empirical study of forest stewardship council certificate holders in the United States. *Forest Policy Econ.* 9, 93–102. doi: 10.1016/j.forpol.2005.03.014

Pascual-Fernández, J. J., Pita, C., Josupeit, H., Said, A., and Rodrigues, G. J. (2019). "Markets, distribution and value chains in small-scale fisheries: a special focus on Europe," in *Transdisciplinarity for Small-Scale Fisheries Governance: Analysis and Practice*, eds R. Chuenpagdee and S. Jentoft (Cham: Springer International Publishing), 141–62. doi: 10.1007/978-3-319-94938-3_8

Pérez-Ramírez, M., Ponce-Díaz, G., and Lluch-Cota, S. (2012). The role of MSC certification in the empowerment of fishing cooperatives in Mexico: the case of Red Rock Lobster Co-Managed Fishery. *Ocean Coast. Manag.* 63, 24–29. doi: 10.1016/j.ocecoaman.2012.03.009

Pirard, R. (2012). Market-based instruments for biodiversity and ecosystem services: a Lexicon. *Environ. Sci. Policy* 19, 59–68. doi: 10.1016/j.envsci.2012.02.001

Ponte, S. (2012). The Marine Stewardship Council (MSC) and the making of a market for "sustainable fish". *J. Agrar. Change* 12, 300–315. doi: 10.1111/j.1471-0366.2011.00345.x

Potts, T., Brennan, R., Lowrie, G., and Pita, C. (2011). *Sustainable Seafood and Eco-Labelling: The Marine Stewardship Council, UK Consumers, and Fishing Industry Perspectives, SAMS Report: 270-211*. Scottish Association for Marine Science, Oban, Scotland.

Pristupa, A. O., Lamers, M., and Amelung, B. (2016). Private informational governance in post-soviet waters : implications of the Marine Stewardship Council certification in the Russian Barents Sea Region. *Fisheries Res.* 182, 128–35. doi: 10.1016/j.fishres.2015.07.006

Roheim, C. A., Bush, S. R., Asche, F., Sanchirico, J. N., and Uchida, H. (2018). Evolution and future of the sustainable seafood market. *Nat. Sustainabil.* 1, 392–398. doi: 10.1038/s41893-018-0115-z

Roser, M., Ritchie, H., and Ortiz-Ospina, E. (2013). *World Population Growth* [Online Resource]. World Population Growth. Available online at: https://ourworldindata.org/world-population-growth (accessed November 18, 2021).

Salladarré, F., Guillotreau, P., Debucquet, G., and Lazuech, G. (2018). Some good reasons for buying fish exclusively from community-supported fisheries: the case of Yeu Island in France. *Ecol. Econ.* 153, 172–80. doi: 10.1016/j.ecolecon.2018.07.017

Sampson, G. S., Sanchirico, N. J., Roheim, A. C., Bush, R. S., Taylor, E. J., Allison, H. E., et al. (2015). Secure sustainable seafood from developing countries. *Science* 348, 504–506. doi: 10.1126/science.aaa4639

SCS Global (2017). *Aquaculture Stewardship Council Seriola/Cobia Standard*. Initial Assessment Report. Kurose Suisan Kaisha Ltd. Available online at: https://www.asc-aqua.org/find-a-farm/ASC00223/ (accessed November 18, 2021).

Skjott Linneberg, M., and Korsgaard, S. (2019). Coding qualitative data: a synthesis guiding the novice. *Qual. Res. J.* 19, 259–70. doi: 10.1108/QRJ-12-2018-0012

Stoll, J. S., Bailey, M., and Jonell, M. (2020). Alternative pathways to sustainable seafood. *Conserv. Lett.* 13, 12683. doi: 10.1111/conl.12683

Sustainable Seafood, C.oalition. (,2018). 'Code of Conduct'. Code of Conduct. (2018). https://www.sustainableseafoodcoalition.org/codes-of-conduct/.

Sutton, M., and Wimpee, L. (2008). "Towards sustainable seafood: the evolution of a conservation movement," in *Seafood Ecolabelling: Principles and Practice*, eds T. J. Ward, B. F. Phillips (West-Sussex: Wiley-Blackwell), 403–415. doi: 10.1002/9781444301380.ch20

Swartz, W., Schiller, L., Sumaila, R. U., and Ota, Y. (2017). Searching for market-based sustainability pathways: challenges and opportunities for seafood certification programs in Japan. *Marine Policy* 76, 185–191. doi: 10.1016/j.marpol.2016.11.009

TQCSI (2008). *MSC Sustainable Fishery Management, Public Certification Report*. Kyoto Danish Seine Fishery Federation (KDSFF).

Travaille, K. L. T., Crowder, B. L., Kendrick, A. G., and Clifton, J. (2019). Key attributes related to Fishery Improvement Project (FIP) Effectiveness in promoting improvements towards sustainability. *Fish Fisheries* 20, 452–465. doi: 10.1111/faf.12357

Uchida, H., Roheim, A. C., Wakamatsu, H., and Anderson, M. V. (2014). Do japanese consumers care about sustainable fisheries? Evidence from an auction of ecolabelled seafood. *Austr. J. Agric. Res. Econ.* 58, 263–280. doi: 10.1111/1467-8489.12036

Valkila, J., and Nygren, A. (2010). Impacts of fair trade certification on coffee farmers, cooperatives, and laborers in Nicaragua. *Agric. Human Values* 27, 321–333. doi: 10.1007/s10460-009-9208-7

Vatn, A. (2015). Markets in environmental governance. From theory to practice. *Ecol. Econ.* 117, 225–233. doi: 10.1016/j.ecolecon.2014.05.005

Vince, J., and Haward, M. (2019). Hybrid governance in aquaculture: certification schemes and third party accreditation. *Aquaculture* 507, 322–328. doi: 10.1016/j.aquaculture.2019.04.041

Vormedal, I., and Gulbrandsen, H. L. (2020). Business interests in salmon aquaculture certification: competition or collective action? *Regul. Govern.* 14, 328–343. doi: 10.1111/rego.12213

Wakamatsu, H., Anderson, M. C., Uchida, H., and Roheim, A. C. (2017). Pricing ecolabeled seafood products with heterogeneous preferences: an auction experiment in Japan. *Mar. Resour. Econ.* 32, 277–294. doi: 10.1086/692029

Walmart (2017). *Walmart Policies and Guidelines*. Available online at: https://corporate.walmart.com/policies#seafood-policy (accessed November 18, 2021).

Ward, T., and Phillips, B. (2009). *Seafood Ecolabelling: Principles and Practice*. West-Sussex: John Wiley & Sons.

Wessells, C. R., and Wilen, E. J. (1994). Seasonal patterns and regional preferences in Japanese household demand for seafood. *Canad. J. Agric. Econ.* 42, 87–103. doi: 10.1111/j.1744-7976.1994.tb00008.x

Wilson, T. (2011). *'Naked Extortion? Regulations on Consumers and Business*. Institute of Public Affairs.

Witter, A., and Stoll, J. (2017). Participation and resistance: alternative seafood marketing in a Neoliberalera. *Marine Policy* 80, 130–140. doi: 10.1016/j.marpol.2016.09.023

Yamamoto, W., Yamaji, E., and Makiyama, M. (2001). Consciousness of rural people for ownership program of rice terraces. A case study of Oyama-Senmaida ownership program in Kamogawa City. *Assoc. Agric. Plan.* 20, 199–204. doi: 10.2750/arp.21.21-suppl_115

Conflict of Interest: The authors 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.