

WHAT'S THE CATCH?

Lessons from and prospects for Marine Stewardship Council certification in developing countries

EMMA BLACKMORE, HANNAH NORBURY, ESSAM YASSIN MOHAMMED, STELLA BARTOLINI CAVICCHI AND ROBERT WAKEFORD – 2015



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This paper represents the view of the authors and not necessarily that of IIED. We welcome your comments on this publication or other aspects of Shaping Sustainable Markets. Please contact emma.blackmore@iied.org.

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ACRONYMS

BMT	benchmarking and tracking tool
CAB	conformity assessment body
DWP	Developing World Program
DWWG	Developing World Working Group
EEZ	exclusive economic zone
ERAEF	ecological risk assessment for the effects of fishing
ETP	endangered, threatened and protected
FAO	Food and Agriculture Organization
FCRs	Fisheries Certification Requirements
FEDECOOP	Federation of Fishing Cooperatives (Mexico)
FIP	fishery improvement project
GDP	gross domestic product
GNI	gross national income
ISSCAAP	International Standard Statistical Classification of Aquatic Animals and Plants
ISU	International Sustainability Unit
IUU	illegal, unreported and unregulated fishing
M&E	monitoring and evaluation
MRAG	Marine Resources Assessment Group
MSC	Marine Stewardship Council
NGO	non-governmental organisation
PI	performance indicator
PNA	Parties to the Nauru Agreement
RBF	risk-based framework
SDGs	sustainable development goals
SFF	Sustainable Fisheries Fund
SFP	Sustainable Fisheries Partnership
UNCLOS	United Nations Convention on the Law of the Sea
WGI	Worldwide Governance Indicators
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

INTRODUCTION

Fish stocks are of enormous importance to the global economy and many national economies, as well as to livelihoods and food security, particularly in developing countries. Fisheries contribute approximately US\$274 billion to global GDP per annum. In 2012, some 58.3 million people were engaged in the primary sector of capture fisheries and aquaculture (FAO, 2014). The actual figure is likely higher since it is not possible for the official statistics to capture everyone engaged in the sector, particularly those operating in artisanal fisheries (ISU, 2012). Fisheries also play a key role in reducing and preventing poverty and in contributing to human health and wellbeing. The protection and enhancement of fish stocks, therefore, needs to be a key objective for efforts to transition to inclusive green economies.

The percentage of assessed stocks fished within biologically sustainable levels has declined, from 90 per cent in 1974 to 71.2 per cent in 2011. At present, 28.8 per cent of fish stocks are estimated as being fished at a biologically unsustainable level and are therefore overfished. The overexploitation of fish stocks reflects an inability of international and national law to control fishing behaviour. Voluntary codes of conduct and market-based instruments, including sustainability labels and related certification systems, have emerged in response to these failures with the aim of shaping supply and demand.

CERTIFICATION, AND SMALL-SCALE DEVELOPING WORLD FISHERIES

One of the most well-known fisheries certification schemes for wild capture fisheries is the Marine Stewardship Council (MSC) standard. It is currently the dominant player in the field of sustainability certification – covering more geographies, species and markets than any other scheme currently in operation in wild capture fisheries. This has been attributed in part to MSC's ability to scale up quickly to respond to commercial interests. Currently, 304 fisheries across 33 countries are engaged in the MSC programme; of these, 209 are certified and 95 are in assessment. Twenty-six out of 304 fisheries are located in developing countries – 18 of which have achieved certification. Of these, only five can be considered small-scale (based on vessels being less than 24 metres in length) and the rest are considered to be larger-scale industrial fisheries. The focus in this paper is on developing world fisheries that are **small scale**.

Despite the MSC's relatively wide market coverage – in terms of both production and consumption – it is restricted almost entirely to the global 'North', or developed countries: fewer than eight per cent of MSC-certified fisheries are in developing countries and the vast majority of MSC labelled products are sold in Europe and the USA. Considering global capture production is dominated by developing countries (70% of global capture production comes from developing countries) their inclusion in efforts to manage fisheries responsibly will be central to achieving global sustainability in fisheries.

There are ten 'developing' countries in which fisheries are engaged in the MSC scheme: Argentina, Chile, Fiji, India, the Maldives, the Marshall Islands, Mexico, South Africa, Suriname and Vietnam. The levels of technology and fishing techniques used in these fisheries are highly variable, with the smallest, artisanal fisheries using hand picking techniques and rakes for harvesting clams, along with free driving to collect spiny lobster from small traps, and the largest using bottom trawlers, 'purse seine' and trawl nets.

Our research analyses the suitability of the MSC certification scheme for developing world small-scale fisheries, as well as analysing possible changes in market demand to understand the potential for scaling up, using existing literature and data, interviews and workshops with key stakeholders. This research is intended to lay the foundations for a Phase 2, with more in-depth and extensive research involving field work with developing world fisheries and a wide range of relevant stakeholders to offer an in-depth understanding of the current and future relevance and suitability of MSC certification for developing world small-scale fisheries.

There is a lack of rigorous impact assessment studies of the environmental, social and economic impacts of MSC certification. Although the MSC scheme has been running for 14 years, many of the certified fisheries have achieved this more recently, and longer time periods are likely needed for impacts to emerge, particularly environmental impacts. Attributing impacts and changes in a fishery to MSC certification is also challenging. Changes to production systems and the management of fisheries may take place before certification has been achieved – and not necessarily because fisheries are planning to achieve certification.

PRODUCTION, CONSUMPTION AND THE MARKET FOR SUSTAINABLE SEAFOOD

Seventy per cent of global capture production of seafood comes from developing countries; and, while nine per cent of global capture production is from MSC certified fisheries, less than four per cent of these are in developing countries. The MSC programme is therefore not currently representative of total global capture production patterns in terms of countries or the species produced. This underlines the fact that the MSC programme is a market-based tool that is not necessarily driven by production patterns (supply), but rather by consumer preference and retailer demand (for higher value species).

Consumer recognition of the MSC 'ecolabel' in developed countries has increased, from an average of 25 per cent in 2010 to 33 per cent in 2014; although, due to the cost of the MSC logo license, some MSC-certified products are sold unlabelled. There are a number of industry commitments in Europe and North America, from household names such as Walmart and Marks & Spencer. These industry commitments appear more significant than consumer choice in driving demand. However, there is a 'circular' challenge in which enough demand is needed to generate supply, but also enough supply to generate demand, since retailers require sufficient product volumes to maintain a consistent brand and image. This demand from retailers for environmentally certified products from high-volume species provides both opportunities and limitations for certification, depending on the scale of the fishery. For some developing countries involvement in the MSC programme could be limited if species caught in their fisheries are not in demand in the markets or countries where MSC-certified products tend to be sold.

In developing countries in general, the value of a tonne of fish exported is twice as high as the value of a tonne imported. Developing countries tend to export high-value fish and import low-value fish to compensate for the animal protein outflow. If one of the main motivations of certification is to access international markets, then only high-value fisheries will be certified and their management improved. Similarly, countries where fisheries are certified are not necessarily the countries that dominate fish exports, implying that other factors are at play in determining which fisheries seek to achieve certification.

THE MARINE STEWARDSHIP COUNCIL

MSC's mission is "to use our ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis" (MSC, 2014a). The MSC sets a standard for third party certification of wild capture fisheries and licences the MSC sustainability label for use on certified products. Its three core principles are 1) health of the target fish stock; 2) impact of the fishery on the environment; and 3) effective management of the fishery.

Developing world fisheries account for only eight per cent of all MSC-certified fisheries, and the MSC is working to address this. It has set up the MSC Developing World Program (DWP) with the mandate to seek "to ensure that developing

country fisheries can access the environmental and economic benefits of MSC certification, and help to safeguard fisheries as a reliable, long term source of food security" (MSC, 2014b). Among its strategies to ensure that the MSC is accessible to all fisheries, it has included a number of alternative tools within the certification requirements. This includes a 'risk-based framework' to allow fisheries that lack the comprehensive scientific information required for certification assessments to access the assessment process.

FISHERY IMPROVEMENT PROJECTS

Fishery improvement project (FIPs) aim to "create measurable change to meet the MSC standard and to ensure the long-term sustainability of a fishery" (WWF, 2013a). They have an inclusive, multi-year, stepwise approach that helps fisheries become more sustainable by improving fishing and management practices, as well as bringing a range of stakeholders together. By facilitating the creation of 'partnerships', for instance between fisheries and retailers, they have created market opportunities for fisheries that are not currently able to obtain MSC certification but aspire to do so. Of the 84 FIPs that are currently active, 62 (74 per cent) are in developing countries. While FIPs are not formally within the scope of the MSC programme, it has developed tools and mechanisms that can be used to support fisheries engaged in FIPs.

POSSIBLE DRIVERS OF MSC CERTIFICATION

The range of different factors that can drive developing world fisheries to become MSC-certified are identified below – from ‘hard’ economic incentives like price premiums, to ‘soft’ incentives like enhanced reputations.

ACCESS TO MARKETS	Probably the strongest driver of MSC certification at present. Some concerns among fisheries that a lack of MSC certification will be a barrier to trade, with all supermarkets in the EU and USA markets showing a preference for MSC certification.
PRODUCTIVITY OR CATCH IMPROVEMENTS	Not mentioned in the literature or interviewees – and may in fact be reduced in the short term as necessary changes are made to management systems.
IMPROVED PRODUCT QUALITY	Comprehensive evidence is lacking, though it has been cited by some fisheries as an impact.
ACCESS TO FINANCE, INPUTS AND GOVERNMENT SUPPORT	Evidence is lacking, though has been cited by some fisheries as an impact.
AVOIDED COSTS OF LEGAL NON-COMPLIANCE AND CONFLICT	Mentioned by a developed world fishery as a key benefit but not so far for small-scale developing world fisheries – likely to only be relevant where regulatory frameworks are strong.
IMPROVED REPUTATION, SOCIAL STATUS AND SELF ESTEEM	More research needed into this factor as a driver – has been mentioned as a driver as well as an impact in some developing world fisheries. Has the potential to be a strong driver and benefit.
ACTORS DRIVING CERTIFICATION:	
FISHERS	Could be significant, further research needed.
PEERS	Could increase as increasing numbers of small-scale developing world fisheries become certified.
GOVERNMENTS	May in fact be a barrier.
BUYERS	Likely to be a strong driving actor, which aligns with market access as key driver.
MSC	More research needed.
NGOS	Many have offered significant support to small-scale developing world fisheries to get certified.
FINANCIAL INSTITUTIONS	General lack of support from financial institutions for supporting the transition of fisheries towards sustainability.

POSSIBLE BARRIERS TO MSC CERTIFICATION

The following different types of barrier can and have limited the participation of developing world fisheries in MSC certification.

DIRECT COSTS OF CERTIFICATION	Appears to be a strong barrier. Many costs involved: pre-assessment, full assessment, annual surveillance audit, re-assessment – can vary significantly depending on the fishery but likely to be particularly significant as barriers to small-scale developing world fisheries becoming MSC-certified.
INDIRECT COSTS OF CERTIFICATION	Significant costs associated with the changes needed to comply with MSC (management system changes, new gear, documentation, equipment needed to obtain data). Likely therefore to be a strong barrier.
FINANCIAL SUPPORT	Most small-scale developing world fisheries which have become certified to date have obtained funds from external sources to support the certification process (from retailers and NGOs) so this has not yet been a key barrier. However it is likely to become a strong barrier as increasing numbers of small-scale fisheries seek certification.
ACCESS TO CREDIT	Most small-scale developing world fisheries which have become certified to date have obtained funds from external sources to support the certification process (from retailers and NGOs) so this has not yet been a key barrier – this may become a barrier as increasing numbers of developing world fisheries seek certification.
ACCESS TO LOW-COST FISHING AND HARVEST TECHNOLOGY	Small-scale developing world fisheries are characterised by lack of access to low-cost fishing technologies and the skill to use them. These technologies can be important tools to achieve certification. However, there is insufficient evidence to suggest that this has been a key barrier to date.
SHORT-TERM ECONOMIC COSTS OF CONSERVATION OR SUSTAINABILITY OBJECTIVES	May be short-term reductions in output as fish stocks recover (may be a condition of certification for many fisheries). Short-term economic costs may depend on species in question, but may be too high for small-scale fishers who have limited alternative livelihood options and may receive insufficient financial benefits from certification to offset the costs. Likely to be a strong barrier for small-scale developing world fisheries.
LEGAL / INSTITUTIONAL BARRIERS AND POLITICAL WILL	Many fishers likely to be excluded from certification because of the actions of others – e.g. due to open access resources. Certification may not be aligned with developing country government's fisheries policies and political will may therefore be limited. Appears to be a strong barrier.
COMPETITION FROM ALTERNATIVE ECO-LABELLING SCHEMES	MSC is by far the most dominant player in the market of sustainability certification for wild capture fisheries – Friends of the Sea is the only scheme starting to exert competitive pressure on MSC. Its incorporation of socio-economic factors may make it a more attractive alternative for some fisheries. Fairtrade is also reported to be emerging in the fisheries sector, owing to the already existing trade relationships with agricultural communities in developing countries, who in some cases may also be seasonal fishers. There is insufficient evidence to suggest this is at present a key barrier, but it may become increasingly relevant in the future.

IMPACTS OF MSC CERTIFICATION

There are limited rigorous impact assessment studies of the environmental, social and economic impacts of MSC certification. However, some evidence does exist.

<p>ENVIRONMENTAL IMPACTS For example MSC seeks to bring about improvements in stock levels (achieved through stock management strategies and improved information on target stock); the sustainability of non-target species, endangered, threatened and protected species (ETP), habitats and ecosystems (achieved through management strategies and improved information)</p>	<p>MSC certification has been shown to result in improved environmental performance. 'On the water' environmental improvements occur incrementally throughout a fishery's involvement with the MSC programme. Most improvement happens where fisheries at the pre-assessment phase receive recommendations to "proceed to full assessment with caution" i.e. are likely to be the least sustainable to begin with. In developing world fisheries improvements have been recorded in research and monitoring of stock levels, reductions in bycatch and mortality of ETP, reduced impact on benthic habitats, etc. However, very few studies have been conducted to date, and environmental improvement is a very broad measure of environmental impact.</p>
<p>MARKET ACCESS, SALES AND OPPORTUNITIES FOR VALUE ADDITION</p>	<p>Evidence of MSC leading to sales in new markets. In some cases fisheries have been able to access markets where they can sell higher-value goods (e.g. through value addition).</p>
<p>PRICE PREMIUMS AND IMPROVEMENTS IN PRODUCT QUALITY</p>	<p>Some small-scale developing world fisheries have been able to fetch a premium in the market, but evidence from <i>developed</i> world fisheries, which is much more extensive, suggests that reports of premiums are not consistent. It is difficult to isolate the effects of the MSC label and its sustainability claims on prices from those linked to quality and/or general trends in the market. One would have expected to see more reports of premiums if this were a common occurrence.</p>
<p>INCOME AND WAGES</p>	<p>Evidence of improved wages from other developing countries has not been reported in either the literature or the interviews. More detailed and rigorous research into the socio-economic impacts of MSC is needed.</p>
<p>LIVELIHOODS AND FOOD SECURITY</p>	<p>It is currently unclear to what extent MSC certification impacts the food security of small-scale fishers in developing countries. Further research is needed.</p>
<p>COST SAVINGS</p>	<p>In one case a small-scale developing world fishery could sell a more profitable clam once it was certified because the market demanded clams with shells – meaning fewer processing costs. Another fishery reported less sorting of by-catch due to newly introduced by-catch reduction devices.</p>
<p>RAISED PROFILE, IMPROVED REPUTATION AND GOVERNMENT SUPPORT</p>	<p>Some developing world fisheries have improved their reputation and profiles as a result of MSC certification. In some cases improved profiles have led to increased government support, but this has not been consistently reported.</p>
<p>LABOUR RIGHTS / CHILD LABOUR</p>	<p>The impact of MSC certification on labour requirements requires further interrogation. MSC's new standard on forced labour is dependent on the need for fisheries to have been prosecuted for forced labour before – something that is less likely to happen in settings where governance is weaker (i.e. developing countries).</p>
<p>IMPROVED TRADING RELATIONSHIPS</p>	<p>As yet unproven, though has been a positive outcome of certification for small-scale farmers operating in agriculture.</p>
<p>ACCESS TO CREDIT AND CAPACITY BUILDING</p>	<p>In some cases, even after MSC certification has been achieved, fishers operating within the certified fishery are not aware of the certification programme and its requirements.</p>
<p>BROADER POLICY AND INSTITUTIONAL CHANGE IN DEVELOPING COUNTRIES</p>	<p>There are a number of examples of empowerment of local actors and institutions as a result of engaging in the MSC certification, e.g. the Baja California red rock lobster fishery in Mexico. This has led to increased government support. There are examples of fisheries related policies being implemented beyond the certified fishery.</p>

NEXT STEPS AND FUTURE RESEARCH

Our research identifies some significant limitations to understanding the current economic and social impacts of MSC certification on small-scale developing world fisheries. Much of the evidence is anecdotal and focused on a handful of fisheries, rather than a comprehensive and quantitative assessment of costs and benefits across the board.

For the next step, we propose in-depth case study-based research, covering:

- all small-scale developing world fisheries which have achieved certification to date
- those who have embarked on pre-assessment
- those who were pre-assessed and did not proceed to full certification
- those who have withdrawn from the scheme
- those who have engaged in FIPs but have not yet entered pre-assessment
- those that have engaged in FIPs and proceeded to certification.

The research should:

- offer evidence on the balance of costs versus benefits – both direct and indirect, intended and unintended – that fisheries can expect during and as a result of certification
- include an explicit assessment of the impact of certification on the livelihoods, food and nutritional security of fishers, their households and wider communities
- explore the value chains connecting certified small-scale developing world fisheries to consumers
- help identify the impact of MSC certification on trading relationships and the factors that limit net returns and value share to fishers.

Ultimately these case studies would allow MSC and its supporting stakeholders – as well as other certification schemes – to better understand the enabling and disabling factors for certification in developing world settings, and to offer recommendations on how these might be enhanced or attenuated through adaptations of the MSC scheme itself; or to perceive any changes required in the wider enabling environment and the efforts of other players. It could also offer practical examples for fisheries on how to overcome challenges and constraints in achieving MSC certification.

ONE INTRODUCTION

1.1 SUSTAINABLE FISHERIES

Fish stocks are of enormous importance to the global economy and many national economies, as well as to livelihoods and food security, particularly in developing countries. Fisheries contribute approximately US\$274 billion to global gross domestic product (GDP) per annum, although they are currently an underperforming asset in market terms.¹ The World Bank estimates that if fisheries were managed optimally they could deliver an additional US\$50 billion each year (World Bank, 2005).

In 2012, some 58.3 million people were engaged in the primary sector of capture fisheries and aquaculture (FAO, 2014a). The actual figure is likely to be higher since official statistics are not able to cover everyone engaged in the sector, particularly those operating in artisanal fisheries (ISU, 2012a). Many more are employed in the secondary sector (e.g. in processing fish). Around 84 per cent of people working in the primary sector are found in Asia, followed by Africa (10 per cent). Employment in the sector has grown faster than the world's population (FAO, 2014a). FAO estimates that fisheries and aquaculture assure the livelihoods of 10–12 per cent of the world's population (FAO, 2014a) and are of particular significance for developing countries. In addition, one billion people rely on seafood – a healthy and renewable resource – as their main source of protein (ISU, 2012a).

Fisheries play a key role in reducing and preventing poverty and in contributing to human

health, wellbeing and food security. Allison (2011:6) explains that fisheries' economic output provides important contributions to poverty and food security through three main, interlinked pathways: 1) nutritional benefits from the consumption of fish; 2) income to those employed in the sector, and multiplier and spillover effects² in fishery-dependent regions; and 3) through generating revenues for governments from exports, taxation, license fees and payments to access resources by foreign fleets or foreign investment in aquaculture. The protection and enhancement of fish stocks and their supporting marine environment needs to be a key objective of efforts to transition to inclusive green economies.

In 2011, global capture fisheries produced 93.7 million tonnes of seafood – the second highest catch ever recorded (the highest being 93.8 million tonnes in 1996) (FAO, 2014a). Over half of the world fish catch comes from developing countries (Pérez-Ramírez *et al.*, 2012b). Despite this substantial catch, the percentage of assessed stocks that are fished within 'biologically sustainable levels'³ has been declining: from 90 per cent in 1974 to 71.2 per cent in 2011. Almost 29 per cent of fish stocks are estimated to be fished at a biologically unsustainable level – and are therefore overfished. These stocks require strict management plans to rebuild stock abundance to full and biologically sustainable levels (FAO, 2014a). The oceans, which make up 71 per cent of the earth's surface, play an important role capturing and storing atmospheric carbon dioxide and regulating global climate – working towards sustainable fisheries can also

1. An economic asset is a resource with economic value, owned or controlled in the expectation that it will provide future benefit.

2. The 'multiplier effect' is the effect of a particular type of job or industry 'spilling over' into other economic activity locally.

3. Previously referred to as 'non-fully exploited' and fully exploited stocks', by the Food and Agriculture Organization.

BOX 1. FISHERIES AND THE POST-2015 SUSTAINABLE DEVELOPMENT AGENDA – WHAT ROLE FOR CERTIFICATION?

Intergovernmental processes to agree a set of universal 'sustainable development goals' (commonly known as SDGs) and targets in the post-2015 era have started. Even though the final document is not ready (as of June 2015), the UN's Open Working Group on SDGs has produced an Outcome Document which has subsequently been endorsed by the Secretary General in his synthesis report.

Goal 14 of the Outcome Document calls for conservation and sustainable use of oceans, seas and marine resources for sustainable development. Targets specific to sustainable fisheries management include: by 2030 increase the economic benefits to small island developing states and Least Developed Countries from the sustainable use of marine resources, including through **sustainable management of fisheries, aquaculture** and tourism; and **provide access for small-scale artisanal fishers to marine resources and markets**.

One way of ensuring that member states

meet these targets is through harnessing market mechanisms such as certification schemes to promote sustainable fisheries management.

According to the MSC, currently fewer than eight per cent of the world's certified fisheries are from developing countries. The MSC's Developing World Fisheries Program is striving to increase the share of certified developing world fisheries. This will be essential in order to ensure that certification can indeed contribute to achieving the proposed SDGs, but will only be possible through the concerted effort of all parties including developing world fisheries managers, donor countries and non-governmental organisations (NGOs), multilateral development agencies and the private sector by providing incentives (access to market for certified fisheries) and support to finance the transition to sustainable fisheries management.

help to support the sustainability of the broader marine environments.

The overexploitation of fish stocks reflects the inability of international and national law to control fishing behaviour. Voluntary codes of conduct and market-based instruments, including sustainability labels and related certification systems, have emerged in response to these failures with the aim of changing supply and demand – raising company and consumer awareness of the sustainability issues faced by fisheries, and allowing them to choose between more or less sustainable seafood options. Certification schemes in particular have increased in number and in their coverage of the market.

Typically developed by NGOs, in partnership with industrial or commercial enterprises in fisheries, certification schemes aim to 'promote and reward sustainable fishing through economic incentives, encouraging producers to meet prescriptive standards, and consumers to choose products supplied by them' (Pérez-Ramírez *et al.*, 2012b).

One of the most well known fisheries certification schemes, and the most extensive in terms of market coverage, is the Marine Stewardship Council (MSC) standard. The Marine Stewardship Council is a third-party certification scheme for wild capture fisheries. It seeks to 'contribute to the health of the world's oceans by recognising and rewarding sustainable fishing

practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis' (MSC, 2014a).

As of September 2014, 304 fisheries⁴ across 33 countries are engaged in the MSC certification scheme; of these 209 are certified and 95 are in assessment⁵ (MSC, 2014c). MSC-certified fisheries catch over eight million tonnes which represents approximately nine per cent of global capture production (MSC, 2014d). At the time of writing, 22,336 MSC-certified seafood products are available to consumers to buy. By comparison, Friends of the Sea, MSC's nearest competitor, has certified 70 wild capture fisheries and 100 aquaculture producers (FOS, 2014a and FOS, 2014b). The volume of FOS certified seafood is unclear, but sources suggest it is far lower than MSC (Ponte, 2012).

Despite the MSC's wide market coverage – in terms of both production and consumption – it is restricted almost entirely to the global 'North' or developed countries: fewer than eight percent of MSC-certified fisheries are in developing countries. With the emergence of, and emphasis on, market-based instruments to address major sustainability challenges in the marine environment (and more broadly in a number of natural resource sectors) there is an implicit assumption that these mechanisms can be effectively applied globally, including to developing world fisheries and to fisheries of

differing scales. Considering that developing countries provide about 60 per cent of the world's fish and fishery products (both by volume and value; Pérez-Ramírez, *et al.*, 2012b), including them in efforts to manage fisheries sustainably worldwide will be central to achieving this goal. However, these fisheries typically face unique challenges in achieving certification.

This report explores the issues surrounding the MSC certification scheme for small-scale fisheries in developing countries, as well as analysing possible changes in market demand to understand the potential to scale up, and the impact of MSC in developing countries. The report uses existing literature and data, interviews and workshops with key stakeholders. Annex 1 offers a semi-anonymised list of interviews carried out across a range of stakeholder groups – academics and scientists, NGOs, fisheries, industry (such as retailers), government, the MSC itself and participants at two workshops held in 2014.

1.2 SMALL-SCALE FISHERIES, DEVELOPING COUNTRIES AND THE MSC PROGRAMME

Eighteen MSC-certified fisheries are located in developing countries, representing eight per cent of the total number of certified fisheries and approximately four per cent of the total volume of catch from certified fisheries. A further ten fisheries are in assessment in developing

4. A 'fishery' in the MSC programme may include one or more 'units of certification'. A unit of certification is usually defined by reference to target fish species and stock; geographic area of fishing; fishing method, gear, practice and/or vessel type. The unit(s) of certification is decided by the fishery client at the beginning of the assessment process, with advice from the certifier. For more information see: www.msc.org/track-a-fishery/what-is-a-fishery

5. These figures are based on the MSC species list of 14 September 2014 and corresponding information available on the MSC website at that point in time. Updates to the list may have since been made but are not included in our assessment.

countries. While these numbers are low, the rate of participation of fisheries in developing countries is increasing (MSC, 2014r). The current list of certified fisheries in developing countries is presented in Annex 2.

For the purposes of this report we have categorised a country as 'developing' according to the MSC's classifications. While the MSC does not have a formal classification or definition to designate countries as developing (or not), they do align somewhat to the United Nations Statistics Division's classifications. The United Nations (UN) do not designate countries simply as 'developing' or 'developed'. Instead they use a number of sub-categories based on economic group and economic class (class being broader than group, see below), shown in Table 1. Only regions are classified as developing or developed (UNSD, 2013).

The World Bank classifies countries into four groups based on gross national income (GNI) per capita: low, lower-middle, upper-middle and high income. It considers developing countries to be those with low and lower-middle income economies.

TABLE 1. UN COUNTRY CATEGORIES

ECONOMIC GROUP
Land-locked developing country
Low-income country
Low-income food-deficit country
Net food-importing developing country
Small island developing state
ECONOMIC CLASS
Developed countries or areas
Least developed countries
Other developing countries or areas

Source: Authors' own, based on UNSD, 2013.

There are ten developing countries where fisheries have obtained MSC certification: Argentina, Chile, Fiji, India, the Maldives, the Marshall Islands (representing Party to the Nauru Agreement or PNA countries),⁶ Mexico, South Africa, Suriname and Vietnam. However, using the World Bank and United Nations classification of these countries, a more detailed picture of their socio-economic status emerges. Table 2

6. Parties to the Nauru Agreement comprises eight countries in Oceania: Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu. At present there is one certified fishery in the region and its geographical scope spans the exclusive economic zones (EEZs) of all of these countries. The Marshall Islands were selected as the country to represent PNA, due to the fact that fishery client group is the PNA office located in the Marshall Islands. We felt that to count this as 8 developing countries would be misleading in regards to how widely – geographically – MSC certification has been achieved.

TABLE 2. WORLD BANK AND UNITED NATIONS CLASSIFICATION OF DEVELOPING COUNTRIES IN THE MSC PROGRAMME

WORLD BANK CLASSIFICATION				SELECTED UNITED NATIONS CLASSIFICATION	
Low income	Lower-middle income	Upper-middle income	High income	Small island developing states	Low-income food-deficit
None	India Vietnam	Argentina Fiji Maldives Marshall Islands Mexico South Africa Suriname	Chile	Fiji Maldives Marshall Islands Suriname	India

Source: World Bank, 2014; UNSD, 2013.

presents these World Bank and United Nations classifications. With regards to the World Bank system, it is interesting to note that the majority of the countries with MSC fisheries are considered to be upper-middle income countries, with only India and Vietnam falling into the developing country category (lower-middle income). With regards to the UN classifications, four of the countries are categorised as 'small island developing states', and India is categorised as a 'low-income food-deficit' country. However, the majority of these countries are within regions classified as 'developing' by the UN: Africa, the Caribbean, Central America, South America, Asia and Oceania.

1.3 DEFINITION OF SMALL-SCALE FISHERIES IN THE DEVELOPING WORLD

In addition to developing countries, the main focus here is on developing world fisheries that are **small-scale**. As there is no fixed definition of a small-scale fishery, this report uses a typology of small-scale fisheries based on definitions by Bjorndal *et al.*, (2014), the FAO (2004 and 2005), Tietze *et al.*, (2000; cited in Christian *et al.*, 2013) and McGoodwin (2001). These are summarised in Table 3.

TABLE 3. CATEGORIES AND CHARACTERISTICS OF SMALL-SCALE AND LARGE-SCALE FISHERIES

CHARACTERISTICS	CATEGORIES OF FISHERIES		
	SMALL SCALE		LARGE SCALE
	SUBSISTENCE	OTHER SMALL-SCALE	
Size of fishing craft/vessel and engine	None or small (<12m) with low-power engine or non-motorised	Small (<24m) usually with low-power engine (<375kW)	Large (≥ 24m) with high-power engine (≥ 375kW)
Type of craft/vessel	Undecked wooden boat, such as canoe or dinghy	Decked or undecked vessel of wood, fibreglass, aluminium or steel	Steel-hull vessel, trawler, factory vessel
Fishing unit	Individuals, or family or community groups	Small groups, some specialisation and division of labour, importance of household and community	Smaller and larger groups; specialisation and division of labour
Ownership	Craft/gear owner-operated	Usually owned and operated by senior operator; some absentee ownership	Concentration of ownership, often by non-operators; cooperative ownership
Time commitment	Mostly part time/occasional	Full time or part time	Usually full time
Fishing grounds	On or adjacent to shore, inland or marine	Inshore/coastal; inland or marine	All marine areas
Disposal of catch	Primarily household consumption but some local barter and sale	Sales to local, national and international markets; household consumption	Primary sale to organised markets
Utilisation of catch	Fresh or traditionally processed for human consumption	Fresh or processed – generally traditionally – for human consumption	Mostly processed; large share for reduction for non-food products
Knowledge and technology	Premium on skills and local knowledge; manual gear	High skills and knowledge needs; manual and mechanised gear, some electronic equipment	Skills and experience important but supported by technology; mechanised gear; automation and electronic equipment

Source: Bjorndal *et al.* (2014).

In addition to the small-scale fishery characteristics in Table 3, small-scale fisheries in the developing world may have the following attributes. They:

- are usually disadvantaged in relation to developed world fisheries because of an inability to monitor, survey and obtain technical information – this can mean they are data-deficient (e.g. on stock sizes)
- can experience free-riding by other fishers (i.e. other fishers can also deplete the same resources)
- are endowed with few financial resources and assets and lack access to credit and markets
- receive fewer subsidies and use less fuel
- generate smaller catches than developed world fisheries
- have ill-defined use or access rights
- harvest a number of different species⁷
- use a number of different types of fishing gear
- fish close to shore
- have diverse livelihood strategies/sources (for example they might consume the catch locally and/or export it)
- increasingly have to compete with other coastal uses such as tourism or industrial zones.

FIGURE 1. GEOGRAPHICAL LOCATION OF MSC-CERTIFIED DEVELOPING WORLD FISHERIES



Source: authors' own with map from www.vectorworldmap.com.

Note: these give a general location of the fisheries and are not precise fishing areas.

7. The MSC, by contrast, has a single-species concept.

TABLE 4. SMALL-SCALE MSC-CERTIFIED FISHERIES IN DEVELOPING COUNTRIES

FISHERY	GEAR / VESSEL	FISHER ORGANISATIONS	FISHING GROUNDS	MARKETS
Mexico, Baja California: red rock lobster	Baited wire traps and fiberglass boats <10m	Federation of fishing cooperatives (FEDECOOP)	Low intertidal zone to depths of around 100 metres	Asia, France and USA
Sian Ka'an and Banco Chinchorro biosphere reserves: spiny lobster	Free diving using 'Cuban <i>casitas</i> '* and fibreglass boats 6–8m	Fishing cooperatives	Nearshore waters	Yucatán Peninsula. A small % goes to USA
Suriname Atlantic seabob shrimp****	Steel hull, twin rig demersal** trawl vessels, ~20m LOA*** and engine capacities >500hp	Fishers sign up to an operational code of practice in order to be included in the MSC certification	Inshore waters (~20km from shore)	European and North American
Vietnam Ben Tre: clam, hand gathered	By hand or metal rakes with a net pocket – no vessels	10 clam cooperatives and 4 clam groups (smaller scale than cooperatives but carry out similar operations)	Coastal waters	EU, Japan, China, Taiwan, USA
Ashtamudi Estuary: short-necked clam	Free diving and hand dredge	Operators licensed by the Kerala State Government and Village Clam Fishery Council	Estuary	Vietnam, Thailand, Malaysia and Indonesia

Notes: *House-like traps used to catch lobsters; **of the sea bed; ***vessel length overall.

****This is not regarded as small-scale by MSC, though according to Table 3 – Bjorndal *et al.* (2014) – we categorise this as small-scale based on vessel size and fishing grounds.

Since this data was collected in Sept 2014 an additional small-scale fishery has become certified in Chile which has not been included in this analysis. See here for more information: <https://www.msc.org/newsroom/news/artisanal-chilean-lobster-fishery-of-the-juan-fernandez-island-community-gains-msc-certification>

Of the 18 fisheries certified in developing countries, this report considers only five to be 'small-scale', based primarily on the vessel size and fishing grounds presented in Table 4. The remaining 13 fisheries are considered to be larger-scale fisheries, according to the categorisation given in Table 3.

There is significant diversity in the types of developing world fisheries that have achieved MSC certification and how their successful engagement with certification came about. In terms of scale of operation their production volumes range from 187 tonnes caught per year to 422,921 tonnes. The levels of technology and fishing techniques used in these fisheries are highly variable, with the smallest, artisanal fisheries using hand-picking techniques and rakes for harvesting clams, along with free diving to collect spiny lobster from small traps, and the largest using bottom trawlers, 'purse seine'⁸ and trawl nets.

The ten species groups that have been certified in developing countries (although not all the fisheries are small scale) are tuna, lobster, clam, hake, anchovy, hoki, mussel, sardine, scallop and shrimp. Hake, tuna and sardine account for approximately 80 per cent of developing country capture production.

The first developing world fisheries achieved certification in 2004 – South African hake and Mexico Baja California red rock lobster – but most certified developing world fisheries achieved this more recently. While the South African hake is a fishery in a developing country, it is highly industrialised; as is the hoki fishery in Argentina.

Products from developing world fisheries with the MSC label are sold all over the world. Our review of markets for certified seafood from developing countries shows that for the 18 certified fisheries, the key customers are found in Canada, France, Germany, South Africa and the United Kingdom. Other important markets for these fisheries include Argentina, Australia, Austria, Denmark, Italy, Namibia, Netherlands, Portugal, Slovenia, Spain, Sweden, Switzerland and the United States (MSC, 2014f).

1.4 THE PURPOSE OF THIS STUDY

This report forms the first part of a two-phase study. While limited in scope, based on a literature review and some stakeholder interviews, this report lays the foundations for the second phase. Phase 2 will involve more in-depth and extensive research including field work with small-scale developing world fisheries and a wide range of relevant stakeholders. The aim is to develop and document an in-depth understanding of the current and future suitability of MSC certification for these fisheries. While the focus of the research is on MSC, it offers lessons for other certification schemes and market-based instruments, in fisheries as well as other natural resource sectors, on the challenges and opportunities of including small-scale developing world fisheries in the design and implementation of these instruments.

Section 2 of this report explores the current market for sustainable seafood and the potential for scaling up; Section 3 provides an overview of the MSC standard, the MSC Developing World Program and other relevant tools and activities; Section 4 explores the drivers and barriers for small-scale developing world fisheries to achieve certification; and Section 5 explores the impacts of the MSC scheme on developing world fisheries. Section 6 considers current initiatives to move fisheries towards MSC certification where fisheries have not met the MSC standard. The report ends with recommendations for further research questions that need to be answered in the second phase in order to better understand the drivers and enabling factors for small-scale developing world fisheries to engage successfully with certification, and how MSC and other stakeholders can support that transition.

8. A purse seine is a large fishing net that hangs vertically in the water to create a circular wall around a shoal of fish, which is then closed or 'pursed' to catch the fish.

TWO PRODUCTION, CONSUMPTION AND THE MARKET FOR SUSTAINABLE SEAFOOD

This section gives an overview of the global production of wild capture fisheries, the trade in fish and fisheries products, and the consumption of fish. It provides an important summary of supply and demand patterns and trends in seafood: the top producing nations, the top wild capture species, and the main importing and exporting countries and regions. The overview, drawn from global datasets, is compared with the production of fisheries engaged in the MSC programme and the markets in which certified products are available. This indicates what potential there is to include fisheries and their products in the MSC programme and, more importantly for this study, to include small-scale fisheries in developing countries.

However, there are limitations to the global datasets that provide our data. The Food and Agriculture Organization (FAO) Global Commodities Production and Trade dataset does not distinguish between farmed and wild caught products, nor do European trade statistics. The FAO trade database provides information on the value and quantity of the imports and exports of a country, but does not show which countries or regions fish products are being imported to or exported from. The emerging picture of supply, demand and national consumption is further complicated by the import of raw materials for processing and re-export to other markets.

2.1 CAPTURE PRODUCTION

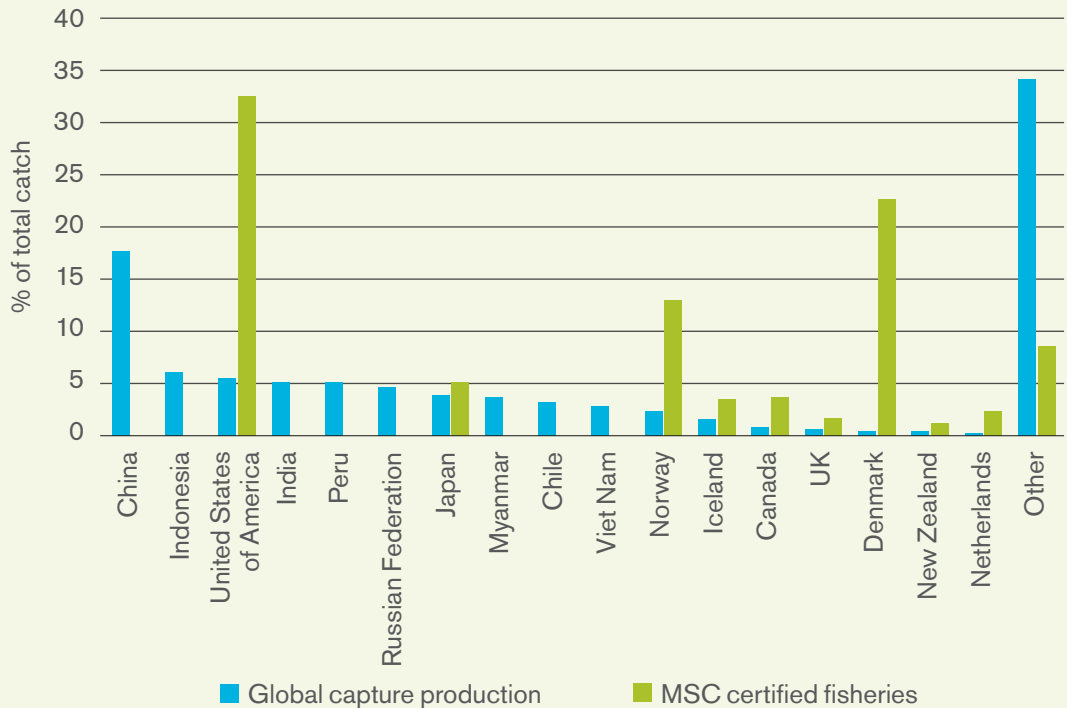
2.1.1 Countries of production

Global capture production is dominated by developing countries, which account for over 70 per cent (FishStat, 2015). China is the top-ranking fishing country in terms of quantity (by weight), followed by Indonesia, the USA, India and Peru (as shown in Figure 2). Nineteen countries caught more than one million tonnes each in 2012, accounting for over 75 per cent of global catch (FAO, 2014a).

Fisheries engaged in the MSC programme (both certified and in assessment) produce around ten million tonnes of seafood each year, representing more than ten per cent of global capture production (MSC, 2014d). MSC-certified fisheries catch over eight million tonnes, which represents approximately nine per cent of global capture production (MSC, 2014d).

Developed countries dominate the MSC programme: less than four per cent of capture production (by weight) from fisheries in the MSC programme comes from developing countries (MSC, 2014c and author's analysis). The USA, Denmark, Norway and Russia account for almost 70 per cent of the capture production by weight from fisheries in the MSC programme, as shown in Figure 2, whereas these countries only account for approximately 13 per cent of total global capture production. The MSC programme is therefore not currently representative of total global capture production patterns.

FIGURE 2. DISTRIBUTION OF CAPTURE PRODUCTION BY COUNTRY



Source: FAO, 2014b; MSC, 2014c; and author's analysis.

2.1.2 Species production

Anchoveta is the most caught species globally, followed by Alaska pollock, skipjack tuna, Atlantic herring and chub mackerel (FAO, 2014a). Twenty-three major species represent 40 per cent of total marine catch, and the majority of these are small pelagic species.⁹ Pelagic species account for 38 per cent of global capture production, demersal species account for 20 per cent and freshwater species account for 11 per cent. Twelve percent of global capture production are categorised as 'marine fishes not identified.'

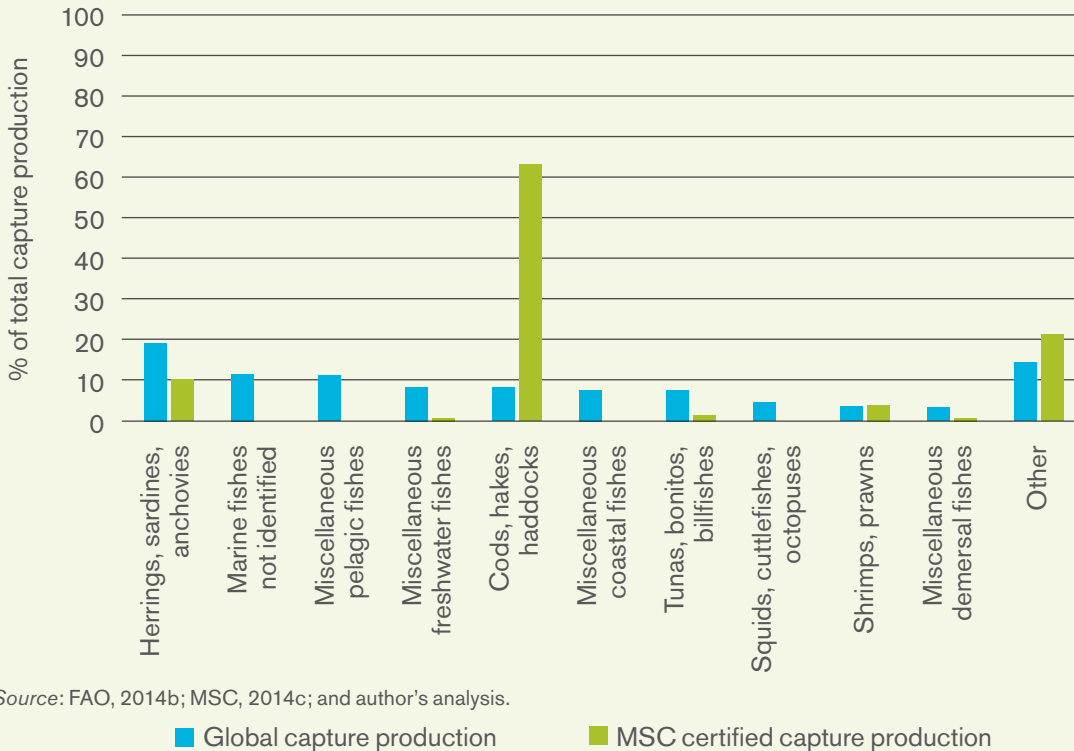
Fifty-five species are currently certified or in assessment under the MSC programme, 41 of which have achieved certification (MSC, 2014c). The top MSC-certified species by catch volume/weight (in tonnes) are cod, Alaska pollock, and herring. However, these volumes do not accurately reflect the *number* of fisheries by

species. The top species by number of fisheries are prawn or shrimp, salmon, and mussels at 8, 7, and 7 per cent respectively, indicating that these fisheries tend to produce smaller catches than the cod, pollock or herring fisheries certified.

Figure 3 shows catch distribution by species, grouped according to the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP). It compares total global capture production (in tonnes) with the capture production from certified fisheries (see Box 2). This shows that, at 19 per cent, herring, sardines and anchovies (small pelagic species) account for the largest proportion of global capture production; whereas at 63 per cent, cod, hakes and haddocks (demersal species) account for the largest proportion of MSC-certified capture production. Figure 3 also shows that a large proportion of fish caught each year – 12 per

9. Pelagic species live and feed in open water, while demersal species live and feed on the bottom of seas or lakes.

FIGURE 3. DISTRIBUTION OF CATCH BY ISSCAAP GROUP

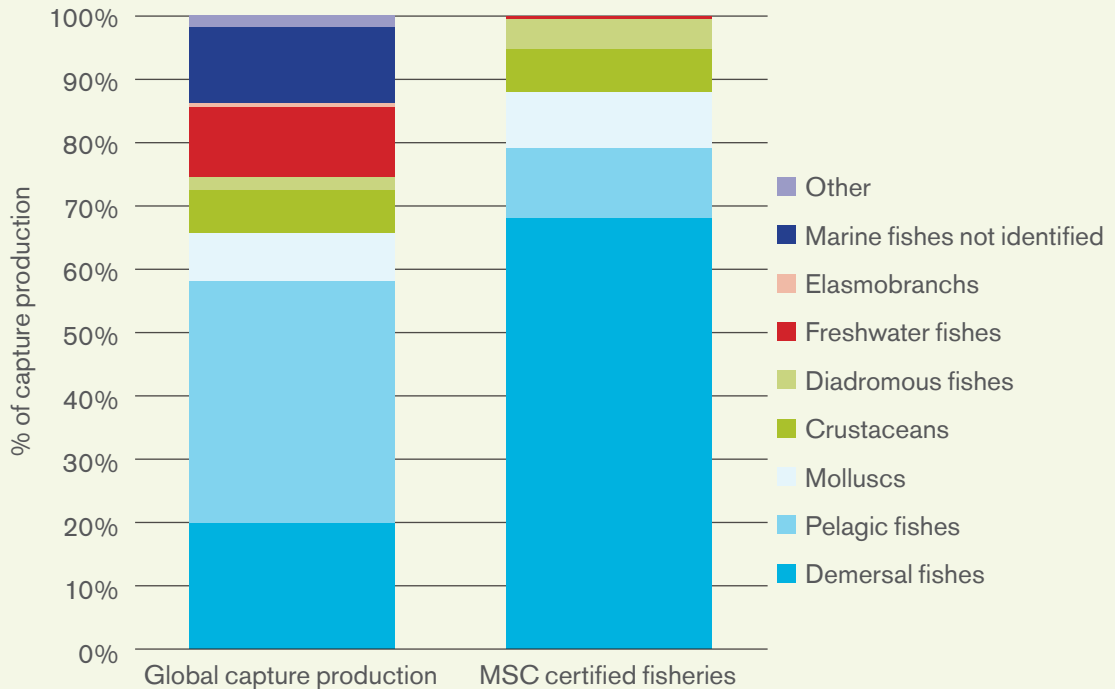


cent – are not identified and are instead classed as 'miscellaneous', such as miscellaneous coastal fishes, miscellaneous demersal fishes, miscellaneous pelagic fishes and 'marine fishes not identified'.

Figure 4 shows the distribution of capture production by a broader species grouping, and the difference between global capture production and that of MSC-certified fisheries. This clearly illustrates that while global capture production is dominated by pelagic species, MSC-certified capture production is dominated by demersal species. However, molluscs and crustaceans account for similar contributions to both total capture production globally and MSC certification (between seven and nine per cent).

This indicates that the species involved in the MSC programme do not necessarily represent the dominant species caught globally, demonstrating that the MSC programme is currently driven by the market and patterns in demand, rather than by supply or production patterns. This suggests that developing countries' involvement in the MSC programme could be limited if species caught in their fisheries are not in demand in the markets or countries where MSC-certified products tend to be sold.

FIGURE 4. DISTRIBUTION OF CAPTURE PRODUCTION BY SPECIES TYPE



Source: FAO, 2014b; MSC, 2014c; and author's analysis. Notes: Diadromous species of fish migrate between fresh water and the sea. Elasmobranchs are a sub-class of cartilaginous fishes including sharks and rays.

BOX 2. ISSCAAP SPECIES CERTIFIED IN THE MSC PROGRAMME

ISSCAAP is the International Standard Statistical Classification of Aquatic Animals and Plants, a classification system for aquatic species devised by the Food and Agriculture Organization (FAO). ISSCAAP contains nine main categories and 50 sub-categories on the basis of their taxonomic, ecological and economic characteristics (see Annex 3). The main categories are 1) freshwater fish, 2) diadromous fish, 3) marine fish, 4) crustaceans, 5) molluscs, 6) whales, seals and other aquatic mammals, 7) miscellaneous aquatic animals, 8) miscellaneous animal products and 9) aquatic plants.

The scope of MSC incorporates ISSCAAP groups 1 to 5 only. Only three freshwater fish species are certified: pike (*Esox*

lucius), pikeperch (*Sander lucioperca*) and walleye (*Sander vitreus*). Salmon is the only diadromous species certified, accounting for eight per cent of certified species. The majority of species certified in the MSC programme are marine fish (almost 60 per cent) including the sub-categories flounders, halibuts, soles; cods, hakes, haddocks; miscellaneous coastal fishes; miscellaneous demersal fishes; herrings, sardines, anchovies; and tunas, bonitos, billfishes; and sharks, rays¹⁰ and chimaeras. Shrimp/prawn species dominate the crustaceans group, accounting for 16 per cent of certified species. Molluscs (mussels, scallops, cockles and clams) account for 16% of species certified.

10. Though sharks and rays are not certified by the MSC scheme.

2.2 GLOBAL TRADE IN FISH AND FISHERY PRODUCTS

Fish is one of the most traded food commodities in the world (FAO, 2014a). The value of the global fish trade exceeds the value of international trade in all other animal proteins combined (World Bank, 2011). International trade in fish and fisheries products has increased significantly in the past 30 years as a result of growing demand, trade liberalisation policies, globalisation, and technological innovations, while improvements in processing, packing, marketing and distribution have altered the nature and range of fish products available in numerous markets (FAO, 2012).

International trade data can indicate trends and patterns in supply and demand for fish and fishery products. However, fish and fishery products are often imported, processed and re-exported, so import and export data is a crude method by which to identify supply and demand.

In 2011, the main exporting countries by quantity (weight) were China, Norway, Peru, Russia and Thailand. By value the main exporting countries were China, Norway, Thailand, Vietnam and the United States. Developing countries contribute significantly to global exports; they account for 54 per cent of the global value of exports and more than 60 per cent of the total quantity of exports (FAO, 2014a). Exports from developing countries have increased in recent decades due to changes in trade tariffs, implementation of bilateral and multilateral trade agreements and increasing per capita incomes, including in emerging developing countries, driving demand for seafood. However, developing countries still face a number of challenges or barriers in accessing international markets. Some

of these barriers include tariff and non-tariff measures, sanitary requirements, access to ports, and regulations of trade in fishing services (Hannesson, 2001) including rules of origin, and conformity assessments. Despite the World Trade Organization Agreement on Technical Barriers to Trade,¹¹ technical barriers still exist, in the form of technical regulations and standards that specify product characteristics.

Overall, developed countries dominate the imports of fish and fishery products, with a 73 per cent share by value and 55 per cent by weight in 2012 (FAO, 2014a). However, China was the largest importer of fish and fishery products by quantity (tonnes) and the third largest importer by value. Japan, Nigeria, Thailand and the USA were the other top importing countries by quantity. By value, the main importers are France, Italy, Japan, Spain and the USA. Developing country imports have been increasing in recent years, attributed to emerging processing sectors and a rise in domestic seafood consumption.

It is important to note the significant role of China in the processing of a range of fish species. China imports huge quantities of raw material, which is processed and then re-exported. This can in part explain China's dominance of both imports and exports. Nonetheless, large imports can also be attributed to China's increasing domestic fish consumption and an increasing demand for high value species (FAO, 2014a). China is expected to increasingly influence global fish markets between now and 2030. The World Bank (2013) predict that in 2030 China will be responsible for approximately 17 per cent of wild capture production, 38 per cent of global consumption of food fish, and will remain a net exporter of food

11. See www.wto.org/english/tratop_e/tbt_e/tbt_e.htm for more information.

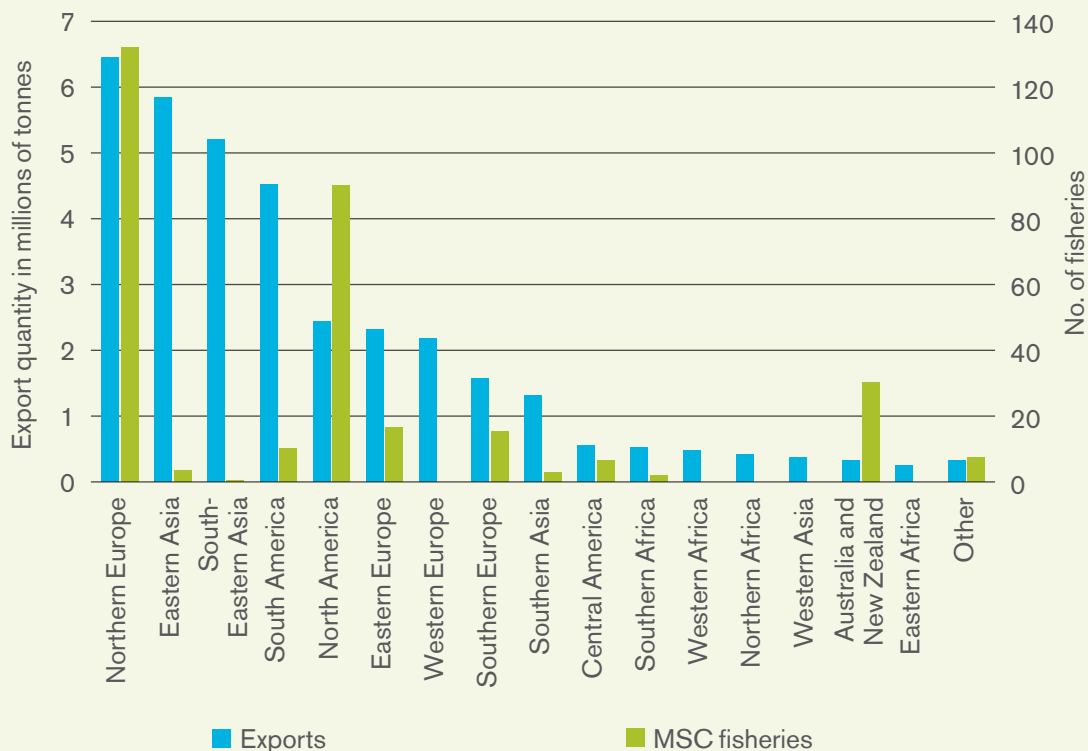
fish – driven by growing urbanisation in China (associated with increased protein consumption), increasing affluence and a growing middle class. These trends and predictions suggest that China’s role in the seafood certification landscape could be highly influential, either in terms of demand for certified seafood and/or the production of certified seafood.

The volume of fish and fishery products exported by geographical region, and the number of fisheries certified in each region, is shown in Figure 5. This shows that countries in which fisheries are certified are not necessarily the countries that dominate fish exports. There could be potential for fisheries in these regions to enter the MSC programme, given that access to markets is already established – particularly in Eastern and South-Eastern Asia.

While global trade data does not indicate the source of imports or the destination of exports,

some general trends are identified by the FAO (2014a). In general, the main export markets for developing countries are developed countries, with approximately 49 per cent of their imports (by value) originating from developing countries (FAO, 2014a). The majority of fishery exports from developed countries (80 per cent) end up in other developed countries. However, exports from developed countries have increasingly been destined for developing countries, which reflects a trend of increasing trade between developed and developing countries in the last ten years. For example, African fishery industries are heavily reliant on European Union (EU) countries, both as outlets for their exports and as suppliers of imports for local consumption and processing industries. These are mainly low-priced small pelagic species, as well as high-value fishery species for emerging African economies (PAF, 2014). The types of species traded between

FIGURE 5. EXPORT OF FISHERY PRODUCTS BY QUANTITY, AND MSC-CERTIFIED FISHERIES BY REGION



Source: FAO, 2014b; MSC, 2014c.

developed and developing countries is of interest, and discussed further below.

The increasing liberalisation of the international fish trade may facilitate an increase in trade by developing countries. In particular, tariffs on imports and exports of fish and fish products in developing countries tend to be higher than those of developed countries (Ahmed, 2006). If World Trade Organisation negotiations result in reduced tariffs, and with increasing consumer purchasing power in developing countries, a greater amount of 'South-South' regional fish trade may be expected. Regional trade agreements have already been made, such as the Association of Southeast Asian Nations (ASEAN) Free Trade Agreement (AFTA), the Common Market for Eastern and Southern Africa (COMESA), and the South American Common Market (MERCOSUR), all of which have focused on eliminating protective tariffs and harmonising trade policies within their regions. For instance, since the ASEAN AFTA was established, average tariffs on fish commodities decreased to as low as three to five percent,¹² consistent with levels in developed countries. This combination of national, bilateral and multilateral free trade agreements in developing countries, and those countries' increased demand for fish, are resulting in expanded South-South fish trade (Ahmed, 2006). While the sheer volume of trade may not change significantly, this trend may reduce or eliminate any incentive for unregulated or informal cross-border trade. Governments will therefore have better information on the volume and type of fish and fish products traded, delivering increased

government revenue, which may in turn be invested in improving fisheries management.

2.3 GLOBAL CONSUMPTION OF SEAFOOD

Global fish consumption was 18.9 kilogrammes per capita in 2011, with fish accounting for 16.7 per cent of the world's population intake of animal protein and 6.5 per cent of all proteins consumed (FAO, 2014a). It is estimated that fish provides 3 billion people worldwide with almost 20 per cent of their intake of animal protein, and 4.9 billion people with about 10 per cent of such protein (FAO, 2014a). In addition to being an important source of protein, fish is a much more important source of micronutrients and lipids, and therefore has the potential to help resolve the issue of 'hidden hunger' or undernourishment caused by essential vitamin and mineral deficiency. Fish is crucial to food and nutritional security. However, fish consumption is not evenly distributed globally. Allison (2011) reports that at 9.5kg per capita consumption, developing countries have much lower per capita fish consumption than developed countries, which at 28.7 kg per capita is three times higher. On the other hand, the relative contribution of fish to animal protein supply is usually higher in developing countries. For example, the proportion of dietary protein taken from fish is as high as 75 per cent in Senegal (Ndiaye, 2003) and 63 per cent in Sierra Leone (European Commission, 2000).

12. Tariffs in developing countries vary greatly depending by both region and country, and many countries differentiate between raw products and processed foods; a heterogeneous tariff structure which also poses some issues to the development of South-South trade (Roheim, 2003). The average tariffs for developing countries, in 2006, were 19.4% for raw products and 23.8% for processed foods (Ahmed, 2006).

There are a wide range of factors driving consumer demand for fish and fishery products, including price, consumer demographics, convenience, nutritional content, food safety, substitutes, tastes, fashion, advertising and consumer expectations (De Silva, 2011). Demand for high-value species such as shrimp, prawns, salmon, tuna, groundfish, flatfish, seabass and seabream is largest in developed countries, whereas markets for low-value (but high volume) species such as small pelagics are predominately in low-income countries (FAO, 2014a). However, this trend is not static and emerging economies have been increasingly importing higher value species for domestic consumption.

In China, consumer preference has already appeared to be shifting toward high-value fish, driven mainly by socioeconomic change, urbanisation, and greater overall levels of income in Chinese society (World Bank, 2013). Globally, per capita fish consumption is set to increase although regional trends differ. Regions with projected high-income growth are expected to see per capita fish consumption rise, with South Asia experiencing the largest increase (World Bank, 2013).

Per capita fish consumption is projected to decline in Central Asia, Europe, Japan, Latin America, and sub-Saharan Africa. In particular, per capita fish consumption in sub-Saharan Africa is projected to decline from approximately 9.7kg to 5.6kg by 2030 (World Bank, 2013). However, total food fish consumption in sub-Saharan Africa is predicted to grow substantially – by approximately 30 percent – due to population increase (World Bank, 2013). Given this predicted growth in total fish consumption, by 2030 sub-Saharan Africa's imports are expected to be 11 times higher than they were in 2000 (World Bank, 2013).

Fish is one of the most traded food commodities in the world (FAO, 2007). Certification schemes could catalyse the growth of the global fish trade, offering higher rates of return from investments made to certify the fishery in question through price premiums and improved market access. However, it is very important to understand the implications of such a projected fish trade and consumption patterns for food and nutritional security. Proponents of an increased fish trade argue that it supports economic growth processes by providing an important source of cash revenue to service international debt, funding national government operations, and

importing food for domestic consumption – thus contributing to national food security and diet diversification (Mohammed and Uraguchi, 2013). Others contend, however, that export-oriented fisheries development – which could be strengthened by certification focused on developed country markets – often compromises local fish supply and consumption, limiting an important source of proteins, vitamins and micronutrients, particularly for many low-income populations in rural areas (Garcia and Rosenberg, 2010). There are a number of undocumented examples of this, such as the West African Mulloway or Ugandan Nile Perch fillets that are exported to Europe while the local people are reduced to eating fish bones (Mohammed, 2010).

However, as Macfadyen and Huntingdon (2007) argue, whether certification is really relevant to the food security of the poor in developing countries depends on several factors: the primary species being consumed in developing countries by the food insecure; the species considered for certification; and who consumes it – the poor or the urban middle class. It is commonly argued that most of the fish destined for export markets is high-value fish, which is not affordable for low income groups anyway. An analysis of the fish trade in sub-Saharan African countries shows that the monetary value of one tonne of exported fish exported is at least twice as high as the same quantity imported (Mohammed and Leifsdotter, unpublished data). This implies that many countries in sub-Saharan Africa tend to export high-value fish (such as shrimp and lobster) and import processed (canned) low-value fish to fill the gap in fish supply.

Perhaps a very important, but often overlooked, unintended consequence of certification for food security is the apparent shift in labour and investment towards certain fisheries, leading to a reduced supply of fish for local consumption. Anecdotal evidence from some African countries (such as Mauritania) suggest that, due to the lucrative returns from shifting to octopus or sea-cucumber fishing exclusively for the export market (with near zero demand locally) there was less fish for local consumption. Moreover, since more exports means more revenue for national governments, most fisheries development resources are targeted specifically at fisheries which can export their products – leaving other fisheries underdeveloped.

2.4 DEMAND AND CONSUMPTION OF MSC-CERTIFIED PRODUCTS

The demand for certified seafood can be inferred from market data identifying the countries where certified products are sold, and the volume at which they are sold (see Figure 6). The number of MSC logo licenses per country can also provide an insight into which countries are selling and marketing MSC products (see Figure 7). Companies can buy MSC logo licences in order to use the MSC 'ecolabel' on promotional material and packaging, showing that their product comes from an MSC-certified fishery. However, due to the additional costs of the logo licence, such as annual fees and royalties, some retailers choose to buy MSC-certified products but not a logo licence.

The MSC (2014e) reports that by the end of 2013 there were 22,336 MSC ecolabelled products on sale in 102 countries globally, which accounts for approximately 5 million tonnes of MSC labelled product (MSC, 2014e). This contrasts with a total of eight million tonnes of seafood produced and certified as MSC (MSC, 2014d). Therefore, approximately 3 million tonnes MSC-certified products are sold without an MSC ecolabel, for the reasons given above, which also makes it hard to track the countries in which MSC certified (but not labelled) products are being sold. As Figure 6 shows, Germany, the Netherlands and the UK are the top three in terms of the number of MSC-certified products on sale bearing the ecolabel. Germany, the UK and the USA sell the highest volume of MSC-certified products (MSC, unpublished data). Europe is by far the biggest market for MSC-certified products, followed by the USA and Canada.

MSC logo license holders can be found in countries such as Costa Rica, Ecuador, Malaysia and Suriname (MSC, 2013a) and products

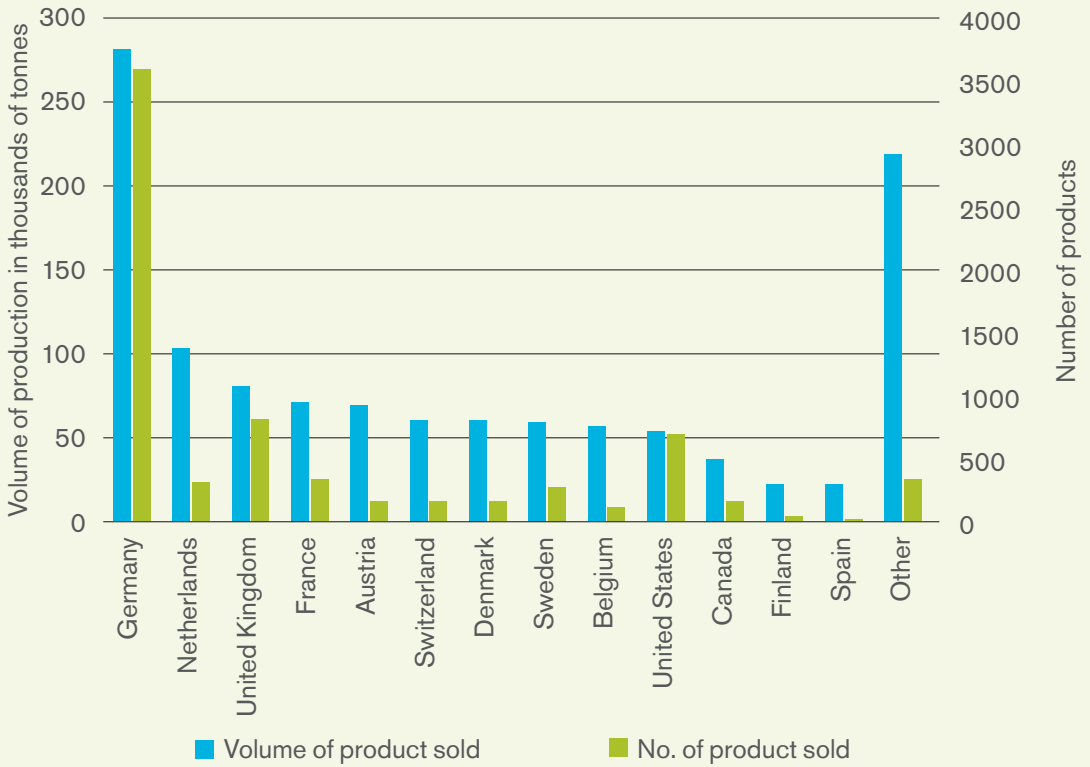
with the MSC logo are on sale in Argentina, the Republic of Korea and Vietnam. There has been growth in the number of ecolabelled products sold in developing countries; there are now over 290. Figure 8 shows the number of MSC products available to buy in developing countries.

2.4.1 Consumer demand

Consumer recognition of the MSC ecolabel has increased from an average of 25 per cent in 2010 to 33 per cent in 2014, according to a survey of 9,019 regular seafood buyers (from the general public) from 15 countries across Asia, Australasia, Europe and North America (MSC, 2014h). The highest levels of recognition are in Germany, Netherlands and Switzerland, and recognition has significantly increased in Australia, Canada and the USA (MSC, 2014r, 2014v). Furthermore, an average of 11 per cent of consumers who were surveyed were able to describe the purpose of the MSC ecolabel (MSC, 2014e). Almost two thirds of consumers expressed an intention to buy MSC ecolabelled products in the future. Consumers in the UK expressed the importance of the role that supermarkets and restaurants play in promoting and providing sustainable seafood. Ninety per cent of respondents reported that ocean sustainability was an important issue to them, and over half said that declining fish stocks had become more important to them over the last year (MSC, 2014t).

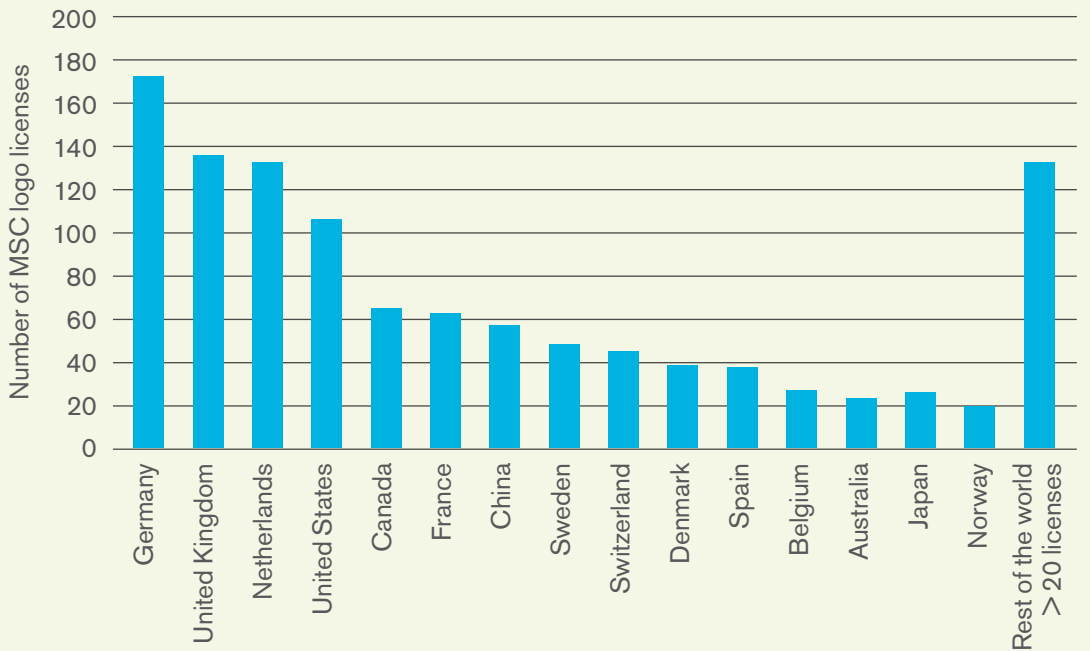
Surveys asking people if they would pay more for sustainably produced seafood showed a level of consumer willingness in some countries: 40 per cent of consumers surveyed in a 2010 study said they would pay five to ten per cent more for eco-friendly seafood (FAO, 2010). However, this is not necessarily a reliable indicator of what would happen in practice; many studies have shown the gap between willingness to pay and actual behaviours (referred to as 'hypothetical bias') (Cummings et al., 1986, Neil

FIGURE 6. NUMBER AND VOLUME OF PRODUCTS ON SALE WITH MSC ECOLABEL, BY COUNTRY



Source: MSC, unpublished data.

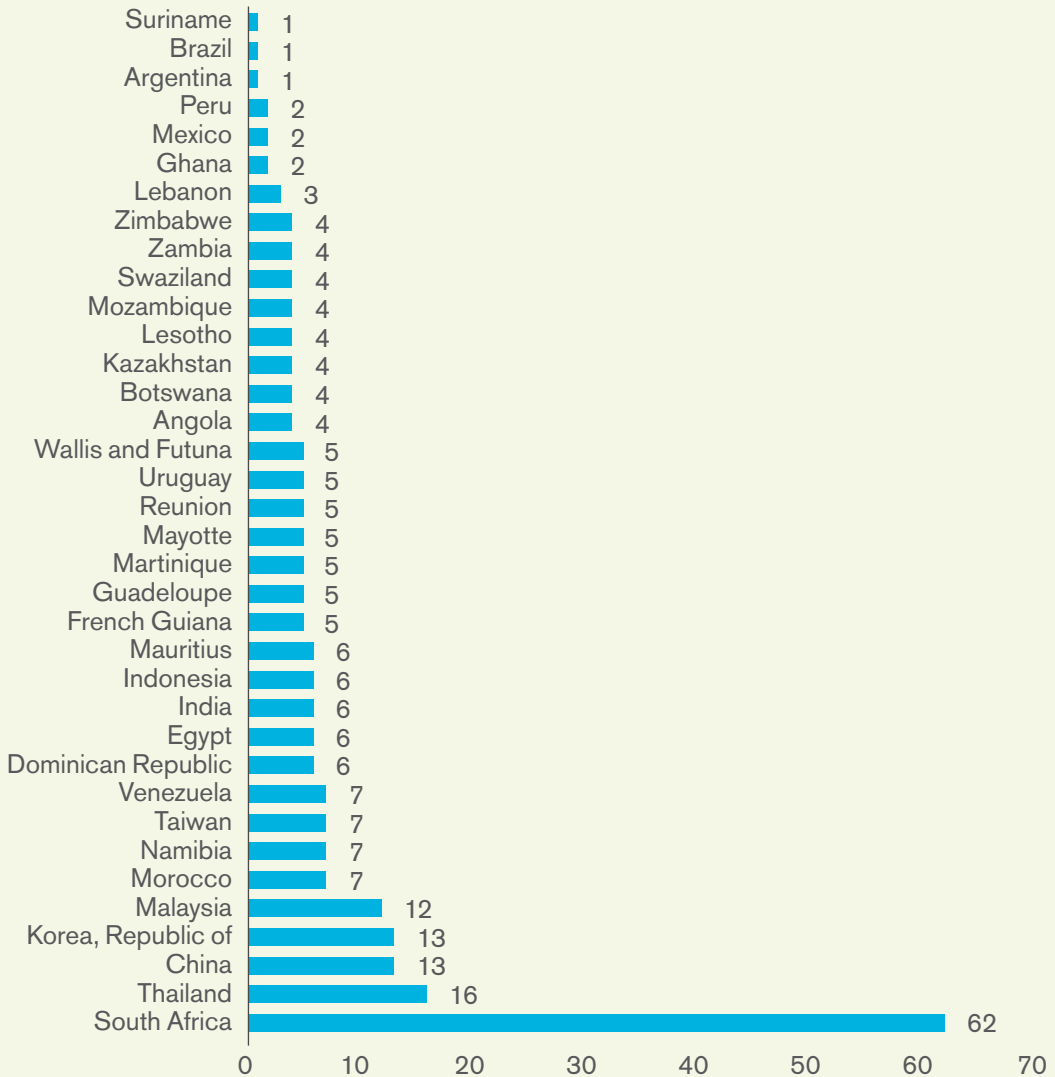
FIGURE 7. NUMBER OF MSC LOGO LICENSES BY COUNTRY



Source: MSC, 2014e.

TWO
 PRODUCTION, CONSUMPTION AND THE MARKET FOR
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 CONTINUED

FIGURE 8. NUMBER OF MSC PRODUCTS AVAILABLE TO BUY IN DEVELOPING COUNTRIES



Source: MSC, undated (a).

et al., 1994, List and Gallet, 2001, Murphy *et al.*, 2005, Blumenschein *et al.*, 2008; all cited in Mohammed, 2012). Mohammed (2012) explains that except for a few minorities such as Smith and Mansfield (1998), and Farmer and Lipscomb (2008), the majority of studies investigating the divergence between hypothetical and actual payments find an upward bias (i.e. when asked how they would behave, people say they would pay more for a product than they actually would in practice). This gap between what consumers say they do on ethical issues and how they act has also been observed by a Cooperative Bank survey which found that of the 80 percent of consumers who claim to shop or invest ethically, only 30 percent 'practice what they preach' (Key Note, 2002).

Indeed, Johnston and Roheim (2005) suggest that while consumers consider overfishing sufficiently important to cause them to contemplate changing the species of fish they buy, they are unwilling to choose a less-favoured species – in other words to sacrifice taste – based solely on the presence of an ecolabel (FAO, 2010). A survey referred to in Nautilus and IIED (2003) concluded that "in relation to decisions about food and shopping, consumers were unashamedly selfish. Most decisions are based on self-benefit, e.g. value for money, taste and convenience, rather than being driven by altruistic motivations."

Consequently, consumer demand may be less powerful in driving sustainable sourcing than other actors and factors, as discussed below. In emerging and developing countries, evidence suggests that the majority of consumers are not yet using sustainability criteria to make their purchasing decisions, as awareness of relevant certification schemes is limited. Although this may be changing, particularly in Asia, further research is needed to understand potential demand for sustainable products in developing and emerging economies.

2.4.2 Industry demand

'Industry' – defined here as retailers, processors, manufacturers, and the catering industry – are likely to be more significant in driving demand for sustainable seafood than individual consumers. Indeed, industry actors, particularly larger-scale players, have the ability to make sourcing choices on behalf of consumers – sometimes referred to as 'choice editing'. Indeed, many consumers have expectations that industry, particularly large supermarket brands, will make sustainable sourcing choices as a matter of course (Hebditch and Blackmore, 2012). This would remove the need for consumers to make complex sourcing decisions themselves based on often incomplete or complicated information, possibly involving decisions a number of different trade-offs (for instance between livelihood-related and environmental components of sustainability).

Sourcing decisions made by industry are typically driven by a number of factors, including a perception of consumer demand or expectations; a need or desire to reduce reputational and supply chain risks and enhance reputation; and/or a desire to ensure security of supply. An assessment of current industry demand and future sourcing commitments indicates the potential demand for certified seafood, and the extent to which there would be sufficient market pull to reward – and therefore incentivise – certification in a larger number of fisheries, including developing world fisheries and the species they commonly produce.

It is important to note, however, that there are a number of significant limitations in data quality and availability which affect the rigour and accuracy of assessments on how, and to what extent, retailer commitments are likely to influence demand.¹³ Consequently, it is beyond the scope of this paper to carry out a detailed, quantitative assessment of industry commitments and translate them into demand for volumes, species and so on. Box 3 provides an overall impression of the scope of industry demand (such as their general direction and geography). A more systematic and in-depth assessment of retailer demand may be possible in Phase 2, depending on the level of disclosure that industry actors are willing to accept.

13. These limitations relate to the differences in the ways in which companies report on commitments – some report number of products sold/procured as MSC; others report on volumes or number of outlets where products are sold; some report on sustainable sourcing – which includes MSC – but don't specify the percentages relating to each scheme; information is lacking on specific species and products and industry players' market shares; often there is a lack of reporting altogether; and there is the possibility that what is actually sourced does not match the commitments made. This is true of almost all the information offered in Box 3 about industry commitments.

BOX 3. NOTABLE INDUSTRY COMMITMENTS TO SOURCING MSC-CERTIFIED SEAFOOD

- **Aldi**, a chain of supermarkets in the UK, Europe and the USA, committed to stock 11 canned and frozen MSC products in all its stores from July 2009 (MSC, 2009). Aldi has 4.6 per cent of the UK supermarket share in 2014 (BBC, 2014).
- **Findus Nordic**, a market leader in Norway, Sweden and Finland (Financial Times, 2012) supplies 100 per cent MSC-certified frozen products in retail and 80 per cent in foodservice, with a goal of 100 per cent (MSC 2014j).
- In Canada, **Ocean Choice International (OCI)**, a vertically integrated seafood company with extensive fishing quota assets and its own fishing fleet, has achieved its commitment of an 80 per cent MSC-certified supply base (MSC 2014j). It delivers over 45 million kilograms (100 million tonnes) of finished products to more than 30 countries every year (OCI, 2014).
- **Carrefour** committed in 2014 to doubling the number of their own brand MSC labelled products before the end of the year. It will allow them to offer to consumers more than 50 MSC labelled products, frozen, canned or fresh (MSC, 2014j).¹⁴
- **Sodexo Germany**, serves MSC-certified seafood dishes at 170 locations nationwide (MSC, 2014j).
- **Waitrose** has committed to 100 percent certified seafood by 2016 and increased its MSC range by 50 percent in a year (2014). The retailer also reported a 40 per cent increase in sales of skipjack tuna since adding the MSC ecolabel (MSC, 2014j). Waitrose has a 5 per cent share of the supermarket market in the UK (BBC, 2014).
- **Walmart USA** and **Sam's Club** require all fresh and frozen, farmed and wild seafood suppliers to become third-party certified as sustainable using MSC, Best Aquaculture Practices or equivalent standards. All uncertified fisheries and aquaculture suppliers had to be actively working toward certification by June 2012. More than 90 per cent of Walmart US, Sam's Club and Asda's (UK) fresh and frozen, farmed and wild seafood has earned Marine Stewardship Certification or Best Aquaculture Practices, or is engaged in a fishery improvement project (Walmart, undated).
- All of **McDonalds'** 'Filet-o-Fish' sandwiches contain MSC-certified fish (14,000 restaurants) (MSC, 2013b). McDonald's Canada also announced this year that all of its Filet-O-Fish sandwiches contain 100 per cent MSC-certified fish (MSC, 2014k), following McDonalds USA, where all seafood is sustainably sourced (MSC, 2013c).
- **High Liner Foods** in Canada is one of North America's leading processors and marketers of seafood. It committed to sourcing all of its wild capture seafood from MSC-certified fisheries by the end of 2013 (MSC, 2013b). High Liner's website shows that 21 out of its 26 fisheries are currently MSC-certified. One is currently in full assessment and four are undergoing fishery improvement projects (FIPs) to work towards being certified (High Liner Foods, 2014).
- **Iglo** in Europe has committed to ensuring all of its wild capture fish is certified to MSC. Currently 80 per cent of its volumes sold in Europe are MSC-certified (Iglo, 2013). Iglo "is Europe's leading branded frozen food business both in terms of sales and brand recognition." They produce and market premium branded frozen food products in 11 countries and distribute across a number of other countries in Central and Eastern Europe, including the Birds Eye, Iglo and Findus brands (Iglo, 2014).

14. We assume this is in France, but the source does not specify.

- **Oceanfresh** in South Africa, a seafood trading company selling to retail and wholesale, will only deal with sustainable and well-managed fisheries by 2016. MSC will be at the heart of its seafood policy (MSC, 2013b).
- At **Woolworths**, Australia, all wild capture seafood will be from MSC-certified fisheries (MSC, 2013c) “in the long term”.
- According to MSC, the **Japanese Consumers’ Co-operative Union, AEON, and Izumi and Seiyu**, leading Japanese retailers, are among more than 40 Japanese retailers that offer over 200 MSC labelled seafood products. In 2011, 6.7 per cent of the Japanese Consumers’ Co-operative Union’s seafood range was MSC labelled (MSC, 2015).
- **Morrisons**, the fourth largest chain of supermarkets in the UK, has a policy to source responsible seafood, which covers not just environmental but also social and economic issues. An internal assessment framework ensures that each species stocked meets a set of conditions before it goes into the stores, such as sustainability criteria, stock levels, fisheries management and where and how the fish is caught. Morrisons are focusing their efforts most on species that are high-risk, data-deficient or ‘not assessed’. Furthermore, Morrisons is the only British supermarket to own a seafood factory. The fish entering these factories has full MSC Chain of Custody.
- The **NFI Crab council**, an association of USA seafood companies collectively representing around 85 per cent of all blue swimming crab imported into the USA, sponsors comprehensive sustainability projects throughout Southeast Asia including projects in Indonesia, the Philippines, Sri Lanka, Thailand and Vietnam. Working with in-country businesses, NGOs and government organisations, the Crab Council assists in creating and implementing FIPs to bolster crab stocks. The Crab Council members only source from fisheries that are involved in FIPs, and have their own ecolabel, ‘Committed to Crab’.
- **Young’s Seafood** – part of the Findus Group, one of Europe’s largest frozen food and seafood companies – is the leading UK fish and seafood processor, providing frozen and chilled, branded and retailer-branded fish. Young’s have been a key supporter of the MSC standard since 1997, and created a corporate ‘quality mark’ for responsible management of seafood called ‘Fish for Life’, whereby all seafood is internally assessed if it is not already certified. They have a traffic light system to classify fish products at high to low risk in terms of sustainability, and anything that is MSC-certified is automatically deemed low risk.
- **Sainsbury’s**, the second largest chain of supermarkets in the UK, is as of 2014 the largest retailer of MSC seafood for the fourth consecutive year, with more than 130 MSC products, including pole and line caught tuna from the Maldives. Furthermore, they have initiated a ‘20x20 sustainability plan’, which states that by 2020 all the fish they sell will be independently certified as sustainable.
- **Marks & Spencer**, similarly, has a policy plan for 2020 called ‘Plan A’, which aims for all M&S products to have at least one Plan A quality – such as fish products from a MSC source – by 2020 (50 per cent by 2015). They acknowledge that it is a challenging commitment and that probably not all of their products will be fully sustainable by 2020, but it is a statement of intent to drive systemic change in product development. Marks & Spencer have also created the Forever Fish campaign in partnership with the Marine Conservation Society and the World Wide Fund for Nature (WWF). Forever Fish means all their wild fish comes from the most sustainable sources available, such as either certified as sustainable, participating in a FIP or working with the WWF to make improvements.
- **The Co-Operative** has set up a £200,000 Sustainable Fisheries Fund, which has supported 12 fisheries through Marine Stewardship Council assessments since 2009.

It is important to note that in many cases these industry commitments are still only commitments; the challenge of matching supply and demand for specific species could affect the types of fisheries that may be included in the MSC scheme. Macfadyen and Huntingdon (2007:14) explain that “given the importance to retailers of large volumes of supplies to build consumer awareness, coupled with the need to ensure long-term sustainability of sources of product, it can also be expected that demand from retailers for environmentally certified products may be especially strong for high volume species, providing both opportunities and limitations for certification depending on the scale of the fishery.”

Indeed, there exists a ‘circular’ challenge in which enough demand is needed to generate supply, but also enough supply to generate demand. Retailers require sufficient product volumes to maintain a consistent brand and image, so variability in supply can be a challenge for supermarkets who want to stock MSC-certified products. They may only stock it once they know there are sufficient and consistent volumes immediately available for them to source and sell (FAO, 2010). This may mean that sustainable certified production generating less than a certain threshold volume of seafood may go unrewarded by the market.

Another key challenge is scaling up industry demand in emerging and developing economies, where consumer preference has so far been limited. This lack of demand has been attributed by MSC to a lack of consumer awareness of the importance of purchasing sustainable seafood, and of MSC itself. Future scaling up of MSC certification – and the potential therefore for large numbers of developing world fisheries to be included – is dependent to an extent on demand growing in these countries from both industry and consumers; or better products. There are specific challenges in many developing and emerging economies in scaling up industry demand and in linking in to supply chains. For example, in developing countries supply chains tend to be more fragmented, and seafood distribution is not regulated in the marketplace. In China, seafood is increasingly purchased online and consumer preferences may be different, for example with a preference for live fish. It will be hugely important to engage actors in Singapore, Korea, Japan and Hong Kong, which serve as important transshipment nodes to many of the developing nations in the Asia Pacific region. This is recognised by MSC, who have made efforts to grow demand in these regions (interview with MSC representative, 2014; see Annex 1). But in general it is difficult to say conclusively in what direction these regions are heading in terms of demand for sustainable products.

In summary, there is little correlation between certified and global production both in terms of species and countries. Supply of, and markets for, certified products do not correlate with international trade. This underlines the fact that the MSC programme is a market-based tool that is not necessarily driven by production patterns (supply), but rather by consumer preference and retailer demand (for higher value species). There are a number of significant industry commitments in Europe and North America that appear more significant than consumer choice in driving demand; however, there exists a 'circular' challenge in which enough demand is needed to generate supply, but also enough supply to generate demand, since retailers require sufficient product volumes to maintain a consistent brand and image. It can also be expected that demand from retailers for environmentally certified products may be especially strong for high volume species, providing both opportunities and limitations for certification, depending on the scale of the fishery.

In developing countries in general, the value of a tonne of fish exported is twice as high as the value of a tonne imported. Developing countries tend to export high-value fish and import low-value fish to compensate for the animal protein outflow. If one of the main motivations of certification is to access international markets, then only high-value fisheries will be certified and their management improved. Similarly, countries where fisheries are certified are not necessarily the countries that dominate fish exports, implying that other factors are at play in determining which fisheries achieve certification.

We now explore the MSC scheme in more detail, to offer a context for later sections on impact, drivers and barriers.

THREE

THE MARINE STEWARDSHIP COUNCIL

The Marine Stewardship Council is an independent, not-for profit organisation with offices in Europe (London, Berlin, Paris, Stockholm and Warsaw) the USA, Australia, Asia (Singapore and Tokyo) and South Africa (MSC, 2014). It was established in 1997 by Unilever and WWF, who recognised the need for a global standard and certification scheme for sustainable wild capture fisheries. The collapse of Grand Banks cod stocks in the early 1990s has been cited as a key trigger in the scheme's development (Agnew *et al.*, 2013). It gained independence from Unilever and WWF in 1999 (MRAG, 2009). MSC's mission is "to use our ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis" (MSC, 2014a).

3.1 MSC FISHERIES STANDARD

The MSC sets a standard for third party certification of wild capture fisheries (marine and freshwater) and licences the MSC sustainability label for use on certified products (see Box 4). Certification to the MSC standard is voluntary and when granted, is species-specific: the label can only be applied to the specific species for which certification has been sought. It is intended as a business-to-consumer label, but can also be used as a business-to-business label. In addition, the MSC standard has a separate 'chain of custody' standard to ensure integrity of supply chains from certified fisheries to labelled products – to ensure that consumers are eating the genuine article.

The standard does not explicitly consider social or economic dimensions. According to Ponte (2012), MSC explicitly avoided including these aspects in its standards because it would have complicated the certification process and slowed down its uptake. MSC have argued that this was in fact due to the absence of an international standard on social issues for fisheries (pers. comms, Developing World Fisheries Program Manager, 2015). As a result of this exclusion of social and economic dimensions, the standard does not have a specific livelihoods or poverty alleviation focus. Its theory of change in relation to economic benefits is that achieving certification helps fishers to maintain and gain market access, rather than achieving price premiums (though some developed world fisheries have received premiums). This appears to apply to both developed and developing world fisheries. These economic benefits can, in turn, deliver social benefits.

The first MSC standards were developed through a process of expert consultation carried out around the world between 1997 and 1999 (MRAG, 2009). The standards are maintained by the MSC Technical Advisory Board: a board consisting of 15 seats that advises the MSC Board on technical and scientific matters. Current members hail from academic institutions (such as universities), food suppliers (such as Findus Group and Brakes), other certification schemes (such as FSC), private sector research consultancies, independent consultants in multiple geographies, including Australia, Cote d'Ivoire, Denmark, Germany, India, Japan, New Zealand and the UK (MSC, 2014m). Although there is a notable absence of representatives from developing countries and small-scale fisheries themselves, the MSC has created a special Developing World Program (see Section 3.3).

BOX 4. MSC STANDARD

The MSC Fisheries Standard is comprised of three core principles:

- 1) health of the target fish stock
- 2) impact of the fishery on the environment
- 3) effective management of the fishery.

To determine if each principle is met, the MSC standard has 28 performance indicators (PIs) that are used by independent third party conformity assessment bodies (CABs) to score the fishery. The performance indicators vary depending on the particular fishery, as there is scope for different interpretations depending on its specific nature: "The certification methodology adopted by the MSC involves the application and interpretation of the Principles and Criteria to the specific fishery undergoing assessment. This is necessary, as the precise assessment of a fishery will vary by the nature of the species, capture method used, the ecology of the fishery etc." (MSC, undated, b: 1).

During an assessment of the fishery, the CAB uses the MSC Fisheries Certification Requirements (FCR) that were developed to ensure consistent application and delivery of the scheme (MSC, 2014g). These set out details of the process and methodology used to certify a fishery. Further details of the MSC Fisheries Standard, the assessment process and certification requirements are available at: www.msc.org/about-us/standards/fisheries-standard

The standards undergo an official review every five years, in which MSC argues stakeholder consultation is central. It follows MSC's standard setting procedure. Changes to the standards may be proposed by the Technical Advisory Board, the MSC Board of Trustees, the Stakeholder Council or by the MSC executive. Consultations are carried out online and in person. The Interested Parties Advisory Committee, for which the Stakeholder Council may propose members, then reviews the comments and inputs of stakeholders alongside the technical content of the changes. Formalisation of changes only occurs after an extensive cycle of consultation with stakeholders (MSC, 2014b).

The most recent review of the MSC standard took place in 2013. The performance requirements for fisheries were reviewed, as well as the speed and cost of certification to reform the fishery assessment process in order to reduce the time, cost and complexity of certification (see Section 3.3.5). The outcome of the review resulted in an updated edition of the MSC Certification Requirements (version 2.0) that is obligatory for all fisheries being assessed from April 2015. As of October 2014, the MSC is also reviewing its Chain of Custody programme (MSC, 2014b).

3.2 CERTIFICATION REQUIREMENTS RELEVANT TO SMALL-SCALE FISHERIES

To ensure the MSC scheme is available to all sustainably managed fisheries, a number of alternative tools have been included within the certification requirements that enable well-managed data-deficient fisheries, and/or fisheries with informal management systems to be recognised and assessed. These methods are highly relevant to small-scale fisheries in the

developing world and are described in more detail in the following sections.

3.2.1 Risk-based framework

Many fisheries in developing countries are data-deficient and the comprehensive scientific information required for certification assessments is not available. For small-scale fisheries in particular, the costs of implementing programmes to provide detailed scientific information are very high and may not be economically justifiable. Therefore, a precautionary risk-based assessment tool has been developed to address the constraints that data-deficient fisheries face, thereby improving the accessibility of MSC certification to all types of fisheries. The MSC Risk-Based Framework (RBF) methodology was adapted from the Ecological Risk Assessment for the Effects of Fishing (ERAEF; Hobday *et al.*, 2007), originally developed to help better manage data-limited fisheries in Australia.

In brief, the RBF methodology assesses the potential risk that a fishery is operating unsustainably in relation to six key outcome performance indicators: **target** species; **primary** species (managed bycatch); **secondary** species (unmanaged bycatch); **endangered, threatened and protected** (ETP) species; **habitats**; and **ecosystems**. The RBF uses four qualitative and semi-quantitative risk-based assessment methods to assess alternative sources of information for 'outcome' performance indicators (PIs) for these six key components, to demonstrate that data-limited fisheries meet the MSC standard:

- **Consequence analysis:** this is a newly introduced method in the new Fisheries Certification Requirements (FCRs V.2.0) and is used for the stock status outcome PI. It uses semi-quantitative data to assess biological trends and to score the consequence of fishing

activity on vulnerable fishery sub-components such as population size, reproductive capacity and geographic range (MSC, 2014i). For example, catch-per-unit-effort (CPUE) data can indicate population size.

- **Productivity susceptibility analysis:** is used for target species, primary species, secondary species and ETP species outcome PIs. It considers the biological characteristics of a species and the level of fishing impact a species can endure without its capacity to recover being affected (that is, the productivity of a species and their susceptibility to fishing gear).
- **Consequence spatial analysis:** this is a newly introduced method in the FCRs V.2.0 and is used for the 'habitat' outcome PI. It looks at habitat and gear attributes and the 'recoverability' of a habitat based on its features and the impact on it from the fishery.
- **Scale intensity consequence analysis:** is used for the 'ecosystem' outcome PI. It consists of a structured process of stakeholder consultation and evaluates the risk of significant impact on ecological components based on the temporal and spatial scale of the fishery and the intensity of its activities.

While 'information' and 'management' PIs continue to be scored using the standard assessment scoring guideposts, the Risk-Based Framework does place additional requirements on the assessment process. Firstly, additional stakeholder consultation is essential and secondly, at least one member of the assessment team must be specifically trained in the RBF methods. These additional requirements could result in increased costs of the assessment and certification process. However, in recognition of this, the MSC provide free training and guidance to certifiers on both the RBF methods and

stakeholder engagement – understanding and recognising who to engage with, what information is needed and how to apply participatory methods (interview with a Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014; see Annex 1). The MSC emphasises efficient stakeholder engagement is key and this can be achieved with better planning and preparation for stakeholder engagement without placing additional burdens on the assessment process. Furthermore, the recent introduction of two new RBF methodologies in the FCRs V2.0 is considered to simplify the application of the RBF (interview with a Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014). The MSC highlights that a balance has to be reached between costs to and credibility of assessment methods and they believe that the RBF now reaches this balance (interview with a Developing World Fisheries Engagement Manager, 2014).

In terms of the uptake, the MSC consider the RBF to be a success – approximately 40 fisheries have used the RBF for one or more outcome PI and all certified fisheries in developing countries have used the RBF since its incorporation (interview with a Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014). Research was conducted by the MSC to determine the appropriateness of the precautionary levels set by the RBF, and these were found to have been set at a suitable level (pers. comms, Developing World Fisheries Program Manager, 2015). With regards to the effectiveness of the RBF – and whether it enables fisheries from developing countries to enter the MSC programme despite data limitations – further research is needed.

A number of interviews with CABs confirmed that the MSC risk-based assessment framework is an effective tool to allow data-deficient fisheries to access the assessment process, which would not have been able to otherwise. However, although it enables them to have access to the assessment process, it does not necessarily make it easier for those fisheries to achieve the MSC standard. Moreover, the risk-based assessment is perceived to be a very expensive process as it is quite long, requiring a higher number of stakeholder meetings than a regular assessment process; hence it increases rather than reduces costs for small-scale developing world fisheries, which tend to be data-deficient (interviews with CABs representatives, 2014). Indeed, by MSC's own admission, the assessment is an intensive process that calls for a high level of information to be provided by the fishery and related stakeholders (MSC, 2014o). However, this should be viewed in light of the costs and time taken to carry out a full stock assessment.

3.2.2 Informal and traditional management approaches

The MSC recognises that small-scale fisheries in developing countries do not always have formal and documented management mechanisms in place but they are still able to achieve the required outcomes. Therefore, guidance was developed to ensure certifiers were able to assess traditional and informal management approaches appropriately. Following consultation, guidance was issued to CABs and incorporated into the MSC Fishery Certification Requirements, thereby allowing informal, undocumented and traditional management mechanisms to be considered and assessed using a number of participatory methods, such as semi-structured interviews with a range of stakeholders. CABs must demonstrate that different methods have been used to collect

information and that stakeholder opinions and views are cross-checked (MSC, 2014g). Once again, further research is needed to assess the effectiveness of this guidance in facilitating the inclusion of fisheries who employ informal or traditional approaches to fisheries management.

3.3 THE MSC DEVELOPING WORLD PROGRAM

Developing world fisheries account for 8 per cent of all MSC-certified fisheries and 11 per cent of fisheries in full assessment, and there are more than 40 developing world fisheries that have had a pre-assessment and/or are engaging in a fishery improvement plan (FIP) with partners. This constitutes 74 per cent of all fisheries engaged in FIPs (MSC, 2014q).

The MSC states that the inclusion of fisheries in developing countries is crucial, and while they recognise the often complex challenges facing these fisheries, they are working to ensure that the MSC is accessible and applicable to all fisheries. The MSC has set up the MSC Developing World Program (DWP) with the mandate to seek “to ensure that developing country fisheries can access the environmental and economic benefits of MSC certification, and help to safeguard fisheries as a reliable, long term source of food security” (MSC, 2014b).

The Developing World Program has identified the main issues facing fisheries in developing countries that can impede engagement with MSC and obtaining certification. They are: lack of awareness about the MSC, poor fisheries management, lack of government support, costs of certification or lack of data. To address these issues the MSC DWP has undertaken a range of activities including direct engagement with fisheries and stakeholders in developing

countries, supporting local and international partnerships and ensuring representation of developing countries in MSC governance, policy development and technical advice.

While the MSC have a target metric at the global level – 15 per cent of world catch to be certified by 2017, and 20 per cent of world landing by 2030 (interview with the MSC Developing World Program Manager, 2014) – there is no quantitative target of the proportion of fisheries certified to the MSC standard that will come from developing countries. However, there is recognition of the contribution that must come from developing country fisheries in order to reach the global target. Consequently, there are targets in terms of creating mechanisms that can help to address the issues that developing world fisheries might face and increased outreach in developing world regions, greater engagement and support for fisheries improvement projects working towards MSC, and building markets sourcing from these fisheries.

3.3.1 Engaging fisheries and stakeholders in the DWP

Stakeholder engagement in developing countries is crucial in order to raise awareness of the MSC scheme. MSC’s stakeholder engagement activities are wide ranging and depend on the objective of engagement, the stakeholder and the region. Stakeholders include government departments, scientists, NGOs, fishers and industry. The first task is to identify which stakeholders should be involved in fisheries certification in a particular country and what their needs are with regards to supporting fisheries.

All developing regions are targeted by the MSC DWP, although activity tends to be greatest where there are regional offices. The decision to open an MSC office and offer sustained and focused

engagement in a given location is based on the following factors: the potential to transform the markets in the country or region (that is, increase demand for a certified product within a market and then ensuring supply meets the demand); existing access to markets (or the potential to access), as in large seafood exports; and an identified need for a framework or mechanism by which to improve fisheries in the region.

The MSC has regional offices in Asia and Southern Africa; these are located in China, Japan, Singapore and South Africa. In the regions or countries where MSC has a presence, outreach work is done by MSC directly, as is the case in South Africa. In regions or countries where MSC do not have a base, the MSC work with in-country partners (usually NGOs) who have an understanding of the stakeholders and fisheries. In regions or countries where there is neither a MSC base nor in-country partners, MSC embark on a mapping process of stakeholders and capacity needs.

The MSC feels it has been particularly successful in their ventures in South Africa. This is due to a combination of factors: an increasing number of consumers are aware of, and concerned about, environmental issues including sustainable seafood; and South African seafood markets are in transition, with the majority of major retailers having made commitments to MSC certification (interview with the Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014).

The MSC has hosted a number of high-level events (conferences and workshops) to discuss the issue of sustainable fisheries in developing countries. The most recent was the first Stakeholder Council meeting, held in Cape Town

and attended by a number of representatives from African countries. The MSC have hosted two previous Developing World Fisheries conferences, in 2012 and 2014, bringing a wide range of stakeholders together in order to understand and address the constraints facing developing countries wishing to engage with the certification programme, and to discuss possible solutions. The 2014 conference focused on fishery improvements projects (FIPs). In 2013 a South Africa Seafood Symposium was held by the MSC Southern Africa team, focusing on supply chains and challenges facing retailers. The MSC DWP have also hosted side events at major events around the world including the World Small-Scale Fisheries Congress, where the MSC certification programme was discussed in the context of developing world fisheries, and the 2nd Conference of African Ministers of Fisheries and Aquaculture, where potential ecolabelling opportunities in Africa were discussed. Furthermore, MSC representatives attend global fisheries meetings in order to conduct outreach and raise awareness of the programme. Recent outreach work has included attendance at the Latin America Sustainable Foods Summit and the Western Central Atlantic Fisheries Advisory Commission meeting.

The MSC DWP uses a range of communication tools, including regular newsletters and promotional films such as *Our Fisheries, Our Future*,¹⁵ which showcases the ways in which fisheries in developing countries engage with the MSC programme.

There has not yet been a systematic assessment of the effectiveness of the MSC's outreach efforts and communications tools, but this could be useful in helping the MSC to understand where

15. See www.youtube.com/watch?v=Vq5l3pNCUzY

their efforts are best directed. The limited scope of this Phase 1 research meant it was impossible to explore this specific angle of MSC's work, since a wide range of stakeholders in different geographies would need to be consulted – both those that have engaged directly with MSC and those who have not been directly targeted.

3.3.2 Capacity building

Capacity building is regarded by MSC as a crucial aspect of stakeholder engagement. At the MSC Developing World Conference in 2014, capacity building and training on certification for developing country stakeholders were identified as key areas in need of further attention. The MSC provides a range of training modules that are specific to the MSC programme and include both technical and project management aspects, for all stakeholders. In countries or regions where the MSC have an existing presence (as in a regional office) stakeholder engagement is more structured and consistent and it allows the MSC to develop capacity building programmes. However, where existing MSC presence is limited, the approach tends to be more ad hoc (interview with Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014).

Recent training events include:

- 2014: fishery improvement project training for stakeholders across Southeast Asia. Stakeholders in the Philippines, Indonesia, Vietnam and Thailand are now able to support the improvement of fisheries as they move towards MSC certification. The training modules included the MSC FIP tools – Action Plan Template and benchmarking and tracking tool (BMT), and risk-based framework (RBF) for assessing data-deficient fisheries.
- 2014: MSC Latin America training event in March. MSC provided training for 30 potential new auditors, government officers and other relevant stakeholders in Quito, Ecuador. The training event, delivered in Spanish, provided an opportunity for participants to better understand the MSC requirements. It was aimed at increasing expert capacity within the region to undertake assessments against the MSC standard and to develop and implement FIPs.
- 2014: Shrimp fisheries management in Nigeria in partnership with the New Partnership for Africa (NEPAD). MSC organised a workshop session for participants attending an FAO shrimp management workshop – scientists and fishery managers from Nigeria, Gabon and Cameroon – in March. The MSC provided training on developing improvement projects leading to certification.

Once again, it is unclear what impact these training sessions have had in terms of increasing access of developing world fisheries to MSC certification; further research into both short-term and long-term effectiveness of the sessions could be useful.

The MSC DWP plans to develop fishery assessment technical training in order to build assessment capacity and establish a pool of certifiers in developing countries. This could present a cost-saving opportunity and provide more in-country support for fisheries throughout their improvement, assessment and surveillance phases of certification. A capacity building toolkit aimed at small-scale fisheries in developing countries is being developed at present and should be available in the first half of 2015. It will be important to track the implementation and impact of this training and toolkit.

3.3.3 Partnering for sustainable fisheries

Partnerships have been identified as enablers of change for fisheries moving towards sustainability (ISU, 2012b) and the MSC have recognised that stakeholder partnerships have a role to play in supporting fisheries that are working towards certification (MSC, 2013e). As such the MSC has developed guidance for those seeking to work in partnerships. MSC encourages collaboration between a range of stakeholders, which include government management agencies, environmental/conservation organisations, community and public interest groups, other fishers and fishing sectors, industry groups, retailers and the commercial/post-harvest sector, as well as scientists and researchers, international agencies and funders. The MSC facilitates partnerships but does not manage them, as its role is more focused on providing the links between fisheries and the market, highlighting the benefits of fishery stakeholder collaboration and providing the mechanisms to enable stakeholders to work better together. Further research is needed on the effectiveness of this facilitation role.

3.3.4 Funding

The MSC does not fund fisheries certification or fishery improvements. However, there are a number of funding streams available to fisheries, both in developing and developed countries, including private sector funding, government funding, development agency funding, NGOs and grants from a number of sources such as the Sustainable Fisheries Fund (administered by the Resources Legacy Fund),¹⁶ Sea Change Investment Fund and the European Fisheries Fund. The various tools developed by the MSC to

assist developing countries in improving fisheries and obtaining certification have the added benefit of providing transparency for funders, thereby fostering assurance and funder confidence.

3.3.5 Speed and cost review

A speed and cost review was conducted to identify cost and time-saving opportunities in the certification and assessment process without compromising standards. As a result, in 2014 the MSC has made changes to the requirements for surveillance and re-assessment audits, namely that under certain conditions a full assessment team does not have to be present for surveillance audits – team members can provide support and input remotely; and where fisheries meet a number of criteria a reduced re-assessment can be conducted which involves a smaller assessment team, a reduced peer review process and a reduced report template. These introductions should reduce the costs of surveillance and re-assessment. The speed and cost review also resulted in a reduction in the number of steps in fishery assessment and the introduction of new report templates.

Understanding the impact of these changes to requirements for surveillance and re-assessment audits in terms of cost reductions for fisheries is needed.

Going forward, the MSC are committed to continuing to work on identifying mechanisms by which fisheries can obtain support in dealing with the costs of certification. For example, an IT-based solution could increase accessibility and ease of use for Action Plans and the BMT.

16. See www.resourceslegacyfund.org/fostering-sustainable-fisheries-worldwide

3.3.6 The MSC Developing World Working Group

To ensure the representation of developing countries in MSC governance the MSC established the Developing World Working Group (DWWG), a committee of the Stakeholder Council, which advises the MSC on its work in developing countries with the aim of ensuring relevance and accessibility of the MSC programme to fisheries in developing countries.

The most recent Developing World Working Group meeting took place in Cape Town in October 2014. The meeting was part of the first Stakeholder Council meeting to be held in Africa. Issues discussed included:

- capacity building for certifiers and stakeholders in developing countries
- pre-MSA fisheries engagement strategy
- and increasing awareness of MSC in developing countries.

We were unable to contact any of the representatives from the DWWG to understand their role, or the impact they perceive the group to have had in informing the content of the standard and MSC's broader work with developing world fisheries.

3.4 MSC TOOLS

The MSC DWP has developed a range of tools and mechanisms in recognition of some of the challenges faced by fisheries in developing countries. The aim is to make the MSC programme more accessible, and to assist these fisheries through the pre-assessment and full assessment phases. Furthermore, the MSC has undertaken a number of additional activities in order to review and address the

various challenges associated with fisheries in developing countries.

3.4.1 Tools to support fisheries improving towards certification

- **Pre-assessment template:** This template helps to make an assessment or 'gap analysis' of fisheries against the MSC fisheries standard.
- **Technical consultants register:** This provides a list of experts who can support FIPs by conducting gap analyses or pre-assessments, assisting in action plans, liaising with certifiers on behalf of the fishery and project managing the assessment process.
- **Benchmarking and tracking tool (BMT):** This provides a consistent and robust method by which the performance of a FIP can be measured against the MSC standard its progress towards MSC certification tracked. The tool provides information on the status and progress of a FIP at a gross scale to stakeholders such as buyers, funders and FIP coordinators. The BMT does not, however, provide detailed information on individual scoring issues under each performance indicator (PI) which the FIP manager needs to monitor and evaluate performance within the FIP.

The BMT does have pre-requisites for its use; these include undertaking a pre-assessment, stakeholder engagement and the development of an Action Plan. The BMT can be considered the follow-up tool to the Action Plan Template and Guidance document. The BMT is a five-step process that results in a BMT index and BMT report sheet. The steps are: entering fishery information; determining the BMT index by assigning likely scores to each PI; establish expected BMT indices based on expected

progress; tracking progress through the BMT index and against the expected progress; and reporting progress through a summary table, scoring overview, index table, progress chart and report sheet.

- **FIP Action Plan and Guidance document:** A FIP Action Plan and Guidance document¹⁷ has been developed for clients and fisheries that have undergone a pre-assessment or baseline review against the MSC standard and are aware of the required areas of improvement. The guidance is operational and assists in the design and implementation of practical actions to enable the fishery to meet requirements under each MSC performance indicator. It also provides information on the stakeholders who may be involved, the resources required, suggested timescales and how to measure progress.

3.4.2 Explicit guidance for small-scale fisheries

Over the next five years, the MSC intend to review at all of the PIs in the context of small-scale fisheries in developing countries, identify the approaches taken by fisheries to overcome challenges and constraints in order to achieve the scoring guideposts for each PI, and provide examples of best practice (interview with Developing World Fisheries Engagement Manager and Accessibility Project and Research Officer, 2014). In doing so, MSC would effectively be providing guidance to other small-scale fisheries on how they might overcome similar issues in order to obtain certification. Phase 2 of this research could play an important role in supporting or complementing this review.

17. See www.msc.org/documents/developing-world/fishery-improvement-projects

FOUR FISHERIES IMPROVING TOWARDS THE MSC STANDARD

It is reported that the greatest fishery improvements occur prior to certification, when fisheries have conducted a pre-assessment to determine how suited the fishery is to meeting the MSC standard (Martin *et al.*, 2012, Agnew *et al.*, 2013) (see Figure 9). Therefore, it follows that significant improvements are achieved during a number of tasks and activities under a formalised Fishery Improvement Project (FIP). This section provides an introduction and background to FIPs and the involvement of the MSC programme with them.

4.1 FISHERY IMPROVEMENT PROJECTS

There is no single and universally agreed definition of a fishery improvement project (FIP) and historically (since 1989) there have been a range of projects whose aims have been to improve fisheries by various means, which depends on the definition of a FIP (Doddema, 2012). For the purposes of this study, the focus is on FIPs that are associated and linked with the MSC standard.¹⁸ In this context a FIP is defined as a multi-stakeholder effort to improve a fishery to sustainability. FIPs aim to “create measurable change to meet the MSC standard and to ensure the long-term sustainability of a fishery” (WWF, 2013a). A FIP provides an inclusive, multi-year, stepwise approach that helps fisheries

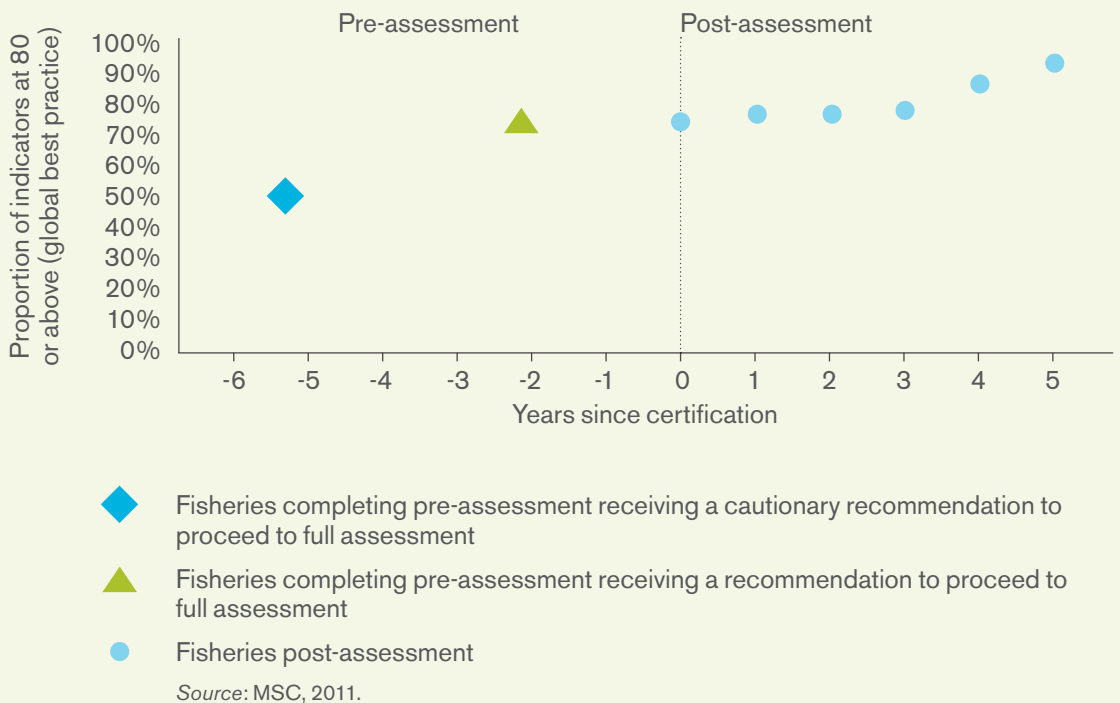
become more sustainable by improving fishing and management practices, as well as bringing a range of stakeholders together, thereby fostering collaboration, partnerships, knowledge, community support and widespread change.

In recent years, retailers have recognised the importance of FIPs in the sourcing of sustainable seafood, and as such an incentive has been created for the private sector (and other stakeholders) to engage in fisheries improvement as they ensure access to important markets. Therefore, FIPs have moved beyond providing technical support alone to now facilitating the creation of ‘partnerships’ between a range of stakeholders, including fishers, processors and retailers, to reward improved fishing practices through the market (Bush *et al.*, 2013). FIPs have created market opportunities for fisheries that are not currently able to obtain MSC certification but aspire to do so.

Major European and American retailers, including Sainsbury’s, Tesco and Co-op supermarkets, have identified a business opportunity in FIPs and provide funding. This fulfils both corporate social responsibility requirements and meets commitments to source sustainable fish. Fish from FIPs is often described as ‘sustainable’ in product labelling and has been termed as ‘MSC-minus’ (Bush *et al.*, 2013).

18. We include the Sustainable Fisheries Partnership’s (SFP) work with FIPs; although SFP say that MSC certification is an optional end goal, the structure of their FIPs is consistent with that which the MSC is promoting and supporting.

FIGURE 9. IMPROVEMENTS IN SCORES OVER TIME



WWF (2013a) has identified a number of characteristics that ensure efficiency and effectiveness during a FIP. These are:

- motivation of fishery improvements through market forces
- the participation of local supply chain actors such as processors and exporters
- stakeholder communication to ensure transparency
- a third-party scoping process and documentation

- a publicly available FIP Action Plan that includes measurable performance indicators and associated budget
- the development of a traceability system
- investment agreements from FIP participants
- a progress tracking system
- and a formal termination process if adequate process is not being made.

The inclusion of a diverse range of stakeholders is essential to FIPs as it enables a full representation

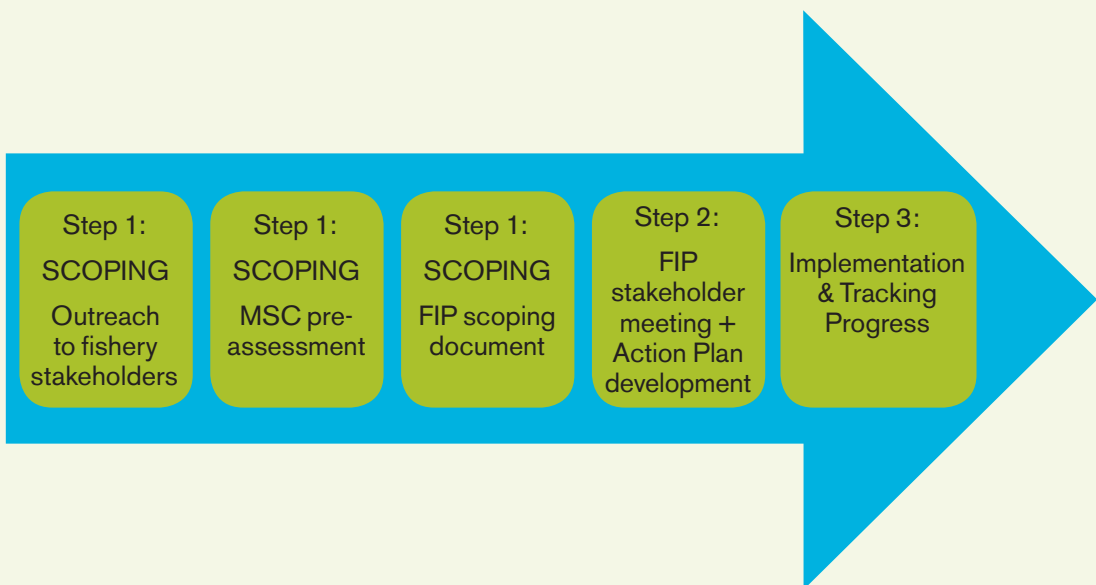
FOUR FISHERIES IMPROVING TOWARDS THE MSC STANDARD CONTINUED

of all sectors involved in the fishery, provides access to a range of fishery information, ensures the appropriateness of the FIP and fosters support which leads to successful implementation. Stakeholders include the private sector, such as processors, producers, exporters and so on, government organisations, fishery managers, academics, NGOs, community groups and industry representatives. Clear definition of roles and responsibilities between stakeholders involved in FIPs is important.

A FIP involves a three-step process consisting of scoping, action plan development and implementation and tracking, as presented in Figure 10 and described below.

- **Step 1: Scoping.** During the scoping phase, stakeholders come together to assess the fishery's performance against the MSC standard, identify potential areas of concern, and document problems to be resolved. The scoping stage includes: stakeholder mapping and engagement, completion of a MSC pre-assessment (completed by a conformity

FIGURE 10. FISHERY IMPROVEMENT PROJECT STEPS



Source: WWF, 2013b.

assessment body (CAB) or 'certification body'), and development of a FIP scoping document that determines the priority of issues to be addressed and identifies potential strategies for what the fishery might do to meet the MSC standard. This is completed by a FIP consultant who is either the pre-assessment certification body or a person trained in applying the MSC standard.

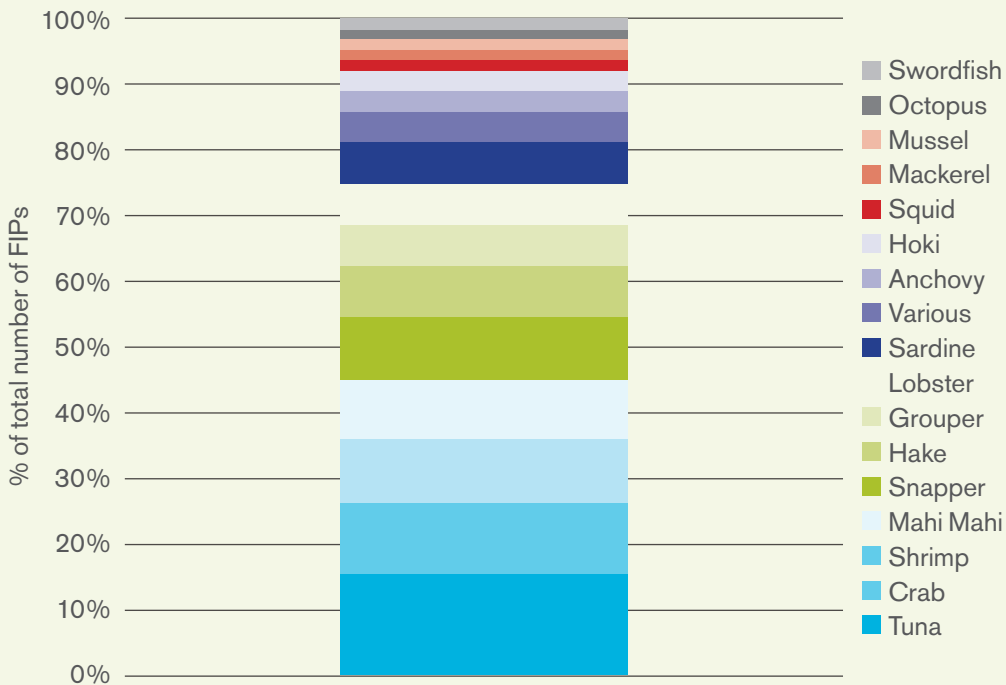
- **Step 2: Action Plan Development.** Developing the FIP Action Plan is a key step in the FIP process. The FIP Action Plan is developed by the FIP consultant in collaboration with FIP stakeholders and lists the activities that will help the fishery meet the deficiencies identified in the MSC pre-assessment.
- **Step 3: Implementation and tracking progress.** FIP stakeholders begin to implement the FIP Action Plan, track progress against goals, and begin discussing the development of a traceability mechanism. FIP stakeholders also participate in a two-day FIP review meeting to assess the annual progress of the fishery against the MSC standard. The goal of the meeting is to highlight progress in the FIP, evaluate whether scores of particular performance indicators have increased since the pre-assessment, and discuss FIP activities that still need to be addressed. Based on the results of the meeting and the progress made on the FIP Action Plan activities, the FIP Action Plan is revised and shared with fishery stakeholders after the meeting.

Development of the FIP scoping document and FIP Action Plan typically takes approximately 6–12 months, while FIP implementation can take 1–5 years.

4.2 CURRENT FISHERY IMPROVEMENT PROJECTS

According to the online FIP Directory (SFP, 2014) there are currently 84 active FIPs. Of these, 62 (74 per cent) are in developing countries and 19 are in developed countries. Three of the FIPs' countries could not be ascertained, due to these fisheries being outside exclusive economic zones (EEZs) or across multiple EEZs. The countries with the highest number of active FIPs are Indonesia (with 11), Mexico (9) and the USA (9). Other developing countries in which FIPs are active include China, Chile, Philippines, Thailand, and Vietnam (SFP, 2014). The FIPs operating in developing countries encompass 17 species groups, the predominant groups being tuna, crab, shrimp, mahi mahi and snapper, as shown in Figure 11.

FIGURE 11. DISTRIBUTION OF FIPs BY SPECIES IN DEVELOPING COUNTRIES



Source: SFP, 2014, and author's own analysis.

4.3 HOW EFFECTIVE ARE MSC TOOLS FOR FISHERY IMPROVEMENT PROJECTS?

FIPs are not formally within the scope of the MSC programme and the MSC do not endorse fisheries in FIPs, as at present there is no formal mechanism by which improvements can be verified and progress ascertained. However, the

MSC has made available tools and mechanisms that can be used to support fisheries engaged in FIPs, as they represent a pathway through which fisheries in developing countries can be introduced to the MSC programme and brought into the fold of sustainable fisheries certification. These range from stakeholder training and capacity building to developing guidance and

tools for use in the establishment, implementation, monitoring and reporting of FIPs.

The MSC are in the final stages of developing a mechanism that could be useful for tracking the uptake of MSC tools such as the pre-assessment template, the Action Plan and the BMT and could provide practitioners and stakeholders an opportunity to offer feedback to the MSC on the effectiveness and usefulness of the tools, and how they are being used. The MSC Developing World Programme (DWP) believes that there is already good uptake of their tools but at present there is no evidence to demonstrate this.. However, it should be noted that the tools are designed to report information to stakeholders, and as such could become useful mechanisms for attracting investors and providing more certainty of fisheries' performance. The BMT is a particularly useful tool in this respect. The BMT is time-bound, which encourages more effective and efficient management of FIPs through the need for long-term planning and allocation of resources. The tool provides transparency to funders and the supply chain, but is not sufficiently detailed to provide effective monitoring and evaluation to a FIP manager.

In addition to assessing the uptake of the MSC's fishery improvement tools by FIPs it would be pertinent to determine what proportion of fisheries engaged in FIPs enter the MSC certification process, and to understand why some fisheries in FIPs do not transition to the certification process. Unfortunately many FIPs are confidential and a lack of information may be a limiting factor in conducting this kind of research. However, it could be a future channel of research. Furthermore, an associated area of focused research could be to develop and circulate a questionnaire to FIPs in the SFP FIP Directory in order to ascertain the uptake of the MSC tools and to evaluate the usefulness of these tools to the FIP process.

The main issue with FIPs is the lack of a universally agreed and structured approach that is adopted by all stakeholders. At present there are numerous stakeholders implementing FIPs, each with different objectives, goals and methods. Therefore there is likely to be a lack of consistency between projects. The MSC has attempted to address this issue by introducing the tools and other mechanisms outlined above but there is no obligation to use these. Furthermore, some FIPs include a range of social and economic attributes that are not covered by the MSC scheme.

FIVE DRIVERS AND BARRIERS TO MSC CERTIFICATION FOR DEVELOPING WORLD FISHERIES

5.1 WHY DO DEVELOPING WORLD FISHERIES CHOOSE TO BECOME MSC-CERTIFIED?

There are a range of different factors and actors that have had – or have the potential to – drive developing world fisheries to become MSC-certified. Some are 'hard' incentives, such as economic incentives arising from price premiums, increased sales, and improved trading relationships; while others are 'soft' incentives, such as enhanced profiles and reputations that can lead to increased support from government or other parties. A number of different actors play a role in directly or indirectly encouraging developing world fisheries to achieve MSC certification – governments, industry (traders, processors and retailers), NGOs and scientists.

5.1.1 Economic incentives: market access

Market access – both accessing new markets and maintaining existing ones – appears to be a key driver for many of the developing world (and developed world) fisheries to achieve MSC certification. For Argentinean fisheries, for example, accessing EU and USA markets was a key driver for obtaining MSC certification (Perez-Ramirez *et al.*, 2012a). Perez-Ramirez *et al.*, (2012b) argue that a number of fishers in developing countries are concerned that a lack of MSC eco-labelling will become a barrier to selling their products.

The expectation in many developing world fisheries is that all supermarket chains in key markets (EU and USA) will show a preference for products with MSC certification. It is important to note, however, that this demand is likely to be

highly dependent on the species being produced (whether it has a high value, and high volumes) as discussed in previous sections. While market access can be a strong driver, developing world fisheries (and their partners) should rigorously assess whether there is sufficient demand for their particular seafood product in countries where MSC is sold, before embarking on the certification process. It could be risky to embark towards certification without first understanding this demand, including considerations of species and quality.

5.1.2 Productivity improvements

Productivity or catch/yield improvements are not mentioned in the existing literature or interviews as a driver for fisheries to engage in MSC certification. Changes to management systems, fishing methods and so on as identified in the pre-assessment phase and as required for compliance with the MSC standard, may in fact lead to short to medium-term decreases in catches; for example, in order to ensure stock levels remain at or above the maximum sustainable yield. The decrease in catches as a result of MSC-instigated management plans, however, is not automatically seen as negative by fisheries, but rather a necessary sacrifice to receive future benefits. In cases where a decrease in catches has not been required by MSC management plans, the fishers were said to feel that MSC benefits them because they will get more money for the same catch (interview with developing country fishery representatives, 2014). It is important to bear in mind, however, that the success of management plans to maintain or build stock levels is likely to rely on excluding some fishers in order to reduce total or overall

fishing effort in an ecosystem – which can have negative livelihood impacts, as discussed in more depth later.

5.1.3 Improved product quality

Though improved quality has been an indirect impact of MSC certification, this has not been mentioned in any existing literature or in stakeholder interviews as a driver for certification.

5.1.4 Access to inputs, finance and government support

Again, better government support – as a result of improved profile and reputation – has been mentioned by some fisheries as an indirect benefit of MSC certification, but not as a driver before certification was embarked on. Finance, where it has been obtained by developing world fisheries, has usually covered the direct costs of certification (pre-assessment, assessment or re-assessment of FIPs), but has not exceeded these costs, which could suggest that finance in itself is not a strong driver of developing world fisheries seeking MSC certification, but rather a highly significant enabling factor.

5.1.5 Avoided costs of legal non-compliance and conflict

This is not mentioned as a key driver by, or in relation to, developing world fisheries in the existing literature. It was cited by an Australian fishery as a key benefit of MSC (avoided costs associated with new legislation/standards for exports) but was not a motivation to embark on certification – market access came first. The weak regulatory framework that exists in many developing countries means that this, at present, is unlikely to be a key driving force for developing world fisheries to obtain MSC certification.

5.1.6 Improved reputation, social status and self-esteem

Research carried out by Perez-Ramirez *et al.* (2012b) into the perspectives of various stakeholders of fisheries certification in developing countries reveals that non-market based incentives were found to be no less important than market-based incentives, such as market access, when engaging with the MSC scheme. They cite increased ‘prestige’ from an environmentally oriented image as a key non-market based incentive. They argue that this is in fact consistent across all certified fisheries, regardless of their status as developed or developing. This view was upheld by the interviews, in which fisheries identified improved reputation and prestige as both a driver and a benefit of undergoing certification (interviews with developing country fishery representatives, 2014).

5.1.7 Actors involved in incentivising MSC certification

Actors play both a perceived and actual role in encouraging fisheries to get certification. For example, a buyer may directly engage with a developing world fishery to encourage or offer support to achieve certification, or it may indirectly encourage fisheries to embark on certification by publicising its commitments to sustainable sourcing. But there may also be a perception by developing world fisheries of demand from buyers (such as “all buyers in Europe or North America would prefer to buy MSC-certified seafood than non-certified seafood”) which is not always real or accurate.

- **Fishers:** Not enough is known about how much fisheries themselves are motivated to get MSC certification – for example because of the inherent values of the standard, or their desire to either work towards sustainability or to be

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assured that their fishing activities are indeed sustainable. This is a largely underexplored but hugely significant area of research, and one that warrants further attention through in-depth conversations with fisheries that have, or wish to obtain, MSC certification.

- **Peers – other fishers:** There is no evidence yet of other fishers who have achieved certification encouraging non-certified fisheries to work towards certification. However, this could change as the number of developing world fisheries that achieve MSC certification increases. Indeed, this has happened in other sectors (such as agriculture) where farmers have seen the benefits in their neighbours' farms and subsequently sought certification.
- **Government representatives:** Many developing country governments are likely to be lacking capacity (and possibly also mandate) to support and encourage developing world fisheries to become certified. In fact, they may act as a barrier to certification, by extracting taxes on production but offering little in the way of support for efforts to move towards sustainability, for example in the form of data collection (Standing, 2009; see sections on 'barriers' for more analysis). Perez-Ramirez *et al.*, (2012b) state that fishing certification requires the active involvement of public authorities. However, experience shows that government participation during the process of certification was low in the great majority of cases.
- **Buyers:** It has been suggested that the MSC market is driven by retailers that recognise eco-labelled seafood as a marketing tool to improve their corporate image and maintain their sources supply (Perez-Ramirez *et al.*, 2012b). This aligns with what fisheries cite as the incentives and drivers for them to achieve MSC certification: market access. This is likely to be both an actual and perceived driver for fisheries to engage with MSC certification.
- **The Marine Stewardship Council:** The role of MSC in supporting developing world fisheries to get certified, for example via the DWWG – events, workshops, teams and offices in certain developing countries – has been highlighted in Section 3.3.6 above. However, greater research is needed on the impacts of these efforts, to understand the significance of MSC's role as a driver towards certification; though they are likely to be an important actor.
- **NGOs:** A number of NGOs are involved in encouraging sustainable fisheries. Some NGOs have organisational strategies that focus specifically on facilitating producers and fishers' certification, for example WWF's Market Transformation Initiative.¹⁹

WWF has played a key role in the promotion of certification in developing world countries. For example, Standing (2009) explains how WWF has contributed to researching the stocks of prawns in Mozambique and the ecosystem impacts of prawn fisheries as part of the preparatory work for applying for MSC certification. It has also assisted some fisheries in accessing the funding for pre-assessment. Indeed, a number of the developing world

19. See http://wwf.panda.org/what_we_do/how_we_work/businesses/transforming_markets/solutions

fisheries interviewed for this research have relied on external support from WWF to achieve certification – both in terms of implementing the necessary technical/managerial changes to achieve the standard, and to meet the costs of assessments (interviews with developing country fishery representatives, 2014).

As an increasing number of fisheries in developing world countries are embarking on the MSC certification process, however, one NGO has expressed concern about their ability to continue to meeting the costs of assessments, and are hoping instead to provide a more advisory role in the process in the future (interview with an NGO representative, 2014).

While laudable, there are possible concerns over the sustainability of NGO support in the long term and the extent to which it risks undermining 'ownership' of certification by fisheries. Standing (2009:21) explains that "where the costs of entering into a voluntary, market-based initiative such as MSC are borne by external donors, levels of commitment by the clients may not be as high as they should be. In other words, the MSC model may not be sustainable if it relies too heavily on external funding or subsidisation." However, other commentators have argued that carrying out the necessary reforms to achieve MSC certification promotes a sense of ownership of certification and the certification process among fishers and fishery managers.

- **Financial institutions:** There doesn't appear to be strong evidence in the existing literature or interviews that finance has been a key driver for developing world fisheries to seek certification. Indeed, there appears to be a general lack of support from financial institutions for efforts to work towards sustainability, with the exception of a handful of grants and specialised funders described earlier. It appears that support from these sources is sought after the choice to achieve certification has already been made. It may be one factor in decision making but it does not appear to be a primary driver. Nonetheless, there is a great deal of scope for financial institutions to play a role in driving and supporting the transition of fisheries towards sustainability.

BOX 5. FACTORS THAT ENABLE SMALL-SCALE DEVELOPING WORLD FISHERIES TO BECOME MSC-CERTIFIED

A number of factors and characteristics were identified in our research that could have implications for fisheries certification in developing countries. These included GDP per capita, GNI per capita, volume and value of fish and fishery product exports, national governance scores (see World Bank governance indicators below), development status, per capita fish consumption, market value of species, species classification, gear type, stakeholder partnerships and existing fisheries management systems. Information relating to these factors and characteristics was collected for all certified fisheries in developing countries, and for all fisheries where time and data availability allowed. We conducted some analysis to explore whether there were any correlations between particular characteristics and certified fisheries, and to identify where further research could be directed. The preliminary analysis did not indicate any conclusive or discernible trends at this stage due to its limited nature, although opportunities for further information gathering and analysis were identified. We acknowledged that more detailed indicators were required to analyse enabling factors.

For example, the use of the World Bank's Worldwide Governance Indicators (WGI) were deemed too broad to be of use. Interestingly, analysis of the WGI scores of countries where fisheries are certified showed that fisheries achieve certification in countries with relatively low average governance scores;²⁰ these included Argentina, Fiji, India, the Maldives, the Marshall Islands, Mexico, Russia, Suriname and Vietnam. This could imply that governance is not a significant factor in either enabling or

disabling certification. However, the broad nature of the governance indicators could be skewing the analysis. More specific and detailed governance indicators of relevance to fisheries management need to be developed.

Another example of a possible enabling factor is the influence of market access. Access to international markets could affect whether a fishery in a developing country seeks certification as the majority of MSC products are destined for Europe, the USA and Canada. Fish and fishery product export information could indicate whether certification is driven by pre-existing access to international markets. Initial analysis of export quantities and values of countries where fisheries are certified showed no discernible trends and indicated that countries with relatively low volume and low value exports still achieve fishery certifications. However, the use of aggregated international trade data does not take into account the destination of exports nor the species and products being exported. Market access indicators and value chain analysis need to be developed for further analysis.

Other relevant characteristics or factors to explore could include: availability of data, such as from government fisheries department; access to credit for small-scale fisheries; infrastructure; and the level of organisation of fishers and their inclusion in fisheries management mechanisms, such as co-management or community management.

We propose exploring these factors in more depth through the case study research recommended for Phase 2 (see Section 7).

20. The World Bank run a Worldwide Governance Indicators (WGI) project that reports aggregate and individual governance indicators for 215 economies annually since 1996. Six dimensions of governance are covered: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. These aggregate indicators combine the views of a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. They are based on 32 individual data sources produced by a variety of survey institutes, thinktanks, non-governmental organisations, international organisations, and private sector firms. The six aggregate indicators are reported in two ways: 1) in their standard normal units, ranging from approximately -2.5 to 2.5 and 2) in percentile rank terms from 0 to 100, with higher values corresponding to better outcomes. The indicators which are relevant to fisheries were identified as government effectiveness, regulatory quality, rule of law, and control of corruption. Using the scores of these indicators an average governance score for every country was calculated and plotted against the number of certified fisheries in each country.

5.2 WHAT ARE THE BARRIERS TO CERTIFICATION FOR SMALL-SCALE, DEVELOPING WORLD FISHERIES?

A number of different types of barrier exist that can and have limited the participation of developing world fisheries in MSC certification. Possible barriers include direct costs, indirect costs, lack of access to finance, market risks, and limited capacities of fisheries to make the changes necessary to comply with the standard. This section discusses the main barriers mentioned in the literature and stakeholder interviews, as well as those that may well exist based on anecdotal evidence, but which need further interrogation in Phase 2 of the research.

5.2.1 Costs associated with MSC certification

A number of costs are associated with certification, both direct (such as covering the costs of certification itself) and indirect – the cost of the financial, technical, social, environmental changes that are required to meet the standard. These can vary significantly depending on the nature of the specific fishery seeking certification. Many of these are particularly significant for developing world fisheries that are generally small scale and have far lower incomes than larger-scale fisheries. Perez-Ramirez *et al.*, (2012b) have argued that the costs associated with MSC certification are a key barrier to the participation of developing world fisheries.

The following section gives an overview of these costs and their scale, where possible. Once again, a systematic and quantitative study of direct and indirect costs – both for developed and developing world fisheries – across all fisheries engaged in the MSC scheme is currently lacking, but would be key to offering evidence on the balance of costs versus benefits that fisheries can

expect during and as a result of certification; and the key factors (such as fishery size, complexity and species) that shape the types and scale of costs that emerge. It would also be useful to explore the extent to which costs and benefits are shared or captured by other players in the value chain. There is anecdotal evidence – and indeed evidence from other certification schemes – that some price premiums gained by MSC certification are being claimed by ‘downstream’ supply chain actors (such as processors and retailers) rather than the fisheries themselves.

Direct costs

There are a number of direct costs associated with the MSC certification process for fisheries. These include:

- pre-assessment
- full assessment
- annual surveillance audit
- re-assessment (every five years).

A pre-assessment determines the fishery unit of certification, the scope of the full assessment and likely issues that will need to be covered by both technical investigation and stakeholder assessment, and any gaps in management that may need improvement before assessment takes place. Certification and audit costs are borne by the fisheries. The client seeking certification of a fishery can be a fishers’ association, an industry association representing quota holders, a processor’s organisation, a government management authority, or any other stakeholder (Gulbrandsen, 2009). Costs associated with a pre-assessment typically range from a few thousand US dollars to US\$20,000 (Macfadyen and Huntingdon, 2007).

FIVE DRIVERS AND BARRIERS TO MSC CERTIFICATION FOR DEVELOPING WORLD FISHERIES CONTINUED

The conformity assessment bodies (CABs) we interviewed stated that although in their opinion there isn't a global lack of certification bodies, there definitely is a lack of representation in developing world countries (interview with representatives from CABs, 2014). In fact, many CABs are concerned that there is no profit in this sector and some may consider abandoning fisheries certification. This is especially the case given the limited number of fisheries that can and will be certified (interview with a CAB representative, 2015).

Some certifying bodies, as well as the MSC, are working to develop expert teams in developing world countries, but this progress may be limited by the need for these teams to speak English, since the standard is currently only available in English. Various stakeholders, including auditors and industry, argued that the lack of CABs in the developing world so far will follow the same trend as that in southern Europe. A few years ago there were very few or none in southern European countries, but as the demand increased and more clients arose in those countries, CABs were created; so a similar progress can be expected in developing world countries, specifically in those with a high potential in terms of fishing output (interview with CAB and industry representatives, 2014). However, the costs of becoming a CAB may limit the emergence of new entrants – especially when the level of business is uncertain.

What drives the costs up for CABs is mainly experts' fees, which makes up roughly 65 per cent of CABs' expenses, followed by travel expenses at 15 per cent, with the remaining 20 per cent for overheads and profit (interview with a CAB representative, 2014). CABs subcontract experts who are specialised as per the MSC requirements, and thus charge high fees. The quality of the experts also means

they are difficult to find and are generally from developed countries. CABs feel that although the development of local auditors would lower the mandate cost of auditing, the price of contracting experts would still mean limited scope for reducing costs. One CAB suggested that the MSC have a group or pool of experts who were able to compare all the reports and data obtained through previous assessments in similar fisheries or in the same area, hence reducing time and costs considerably. Another CAB suggested that, to make it simpler to use local auditors, the MSC establish another language as official; for instance one of the UN official languages (interview with CAB representatives, 2014).

Obtaining information for a full assessment and the costs of record keeping (detailed and accurate information on stock structure and productivity are needed, such as fleet composition, fishery removals, endangered, threatened and protected species, non-target species, and so on) has also been a significant cost for many small-scale and developing world fisheries. The Risk-Based Framework (RBF) (see section 3.2.1) was designed to improve the inclusivity of the scheme by reducing the data requirements for eligible fisheries. Both auditors and NGOs that have worked with developing world fisheries interviewed for this research agree in saying that the RBF was effective in framing guidelines for data-deficient fisheries. The RBF was helpful in getting more fisheries into certification, since it makes it possible to assess fisheries that could not have been assessed without it. Nevertheless, the RBF is quite a long process, requiring increased consultation with stakeholders. This can mean that the direct costs are in fact increased when the RBF is used (interviews with developing country NGO and CAB representatives, 2014).

The MSC estimates that most full assessment certifications cost between US\$15,000 and US\$120,000 (Christian *et al.*, 2013). Macfadyen and Huntingdon (2007) find that MSC certification can cost between US\$10,000 and US\$ 500,000 for full assessment, depending on the complexity and size of the fishery. For many of the smaller-scale artisanal fisheries, assessment costs are likely to be at the lower end of this spectrum, though relative to the average income of these fisheries even the lower end is likely to be extremely challenging. The certification process is complex and can take more than a year to complete (MRAG, 2009). On top of the assessment costs, fisheries are required to cover the costs of annual audits (to check any conditions of certification have been met). After five years the fishery must undergo complete re-assessment. Costs are usually lower than before, especially if stock impacts, bycatch and other environmental issues as well as management monitoring have been rectified as a result of the original certification (Peacey, 2000, in Macfadyen and Huntingdon, 2007). The cost estimates reported by the fisheries interviewed vary from US\$140,000–210,000 cumulative cost of certification, including yearly audits for a medium-scale fishery, to US\$62,000 cumulative cost and US\$12,000–25,000 once a year for a small-scale fishery. One fishery that underwent pre-assessment registered a US\$1,000 fee per day for consultants, totalling US\$15–20,000 for two weeks of auditing (interviews with developing country fishery representatives, 2014). Standing (2009) outlines the cost of MSC certification for the South African hake trawl industry: full assessment cost approximately £50,000 and each annual assessment a further £20,000 – a total of £130,000 over the space of four years or approximately US\$190,000.

Although roughly equal proportions of large, medium and small-scale fisheries go through pre-assessment, small-scale fisheries are, significantly, the least likely to be recommended to proceed to full assessment – and are least likely to proceed if in receipt of a recommendation. This may reflect the difficulty of acquiring data from small-scale fisheries, and problems associated with the cost of certification and management systems (MRAG *et al.*, 2011).

These costs are typically paid for by the producers, i.e. the fishery, and are paid to the third-party certification body. As well as varying according to the size and complexity of the fishery, costs also vary according to the cost structures of the independent third party certification body carrying out the assessment. The fishery seeking certification can and should seek quotes from a number of CABs and select from among them (MRAG, 2009). At present, certification bodies and auditors are concentrated in developed countries. This can mean higher operation costs for the auditors and ultimately for the developing world fisheries, who have to source auditors from developed countries with higher travel and accommodation costs, and day rates which can be up to US\$1,000 or more a day (interview with a developing country fishery representative, 2014).

The emergence of developing world certification bodies is prevented or limited by a number of significant barriers. MRAG (2009) argues that the cost of accreditation (which is borne by certification bodies) means that developing world certification bodies may struggle to get accredited to certify against MSC. The fees for accreditation are set by Accreditation Services International (the only body allowed to accredit

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certification bodies for MSC)²¹ and need to be paid every five years when accreditation takes place. These fees are the same regardless of the size or geographical location of the certification body. This has limited the emergence of certification bodies in general (which could increase competition and bring costs down), and more significantly, the emergence of developing world certification bodies. In addition to these costs are the costs to the organisation seeking accreditation to develop and maintain the expertise and systems necessary to meet the rigorous requirements of accreditation (MSC, 2009). These are key challenges for developing world certification bodies.

To summarise, the quality of the experts required by MSC for certification is very high, meaning they are difficult to find, extremely specialised and charge high fees – and are generally based in developed countries where capacity for this kind of expertise tends to be higher. Creating local conformity assessment bodies could be one way to bring about cost-cutting and capacity building. However, CABs argue that although the development of local auditors would lower the overall cost of auditing, experts subcontracted by the CABs would still command a high price, limiting the scope for reducing costs. This will be the case until experts, as well as CABs, are trained and based locally. Some certifying bodies, including the MSC, are working to develop expert teams of auditors in developing countries, but language is a key barrier: it is hard to find people whose level of English is good enough to carry out technical audits according to MSC standards

(interview with CAB representative, 2014). For this reason, where CABs have opened regional offices until now, they have simply outsourced auditors from their developed country offices rather than hiring locals.

Indirect costs

In addition to the costs of the certification process, there are also costs associated with making the changes required to meet certification standards – such as to management systems, documentation, fishing gear and so on. Although our interviews found that indirect costs did not present as much of a barrier as direct costs of certification, this may be because the majority of fisheries undergoing certification were likely already following, or were close to following, sustainable management and fishing practices; so the changes required to meet the standards of certification were minimal. The indirect costs mentioned by developing world fisheries include the cost of equipment to obtain scientific data, such as equipment for the study of the seabed or hydroacoustic equipment. These machines, along with the training needed for those operating them, are costly; the majority of fisheries do not already have them in their possession. Buying them puts such a strain on fisheries that one developing world fishery decided to abandon the certification process because they didn't have enough funds, seeing as the CABs would not accept information gathered by approximation (interview with developing country government representative, 2014).

21. 'Accreditation means that we assess organisations that provide certification, testing and inspection services against internationally recognised standards. It demonstrates the organisation's competence, impartiality and performance capability and is the key to reducing risk and ensuring that consumers, suppliers and purchasers can have confidence in the services provided' – Accreditation Services Limited. See more at www.accreditation-services.com

An additional challenge can be the uncertain and unpredictable nature of these costs, unlike the direct certification costs, which are easier to predict and calculate in advance. Standing (2009:20), in his research on the growth of marine certification (specifically MSC) in Southern Africa, interviewed a representative of the South African Deep-Sea Trawling Industry Association (which owns the certification for the Hake fishery in South Africa). The representative explained that, “so far, the cost of meeting requirements for certification in South Africa’s hake fishery far outstripped the money paid to certifying bodies for pre-assessment, full-assessment and annual assessments. A rough estimate is that the accumulated direct costs [the indirect costs of meeting the requirements for certification] of certification may be US\$1 million.” As a percentage of the total turnover of the industry this was regarded by the source as reasonable, however. This is unlikely to be true for other, smaller fisheries, though it would have to be assessed on a case-by-case basis for which there is a lack of existing evidence to draw from.

There is a requirement for fisheries to provide detailed and accurate information on stock structure and productivity, fleet composition, fishery removals, ETP species, and non-target species. Perez-Ramirez *et al.*, (2012b) argue that fisheries in developing countries are small scale and, therefore, data deficient. The lack of reliable scientific data about fish resources can be an issue as the MSC standard requires verifiable and auditable information that generally implies infrastructure research and monitoring. However, where data is limited and eligibility criteria are met, the risk-based assessment framework is now available for certifiers to use.

There are also indirect costs – or negative impacts – that arise as a result of certification, for example short-medium term reductions in catches as a result of different fishing techniques or management systems. This can have consequences for incomes, employment and so on, or can lead to a loss of livelihoods. In the case of the Vietnam Ben Tre clam fishery there were a number of clear economic benefits for fishers as a result of more sustainable harvesting, but in order to implement these sustainable harvesting systems, it was necessary to exclude harvesters from outside the province who had previously harvested in the area in order to ensure harvesting was sustainable (though they had been regarded as acting outside the law in doing so). Both the provincial and national governments have concluded that the harvesters will not be provided with alternative income sources because they were acting outside the law (MRAG, 2010).

5.2.2 Financial support to cover MSC certification costs

Some fisheries are able to obtain funds from other sources to cover certification – for example from NGOs, charitable funds, governments and retailers. The MSC itself lists some options for charitable funding for developing world fisheries to cover the costs of certification. These include the Sea Change Investment Fund which “aims to use the power of the market to encourage sustainable fishing practices” and which is open to companies that increase the availability of sustainable seafood in the marketplace.²² It is supported by the Packard Foundation. In addition, the Sustainable Fisheries Fund (SFF) administered by the Resources Legacy Fund) supports sustainable fisheries around the world and is interested in the MSC (MSC,

22. See www.ceacon consulting.com/work/case_studies.aspx?v=1&c=4&cs=26

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2014r). Evidence is lacking on the extent to which small-scale developing world fisheries have accessed these funds. However, the five developing world fisheries we have interviewed had not obtained support from these funds (interview with developing country fisheries representatives, 2014). According to Standing (2009), MSC and WWF have helped fisheries apply to the Sustainable Fisheries Fund and at least 75 per cent of applicants for funding through SFF have received some funding to date, though it is unclear how many fisheries have applied (Standing, 2009).

The Vietnam Ben Tre Clam Fishery faced costs of US\$120,000 in getting certified to the MSC standard. The full assessment cost was US\$68,380. The fishery was supported financially by WWF and the Sustainable Fisheries Fund. Though not a developing world fishery, the Cornish Sardine Fishery (a small fishery) has struggled with the costs of certification. There are only six sardine ring-netters but annual audit costs are around US\$7,000 and it will be over US\$46,000 for recertification in three years' time (ISU, 2012b). The costs may be comparable for small fisheries in developing countries, since there are no special considerations or cost structures for developing world fisheries or alternative certification bodies; in fact, due to weak local currencies, costs may in real terms be higher than for a similar-sized fishery in a developed country.

All the developing world fisheries we interviewed have received some level of outside support, whether financial or technical or both, usually in the form of a total coverage of the assessment costs. In the majority of cases the financial support came from NGOs such as WWF, buyers, or governments, which often share the costs among themselves in varying proportions. Some high profile developing world fisheries that

have not faced financial challenges in getting certified still decided to obtain the participation of their local and national governments. This was in order for the project to be credible, and to get access to the national fisheries research institute data, which they regarded as essential for the successful completion of the assessment process – thereby reducing indirect costs (interview with developing country fisheries representatives, 2014).

A number of retailers have spoken about being involved, both directly and indirectly, in enabling fisheries to achieve certification. This involvement usually takes the form of money for research; membership in associations aligned to achieving sustainability goals like MSC; engaging with seafood certifications schemes; and discussions with governments and supply chains about vessel lists, capacity control, vessel monitoring systems, methods of data collection, and scientific advice.

One CAB outlined how developing world fisheries (and, for the most part, developed world fisheries) always receive external support of some kind to mediate and simplify the certification process – through actors who either play the 'middleman' between the fishers and the MSC or between the fishers and the CAB (interview with conformity assessment body representative, 2014).

The costs associated with MSC certification for developing world fisheries are high. Evidence on the typical revenues of small-scale developing world fisheries indicates that it is highly unlikely that these fisheries will be able to afford the certification costs themselves. However, since the majority of small developing world fisheries to date have been supported externally, this has not in reality been a key barrier. It may, however, be a barrier to future re-assessments and certification, and to other fisheries joining the scheme which may not be able to access support or finance.

5.2.3 Access to credit to cover MSC certification costs

Most developing world fisheries have used grants, charitable donations, support from NGOs and so on to cover the costs of certification. This has been instrumental for many developing world fisheries, and in some cases has ultimately led to financial benefits as a result of MSC certification (such as in the case of the Vietnam Ben Tre clam fishery). But these benefits are not guaranteed, and even where they do exist they are unlikely to compare to the scale of costs that need to be covered. The financial sustainability of certification is therefore a key concern and a potential barrier to long-term engagement with the MSC scheme (alongside the uncertainty of which benefits may arise and to what extent). A major challenge therefore exists around the financial capacity of small-scale developing world fisheries.

It is far harder for developing world small-scale fishers to obtain credit compared to their developed world counterparts (Macfadyen and Huntingdon, 2007). Such financial exclusion arises for a number of different reasons. Some of these include lack of or limited access to suitable products and services due to difficult lending conditions; poor fishers' limited skills and knowledge about using/negotiating for formal services; providers and the target groups' limited information and knowledge of products and services; and poor fishers' inability to choose between alternate products and services due to low financial literacy (Mohammed and Uruguchi, forthcoming). Some of the root causes of the underperformance of the financial market system in developing world small-scale fisheries include:

- **Limited source and type of suitable financial products and services:** The type and source of financial products and services are limited. Borrowers seek out loans individually without having relevant business plans. They often do not know the process and lack the bargaining power for better financial products and services. The problem is more acute among very poor fishers.
- **Small loan amount with short-term instalment and repayment systems:** Closer review of the loan portfolio of microfinance provided to fishers reveals that most loans are small, short-term and repayments are usually weekly, not tailored to the business cycles of small-scale fishers. For example, economic returns from certification and the consequent improvement in fish stock are unlikely to emerge in less than two to three years. As we have already seen, the initial investment needed to go through the certification process is substantial. Fishers also often do not realise that certification is not a one-off assessment but rather an ongoing commitment that has a high cost over the five-year cycle. One auditor stated that, "clients who forget the annual audits will be disappointed" (interview with CAB representative, 2015). Therefore, small amount of finance requiring short-term instalments or repayments are not suitable.
- **High transaction costs and rigid collateral:** Formal lending institutions like banks are difficult to access by small-scale and poor fishers. The transaction costs are high and they have rigid and large collateral requirements, which are incompatible with the type of collateral that small-scale fisheries possess.

- **Weak risk management system:** In many developing countries, a functional fishery loan risk management²³ system is weak or absent, often leading to coercion and conflict to ensure the repayment of loans by any means. Loans are not tailored to certification processes, so do not insure against risks or meet fishers' corresponding funding needs. Fishery contingent guarantee services are non-existent in most fisheries-dependent developing countries, or are in their infancy but not yet integrated into the financial system. This limits expansion and outreach to poor small-scale fishers, potentially excluding them from the certification process and from future economic and ecological gains.

5.2.4 Limited access to low-cost fishing and harvest technologies

Developing world small-scale fisheries are also characterised by lack of access to low-cost fishing technologies and the skill to use them. Adopting low-cost technologies, for example, includes modernising fishing techniques and operations through better fishing boats, fishing gear and post-harvest technology. Certification can only be achieved through reduced pressure on the resources. Therefore, access to technologies that enhance the efficiencies of the fish production system is crucial. At a higher level, competitiveness and income can be increased through introduction of fish processing technologies, which increase the value of products. All these require efficient extension services, which should provide: advice and research; appropriate regulatory measures;

business development; and information and training, in order to transform subsistence or small-scale fishing into activities capable of generating significant economic opportunities (Mohammed and Uruguchi, 2013).

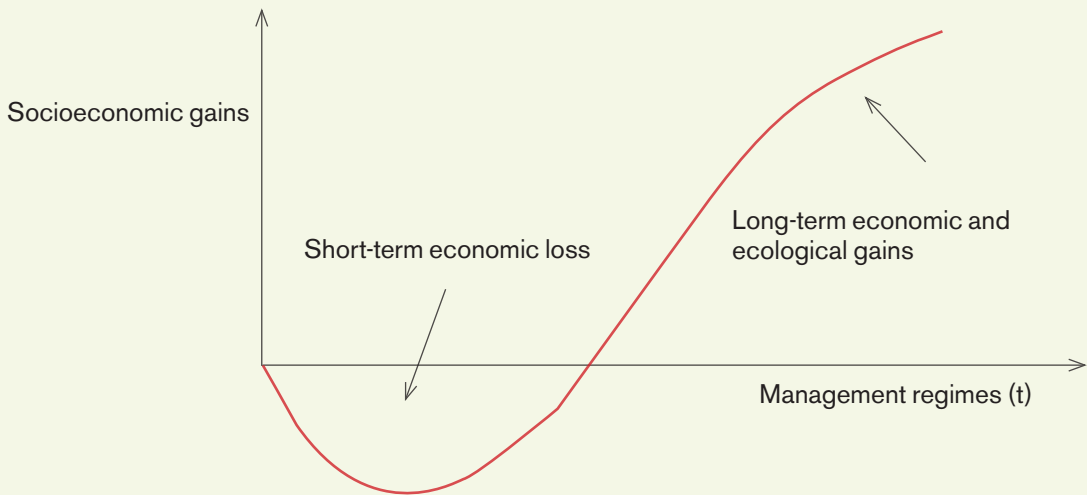
Another challenge that reduces profitability by small-scale fishers is post-harvest loss. An assessment among developing world small-scale fisheries shows that the main sources of post-harvest loss are: 1) physical damage (such as rotting) due to a lack of proper handling, causing the value of fish to decline; and 2) market loss caused by sudden market changes which force fish operators to sell their catch at lower prices (Ward and Jeffries, 2000). For most of the artisanal fisheries in developing countries, supplying fresh fish delivers greater economic returns than cured (or dried) fish. Supplying large quantities of fresh fish, however, requires infrastructure to establish marketing space, storage facilities, availability of ice and refrigeration, adequate and efficient transport facilities, access from landing sites to main roads, potable water supply wells, pumps, and fish reception and cleaning.

5.2.5 Overcoming the short-term costs of sustainability objectives

Regulatory approaches which mainly rely on input or output controls (or a combination) inevitably impose short-term economic loss on resource users. Similarly, certification schemes impose short-term economic cost until fishers start reaping the benefits of recovered fish stock (see Figure 12). The main argument behind the

23. Loan or credit risk is the risk that a borrower will default by failing to make required payments. To mitigate or manage such risks, systems such as collateral or credit insurance are used. In most cases, fishers cannot offer collateral and therefore are regarded as 'not creditworthy'. Therefore, the most viable alternative would be to establish credit insurance system either by the government, donor agencies or the private sector to hedge the risk, thereby avoiding coercion and conflict.

FIGURE 12. SHORT-TERM ECONOMIC COST OF MARKET-BASED INSTRUMENTS (INCLUDING CERTIFICATION)



Source: Mohammed and Brouwer, forthcoming.

pursuit of certification schemes and associated regulatory measures – such as the use of bigger mesh sizes in fishing nets, introducing turtle exclusion devices, and other fishing gear restrictions – is that while in the short term resource users experience economic or income loss, in the long term they are expected to benefit from the improved regeneration of the natural resources, such as fish stocks. This is based on the assumption that the restrictions and proposed activities in order to achieve certification are effectively enforced. If such interventions are not well designed or effectively enforced, they may fail to deliver both ecological and economic benefits.

Recovery of fish stocks “usually implies drastic and long-lasting reductions in fishing pressure and/or the adoption of other management measures to remove conditions that contributed to the stock’s overexploitation and depletion” (FAO, 2003). The extent of short-term economic cost may vary with the type of resource or species in question. For example, the rate of regeneration of some shrimp species can be very fast, hence a lower short-term economic cost. On the other hand, some coral reef fish species such as surgeonfish can take more than a couple of decades to fully recover to pre-exploitation level,

though this is a somewhat extreme example. Recovery time will certainly determine how much resource is needed to offset the short-term economic cost often borne by poor small-scale fishers. While resource users (fishers) understand that they would benefit from ecological gains such as recovered fish stocks, the short-term economic loss can be too high; particularly for small-scale fishers who have limited alternative livelihood options (Mohammed, 2014), because the combination of degraded fish stock and new harvest restrictions can create insurmountable difficulties. Therefore, the process of certification can be very costly for small-scale fisheries in the short term, and alternative mechanisms may be needed to offset these economic losses.

5.2.6 Legal/institutional barriers and political will

Research by Béné *et al.* (2010) has highlighted that developing countries generally suffer from a serious lack of capacity and resources, poor governance and a weak public and private institutional context – all of which can act as a barrier to certification. Perez-Ramirez *et al.*, (2012b) suggest that open access fisheries can be a major barrier to seeking certification, as only

FIVE DRIVERS AND BARRIERS TO MSC CERTIFICATION FOR DEVELOPING WORLD FISHERIES CONTINUED

those fisheries that have property rights over the fishery may participate in the MSC programme. However, enforcing exclusive fishing rights could have potentially devastating consequences for small-scale fisheries in developing countries; data has shown that the main contribution of these fisheries to poverty alleviation is due to their semi-open, or common access, nature (Béné *et al.*, 2010).

Indeed, Kaiser and Edward-Jones (2006, in Gulbrandsen 2009: 658) analysed the common features of the first 11 fisheries that achieved MSC certification. These features included “a high selectivity of their target species, have stocks that occur within known areas for which there are exclusive national access rights, tend to have limited access, are well regulated and enforced, and are often co-managed by governments, scientists, and fishers”. They compared this to the dominant traits in the majority of fisheries around the world which have “no significant input into the management process; they share the fish resources with multiple fishers from other nations or with associated fishers and have little control over the setting of fishing quotas. Many fishers, in fact, are excluded from even considering MSC certification because of the actions of others that are beyond their control. This feature of open access resources effectively excludes fisheries that meet most of the MSC criteria, but share the fish resources with other fisheries that do not fish sustainably.”

Certification may not be aligned or relevant to developing country governments’ fisheries policy and political will may therefore be limited. For example, a number of developing world NGOs have pointed out that most developing world governments have pursued, and still pursue, strategies to increase fisheries production and output in order to maximise national revenues,

foreign exchange earnings and poverty alleviation (interview with developing country NGO representatives, 2014). This may directly conflict with the need to reduce fishing effort to restore stocks to MSC’s standard. In the Asia-Pacific region, for example, subsidies are often offered to fisheries. Combined with a lack of control of fishing rights, this promotes overcapacity, despite agreements made under the 1995 FAO Code of Conduct. It is important to consider, however, that some capacity-enhancing subsidies – for example applied to small-scale developing world fisheries – may be aligned to the country’s poverty reduction or food security strategies, and may therefore be a possible tool to enhance sustainability. Greater clarity is needed on the distinction between good and bad subsidies in particular contexts.

Many stakeholders from industry who are trying to work with developing world governments towards sustainability and certification report that these governments’ attitude can constitute one of the biggest barriers to the MSC certification of developing world fisheries. They lack the capacity and/or willingness to put the necessary policies and processes into place to provide an enabling environment for certification, or to enforce them (interview with industry representatives, 2014). This is mainly attributed to governments still aiming to increase production, as previously stated. There are also extreme examples of fisheries being stuck in pre-assessment because they are waiting for the government to implement the necessary milestones – such as creating national regulations on fishery access, or on illegal, unreported and unregulated fishing – required by the MSC to proceed to full assessment (interview with developing country fishery representative, 2014). Such cases reflect the larger issue of fisheries being unable to comply with all the requirements stipulated in

the assessments since some of the changes are outside their control.

But this is not inevitable, and political will can be built. It is for this reason that MSC has invested time and resources in some countries, such as Indonesia, to liaise closely with governments and to establish public-private partners to support fisheries in achieving MSC certification. In South Africa, once the benefits of MSC certification were proven in terms of reducing the bycatch of birds, the government was largely supportive of MSC – to the extent that they have integrated parts of the standards into their legislation, and various government ministries have supported fisheries to obtain MSC certification by helping them obtain the necessary data.

5.2.7 Competition from alternative eco-labelling schemes

The MSC does not currently recognise equivalence with any other schemes and is by far the most dominant player in sustainability certification of wild capture fisheries. This has been attributed in part to MSC's ability to scale up quickly to respond to commercial interests (Ponte, 2012). Other schemes and labels are either species-specific and/or location-specific – for example, the Australian Southern Rock Lobster Clean Green Program, the Salmon Safe Label, Marine Ecolabel Japan – or relate mainly to aquaculture (Global Aquaculture Alliance, GlobalGAP or organic) (Ponte, 2012). The only other existing label to include capture fisheries that is starting to place competitive pressure on the MSC is the Friends of the Sea (FOS). FOS has a wider product reach than MSC as it offers certification for both wild-caught and aquaculture products. It differs from MSC in its inclusion of social and economic standards and specifically focuses on the inclusion of developing

world fisheries (which currently represent over 50 per cent of FOS certifications), and in some occasions FOS funds the assessment process for fisheries directly (FOS, 2014c). Naturland Wildfish is another sustainability certification scheme that has emerged for wild capture fisheries and includes standards related to economic, social and environmental criteria. However, it is still in its pilot phase.

Fairtrade is also reported to be emerging in the fisheries sector, owing to the already existing trade relationships with agricultural communities in developing countries, who in some cases may also be seasonal fishers. Those local communities recognise the Fairtrade logo and what the certification entails – including the socio-economic benefits – thus simplifying the selection process; they may already have engaged with Fairtrade in their capacity as farmers (interview with a developing country NGO representative, 2015).

Though these schemes are either nascent or in the early stages of application, their alternative approach to certification may mean they offer an attractive or more accessible alternative for small-scale developing world fisheries to achieve sustainability certification. Their approaches include: the inclusion of socio-economic criteria; access to funding to cover the costs of certification; their alternative approach to outreach and capacity building; and different environmental standards or management requirements. While it appears, therefore, that competition from alternative eco-labelling schemes is not yet posing a significant barrier to the participation of developing world fisheries in MSC certification, there is strong potential for it to do so. This requires greater interrogation, potentially in Phase 2 of this research.

SIX

IMPACTS OF MSC CERTIFICATION FOR DEVELOPING WORLD FISHERIES

6.1 BACKGROUND: AN OVERVIEW OF THE AVAILABLE DATA

There is a lack of rigorous impact assessment studies of the environmental, social and economic impacts of MSC certification. Although the MSC scheme has been running for 14 years, many fisheries have become certified more recently, and longer periods are likely needed for impacts to emerge – particularly environmental impacts.

Attributing impacts and changes in a fishery to MSC certification is also challenging. Changes to production systems and fisheries management may take place before certification has been achieved – and not necessarily because fisheries are planning to achieve certification (Standing, 2009). Changes may occur as a result of external factors, rather than from the process that fisheries follow in order to achieve MSC certification. There are several experimental, quasi-experimental and non-experimental techniques that can be used to assess the potential impacts of MSC certification: randomised controlled trials (RCT) and propensity score matching, to mention two. However, these techniques can be both technically and financially prohibitive. Consequently, MSC has relied in the past on stories of change: “by using qualitative approaches to capture the stories in the fisheries and specifically enquire people’s perceptions about who or what is responsible for prompting the changes observed, answers could emerge that indicate the influence the MSC programme has had on decisions and actions in fisheries. Any information that emerges from such a process could be presented alongside the project and

meta-level analysis of changes in performance against the core PIs [performance indicators].” (MSC, 2006:9).

However, the MSC now has its own monitoring and evaluation (M&E) programme. This programme collects empirical data that can be evaluated against the MSC’s sustainability and strategy outcome objectives. It uses 22 indicators that were developed in consultation with stakeholders and “measure the quantity and quality of short, medium and long-term effects of the MSC program on certified fisheries, target resources, associated ecosystems and other areas of strategic activities” (MSC, 2013d:10). The M&E programme focuses on environmental impacts and uses data from fishery assessment and successive surveillance audits carried out by the conformity assessment bodies as third-party organisations, and are publicly available on the MSC website (MSC, 2013d). While useful, this programme does not offer fully independent assessments of on-the-water changes, though Agnew *et al.* (2006) and Martin *et al.* (2012) show the presence of a statistically robust link between changes in scores and the underlying improvements ‘on the water’. This research is helpful in demonstrating possible environmental impacts, although it risks missing important analyses of what social and economic benefits are delivered by the scheme, and how these compare to the costs. Despite the fact that the MSC standard does not include social and economic criteria, investigating social and economic impacts is central to understanding the

scheme's potential to benefit developing world fishers – who are typically poor and heavily reliant on fishing to meet their basic livelihood (and often food security) needs.

Aside from MSC's own studies, the literature that does exist is varied in terms of methodology: some review data from assessment reports and scores made publically available by certification bodies (using before-after quantitative assessments); others review existing literature and supplement them with stakeholder interviews; and some focus on stakeholder interviews alone. Their scope is also highly variable – some studies are country-specific; some focus on specific issues or impacts such as partnerships for research that have happened as a result of certification, or the number of objections that have been made against certified fisheries and not upheld. Many studies mention impact, but few studies focus specifically on it. Fewer still refer specifically to the impact of the MSC on developing world fisheries, but where they do they focus on one or two specific case studies. Consequently, there is a lack of quantitative, rigorous assessment of the net benefits of certification for developing world fisheries. This, in part, reflects the fact that the majority of developing world fisheries have become certified very recently in comparison to the larger number of developed world fisheries that have achieved certification – limiting the time periods over which impact can be accurately measured. The first developing world fishery was certified in 2004 (and could be classed as large-scale or 'industrial'), while the majority of developing world fisheries were certified from 2011–12 onwards.

In this section we review the research that does exist, and draw on insights from interviews with a number of stakeholders, including MSC's Developing World Team; developing world fisheries managers (those who have achieved certification); developing world governments who have supported certification or are interested in sustainable fisheries; NGOs and academics who have also worked directly with developing world fisheries or are interested in sustainable fisheries; and industry representatives who source certified seafood products.

While the MSC standard focuses on environmental sustainability, we take a broader approach to understanding impacts by exploring socioeconomic as well as indirect or unintended positive and negative effects. MSC's theory of change assumes that market incentives (through buyer preferences) will drive sustainability improvements in fisheries. In this sense, economic impacts in the form of improved market access are implicit in the aims of the standard and need to be investigated. However, there are limitations to understanding economic and social impacts systematically across a representative number of fisheries – as much of the evidence that already exists focuses on a handful of fisheries and the economic benefits those fisheries have reported, rather than a comprehensive and quantitative assessment of benefits across the board.

It is important to recognise that fundamental issues have been raised over the nature of the MSC standard and its certification process. Though it is beyond the scope of this paper to grapple with these in depth, these issues give a context for the reader to understand the scheme's possible overall to impact on sustainability in marine environments. We have summarised the key issues identified in Box 6.

BOX 6. OPPORTUNITIES TO IMPROVE THE MSC STANDARD AND CERTIFICATION PROCESSES

Despite the sustainability claims made by the MSC, many researchers have suggested that there are still areas that need continued development and improvement. For example, the standard allows for fishmeal production to be certified – the sustainability of which has been called into question by a number of commentators for numerous reasons, including the fact that it diverts fish away from direct human consumption and because fishmeal is usually sourced from forage fish species which are considered to be keystones of their ecosystems – a variety of species including tuna, marine mammals, sharks, swordfish, and seabirds depend on them for food (WWF, 2015). Christian *et al.*, (2013) argues that the certification of fishmeal contradicts Article 2 of the FAO Code of Conduct for Responsible Fisheries, which requires managers to “promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities” and Article 11.1.9, that “states should encourage the use of fish for human consumption and promote consumption of fish whenever appropriate.”

Christian *et al.*, (2013) also argue that fisheries that benefit from fuel subsidies – predominantly in developed countries – should not be allowed to be MSC-certified. Under Principle 3, the MSC does not allow a certified fishery to be in receipt of capacity-enhancing or “bad” subsidies (MSC PI 3.1.4) – and fuel subsidies are an obvious capacity-enhancing subsidy (Sumaila *et al.*, 2008, 2010 in Christian *et al.*, 2013). Christian *et al.*, (2013) argues that by receiving these subsidies fisheries should automatically cause fisheries to fail certification, something that did not happen in the case of the Pacific sardine fishery. As previously argued, however, it is important to consider that some capacity-enhancing subsidies may be a possible tool to enhance sustainability in some contexts, such as helping to build livelihoods.

Objections have been raised against some fisheries seeking MSC certification on the basis that a number of them are overfished and/or are using fishing techniques that are regarded as unsustainable. Froese and Proelss (2013, in Christian *et al.*, 2013) argue that even according to the MSC’s own assessment, 16 per cent of the 45 MSC-certified fish stocks are subject

to overfishing and 27 per cent are ‘depleted’. In the case of the South African Hake trawl fishery that obtained MSC certification, an audit carried out by the Friends of the Sea on behalf of two European supermarkets concluded that the fishery would not be suitable for certification by Friends of the Sea standards, based on its status as overfished and unacceptable levels of bycatch. The hoki trawl fishery in New Zealand also obtained MSC certification despite its use of bottom trawling, which was collecting deep-seal corals and sponges as bycatch (Standing, 2009). Nevertheless, Froese and Proelss (2012) argue that this study shows the percentage of stocks whose biomass was above the biological maximum sustainable yield²⁴ was three to four times higher (47–69 per cent) in certified seafood than an estimated 15 per cent for all stocks. They argued that by buying seafood from these healthy stocks, consumers support sustainable fisheries, meaning that they can eat their fish and have it, too.

Similarly, many studies have suggested that certification and scoring issues within the scheme must be resolved. For example, a number of researchers have argued that there is evidence of ‘generous’ certification scorings of fisheries seeking MSC certification. This has been attributed to the fact that: “fisheries not only choose their own certifiers and prefer those companies likely to produce a positive result, but a successful fisheries certification also means future work for the certifier in terms of annual monitoring and eventual re-assessment” (Ward, 2008; Gulbrandsen, 2009; Jacquet *et al.*, 2010b in Christian *et al.*, 2013:11).

The validity of peer review processes used to ensure the decisions of certifying bodies has also been questioned, based on the financial incentives that can exist between certifying bodies and the peer reviewers they choose. A negative review of the work of an organisation they work closely with and on which they rely for consulting contracts might make them less likely to obtain work in the future (Standing, 2009). However, the counter argument to this is that the reputation of peer reviewers is of central importance to their jobs – it would not be worth compromising this and their chances of work and academic success in the future.

24. With fishing pressure below ‘fishing mortality maximum sustainable yield’ or FMSY.

The following sections focus on the benefits and costs of MSC certification for developing world fisheries, and small-scale fisheries in particular. However, where relevant, evidence is included of where these benefits and costs are also found to a large extent in developed world fisheries. Box 7 offers an overview of the impacts of certification for small-scale producers in developing countries in agriculture, many of which face similar challenges to small-scale developing world fisheries.

6.2 WHAT ENVIRONMENTAL BENEFITS DOES MSC CERTIFICATION DELIVER FOR DEVELOPING WORLD FISHERIES?

MSC certification does indeed result in improved environmental performance (Agnew *et al.*, 2006; Martin *et al.*, 2012; MSC, 2014e). Broad level environmental improvements are monitored by the MSC's Monitoring and Evaluation Programme by tracking 13 environmental performance indicator scores on the premise that positive trends in scores are indicative of improvements in fishing practices with potential environmental impacts on the target species, non-target species and associated habitat and ecosystems. The environmental indicators are aligned with the three core principles of the MSC standard: health of target fish stock; limited impact of the fishery on the environment; and effective management of the

fishery. The overall environmental improvements recorded are in Table 5.

'On the water' environmental improvements, or actual observed environmental changes, do occur in MSC-certified fisheries, and these improvements occur incrementally throughout a fishery's involvement with the MSC programme (MRAG *et al.*, 2011). These changes are closely linked to meeting conditions for certification that are raised during pre-assessment, certification and subsequent surveillance stages of the programme. However, a high proportion of fisheries do not show positive or negative change (in outcome indicators), thereby suggesting that these fisheries are already meeting best practice (MRAG *et al.*, 2011).

Fisheries engaged in the MSC pre-assessment process that receive recommendations to proceed to full assessment 'with caution'¹²⁵ make the largest improvements prior to certification (Martin *et al.*, 2012). Fisheries whose recommendations are not accompanied with caution do not make similar improvements, which are attributed to a lack of incentive to make changes before a full assessment. The performance indicator with the greatest quantified outcome change is stock status, for which more information is available and therefore is more closely monitored. Significant improvements occur post-certification and are linked to specific conditions (MRAG *et al.*, 2011). However, some

TABLE 5. MSC ENVIRONMENTAL INDICATORS

Principle	Environmental indicator	Environmental improvement
Principle 1	Target stock status	The proportion of fisheries in the MSC programme that are maintained at or above maximum sustainable yield levels has increased from 80% in 2009 to 94% in 2013 (MSC, 2014e).
	Target stock management	The proportion of fisheries with comprehensive harvest strategies and harvest control rules and tools increased from 70% in 2010 to 77% in 2013 (MSC, 2014e).
	Information on the target stock	88% of fisheries have high-quality information on the target stock and their assessments include main uncertainties and a peer review process (MSC, 2014e).
Principle 2	Status of non-target species	The proportion of fisheries with non-target species below biological limits has declined from 26% in 2012 to 22% in 2013 (MSC, 2014e).
	Status of endangered, threatened and protected species (ETP)	No certified fisheries cause serious or irreversible harm to endangered, threatened and protected (ETP) species (MSC, 2014e).
	Status of habitats and ecosystems	The proportion of fisheries in the MSC program with habitat and ecosystem impacts at or above best practice has increased from 71% in 2009 to 82% in 2013 (MSC, 2014e), thereby increasing the proportion of fisheries with very low impacts.
	Management of non-target and ETP, habitat and ecosystem impacts	The proportion of certified fisheries with ETP scores at or above best practice has increased from 73% in 2009 to 88% in 2013 (MSC, 2014e).
	Information on non-target and ETP, habitat and ecosystem	More than 81 fisheries have improved information on non-target and ETP species, habitats, and ecosystem structure and function resulting in a higher proportion of fisheries performing at best practice level. However, the proportion of fisheries above best practice has not increased in the last three years, reflecting the difficulty of acquiring high quality information on the ecosystem impacts of fishing (MSC, 2014e).

25. I.e. that are a number of conditions that need to be met in order for certification to be achieved/ for fisheries to pass full assessment.

fisheries experience a decline in environmental performance following certification (Agnew *et al.*, 2014). In these instances new conditions are issued and in some cases 'expedited audits' are conducted, as was the case in the North Sea herring fishery in 2007 following concerns about a steady decline in stock status.

Agnew *et al.* (2006) identified a number of environmental gains across ten certified fisheries that had been subject to at least one post-certification audit to determine whether environmental changes or improvements could be detected in certified fisheries via certification conditions. These gains were termed 'operational result' gains, which are defined as 'real downstream results of actions' that had been translated into real environmental improvements. The majority of these gains could be linked to the MSC certification programme which had at least partially, and often mostly, been a stimulus for the change.

Environmental improvements are often fishery-specific and related to the conditions set during pre-assessment and the certification process. Therefore, it is difficult to generalise across

all fisheries in the MSC programme and to differentiate between improvements that are experienced by fisheries in developed and developing countries. However, environmental improvements can be broadly categorised as: improved stock status of target species; reduction of bycatch; reduction of impacts on seabirds; reduction of impact on habitats and ecosystems; and improvement of management aspects (leading to actual environmental improvements).

A range of examples of specific environmental benefits identified through both the MSC's M&E programme and independent studies are presented in Table 6 – though these are confined to developed world fisheries.

TABLE 6. EXAMPLES OF ENVIRONMENTAL BENEFITS IN MSC-CERTIFIED FISHERIES

CATEGORY	FISHERY	ENVIRONMENT IMPROVEMENT/BENEFIT	SOURCE
Improved stock status of target species	New Zealand hoki	Hoki (<i>Macruronus novaezelandiae</i>) populations in both stocks in the New Zealand hoki fishery have more than doubled, spawning stock biomass has increased and both stocks are now considered to be within sustainable limits.	Ministry for Primary Industries, 2013
	Thames herring	A halt in the decline of spawning stock biomass	Agnew <i>et al.</i> , 2006
	Loch Torridon nephrops	Increasing stock density recorded in CPUE and increases in the number of large animals	Agnew <i>et al.</i> , 2006
	Canadian Scotia-Fundy haddock	Development of defined harvest objectives, strategies and control rules to ensure that a change in stock status would result in a reduced quota.	MSC, 2014e
	Oregon pink shrimp	Improved monitoring and reporting of catch data and discards to ensure stock dynamic models detect fishery-related changes in stock status, and mitigate this accordingly (e.g. reducing fishing effort)	MSC, 2014e
Reduction of bycatch	Gulf of Alaska pollock fishery	Reduction of bycatch of Chinook salmon	MRAG, 2011
	New Zealand hoki	Reduction in fur seal mortalities	Agnew <i>et al.</i> , 2006
	Norway North Sea and northeast Arctic saithe	Improved recording of bycatch through scientific sampling, particularly of endangered, threatened and protected species	MSC, 2009
	North Eastern Sea Fisheries Committee Sea Bass	Improved monitoring of bycatch and new limits on fishing effort resulting directly from a condition of certification	MSC, 2009
Reduced impact on seabirds	Patagonian toothfish	Reduced bird mortality	MRAG, 2011
	South Georgia toothfish	Reduced number of discarded hooks appearing in albatross nests	Agnew <i>et al.</i> , 2006
	New Zealand hoki	Reduction of impacts on seabirds	MSC, 2009
	Domstein Longliner Partners northeast Arctic cod and haddock	Requirement to provide more robust estimates of all bycatch, including commercial and non-commercial species, mammals and birds	MSC, 2009
	Pacific hake mid-water trawl fishery	Investigation into impacts of fishery on biological diversity and ecosystem productivity – increased knowledge and understanding of fishery resulting in a reduction of risk	MSC, 2014e

CATEGORY	FISHERY	ENVIRONMENT IMPROVEMENT/BENEFIT	SOURCE
Reduced impact on habitats and ecosystems	Patagonian toothfish	Elimination of the discarding of hooks and implementation of protected areas	MRAG, 2011
	Western Australian rock lobster	Reduction of fishery beach litter on metropolitan beaches	Agnew <i>et al.</i> , 2006
	Loch Torridon nephrops	Elimination of ghost fishing*	Agnew <i>et al.</i> , 2006
	South Georgia Patagonian Toothfish Longline	Precautionary closure to longlining** of three areas of deep coral habitat following an MSC certification condition to direct research “at locating areas of complex benthic*** habitat”	MSC, 2009
	Germany North Sea Saithe Trawl	Improvements to the design of fishing gear to reduce environmental performance	MSC, 2009
	Norway North Sea and northeast Arctic saithe	Mapping of cold water coral areas and assessment of damage to corals from non-trawl gears	MSC, 2009
	Canada Northern Prawn / Gulf of St Lawrence Northern Shrimp Trawl Esquiman Channel	Research into the impacts of shrimp trawls on the seabed, along with a commitment to modify fishing practices if unacceptable impacts are shown	MSC, 2009
	The DFPO Denmark North Sea and Skagerrak saithe	Code of Conduct expanded to include a requirement to record all interactions with ETP species by the fleet. Landings of common skate and spurdog have been reduced.	MSC, 2014e
Management aspects that led to environmental improvements	South Georgia toothfish	Closer correspondence of extractions to the total allowable catches, revision of assessment process. Continued low levels of illegal, unreported and unregulated fishing, which although it was a condition actually happened before certification.	Agnew <i>et al.</i> , 2006
	South Georgia Patagonian Toothfish Longline	Implementation of a highly accurate catch recording system involving barcoding every single box of fish to enable effective auditing for the Chain of Custody audit.	MSC, 2009

Notes: *ghost fishing – discarded fishing gear endangering marine life; **longlining – a long heavy fishing line with a large number of baited hooks, used in deep-sea commercial fishing; ***benthic – of the sea bed or bottom of a body of water.

Improvements have also been detected in fisheries located in developing countries (MSC, 2013a). The majority of improvements identified by the MSC's M&E programme relate to Principle 2 – ecosystem impacts. Aside from the evidence offered by the MSC itself and studies by the International Sustainability Unit (ISU) and the Marine Resources Assessment Group (MRAG) presenting fisheries' self-reported environmental impacts, independent studies looking specifically at the environmental impacts of MSC certification in developing world fisheries do not exist. The evidence that does exist, from MSC and ISU sources, is presented in Table 7.

As previously mentioned, fisheries engaged in the MSC pre-assessment process who receive recommendations to proceed to full assessment with caution make the largest improvements prior to certification (Martin *et al.*, 2012). This is certainly true for the Gambia sole fishery, which has introduced a number of measures for improvement of the fishery in preparation for full assessment. This has included developing a management plan, implementing a research plan and collecting data for stock assessments. While not a direct environmental improvement in themselves, these measures are likely to improve the environmental performance and sustainability of the fishery (MSC, 2013d).

Wider impacts have also arisen from the certification of the South Africa hake fishery. Following its success, Mozambique, Reunion Island, Tanzania and Kenya have shown greater interest in MSC pre-assessment and certification; it has also led to a number of broad level industry commitments to reduce ecosystem impacts of fisheries through the introduction of mitigation measures to reduce the bycatch of turtles and seabirds, and to develop and implement management plans (Standing, 2009).

TABLE 7. EXAMPLES OF ENVIRONMENTAL BENEFITS IN MSC FISHERIES IN DEVELOPING COUNTRIES

FISHERY, COUNTRY & SPECIES	ENVIRONMENTAL BENEFIT
Patagonian scallop	MSC certification has added expertise resulting in strong research and monitoring of the scallop biomass in order to develop best management practices (MSC, 2009).
Fiji albacore tuna longline	<p>Development and implementation of a shark bycatch reduction plan, which included the prohibition of wire traces*.</p> <ul style="list-style-type: none"> • introduction of a ban on landing silky sharks in August 2014 • an increase in observer coverage on vessels to monitor fishery interaction with sharks (MSC, 2014e)
PNA Western and Central Pacific skipjack tuna	Improved management of non-target and ETP species, habitat and ecosystem impacts
Mexico Baja California red rock lobster fishery	Introduction of escape gaps and a reduction in motor size in order to confine effort in the fishery (MSC, 2013a)
South Africa hake trawl	<ul style="list-style-type: none"> • Significant reduction (90%) in incidental mortality of seabirds – albatross deaths reduced by 99% (MSC, 2014e, Maree <i>et al.</i>, 2014) • Introduction of a bycatch policy to reduce the bycatch of kingklip; and also a stock rebuilding plan for kingklip (MSC, 2009) • Reduced impact on benthic habitats (MRAG, 2010) • Improvement in bycatch management – introduction of tori lines** • Non-fishing zones created in vulnerable areas and the fishery has initiated an independent assessment of their potential as offshore marine protected areas (ISU, 2012b) • Trawling is only permitted in established fishing grounds where the bottom is flat and muddy, unless the new areas have been properly assessed as being suitable for hake trawling (MSC, 2009) • Introduction of catch limits for monk (MSC, 2014e)
Suriname Atlantic seabob shrimp	Bycatch reduction devices (BRDs) with escape panels were introduced. Surveys show this has reduced bycatch by 24% to 34% (ISU, 2012b).
Vietnam Ben Tre clam hand-gathered	<p>Prior to certification, the harvest of clams below a certain size and the use of tractors on sand flats to transport clams were banned. Only rakes and sieves may be used to harvest clams. Closure guidelines can be introduced for an area if it is considered necessary for environmental development (MRAG, 2010).</p> <ul style="list-style-type: none"> • Improved status of ETP species (MSC, 2014e) • A biodiversity impact study, conducted in response to a certification condition, indicated that there are no unacceptable effects of the fishery on biological diversity in the Ben Tre province (MSC, 2013a)

Notes: *wire traces are sections of wire fishing line connecting the hook to the main fishing line, designed to stop fish escaping from the hook; **tori lines are a curtain of plastic streamers trailed from the stern of the ship, scaring birds away from longliners' baited hooks and trawlers' cables.

BOX 7. INSIGHTS FROM CERTIFICATION AND DEVELOPING WORLD PRODUCERS IN AGRICULTURE AND FORESTRY

Though fisheries and seafood are unique in many ways, particularly environmentally, the fishers who operate in small-scale developing world fisheries have a great deal in common with small-scale farmers and forest operators. Below we summarise a handful of key publications in agriculture and forestry to offer insights on the benefits, costs and challenges faced in other natural resource sectors.

Certification's impacts on forests, stakeholders and supply chains

This publication focused on the Forest Stewardship Council. Positive impacts identified include:

- shifts towards more scientifically rigorous models of forest management
- strengthened internal mechanisms of monitoring, evaluation and reporting, documentation and book keeping
- adoption of more business-like approaches (albeit sometimes at the cost of satisfying livelihood needs from the forest)
- greater emphasis on community structures as the basis for forest management
- increased frequency of contacts and dialogue with government, industry and donors
- increased acceptance of the enterprise and its stakeholders in local or national policy fora.

Other changes (which could lead to positive or negative outcomes) include a change in emphasis from local or national markets to international markets for part or all of production.

Costs, barriers and negative impacts include:

- no significant increase in community incomes
- increased administrative costs
- high costs of certification for community groups
- inaccessibility of both market information and certified forest product markets
- inability of forest standards to recognise many (complex) local land use systems, and locally-relevant social issues
- social and cultural burdens, and technical challenges, entailed when undertaking the necessary business improvements to support certified forest operations.

The study shows that certification has invariably been driven from outside, and often by donors, who have enabled communities to meet the challenges associated with certification by offering significant subsidies. The main driving force for small-scale enterprises to pursue certification is the promise of greater market security, which is not guaranteed. Without this security, communities may not continue with certification beyond an initial 'honeymoon' period when support from donors and certifiers is at its highest.

Source: Bass et al., 2001.

Pro-poor certification: Assessing the benefits of sustainability certification for small-scale farmers in Asia.

A review of the impacts of organic, Fairtrade, Rainforest Alliance, Utz Certified, and Café Practices on small-scale producers in Asia:

- Certification can improve the value of the product, but it doesn't necessarily lead to the producers themselves getting an increased share of the final price. In some cases producers may see a premium but this may be linked to changes in product quality, rather than the certification scheme itself (except in the case of Fairtrade which has development premiums built in).
 - Certification can mean improved access to information, training and support – from donors, NGOs and private sector players such as exporters, government or certification bodies themselves.
 - Certification can improve trading relationships, creating an incentive to form longer-term and more direct relationships.
 - Location-specific factors are highly likely to affect the success of various certification schemes – factors such as: environmental conditions; soil characteristics; the ability or willingness of farmers to organise themselves into groups; the farming systems already being employed (low input versus high input); and the availability of local extension services and support from exporters and other agents in the value chain or NGOs.
- Certification is typically most successful when farmers are already linked to markets and can use these links to obtain support and co-investment for certification. These markets typically also demand high quality produce.

Source: Blackmore and Keeley, 2012.

Building a roadmap to sustainability in agro-commodity production.

- In many sectors, there is a bias towards certifying 'low-hanging fruits': the larger farmers or the better organised, accessible and smallholders with capital who face fewer sustainability challenges or are better performing to start with.
- While in general the impact of voluntary sustainability standards in agriculture appears to be positive, it is rare that they contribute to a positive impact on all the issues they aim to address, and instances of no or very limited impacts are also common.
- Other efforts and investments are needed so that: all stakeholders in a sector align around a common vision of sustainability; key performance indicators are in place to measure progress and to be accountable for progress; investments are made in service delivery (technical assistance, finance and inputs); market demand is strengthened for sustainability; public sector regulation and governance is improved; and producers organised.

Source: Molenaar et al., 2013.

6.3 SOCIO-ECONOMIC IMPACTS FOR DEVELOPING WORLD FISHERIES

6.3.1 Market access, sales and opportunities for added value

There is anecdotal evidence of MSC leading to sales in new markets. In some cases this has allowed fisheries to add value and obtain a larger share of revenue. Industry commitments (such as those outlined in Section 1) have helped to drive this. The South African hake fishery (the largest MSC-certified fishery in a developing country, which can be regarded as large scale or even 'industrial') has been able to move away from traditional lower-value markets for unprocessed whole fish as a result of MSC certification and towards new markets in Europe where it delivers processed, packaged and branded high-value goods (ISU, 2012b).

In addition to opening up new markets, a number of fisheries – particularly in the developed world – have reported that MSC has enabled them to protect existing markets. Indeed, there is a perception that MSC will become a prerequisite for access to certain markets. A South African industry source argued in Washington and Ababouch (2011:41) that MSC will be a necessity to access markets in certain countries: "We have in the last 12–18 months had new product launches into Europe and the United States that have been on a 'MSC or nothing' basis".

Market access resonated among all the interviews carried out with developing world fisheries or their representatives as the greatest driver for, and the most direct socio-economic impact of, MSC certification. Many developing world fisheries managers aspire to have better access to markets in the North. MSC certification can catalyse access to export markets. Some developing

world fisheries have undergone the certification process as a response to requests by buyers; others have received offers to buy the entire harvest instantly after obtaining certification.

A number of developing world fisheries and governments interviewed said that so far MSC just provides access to European and American markets since retailers there demand it, but it still is not a barrier to trade since there are other large markets available to fisheries in Asia and South America which mostly do not require certification or changes to fishing activities to improve sustainability (such as using turtle excluding devices) (interview with developing country fishery and government representatives, 2014).

As a direct result of MSC certification, the cooperatives in the Vietnamese Ben Tre clam fishery found new buyers in Europe and the United States and developed markets for shell-on clams, a more profitable option because there is less processing involved (ISU, 2012b). Nevertheless, the accessibility of markets such as those in the EU or the USA – where MSC is in highest demand – depends also on the ability of the fishery to be able to meet stringent food safety standards, or having capacity to store, process, package and so on, which is often lacking in many developing countries. Most small-scale developing world fisheries may not have access to these facilities. This was confirmed by one NGO interviewee who has worked with many small-scale developing world fisheries. The interviewee argued that the 'access to markets' approach that certification adopts excludes a large number of small-scale developing world fisheries for the reasons stated above. For example, in order to export to the USA, refrigerated boats and turtle excluding devices are needed, which are very expensive and are rarely possessed by small-scale fisheries (interview with a developing country NGO representative, 2014). Therefore,

there are a number of measures that need to be in place to ensure that developing country small-scale fishers have better access to markets and benefit from value addition.

Governments play an important role in supporting fisheries' access to markets – adequate investments to build fisheries development infrastructures such as harbours, roads, refrigeration and processing plants are needed. This should also be complemented by organising fishers in the form of cooperatives or associations to benefit from economies of scale by sharing the cost of certification and storage and processing facilities, and maximising profitability from their harvest. In addition, cooperatives can play an important role in ensuring the benefits of certification are shared and accrue directly to fishers (interview with a developing country NGO representative, 2015).

6.3.2 Price premiums and improvements in product quality

MSC certification can lead to changes in the quality of seafood, for example via different harvesting methods, which also contribute to improved sustainability of stocks. In the case of the Vietnam Ben Tre fishery, for example, they have used bigger mesh size nets as a result of MSC certification to allow smaller clams to fall back to the sand. This ensures the clams selected are the size demanded by the market. They also return the largest clams to the sand flat after harvest, allowing them to breed. These selective harvesting techniques have led to more stable and predictable yields (ISU, 2012b), which has ultimately reduced economic volatility and built more stable livelihoods.

The improved quality in the case of the Vietnam Ben Tre Clam Fishery – in terms of clam size – has led to increased prices paid per clam, although

the premium has also been attributed to MSC certification itself. The price premiums were particularly obvious in the first year after MSC certification was achieved – price increases of 20–30 per cent were recorded eight months after full MSC assessment (ISU, 2012b). Prices per tonne paid to one cooperative increased from US\$615 in 2007 to US\$1,874 in 2010, including a 71 per cent increase between 2009 and the first half of 2010 subsequent to MSC certification (MRAG, 2010).

In general, however, it is challenging to isolate the effects of the MSC label and its sustainability claims on prices from those linked to quality and/or general trends in the market. This is partly due to the difficulties in finding fisheries that are very similar in all respects other than their certified status to ascertain whether the MSC label alone is the key factor in determining price differences. For example, MSC-certified hoki from New Zealand has reported premiums when compared to Chilean and Argentinian hoki, but this has also been attributed to differences in quality (ISU, 2012b).

In the case of the Indian Ashtamudi clam fishery, producers were able to fetch a premium for their clams in the local market without objections from local customers. This has been attributed to the fact that the MSC process was widely publicised in the community (interview with a developing country NGO representative, 2014). Nevertheless, the product is the only clam sold in the market so it is difficult to determine whether the acceptance of the price increase is attributable to the monopoly on the market or to a genuine customer willingness to pay more for an MSC-certified product.

Evidence from developed world fisheries – which is much more extensive – suggests that the reports of premiums are not consistent. In

light of the total number of fisheries who have obtained MSC certification one would have expected to see more reports of premiums if this were a common occurrence. There is also uncertainty over whether premiums will be maintained as certification expands and more products become certified, increasing supply relative to demand. Indeed, evidence from the organic banana sector and also for dolphin-safe tuna suggests this may not be so. Although the price of conventional bananas fluctuated by roughly 30 per cent between 1997 and 2003, and remained roughly the same in real prices during this period, the price of organic bananas has dropped by 73 per cent. A price premium is still paid for organic bananas, but it appears to be decreasing over time as the supply of organic bananas increases (UNEP, 2003, in Macfadyen and Huntingdon, 2007). However, price premiums may emerge as a result of competition between retailers to secure the consistent volumes they need for their supply to meet their commitments to sustainable sourcing.

Evidence on the costs of certification (see 4.2) – which are very significant for developing world fisheries – implies that price premiums are needed to ensure there are net benefits for participating fisheries. But even where premiums do result from certification, Standing (2009) raises the question of whether small-scale local fishers are the actual commercial beneficiaries of certification or whether it is the processors, exporters, wholesalers and retailers that reap the rewards from premiums.

Small-scale fishers rarely engage in certification programmes or FIPs, MSC pre-assessment or MSC full assessment without the support of NGOs or industry organisations or associations, which are usually comprised of processors, wholesalers and retailers. Support comes in

the form of technical assistance, funding and capacity building (Ponte, 2008). Support from industry organisations and associations has raised concerns regarding the destination of commercial benefits.

The need for chain of custody in certified fisheries and product supply chains may mean a change in distribution channels (value and supply chains) since vertical integration allows for more control and efficiency in the application of traceability, hygiene requirements and other standards (Perez-Ramirez *et al.*, 2012a). Vertical integration tends to lead to marginalisation and exclusion of small-scale ancillary workers, meaning a possible loss in the number of livelihoods supported and the capture of economic benefits by a small number of processors and middlemen (Standing, 2009). In addition, within these distribution channels, small-scale fishers have relatively little influence on price transmission. Certification can in fact be likely to reward middlemen and the post-harvest chain of custody, but not necessarily the fisher (Kurien, 2004; SEAFDEC, 2001).

The issue of distribution remains key to ensuring that the poor or the most vulnerable sections of society benefit from certification schemes. One of the main reasons equitable or fairer benefit sharing is important is in order to build wider national legitimacy and support behind the incentive mechanism. If the certification scheme and the way it is operated or used is perceived as illegitimate, this may lead to conflict and jeopardise fisheries management and conservation efforts, as well as the effectiveness of the scheme (Mohammed and Brouwer, forthcoming). Therefore, careful balancing between effective implementation of certification scheme and legitimacy is needed. Even though it is marginal to the MSC's principles and performance indicators, gaining the support of

local, resource-dependent fisher communities through improvements to their livelihoods and poverty alleviation may in turn assist in the achievement of conservation objectives.

We argue that, to foster legitimacy for MSC certification, enough people must benefit. But, if too many people benefit from something they did not contribute to, this will dilute incentives or benefits, which may result in lower sustainability outcomes and in lower overall benefits to share. On the other hand, if benefits are accrued by a small group of people, or specific actors along the supply chain, or even geographical areas, people may feel unfairly treated and turn against the whole mechanism as illegitimate. There may be a high likelihood for sabotage or 'poaching' that could undermine sustainable fisheries. Thus, a clearer understanding of distributional issues is becoming increasingly important for the effectiveness and sustainability of certification schemes and other market governance mechanisms. It will be important to map the actors along the supply chain and assess power structures and profitability among different stakeholders, to identify features that limit net returns by fishers. Efforts must be made to overcome these barriers that may limit profitability by small-scale and often poor fishers.

6.3.3 Income and wages

Some fisheries in *developed* countries have reported improved wages as a result of the economic benefits that have emerged from changes to the fishery's management to work towards sustainability. However, this has also meant a loss of livelihoods for some fishers who didn't obtain a quota and were therefore not able to continue fishing (ISU, 2012b), so while there were clear benefits for some fishers, there may not have been a net gain in terms of yields overall; and there are very likely trade-offs

between environmental and socio-economic benefits which need to be quantified. Increased benefits for 'armchair fishers' – usually wealthy, influential individuals who own boats and fishing gears but hire other people to operate them – does not necessarily lead to improved wage rates to fishers. However, one may be able to argue that sustainable management of fisheries ensures that the livelihoods of many poor fishers are maintained (through continued employment) and therefore their resilience to shocks, whether environmental and economic, is enhanced. There is a need to address equitable benefit sharing to ensure benefits are distributed fairly and no harm is done to any fisher group.

The Vietnam Ben Tre Clam fishery has seen wages increase fivefold since 2007 (ISU, 2012b). This fishery has also seen a 400 per cent increase in income (MSC, 2014j). The increased value of the fishery has meant that it can support more people without overexploiting the stock. Today, nearly 13,000 households are involved, compared with fewer than 9,000 in 2007. Many are now able to pay their children's school fees and support them through vocational training (ISU, 2012b).

Nevertheless, evidence of improved wages from other developing country fisheries has not been reported in either the literature or the interviews. More detailed and rigorous research into the socio-economic impacts of MSC certification is needed.

6.3.4 Livelihoods and food security

While voluntary certification schemes may encourage environmentally sustainable fisheries, they do not explicitly address the immediate needs of food and income in developing countries. This is also true of the MSC.

Small-scale capture fisheries are locally complex, diverse and dynamic, central to livelihoods and

provide food, income and employment as well as a range of social and cultural values and benefits to fishers themselves, fishing communities and others (see for example Béné and Neiland, 2004; Friend *et al.*, 2009; Chuenpagdee, 2011; Weeratunge *et al.*, 2014). The benefits become particularly important when placed in the context of current food production challenges, social change and growing climate change uncertainties. Small-scale fisheries are a vital source of livelihoods in developing countries but they are often undervalued due to under-reporting of catches and employment. They provide a safety net function by providing part-time and temporary income in times of crisis such as during agricultural failures, conflict and recession (UN General Assembly, 2012). Small-scale fishers in developing countries have a direct social dependence on fisheries, and this dependence extends to family members and communities who may not necessarily be directly involved in the fisheries themselves, but who either are engaged in immediate post-harvest activities such as processing, or who depend on the benefits fisheries provide to the fisher. Certification may improve the wages and incomes of fishers, and the stability or duration of trading relations, thereby improving the quality and resilience of livelihoods. However, as described above (5.3.3) it can also involve the exclusion of a number of fishers – in order to allow for sustainable management of the fisheries resource – which may mean an overall net loss of the number of livelihoods supported. Further research is needed in this respect, with an exploration of changes in employment opportunities throughout the supply chain subsequent to achieving MSC certification.

Small-scale fisheries play an important role in food and nutritional security. Fish and fishery products are often an affordable and relatively cheap or available source of animal protein in many developing countries. As well as providing key elements of the diet, aquatic resources and fish are important because of their availability and diversity in rural areas. This availability, either through direct access or through markets (such as small dried marine fish in rural areas of Africa) also means that many fisheries can assume a critical role as part of rural household livelihood strategies for dealing with unpredictable food production from year to year and/or seasonal production shortfalls. However, many of these roles are still poorly understood.²⁶

It is currently unclear to what extent achieving MSC certification impacts the food security of small-scale fishers in developing countries, for example through enhanced stocks and improved incomes that occur as a result of enhanced stocks (or indeed cost-savings – see below). As discussed earlier, the small-scale fisheries which achieve MSC certification are likely to export their catches, and are unlikely to consume it themselves. As such, changes in profitability of the fishery as a result of certification – which will impact purchasing power – are central to understanding the impacts of MSC certification on food security.

Indeed, Kurien (2004) argues that there is potential for sales to the export market to threaten nutritional security at the place of origin, and to displace women or local groups who find employment and play a central role in local fish marketing. Similarly, Standing's (2009) argument that small-scale local fisheries are not necessarily

26. See for instance Wilson, J. (2012) Beach seining in Mozambique – bane or benefit? Tanzania Proceedings. IIFET.

the beneficiaries of certification calls into question whether, when fisheries products are being exported and fishers are not necessarily improving their wages or incomes, that they may be unable to fulfil their nutritional needs. More research is needed in this respect.

The impacts of MSC certification on livelihoods and food security (and other social aspects) needs further, dedicated interrogation. However, fisheries are complex social-ecological systems, their features and characteristics tend to be location-specific and depend on not only the resource itself but the cultural, social and economic fabric of the fishing community or communities involved. Therefore, in order to further identify and determine the feasibility, potential and impacts of small-scale fishers engaging in the MSC programme, we recommend that a number of case studies are conducted to ascertain detailed and location-specific information.

6.3.5 Cost savings

As mentioned above, as a direct result of MSC certification, the cooperatives in the Vietnamese Ben Tre clam fishery found new buyers in Europe and the USA and developed markets for shell-on clams, a more profitable option because there is less processing involved (ISU, 2012b).

The Surinamese Atlantic Seabob Shrimp Fishery saw cost savings as a result of implementing a code of conduct for the fleet, and using bycatch reduction devices with escape panels which reduced time and effort spent in sorting through by-catch. These measures were put in place to meet the MSC standard. Surveys show this has reduced bycatch by 24 per cent, a boon for fishers as well as fish. One of the fishers reported that “in the beginning we thought BRDs [bycatch reduction devices] wouldn’t work, that

we would lose seabob...after the tests we were happy because we didn’t lose much seabob but bycatch was reduced by a third. For me and my crew, that’s less sorting on the back deck” (ISU, 2012b: 52).

6.3.6 Raised profile, improved reputation and government support

One interviewee singled out the most important benefit from obtaining MSC certification for their developing world fishery: the fact that NGOs and civil society, which had previously put a lot of pressure on the sardine industry in the area, stopped criticising their fishing activities and allowed them to continue their business without intrusions (interview with developing world fishery representative, 2014). The stakeholder pointed out that if it wasn’t for MSC certification proving that they are following sustainable fishing practices, the fishery would probably not exist anymore as a result of outside pressure. The fishery is even allowed to fish inside marine protected areas in the fishing area, owing to observer programmes whose data show that there are no ecosystem impacts. The same stakeholder also mentioned that MSC certification, in addition to giving the fishery credibility, accountability, and a good image, impacted the management of the fishery and greatly helped to avoid increasing fishing effort.

For other developing world fisheries, MSC certification has also allowed them to raise their profile and has increased their government’s awareness of the fishery. As a result, some fisheries have obtained government investment to support the fishery and the communities dependent on them. Following MSC certification of the Mexican Baja lobster, the government provided the communities involved in the fishery with long-term electricity (a US\$20 million

project), as well as improved infrastructure such as roads and water (MSC, 2009).

6.3.7 Labour rights/child labour

The MSC Board has recently included the requirement for fisheries and other players in the chain of custody to comply with national and international laws on forced labour (MSC, 2014p). Even though the MSC standard does not assess social and employment conditions of fisheries and their supply chain, they have acted to condemn the use of forced labour by rendering ineligible for MSC certification those fisheries that have been successfully prosecuted for forced labour violations in the past two years. While laudable, this appears to depend entirely on fisheries being prosecuted for forced labour violations first. This is less likely to happen in many developing country settings where governance is weaker – monitoring of compliance with, and enforcement of, legislation is often a challenge (and therefore where forced labour is far more likely) – and judicial systems may be weaker. This may mean that the forced labour part of the standard does not have a huge impact on changing practices in developing country settings, though this requires further research and monitoring over time.

In general, the impact of MSC certification on labour requirements needs further interrogation. It is unclear whether achieving certification increases the number of jobs and livelihoods supported, or decreases it as a result of necessary reductions in fishing effort (see 5.3.3 above). It may be that both have happened or are a possibility, depending on the specific context in which the fishery is operating.

6.3.8 Improved trading relations

Improved trading relationships (for example transparency in purchasing agreements, the bargaining power of fisheries and the duration

of purchasing agreements) can reduce the economic vulnerability of small-scale fisheries, build their resilience and enhance incomes over the medium to long-term. In some cases retailers – and therefore presumably other players in the supply chain – may struggle to source the volumes of particular certified species they need to meet their sourcing commitments. This may incentivise retailers or traders to engage with longer-term relationships with fisheries to ensure consistency in their supply. However, this is as yet unproven, and requires further analysis, preferably through analysing all players and relationships in a number of different supply chains linked to small-scale fisheries. MSC may bring about longer-term trading relationships (as has happened in other small-holder certification schemes in agriculture) though that is yet to be proven.

6.3.9 Access to credit and capacity building

Access to credit is particularly important for small-scale developing world fisheries; these fisheries often struggle to obtain credit to invest in their production systems, as discussed in 4.2.3. However, at times, it is capacity that is lacking rather than credit, even in developed countries. Further research is needed into the ways in which MSC certification builds the capacity of small-scale developing world fisheries.

In some cases, even after MSC certification has been achieved, fishers operating within the certified fishery are not aware of the certification programme and its requirements or the importance of sustainable marine resource exploitation. Quite often the knowledge is not passed down from managers who are involved in the certification process. For example, in the red rock lobster fishery in Mexico, Pérez-Ramírez *et al.* (2012b) reported that the members of the fishing cooperatives (the fishers and fisher communities) had minimal knowledge

of certification and that only the managers at the Mexican federation of fishing cooperatives, FEDECOOP, were knowledgeable about the guidelines and requirements. This 'discontinuous flow of information' does not build capacity among the fishers nor does it create an enabling environment in which marine resource sustainability becomes embedded in fishing activities. However, the certification of the red rock lobster fishery empowered FEDECOOP and increased its capacity to negotiate with the Mexican government on issues such as increased governmental support and quotas. As a result, FEDECOOP received support to improve fishery research, stakeholder communication and community infrastructure and social programmes, which created a huge incentive for fishers to comply with requirements introduced to the fishery.

6.3.10 Broader policy and institutional change in developing countries

MSC's theory of change states that "the MSC program is designed to create market incentives to reward sustainable fishing practices" (MSC, 2011). Effective governance and fishery policy are essential components of fishery management. Governance is particularly important to determine access to fisheries resources, integrity of fisheries resources and distribution of fish benefits. For example, fisheries in the MSC programme engage with both government and non-governmental organisations in their pursuit for certification. The question is whether certification has positive implications on overall governance, policy and institutions.

MSC certification can be obtained with little or no involvement from governments, despite the historic tendency for fisheries to be managed by governments through international, regional, and domestic management regimes (Gulbrandsen,

2014). Furthermore, fisheries have been managed through international governance mechanisms and a range of legally binding rules, the most notable being the United Nations Convention on the Law of the Sea (UNCLOS, 1982). Gulbrandsen (2014) argues that in order to evaluate the impact of certification on governance, policy and institutions, a useful starting point is to track state engagement through the incorporation of certification schemes into national policies and strategies, and determine whether certification programmes have been enhanced or restricted by relevant authorities.

A limited number of studies have presented policy and institutional benefits realised by fisheries in developing countries, which include improved relations and co-operation between fisheries and conservation NGOs; improved co-management and the role of resource management authorities; and the establishment of working groups which bring together a range of stakeholders including subsistence and commercial fishers, industry partners, government fisheries departments and NGOs (ISU, 2012a). MSC certification can lead to national and international recognition thereby raising the profile of the fishery. This in turn can lead to recognition from governments, greater negotiating power, increased influence and subsequent involvement in decision-making.

As we saw above, certification of the red rock lobster fishery in Mexico resulted in increased and direct support from the government in fishery research, stakeholder communication and quota negotiations (Pérez-Ramírez *et al.*, 2012b). It also resulted in subsidies for fuel; supplying coastal communities with mains electricity (replacing diesel generators); and resurfacing crumbling access roads to the villages (ISU, 2012b). Furthermore, members of FEDECOOP were given seats on the committee of the fisheries

department (ISU, 2012a). Empowerment of fishing communities can result in institutional change through increased negotiating power, which can in turn lead to greater demands being placed on institutions (Pérez-Ramírez *et al.*, 2012b).

The success of a fishery due to MSC certification can act as an incentive for other fisheries to adopt similar management systems (ISU, 2012b; Pérez-Ramírez *et al.*, 2012b). In Suriname, the certification and success of the seabob fishery is credited with leading to the country implementing its first fishery-specific management plan (ISU, 2012a). Furthermore, the Surinamese government established a seabob working group which included a wide range of stakeholders. In South Africa, the South African hake fishery introduced seabird bycatch mitigation measures (tori lines) to its fleet in response to a condition set by MSC; this resulted in a change in government policy and the use of tori lines is now mandatory for all trawling vessels in South Africa (MSC, 2009). Furthermore, this was done in cooperation with NGOs. In South Africa, certification is used to prevent reallocation of catch quotas – not necessarily for positive developmental gains, however. Certification has in fact been used to prevent redistribution of quotas away from the largest and most economically powerful owners (Pérez-Ramírez *et al.*, 2012b).

There is widespread recognition that the process of MSC certification can stimulate collaboration,

engagement and dialogue between a range of stakeholders; see Box 8 (Kaiser and Hill, 2010; Gutierrez *et al.*, 2012; Martin *et al.*, 2012; Pérez-Ramírez *et al.*, 2012a; Wiedenfeld, 2012; Agnew *et al.*, 2013). In the Baja California red rock lobster fishery in Mexico, the conditions set for certification required the management plan to include more specific references to ecological interactions. This in turn led to artisanal fishers and scientists collaborating and building closer relationships (ISU, 2012a). These partnerships can play an important role in supporting fisheries more widely, whether fisheries are actually able to obtain certification in the end or not. A common type of partnership that can emerge as a result of the certification process is one between the fishing industry and researchers – for example in the production of data on stock status. “It involves the participation and communication of several sectors by team working, whether certification is achieved or not” (Pérez-Ramírez *et al.*, 2012a). Increased collaboration can contribute to sustainable ecosystem-based fishery management (Kaiser and Hill, 2010; Gutierrez *et al.*, 2012; Martin *et al.*, 2012; Pérez-Ramírez *et al.*, 2012a; Wiedenfeld, 2012; Agnew *et al.*, 2013). Other benefits related to relationship building and collaboration include improved relations and cooperation with conservation NGOs, and improved co-management, especially in association with resource management authorities (in the case of South African hake, for example) (ISU, 2012a).

BOX 8. MSC AS A DRIVER FOR COLLABORATIVE RESEARCH

MSC certification of South African hake fishery was sought by the South African Deep Sea Trawl Industry Association (SADSTIA) and granted in 2004, with a number of conditions. The fishery was recertified in 2011, but again with conditions. According to Field *et al.* (2013), some of these conditions are being addressed through collaboration between the government fisheries body, the Department of Agriculture Forestry and Fisheries (DAFF), other government agencies (South African National Biodiversity Institute and the South African Environmental Observation Network), academia (mainly the University of Cape Town) and NGOs (WWF for Nature in South Africa (WWF-SA) and BirdLife Africa) with SADSTIA.

This collaboration has taken the form of research, such as detailed mapping of trawling grounds and sediment types, and recommendations for offshore spatial management and marine protected areas. Work has also included the maintenance and analysis of historic catch and effort databases. Most recently it has involved negotiations to implement an experimental trawl closure area with a view to measure the extent of recovery of 'benthic communities' – organisms that exist in the ecological region at the lowest level of the ocean, including the sediment surface and some sub-surface layer – in a before-after-control-impact (BACI) design experiment. As part of this experiment, fisheries committed to restricting their trawling activities to particular 'lanes', leaving other areas to recover once baseline surveys had been carried out. However, the experiment has struggled to secure funding (Field *et al.*, 2013).

SEVEN LESSONS FROM AND PROSPECTS FOR MSC CERTIFICATION FOR SMALL-SCALE FISHERIES IN DEVELOPING COUNTRIES

7.1 KEY INSIGHTS AND ISSUES

This study has provided a greater understanding of some of the potential drivers, barriers and impacts of MSC certification for small-scale fisheries in the developing world.

Small-scale fisheries typically face unique challenges in obtaining MSC certification. Their small size means they are usually disadvantaged in comparison to developed world fisheries for a number of reasons. This includes: an inability to monitor and survey and obtain technical information – which can mean they are data deficient (for instance on stock sizes); they are typically open access, thus making certification impossible as fishers do not have the necessary exclusive rights; they face higher transaction costs in getting certified; they are endowed with few financial resources and assets, and lack access to credit and markets; they generate smaller catches than developed world fisheries; they have ill-defined use or access rights; they

harvest a number of different species (in contrast to the MSC's single-species concept); and have complex socio-economic conditions.

A number of developing world fisheries have achieved, or are working towards MSC certification, which demonstrates that MSC certification can be a genuine outcome for these fisheries. However the total number remains small – only 18 developing world fisheries have achieved MSC certification (as of September 2014) and even fewer are actually defined as 'small-scale' (five, according to FAO's classification). On the other hand, there are a large number of developing world fisheries working towards MSC certification via FIPs.

Market access – both to new markets and to maintain existing markets – is one of the key incentives driving developing world fisheries to achieve MSC certification. In terms of the actors driving fisheries to get certified, retailers are a dominant force – largely in Europe and the USA,

which are by far the largest markets for MSC-certified products. Fishers themselves are likely to be a key actor driving efforts towards certification, but further research is needed in this respect.

From the information available, observed trends and patterns in global fish production do not correlate with those countries or fish species that are currently MSC-certified. This demonstrates that the MSC programme is a market-based tool that is not necessarily driven by production patterns, but rather by retailer demand for higher value species, in large and consistent volumes. This may limit future potential for scaling up and the inclusion of small-scale developing world fisheries, though MSC are undertaking efforts to increase demand in emerging and developing economies, particularly in South Africa and Asia.

In terms of benefits, in some cases MSC certification has allowed developing world fisheries to add value and thereby obtain a larger share of revenue (for example through additional processing). MSC certification can lead to improvements in the quality of seafood, for instance via different harvesting methods which also contribute to improved sustainability of stock and higher prices, such as in the case of the Ben Tre fishery in Vietnam. Cost savings through a reduction of bycatch, and sorting of this bycatch, has also been a benefit for one developing world fishery. In some small-scale developing world fisheries, incomes have increased and price premiums have emerged, but the evidence base remains very limited. Evidence from developed world fisheries – which is much more extensive – suggests that reports of premiums are not consistent. In the light of the number of fisheries who have obtained certification (both developed and developing) one would have expected to see more reports of premiums if this were a common occurrence.

There are concerns about the distribution of benefits from MSC certification and how this compares to who bears the direct and indirect costs of certification. Anecdotal evidence suggests that economic gains from certification schemes are reaped by processors, exporters and retailers, and not necessarily the fishers who have achieved certification.

Direct costs that represent significant barriers to small-scale developing world fisheries achieving MSC certification include the high costs of pre-assessment, assessment, annual auditing and re-assessment relative to the income and financial capacity of small-scale developing world fisheries. Since the majority of small-scale developing world fisheries to date have been supported externally through the certification process, this has not in reality been a key barrier to date. It is highly likely, however, to be a barrier to future re-assessments and certification and to other fisheries joining the scheme. A number of indirect costs have also been reported – such as fewer livelihoods being supported as a result of fishery closures, and fishers being excluded for stock rebuilding. These costs are likely to be almost always borne by fishers, though further analysis is needed.

NGO support cannot be guaranteed long term, therefore if the numbers of these fisheries seeking certification grows it may mean that fisheries themselves will be the main actors bearing the lion's share of direct certification costs. Judging by the financial capacity of most small-scale developing world fisheries, the high costs of pre-assessment, certification, annual assessments and re-certification, and the lack of consistent reports of premiums, for the majority of small-scale developing world fisheries the benefits of MSC certification are unlikely to outweigh the costs. However, further research is needed to answer this question definitively.

The impact of MSC certification on livelihoods, food and nutritional security has been highlighted as a significant gap in evidence on socio-economics impacts. While studies have been done on the impact of trade on livelihoods and food and nutritional security, there are conflicting results. The small-scale fisheries that achieve MSC certification are likely to export their catches, and are unlikely to consume it themselves. Enhanced stocks and improved incomes or premiums that may result may enhance fishers' purchasing power and thereby the capacity of these fishers to fulfil their food and/or nutritional needs. However, some commentators have suggested that sales to the export market could threaten the nutritional security at the place of origin, and displace women or local groups who find employment and play a central role in local fish marketing. But trade (local, national, international) is just one variable or factor that could change as a result of certification and consequently impact on livelihoods, food and nutritional security. Other components would be the closing of access to subsistence fishers, the changing shape of value/supply chains (with changes in labour requirements and distribution of benefits). These could all potentially have implications for employment, income, food security, nutritional security and livelihood strategies. But it is necessary to understand whether these impacts are specific to certification or common to the industrialisation of fisheries in general, and to the increased trade of fish products, which is a global phenomenon. Further research is needed in this respect.

7.2 NEXT STEPS AND FUTURE RESEARCH

Although the MSC scheme has been running for 14 years, the majority of certified fisheries have achieved this in the last few years. Fisheries are complex systems – particularly those in developing countries – and their features and characteristics tend to be location-specific, depending not only on the resource itself but the cultural, social and economic fabric of the fishing community or communities involved. Our research has identified that there are currently significant limitations to understanding economic and social impacts of MSC certification on small-scale developing world fisheries – much of the evidence that already exists is anecdotal, in that it focuses on a handful of fisheries and the economic benefits those fisheries have reported, rather than a comprehensive and quantitative assessment of costs and benefits across the board. Understanding the context-specific factors that shape the emergence of costs and benefits is particularly necessary to understand the accessibility of the scheme.

In order to further identify and determine the impacts of the MSC scheme on small-scale developing world fisheries and its potential to scale up in developing countries, research via a number of case studies would be highly beneficial. These case studies should include all small-scale developing world fisheries who have achieved certification to date, those who have embarked on pre-assessment, those who were pre-assessed and did not proceed to full certification, those who have withdrawn from the scheme, those who have engaged in FIPs but have not yet entered pre-

assessment, and those that have engaged in FIPs and proceeded to certification. The case studies would systematically analyse and quantify direct and indirect costs for developing world fisheries which have achieved certification or are in assessment or pre-assessment, how challenges were overcome, and the insurmountable challenges that arose for fisheries who were not able to achieve certification.

This research would offer evidence on the balance of costs versus benefits – both direct and indirect, intended and unintended – that fisheries can expect during and as a result of certification and the key factors (such as fishery size, complexity and species) that shape the types and scale of costs that emerge. The research would also explore drivers and barriers in more detail and consistently across all fisheries. In particular the role of fishers themselves as drivers to achieve MSC certification warrants greater interrogation. Where possible, fisheries that have been certified and those that have not achieved certification – with otherwise similar attributes and within similar socio-economic and political contexts – would be analysed, to facilitate a more rigorous comparison of costs and benefits through a counterfactual. This research should include an explicit assessment of the impact of certification on the livelihoods, food and nutritional security of fishers, their households and wider communities. This may allow for specialised processes to be introduced that will enable fishers to adapt to the changes that certification may bring, to be involved in and benefit from the certification process and to ensure that those engaged in ancillary activities are not excluded or marginalised.

As part of this case study-based research there should be an exploration of the value chains that connect certified small-scale developing world fisheries to consumers, in order to analyse the distribution of value and power along the chains and to assess whether any change in trading relationships – for example transparency in purchasing agreements, increased bargaining power of fisheries and the duration and ‘quality’ of trading relationships – can be attributed to MSC certification. It would be useful to identify where (or by whom) in this value chain the costs of certification are borne and where the returns are delivered. Ideally, these value chains would be compared to similar value chains where certification is not present in order to offer a counterfactual.

This research would help identify the impact of MSC certification on trading relationships and the factors that limit net returns and value share to fishers. More informed recommendations can then be made as to how to overcome these factors, which ultimately play a role in limiting profitability by small-scale fishers and the incentive for these – and other – fisheries to engage in the scheme.

Ultimately, these case studies would allow MSC and its supporting stakeholders – as well as other certification schemes – to better understand the enabling and disabling factors for certification in developing world settings, and to offer recommendations on how these might be enhanced or attenuated through adaptations of the MSC scheme itself; or to perceive any changes required in the wider enabling environment and the efforts of other players. It could also offer practical examples for fisheries on how to overcome challenges and constraints in achieving MSC certification.

REFERENCES

- Agnew, DJ *et al.* (2013) The MSC experience: developing an operational certification standard and a market incentive to improve fishery sustainability. *ICES Journal of Marine Science*. See <http://icesjms.oxfordjournals.org/content/early/2013/07/27/icesjms.fst091.full>
- Agnew, D *et al.* (2006) Environmental benefits resulting from certification against MSC's principles and criteria for sustainable fishing. Marine Resources Assessment Group and Marine Stewardship Council. See www.msc.org/documents/environmental-benefits/MSC_Environmental_Benefits_Report_Phase1_FINAL_4Ma.pdf
- Ahmed, M (2006) Market access and trade liberalisation in fisheries. International Centre for Trade and Sustainable Development, Geneva. See www.ictsd.org/themes/environment/research/market-access-and-trade-liberalisation-in-fisheries
- Allison, E (2011) Aquaculture, fisheries and food security. World Fish Centre working paper 2011-65. See www.worldfishcenter.org/resource_centre/WF_2971.pdf
- Bass, S *et al.* (2001) Certification's impacts on forests, stakeholders and supply chains. IIED. See <http://pubs.iied.org/pdfs/9013IIED.pdf>
- BBC (8 April 2014) Aldi, Lidl and Waitrose supermarkets increase market share. www.bbc.com/news/business-26936146
- Béné, C *et al.* (2010) Not by rent alone: analysing the pro-poor functions of small-scale fisheries in developing countries. *Development Policy Review* 28(3): 325–358.
- Béné, C and Neiland, A (2004) Empowerment reform, yes...but empowerment of whom? Fisheries decentralization reforms in developing countries: a critical assessment with specific reference to poverty reduction. *Aquatic Resources, Development and Culture* 1(1): 35–49.
- Bjorndal, T *et al.*, (eds) (2014) Value chain dynamics and the small-scale sector: policy recommendations for small-scale fisheries and aquaculture trade. FAO Fisheries and Aquaculture technical paper no. 581. FAO. See www.fao.org/publications/card/en/c/80b57c51-f3b1-590f-b06c-4b81322e179d
- Blackmore, E *et al.* (2012) Pro-poor certification: assessing the benefits of sustainability certification for small-scale farmers in Asia. IIED. See <http://pubs.iied.org/14604IIED.html>
- Bush, S *et al.* (2013) The 'devils triangle' of MSC certification: balancing credibility, accessibility and continuous improvement. *Marine Policy* 37: 288–293.
- Christian, C *et al.* (2013) A review of formal objections to Marine Stewardship Council fisheries certifications. *Biological Conservation* 161:10–17.
- Chuenpagdee, R (ed.) (2011) World small-scale fisheries: contemporary visions. Eburon Uitgeverij.
- De Silva, DAM (2011) Value chain of fish and fishery products: origin, functions and application in developed and developing country markets. FAO. See www.fao.org/fileadmin/user_upload/fisheries/docs/VALUE_CHAIN-report1.doc

- Doddema, M (2012) On fisheries improvement projects: an analysis of the suitability of fisheries improvement projects for achieving improvements in fisheries. A case study of a fisheries improvement project for the yellow-fin tuna fishery in Lagonoy Gulf, the Philippines. MSc Thesis. Wageningen University.
- European Commission (2000) Communication from the Commission to the Council and the European Parliament. COM (2000) 724. Brussels. See <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52000DC0724>
- FAO (2015) Fishery statistics collection. Food and Agriculture Organization. www.fao.org/fishery/statistics/global-production/3/en
- FAO (2014a) The state of world fisheries and aquaculture: opportunities and challenges 2014. See www.fao.org/3/d1eaa9a1-5a71-4e42-86c0-f2111f07de16/i3720e.pdf
- FAO (2014b) Global capture production 1950–2012. www.fao.org/fishery/statistics/global-capture-production/en
- FAO (2012) The state of world fisheries and aquaculture 2012. See www.fao.org/docrep/016/i2727e/i2727e00.htm
- FAO (2010) Demand for, and benefits of, certification and branding. www.fao.org/docrep/010/ai002e/AI002E04.htm
- FAO (2007) The state of world fisheries and aquaculture 2006.
- FAO (2005) Increasing the contribution of small-scale fisheries to poverty alleviation and food security. Technical guidelines for responsible fisheries no. 10.
- FAO (2004) Advisory Committee on Fisheries Research 2004: Report of the second session of the Working Party on Small-scale Fisheries, Bangkok, Thailand, 18–21 November 2003. *FAO Fisheries Report No. 735*. See www.fao.org/docrep/006/y5245e/y5245e00.HTM
- FAO (2003) The state of world fisheries and aquaculture 2002 part 1: world review of fisheries and aquaculture. See www.fao.org/docrep/005/y7300e/y7300e04.htm - PO_0
- FAOSTAT (undated) Country groups. Statistics Division of the Food and Agriculture Organization. <http://faostat.fao.org/site/371/default.aspx>
- FishStat (2015) FAO fishery statistical collections: global capture production. www.fao.org/fishery/statistics/global-capture-production/en
- Field, JG *et al.* (2013) Cooperation between scientists, NGOs and industry in support of sustainable fisheries: the South African hake *Merluccius* spp. trawl fishery experience. *Journal of Fish Biology* 83(4): 1019–34. See www.ncbi.nlm.nih.gov/pubmed/24090560
- Financial Times (2012) Findus owner drops plan to sell Nordic arm. March 8 2012. Available at: <http://www.ft.com/cms/s/0/f659be32-6954-11e1-9618-00144feabdc0.html>
- Friend *et al.* (2009) Songs of the doomed: the continuing neglect of fisheries in hydropower debate in the Mekong. In: Molle, F *et al.* (eds) *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. Earthscan: 23–54.
- FOS (2014a) Fisheries. Friends of the Sea website. www.friendofthesea.org/fisheries.asp
- FOS (2014b) Aquaculture. www.friendofthesea.org/aquaculture.asp
- FOS (2014c) About us. www.friendofthesea.org/about-us.asp
- Froese, R and Proelss, A (2012) Evaluation and legal assessment of certified seafood. *Marine Policy* 36(6): 1284–1289.
- Garcia and Rosenberg (2010) Food security and marine capture fisheries: characteristics, trends, drivers and future perspectives. *Philosophical Transactions of the Royal Society* 365(1554): 2869–2880.
- Gulbrandsen, L (2014) Dynamic governance interactions: evolutionary effects of state responses to non- state certification programs. *Regulation & Governance* 8: 74–92.
- Gulbrandsen, L (2009) The emergence and effectiveness of the Marine Stewardship Council. *Marine Policy* 33(4): 654–660.
- Gutiérrez, NL *et al.* (2012) Eco-label conveys reliable information on fish stock health to seafood consumers. *PLoS ONE* 7(8): e43765. See <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0043765>

- Hannesson, R (2001) Effects of liberalising trade in fish, fishing services and investment in fishing vessels. OECD. www.oecd.org/tad/fisheries/1917250.pdf
- Hebditch and Blackmore (2012) Building sustainable supply chains: consumer choice or direct management? IIED. See <http://pubs.iied.org/pdfs/17134IIED.pdf>
- High Liner Foods (2014) Status of key High Liner fisheries. See <http://highlinersustainability.com/our-progress/current-status-of-key-high-liner-fisheries>
- Hobday, AJ *et al.* (2007) Ecological risk assessment for the effects of fishing: methodology. Report R04/1072. Australian Fisheries Management Authority, Canberra.
- Iglo (24 September 2013) Iglo welcomes Russia pollock MSC certification. www.seafoodsource.com/en/news/supply-trade/17-news/environment-sustainability/24384-iglo-welcomes-russia-pollock-msc-certification
- IFFO (2013) IFFO responsible supply statistics. www.iffo.net/iffo-rs-statistics
- ISU (2012a) Towards global sustainable fisheries: the opportunity for transition. International Sustainability Unit. See www.pcfisu.org/wp-content/uploads/2012/01/ISUMarineprogramme-towards-global-sustainable-fisheries.pdf
- ISU (2012b) Fisheries in transition: 50 Interviews with the fishing sector. See http://www.pcfisu.org/wp-content/uploads/pdfs/TPC1224-Princes-Charities-case-studies-report_WEB-29-03.pdf
- Kaiser, MJ and Hill, L (2010) Marine stewardship: a force for good. *Nature* 467:531. See www.nature.com/nature/journal/v467/n7315/full/467531a.html
- Key Note (2002) The green and ethical consumer. Key Note market assessment update.
- Kurien, J (2004) Fish trade for the people: toward understanding the relationship between international fish trade and food security. Report of the study on the impact of international trade in fishery products on food security. FAO and the Royal Norwegian Ministry of Foreign Affairs.
- Macfadyen, G and Huntington, T (2007) Potential costs and benefits of fisheries certification for countries in the Asia–Pacific region. FAO. See www.fao.org/docrep/010/ai002e/ai002e00.htm.
- Maree, BA *et al.* (2014) Significant reductions in mortality of threatened seabirds in a South African trawl fishery. *Animal Conservation* 17(6): 520–529. <http://onlinelibrary.wiley.com/doi/10.1111/acv.12126/abstract>
- Martin S *et al.* (2012). Environmental impacts of the Marine Stewardship Council certification scheme. *Reviews Fisheries Sciences* 20: 61–69.
- McGoodwin, J (2001) Understanding the cultures of fishing communities: a key to fisheries management and food security. FAO fisheries technical paper No 401.
- Ministry for Primary Industries (2013) Fisheries Assessment Plenary May 2013: stock assessments and yield estimates, volume 1: introductory sections to jack mackerel. Fisheries Science Group.
- Mohammed, EY and Brouwer, R (forthcoming) Assessing preferences for compensation packages using the choice experiment method: the case of hilsa conservation in Bangladesh.
- Mohammed, EY and Leifsdotter, C. (unpublished data). Fish trade deficit in developing countries.
- Mohammed, EY and Uruguchi, ZB (forthcoming) Harnessing market forces for inclusive marine and coastal resources management: lessons from market systems development approach.
- Mohammed, EY and Uruguchi, ZB (2013) Impacts of climate change on fisheries: implications for food security in sub-Saharan Africa. In: Hanjra, MA (ed.) *Global Food Security: Emerging Issues and Economic Implications*. Nova Science Publisher.
- Mohammed, EY (2012) Contingent valuation responses and hypothetical bias: mitigation effects of certainty question, cheap talk, and pledging. *Environmental Economics* 3(3): 64–73.
- Mohammed, EY (13 July 2010) The missing 't'. www.iied.org/missing-t
- Molenaar, WJ, *et al.* (2013) Building a roadmap to sustainability in agro-commodity production. International Finance Corporation. <http://tinyurl.com/prvoxfw>
- MRAG (2010) Towards sustainable fisheries management: international examples of innovation. Marine Resources Assessment Group.
- MRAG (2009) Review of fish sustainability information schemes: final report. See http://cels.uri.edu/urissi/docs/FSIG_Report.pdf.

- MRAG *et al.* (2011) Researching the environmental impacts of the MSC certification programme. Marine Resources Assessment Group, Poseidon and Meridian Prime. See www.msc.org/documents/environmental-benefits/measuring-environmental-impacts-report-2011/environmental-impacts-of-the-msc-programme-full-report
- MSC. 2015. Asia-Pacific. Available at: <https://www.msc.org/business-support/commercial-commitments/asia-pacific/?searchterm=msc>
- MSC (2014a) Vision and mission. www.msc.org/about-us/vision-mission.
- MSC (2014b) About the Developing World Program. See www.msc.org/about-us/credibility/working-with-developing-countries/about-the-developing-world-programme
- MSC (2014c) Fisheries by species information list: updated 18 September 2014. www.msc.org/track-a-fishery/fisheries-in-the-program/fisheries-by-species
- MSC (2014d) MSC in numbers. www.msc.org/business-support/key-facts-about-msc
- MSC (2014e) Marine Stewardship Council: global impacts report 2014. Available at: <https://www.msc.org/documents/environmental-benefits/global-impacts/msc-global-impacts-report-2014>
- MSC (2014f) Community Catch. MSC's Developing World Programme newsletter, issue 10, August 2014. See www.msc.org/documents/developing-world/communitycatch-developing-world-newsletter/august-2014/communitycatch-developing-world-newsletter-english-august-2014
- MSC (2014g) MSC fisheries certification requirements and guidance: version 2.0. See www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0
- MSC (11 November 2014h) New research shows increasing appetite for sustainable seafood. www.msc.org/newsroom/news/new-research-shows-increasing-appetite-for-sustainable-seafood
- MSC (2014i) Fishery training resources. www.msc.org/certifiers/certifier-training-support/fishery-training-resources
- MSC (2014j) Global impacts delivered in partnership: commercial commitments May 2014. See www.msc.org/documents/msc-brochures/global-impacts-delivered-in-partnership-commercial-commitments/view
- MSC (17 June 2014k) Partner release: McDonald's® Canada now serving Marine Stewardship Council certified sustainable fish in its Filet-O-Fish® sandwich. www.msc.org/newsroom/news/partner-release-mcdonald2019s-r-canada-now-serving-marine-stewardship-council-certified-sustainable-fish-in-its-filet-o-fish-r-sandwich?fr
- MSC (2014l) Offices and staff. Marine Stewardship Council. www.msc.org/about-us/offices-staff
- MSC (2014m) MSC Technical Advisory Board. www.msc.org/about-us/governance/structure/technical-advisory-board
- MSC (2014n) Reviewing MSC standards. www.msc.org/about-us/standards/review
- MSC (2014o) Know the basics. www.msc.org/get-certified/fisheries/assessment-process/know-the-basics#what-is-certification
- MSC (2014p) MSC Board announces clear policy on forced labour. www.msc.org/newsroom/news/board-statement-ensuring-that-msc-certified-companies-are-free-from-forced-labour
- MSC (2014q) Developing world fisheries participating in the MSC programme. www.msc.org/about-us/credibility/working-with-developing-countries/fisheries-involved-in-the-developing-world-programme
- MSC (2014r) Grants and support. www.msc.org/get-certified/grants-and-support
- MSC (2014s) Fisheries by species. www.msc.org/track-a-fishery/fisheries-in-the-program/fisheries-by-species/fisheries-by-species#icefish
- MSC (2014t) Vast majority of British consumers expect retailers and restaurants to provide sustainable seafood options: survey Available at: <https://www.msc.org/newsroom/news/vast-majority-of-british-consumers-expect-retailers-and-restaurants-to-provide-sustainable-seafood-options-survey>

MSC (2013a) Community Catch. MSC's Developing World Programme newsletter, issue 7, September 2013. See www.msc.org/documents/developing-world/communitycatch-developing-world-newsletter/september-2013/communitycatch-developing-world-newsletter-english-september-2013/view

MSC (2013b) Annual Report 2012/2013. See www.msc.org/business-support/msc-annual-report/msc-annual-report/?searchterm=annual%20report

MSC (2013c) McDonald's USA first national restaurant chain to serve MSC certified sustainable fish at all US locations. See <https://www.msc.org/newsroom/news/mcdonalds-usa-first-restaurant-chain-to-serve-msc-certified-sustainable-fish-nationwide>

MSC (2013d) Marine Stewardship Council global impacts report 2013. Available at: <https://www.msc.org/documents/environmental-benefits/global-impacts/msc-global-impacts-report-2013>

MSC (2013e). Partnering for Sustainable Fisheries: A practical guide for working in partnerships to support Marine Stewardship Council certification for small-scale and developing world fisheries. Available at <http://www.msc.org/about-us/credibility/all-fisheries/tools-for-fisheries-improving-towards-msc-certification/partnering-for-sustainable-fisheries-tool>

MSC (2011) Improvement in score over time graph. See www.msc.org/documents/environmental-benefits/measuring-environmental-impacts-report-2011/fishery-improvements-over-time-graph/view

MSC (2009) Net benefits: the first ten years of MSC certified sustainable fisheries. See www.msc.org/documents/email/Net-Benefits-report.pdf

MSC (2006) Marine Stewardship Council workshop: monitoring and evaluating the environmental impacts of the MSC certification programme. Final workshop report. London, 21–22 September 2006. See https://www.msc.org/documents/environmental-benefits/MSCEB_Workshop_Report_Sept_2006_FINAL_Jan07.pdf

MSC (undated, a). Sustainable seafood product finder. www.msc.org/where-to-buy/product-finder

MSC (undated, b). The MSC principles and criteria for sustainable fishing. Guide to principles, criteria, sub-criteria and performance indicators. See www.msc.org/documents/quality-and-consistency-in-assessments/Guide%20to%20P-Cs-SC-PIs.pdf/view

MSC (unpublished data). Product, numbers and volumes by country for financial year 2013 - 2014.

Nautilus and IIED (2003) Investment mechanisms for socially and environmentally responsible shrimp culture. Synthesis summary and working papers. Nautilus Consultants Ltd.

Ndiaye, O (2003) Report of the expert consultation on international fish trade and food security. Casablanca, Morocco, 27–30 January 2003. FAO Fisheries Report No 708.

OCI (2014) Corporate information. Ocean Choice International <http://highlinersustainability.com/our-progress/current-status-of-key-high-liner-fisheries>

PAF (2014) The Pan African Fisheries and Aquaculture policy framework and reform strategy: promoting inter-regional fish trade. Policy brief No 12. See www.africanfisheries.org/knowledge-output/pan-african-fisheries-and-aquaculture-policy-framework-and-reform-strategy-1

Pérez-Ramírez, M *et al.* (2012a) MSC certification in Argentina. Stakeholders' perceptions and lessons learned. *Marine Policy* 36(5): 1182–1187.

Pérez-Ramírez, M *et al.* (2012b) Perspectives for implementing fisheries certification in developing countries. *Marine Policy* 36(1): 297–302.

Ponte, S (2012) The Marine Stewardship Council and the making of a market for 'sustainable fish'. *Journal of Agrarian Change* 12(2): 300–315.

Ponte, S (2008) Greener than thou: the political economy of fish ecolabeling and its local manifestations in South Africa. *World Development* 36(1): 159–175.

Roheim, AC (2003) Trade liberalisation in fish products: impacts on sustainability of international markets and fish resources. Mimeo. World Bank.

SEAFDEC (2001) Eco-labelling. Technical paper presented to the ASEAN-SEAFDEC conference on sustainable fisheries for food security towards 2020 – Fish for the people 2020: adaptation to a changing environment. 13–17 June 2011, Bangkok, Thailand.

- SFP (2014) FIP Directory. Sustainable Fisheries Partnership. <http://fisheryimprovementprojects.org>
- Standing, A (2009) The growth in certification of marine fisheries in Southern Africa: potential benefits and challenges. See www.unep.ch/etb/areas/pdf/Fish%20project%20documents/ISS%20Fisheries%20report%20Southern%20Africa.pdf
- UNCLOS (1982) United Nations Convention on the Law of the Sea of 10 December 1982. United Nations. See www.un.org/depts/los/convention_agreements/convention_overview_convention.htm
- Walmart (undated) Sustainable food. <http://corporate.walmart.com/global-responsibility/environment-sustainability/sustainable-seafood>
- Ward, AR and Jeffries, DJ (2000) A manual for assessing post-harvest fisheries losses. Natural Resources Institute.
- Washington, S and Ababouch L (2011) Private standards and certification in fisheries and aquaculture. Current practice and emerging issues. FAO fisheries and aquaculture technical paper no. 553. See www.fao.org/docrep/013/i1948e/i1948e00.htm
- Weeratunge, N. *et al.* (2014) Small scale fisheries through the wellbeing lens. *Fish and Fisheries* 15(2): 255–279.
- Wiedenfeld, DA (2012) Analysis of the effects of Marine Stewardship Council fishery certification on the conservation of seabirds. American Bird Conservancy.
- World Bank (2014) Country and lending groups. <http://data.worldbank.org/about/country-and-lending-groups>
- World Bank (2013) Fish to 2030: prospects for fisheries and aquaculture. World Bank report no. 83177-GLB
- World Bank (2011) The Global Program on Fisheries: strategic vision for fisheries and aquaculture. See <http://siteresources.worldbank.org/EXTARD/Resources/336681-1224775570533/2011StrategicVision.pdf>
- World Bank (2005) The sunken billions: the economic justification for fisheries reform. See <http://siteresources.worldbank.org/EXTARD/Resources/336681-1224775570533/SunkenBillionsFinal.pdf>
- WWF (2015) Fishmeal and fish oil overview. Available at: <https://www.worldwildlife.org/industries/fishmeal-and-fish-oil>
- WWF (2013a) FIP handbook: guidelines for developing fishery improvement projects. World Wide Fund for Nature. See http://awsassets.panda.org/downloads/wwf_fip_final_web_version.pdf
- WWF (2013b) WWF fishery improvement project process. Presentation at IV Symposium Langosta Espinosa, La Ceiba, Honduras, 16 May 2013.
- UN General Assembly (2012) The Right to Food. UN.
- UNSD (2013) Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings. United Nations Statistics Division. <http://unstats.un.org/unsd/methods/m49/m49regin.htm#developed>

ANNEX 1. LIST OF STAKEHOLDERS CONSULTED IN THIS RESEARCH

The stakeholder interviews carried out for this research are listed below and semi-anonymised, by categorising the interviewees by their respective stakeholder group (e.g., auditors, fisheries, governments, industry, NGOs, MSC, etc.). This anonymisation was offered to all interviewees to encourage them to speak freely.

The interviews lasted approximately one hour each and were carried out via telephone between November 2014 and April 2015. Additional communication was carried out with a number of MSC staff over email during the research process.

The purpose of the interviews was to supplement the existing literature by probing in more detail the following overarching questions:

1. Whether and under which circumstances can certification contribute to improved livelihoods, socio-economic development

for fisher communities, and to greater environmental sustainability?

2. What are the main barriers to certification being able to play such roles for developing country fisheries, and how are these best overcome?
3. What are the policy foundations, capacities and instruments that may be necessary for certification to work?

By obtaining stakeholders' insights on the above issues, we were able to assess the impacts, drivers and barriers of MSC for many fisheries whose stories have not been included in the literature because of their recent adoption of MSC, as well as gaining more general insights into the accessibility of MSC for developing world fisheries.

#	REGION	DATE	STAKEHOLDER GROUP							
			AUDITORS (CABS)	CERTIFIED DEVELOPING COUNTRY FISHERIES	DEVELOPING COUNTRY GOVERNMENT	INDUSTRY	NGOS	MSC	INTERNATIONAL ORGANISATIONS/ ACADEMICS/ SCIENTISTS	OTHER CERTIFICATION SCHEMES
1	Africa	11/2014			X					
2	Africa	11/2014			X				X	
3	Africa	11/2014					X			
4	Asia	11/2014		X			X			
5	Asia	12/2014	X							
6	Asia	12/2014							X	
7	Asia	11/2014		X			X			
8	Asia	12/2014	X							
9	Asia	12/2014						X	X	
10	Europe	11/2014	X							
11	Europe	12/2014								X
12	Europe	11/2014		X		X				
13	Europe	12/2014								X
14	Europe	12/2014	X							
15	Europe	01/2015	X							
16	Europe	11/2014				X				
17	Europe	11/2014				X				
18	Global	12/2014						X		
19	Global	12/2014						X		
20	Global	12/2014						X		
21	Middle East	12/2014							X	
22	North America	12/2014		X		X				
23	Oceania	12/2014		X	X					
24	South America	03/2015							X	
25	South America	11/2014		X		X				
26	South America	04/2015					X			
27	South America	04/2015					X			

ANNEX 2. MSC-CERTIFIED FISHERIES IN THE DEVELOPING WORLD

REGION, COUNTRY AND FISHERY NAME	DATE OF CERTIFICATION	NUMBER OF FISHERIES AND VESSELS (WHERE AVAILABLE); ANNUAL TONNAGE (T)	FISHING METHOD	MARKET INFO (WHERE AVAILABLE)	ADDITIONAL BACKGROUND INFORMATION WHERE AVAILABLE
Africa South African hake trawl ²⁷	April 2004, recertified in 2010	2 fisheries Deep-sea trawlers (20–90 metres) and inshore trawlers (15–35 metres) 134,000t	Bottom trawl	Europe and USA	Tori lines implemented to reduce seabird mortality, now mandatory
Africa Tristan da Cunha rock lobster ²⁸	June 2011	1 fishery 1 vessel 435t	Baited open-ended lobster traps, hoop-nets & semi-cylindrical traps	Japan and the USA	Box traps are deployed from small boats around all four islands, hoop nets are deployed from powerboats at Tristan only, and monster traps are deployed from at the three outer islands
Asia Vietnam Ben Tre clam hand gathered ²⁹	November 2009	1 fishery 0 vessels 4280t	By hand or metal rakes with a net pocket	Artisanal, selling into local markets. But anticipating export markets	Fishing takes place at low tides between April and October (but can occur all year round). Cooperative formed in 1997 after poor management in 80s and 90s. 13 cooperatives developed by 2006. Stock levels declined due to poor management – small and seed clams were harvested. Collaboration with Vietnam's Department of Agriculture and Rural Development to implement a series of management measures—area rights given to cooperatives – landings reported to government. Better management attracted attention of WWF who supported them in getting certified (MRAG, 2010).
Asia Maldives skipjack tuna	November 2012	1 fishery All Maldivian P&L fishing vessels 96,861t	Pole and line (P&L)	European markets	

27. See www.msc.org/documents/fisheries-factsheets/net-benefits-report/South-Africa-hake-trawl.pdf

28. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/south-atlantic-indian-ocean/tristan-da-cunha-rock-lobster/tristan-da-cunha-rock-lobster/?searchterm=tristan

29. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/vietnam-ben-tre-clam-hand-gathered

REGION, COUNTRY AND FISHERY NAME	DATE OF CERTIFICATION	NUMBER OF FISHERIES AND VESSELS (WHERE AVAILABLE); ANNUAL TONNAGE (T)	FISHING METHOD	MARKET INFO (WHERE AVAILABLE)	ADDITIONAL BACKGROUND INFORMATION WHERE AVAILABLE
Asia India Ashtamudi Estuary short-necked clam	2014		Dredges		
Latin America Mexico Baja California red rock lobster ³⁰	April 2004, reassessment in May 2009	1 fishery Fibreglass boats 5–7 metres in length with outboard engines 1,899 MT	Baited wire traps	90% to Asia, France and USA. 10% sold domestically	Collaboration between WWF US, NGOs and government to get fishery certified
Latin America Mexico Baja California pole and line yellowfin and skipjack tuna ³¹	April 2012	2 fisheries 2 vessels 187t	Pole and line	Fish is canned in Mexico. Currently being marketed in Mexico; with certification the ambition would be to target the EU, USA and Canadian markets for canned certified tuna.	
Latin America Mexico: Sian Ka'an and Banco Chinchorro Biosphere Reserves spiny lobster ³²	July 2012	1 fishery Free diving. 1,200t	Free diving using casitas cubanas in exclusive access parcels, and hand harvest in the reefs	Spiny lobster fishery products are sold regionally for the tourism sector in Cancún, Playa del Carmen, Cozumel, and other markets in the Yucatán Peninsula. A small amount is exported to the USA	
Latin America Mexico: Gulf of California, sardine ³³	July 2011	1 fishery 36 vessels 83,000t	Purse seine (purse-shaped netting with a draw string)	Fishmeal and animal feed	
Latin America Suriname Atlantic seabob shrimp ³⁴	November 2011	1 fishery 20 vessels 10,000t	Twin-rig otter trawl	EU and USA markets	

30. See www.msc.org/track-a-fishery/documents/fisheries-factsheets/net-benefits-report/Mexico-Baja-rock-lobster.pdf

31. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/mexico_baja_california_pole_line_yellowfin_skipjack_tuna

32. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/western-central-atlantic/sian_kaan_banco_chinchorro_biosphere_reserves_spiny_lobster

33. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/gulf-of_california-mexico-sardine/gulf-of_california-mexico-sardine

34. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/western-central-atlantic/suriname_atlantic_seabob_shrimp and www.msc.org/track-a-fishery/fisheries-in-the-program/certified/western-central-atlantic/suriname_atlantic_seabob_shrimp/assessment-downloads-1/FFS%20Suriname%20Atlantic%20seabob%20shrimp_FINAL%20A4_UK.pdf

REGION, COUNTRY AND FISHERY NAME	DATE OF CERTIFICATION	NUMBER OF FISHERIES AND VESSELS (WHERE AVAILABLE); ANNUAL TONNAGE (T)	FISHING METHOD	MARKET INFO (WHERE AVAILABLE)	ADDITIONAL BACKGROUND INFORMATION WHERE AVAILABLE
Latin America Argentine Hoki ³⁵	May 2012	1 fishery 110 fleets 110, 267t	Trawl nets	Export	
Latin America Argentine anchovy ³⁶	August 2011	1 fishery 5 high seas ice-chilling vessels 3,663t	Trawl net	80% is exported	
Latin America Patagonian scallop ³⁷	December 2006, recertified in April 2012	1 fishery 4 vessels 45–59 metres long 45,000t	Trawl net	50% EU 40% USA 10% Canada	
Latin America Chilean mussels	February 2014	1 fishery 10,000t	Catch and grow	The main target market is Spain followed by other European markets and the USA	
Oceania/ South Pacific Fiji albacore tuna longline ³⁸	Certified in December 2012	1 fishery 3,470t	Longline	Japan, USA, Thailand and American Samoa	
Oceania / South Pacific PNA Western and Central Pacific skipjack tuna ³⁹	December 2011	1 fishery 422,921t	Purse seine	Processed into canned tuna and sold to USA, Europe, Japan and Korea	

Source: Authors' own, based on data from MSC, 2014d and 2014s.

Notes: There are discrepancies between these two data sources – for instance some fisheries are listed in MSC 2014d as 'in assessment' but are listed as 'certified' in MSC 2014s, and vice versa. In addition the catch data sometimes differ between the two sources. Where this is the case the larger number is taken unless the catch data are clearly dated, in which case the more recent figure is taken. In addition, in some of the cases listed the data are relatively out of date (e.g. 2008).

35. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/south-atlantic-indian-ocean/argentine_hoki

36. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/south-atlantic-indian-ocean/argentine_anchovy

37. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/south-atlantic-indian-ocean/patagonian-scallop

38. See www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/fiji_albacore_tuna_longline

39. http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/pna_western_central_pacific_skipjack_tuna/fishery-name

ANNEX 3. INTERNATIONAL STANDARD STATISTICAL CLASSIFICATION OF AQUATIC ANIMALS AND PLANTS SPECIES GROUP (ISSCAAP)

	ISSCAAP GROUP OF SPECIES
FAO code	1. Freshwater fishes
11	Carps, barbels and other cyprinids
12	Tilapias and other cichlids
13	Miscellaneous freshwater fishes
	2. Diadromous fishes
21	Sturgeons, paddlefishes
22	River eels
23	Salmons, trouts, smelts
24	Shads
25	Miscellaneous diadromous fishes
	3. Marine fishes
31	Flounders, halibuts, soles
32	Cods, hakes, haddocks
33	Miscellaneous coastal fishes
34	Miscellaneous demersal fishes
35	Herrings, sardines, anchovies
36	Tunas, bonitos, billfishes
37	Miscellaneous pelagic fishes
38	Sharks, rays, chimaeras
39	Marine fishes not identified
	4. Crustaceans
41	Freshwater crustaceans
42	Crabs, sea-spiders
43	Lobsters, spiny-rock lobsters
44	King crabs, squat-lobsters
45	Shrimps, prawns
46	Krill, planktonic crustaceans
47	Miscellaneous marine crustaceans

ISSCAAP GROUP OF SPECIES	
5. Molluscs	
51	Freshwater molluscs
52	Abalones, winkles, conchs
53	Oysters
54	Mussels
55	Scallops, pectens
56	Clams, cockles, arkshells
57	Squids, cuttlefishes, octopuses
58	Miscellaneous marine molluscs
6. Whales, seals and other aquatic mammals	
61	Blue-whales, fin-whales
62	Sperm-whales, pilot-whales
63	Eared seals, hair seals, walruses
64	Miscellaneous aquatic mammals
7. Miscellaneous aquatic animals	
71	Frogs and other amphibians
72	Turtles
73	Crocodiles and alligators
74	Sea-squirts and other tunicates
75	Horseshoe crabs and other arachnoids
76	Sea-urchins and other echinoderms
77	Miscellaneous aquatic invertebrates
8. Miscellaneous aquatic animal products	
81	Pearls, mother-of-pearl, shells
82	Corals
83	Sponges
9. Aquatic plants	
91	Brown seaweeds
92	Red seaweeds
93	Green seaweeds
94	Miscellaneous aquatic plants

WHAT'S THE CATCH?

LESSONS FROM AND PROSPECTS FOR MARINE STEWARDSHIP COUNCIL (MSC) CERTIFICATION IN DEVELOPING COUNTRIES

Worldwide fish stocks are of enormous importance to the global economy, livelihoods and food security, contributing about US\$274 billion to global gross domestic product per annum. Fishing is particularly important in developing countries, where over half of the world fish catch originates. But almost 29 per cent of fish stocks are now estimated to be fished at a biologically unsustainable level.

Among the certification schemes offered as market-based incentives for sustainable fishing, the Marine Stewardship Council's standard is the most extensive, representing nine per cent of global capture production. Yet only eight per cent of the world's certified fisheries are from developing countries, and even fewer are small-scale. How can the MSC certification

scheme be made more accessible to small-scale fisheries in developing countries? The benefits of certification are attractive, including access to markets in developed countries; but the process is costly and its requirements are often beyond the reach of small-scale fishers.

This report assesses barriers and drivers to certification for small-scale developing world fisheries, as well as the environmental and socio-economic impacts of MSC certification. It also outlines future research needed to understand what factors will allow more fisheries to overcome the challenges of achieving MSC certification.



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