



Exploring Seafood Sector Evaluation of Ecosystem Services to Guide Investment in Fisheries Rebuilding

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Acronyms

| | |
|-------|--|
| ALB | Albacore |
| BES | Biodiversity and Ecosystem Services |
| CBD | Convention on Biological Diversity |
| CEA | California Environment Associates |
| CEV | Corporate Ecosystem Valuation |
| CIESM | Mediterranean Science Commission |
| CSR | Corporate Social Responsibility |
| DWFN | Distant Water Fishing Nation |
| EAFM | Ecosystem Approach to Fisheries Management |
| EBM | Ecosystem-based Management |
| ES | Ecosystem Services |
| EP&L | Environment Profit and Loss |
| ESV | Ecosystem Service Valuation |
| FAO | United Nations Food and Agricultural Organisation (UNFAO) |
| FIP | Fisheries Improvement Project |
| FFA | Forum Fisheries Agency |
| FMI | Food Marketing Institute |
| FPSS | Food Processing Sector Supplement |
| GRI | Global Reporting Initiative |
| ICTSD | International Centre for Trade and Sustainable Development |
| IMF | International Monetary Fund |
| ISSF | International Seafood Sustainability Foundation |
| ISU | HRH Prince Charles International Sustainability Unit |
| KII | Key Informant Interview |
| MEA | Millennium Ecosystem Assessment |
| MSC | Marine Stewardship Council |

| | |
|--------|---|
| MES | Marine Ecosystem Services |
| MESP | Marine Ecosystems Services Partnership. |
| MPES | Marine Payment for Ecosystem Services |
| MSY | Maximum Sustainable Yield |
| NGO | Non-government organisation |
| OECD | Organisation for Economic Cooperation and Development |
| PES | Payment for Ecosystem Services |
| RedLAC | Risk, Emergency, and Disaster Task Force Inter-Agency Workgroup for Latin America and The Caribbean |
| SFP | Sustainable Fisheries Partnership |
| SIDS | Small Island Developing States |
| SPA | South Pacific Albacore |
| TAC | Total Allowable Catch |
| TEEB | The Economics of Ecosystems and Biodiversity |
| TVM | Te Vaka Moana |
| UNGC | United Nations Global Compact |
| UNEP | United Nations Environment Programme |
| USD | United States Dollar |
| WAVES | Wealth Accounting and Valuation of Ecosystem Services |
| WCPFC | Western Central Pacific Fisheries Commission |
| WCP-CA | Western Central Pacific – Convention Area |
| WBCSD | World Business Council on Sustainable Development |
| WRI | World Resources Institute |
| WWF | World Wide Fund for Nature |

Glossary

Biodiversity (a contraction of biological diversity): The variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part. Biodiversity includes diversity within species, between species, and between ecosystems (MA 2005a). Biodiversity may be described quantitatively, in terms such as richness, rarity, and uniqueness. (TEEB 2010)

Corporate Sustainability: A company’s delivery of long-term value in financial, social, environmental and ethical terms. (UNGC 2012)

Ecological production function: Relationship between environmental inputs and outputs of goods and services. (TEEB 2010)

Ecosystems: An ecosystem is a dynamic complex of plant, animal and micro-organism communities and their non-living environment acting as a functional unit. (CBD Article 2)

Ecosystem-Based Management: Management of the uses and values of ecosystems in conjunction with stakeholders to ensure ecological integrity is maintained and recognising that ecosystems are dynamic and inherently uncertain. (Ward et al, 2002)

Ecosystem processes: The physical, chemical and biological actions or events that link organisms and their environment such as decomposition, nutrient cycling, production of plant matter, and fluxes of nutrients and energy. (UNGC 2012)

Ecological sustainability: The use of species or ecosystems within the capacity of the species, ecosystem or bioregion to sustain natural processes, to renew or regenerate consistent with maintaining ecosystem integrity, and ensuring that the benefits of the present use do not diminish the potential to meet the needs and aspirations of future generations. (Ward et al, 2002)

Ecosystem Services: The direct and indirect benefits (goods and services) people obtain from ecosystems. (MA 2005)

Fisheries Improvement Project: Projects which are formally linked to third party certification and preceded by an independent MSC pre-assessment that informs work-planning and milestone setting to achieve MSC. (WWF Australia 2012)

Key Informant: An insider who is willing and able to provide a field researcher with superior access and information, including answers to questions that arise in the course of the research. (Schutt 2009)

Marine Conservation: The protection and preservation of biodiversity, its web of ecosystems and their processes in oceans and seas. Marine conservation focuses on limiting human-caused damage to marine ecosystems, and on restoring damaged marine ecosystems. (Norse and Crowder 2004)

Natural capital: An economic metaphor for the limited stocks of physical and biological resources found on earth. (MA 2005b)

Payments for Ecosystem Services: Contains these elements; voluntary transaction, well-defined environmental service or a land use likely to secure its provision, at least one buyer, at least one provider effectively controlling service provision and, if and only if the environmental service provider secures service provision (conditionality) (Wunder 2007). Sommerville et al's (2009) revised definition notes the term acts as an umbrella for approaches that provide positive incentives to manage ecosystems to produce environmental outcomes.

Production function: A function used to estimate how much a given ecosystem service (e.g., regulating service) contributes to the delivery of another service or commodity which is traded on an existing market. (TEEB 2010)

Stakeholder: Any person or group (including governmental and non-governmental institutions, traditional communities, universities, research institutions, development agencies and banks, donors, etc.) with an interest or claim (whether stated or implied) which has the potential of being impacted by or having an impact on a given project and its objectives. Stakeholder groups that have a direct or indirect "stake" can be at the household, community, local, regional, national, or international level. (MSC 2011)

Sustainability: A characteristic or state whereby the needs of the present and local population can be met without compromising the ability of future generations or populations in other locations to meet their needs. (MA 2005a)

Sustainable Fishery: can be continued indefinitely at a reasonable level give it maintains and seeks to maximise, ecological health and abundance, maintains the diversity, structure and function of the ecosystem on which it depends as well as the quality of its habitat, minimising the adverse effects

that it causes; is managed and operated in a responsible manner, in conformity with local, national and international laws and regulations; maintains present and future economic and social options and benefits; is conducted in a socially and economically fair and responsible manner. (MSC 2010)

Sustainable Sourcing: Retailers can help mitigate threats to biodiversity by choosing or sourcing sustainable species and knowing how and where each was caught or raised. Sustainable sourcing practices enable producers, processors and suppliers to consistently deliver seafood products while protecting and improving the natural environment and livelihoods of local communities. (FMI 2012)

Supply Chain: A fish supply chain can be generally described as a set of interdependent fishers, agents, processors, distributors and wholesalers/retailers/food services, who work together to supply a fish derived product to the consumer. (Thorpe and Bennett, 2004)

Trade-offs: Management choices that intentionally or otherwise change the type, magnitude, and relative mix of services provided by ecosystems. (MA 2005a)

Valuation: The process of expressing a value for a particular good or service in a certain context (e.g., of decision-making) usually in terms of something that can be counted, often money, but also through methods and measures from other disciplines (sociology, ecology, and so on). (MA 2005a)

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1 ABSTRACT

Marine fisheries are in crisis internationally, although where management systems function, fisheries are more sustainable. In part this is because fisheries management is not a high government priority, with the exception of some small island developing states with few other natural resources. Ecosystem-based management (EBM) of fisheries is recognised as an approach that is more likely to produce sustainable outcomes. Since 1995, a range of non-government and private sector initiatives have developed to reduce the environmental impacts of marine fisheries and complement public sector management, including the Marine Stewardship Council (MSC) and multi-stakeholder fisheries improvement projects (FIP). The latter often lack transparency, their ecological outcomes and financial accountability are unclear and they do not operate at scale. This reduces their effectiveness in addressing biodiversity conservation challenges and limits opportunities to leverage complimentary investment and promulgate success. A recent review found that there is willingness, especially amongst the seafood supply chain, to support EBM in marine fisheries and that this motivation is coupled with tangible seafood supply chain investment in FIPs, often via MSC engagement. Whether this investment can occur through payment for ecosystem services (PES) frameworks is the question being researched in this next study. Fish nurseries and marine biodiversity are just some marine ecosystem services and certification is often cited as a PES approach. This review will explore whether private sector supply chain investment can be deemed as PES in a marine context, whether this can contribute to rebuilding fisheries and the challenges and opportunities of doing so.

Keywords: ecosystem services, fisheries improvement, fisheries rebuilding, certification, investment, seafood sector governance

Words: 5277

2 INTRODUCTION

Since the mid 1990's many participants involved with fisheries management internationally, including government, multi-lateral agencies, non-government organisations (NGO) and the private sector have sought to address unsustainable fisheries including through developing the; 1995 United Nations Food and Agricultural Organisation (FAO) Code of Conduct for Responsible Fisheries, which has had mixed results (Pitcher et al, 2009), MSC, and NGO facilitated and private sector FIPs. The latter often lack transparency, have varied rigour, ecological outcomes and financial accountability, and do not yet operate at a scale to rebuild global fisheries or restore marine ecosystems. Debate continues about the metrics of ecosystem and fishery health (Worm et al, 2006, Worm et al, 2009, Pitcher 2001) and international discourse is shifting focus onto rebuilding marine fisheries and ecosystems (World Bank 2011, UNEP 2011b, Ye et al, 2012, Sumaila et al, 2012, OECD 2012) using ecosystem-based management approaches (Ward et al, 2002, Pauly et al, 2002, Halpern et al, 2008, Tallis et al, 2010, UNEP 2011a, UNEP 2011b). Agreement exists about the significantly increased wealth potential of rebuilt marine fisheries (Figure 1), the significant cost of recovering them, and the need for public private partnerships to invest to do so (ISU 2012, World Bank 2012, Ye et al, 2012, OECD 2012, Sumaila et al, 2012, Rangeley and Davies 2012).

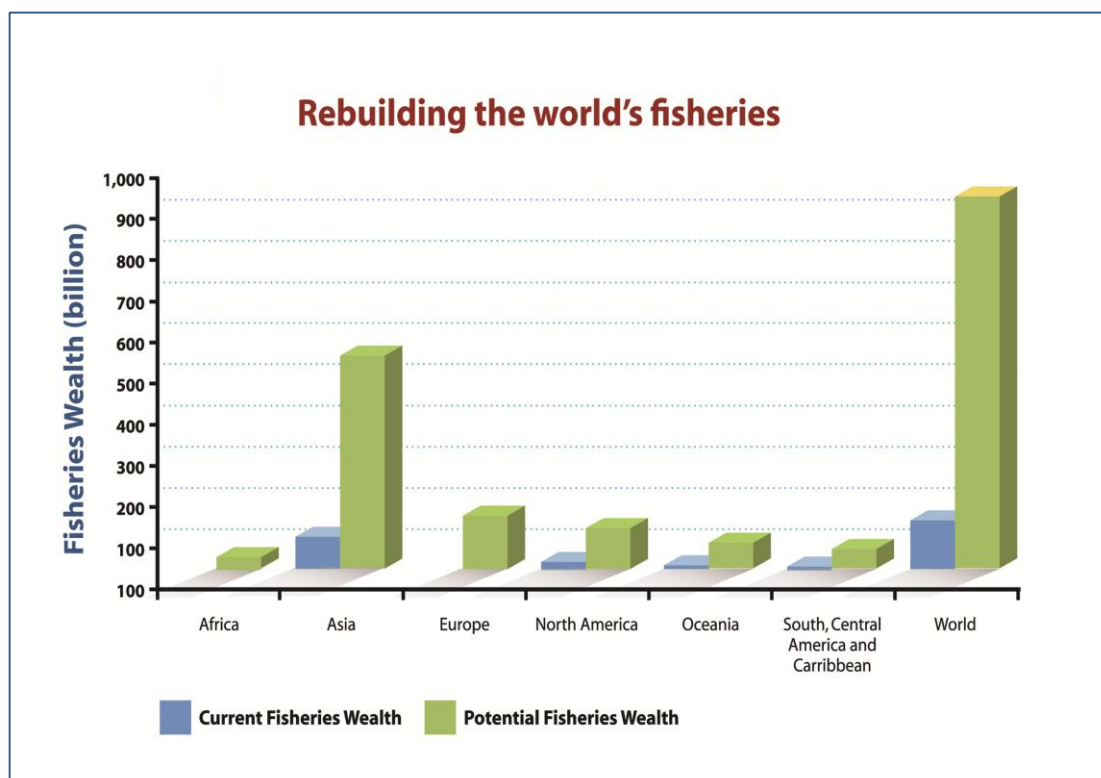


Figure 1: Estimated wealth generation from rebuilt marine fisheries (World Bank 2012).

An earlier review investigated seafood stakeholder perspectives about EBM finding; i) willingness amongst the seafood supply chain to support EBM in fisheries, ii) motivation to improve as a result of MSC certification, and; iii) tangible seafood supply chain time, money and other resources invested in improving fisheries (Short 2011). This second paper investigates a novel combination of inter-disciplinary tools to enable the seafood sector to systematically embed fishery and ecosystem sustainability throughout their supply chains. It explores the scale of potential investment associated

with the 194 seafood supply chain commitments to source MSC certified seafood (MSC 2011) (see Appendix 8.2) and whether capturing and leveraging that investment with public, philanthropic and non-government sources could scale up fishery rebuilding and marine ecosystem restoration. Underpinning this is a critical evaluation of the use of ecosystem service (ES) approaches and whether the seafood sector, given its dependence on marine biodiversity, could use payment for ecosystem services (PES) to guide investment, strengthen accountability and improve fisheries at scale.

Following the Abstract this paper has five core sections. Section 2 introduces the current state of marine fisheries and need for marine ecosystem recovery at scale, marine fishery PES application, fisheries improvement initiatives and the research framework. Section 3 outlines the study method and Section 4, the results and findings. ES in the marine context and PES for fisheries are explored by testing the MSC as a PES mechanism and hypothetically in a real fishery and current seafood sector corporate sustainability governance is reviewed. Section 5 discusses the study findings and proposes an institutional model before elaborating research and development recommendations. Section 6 presents conclusions.

2.1 REBUILDING MARINE FISHERIES AT SCALE TO SUPPORT MARINE ECOSYSTEM RECOVERY

The poor state of marine ecosystems is clear (MA 2005, Worm et al, 2006, Halpern et al, 2008, Gutierrez et al, 2012) with dead zones, garbage patches, overfishing, eutrophication and acidification some of the realities needing management. Restoration can increase productivity fourfold and decrease variability by 21% on average (Worm et al, 2006). Recent estimates are that a fishery rebuilding investment of about USD\$203 billion would result in benefits surpassing costs after 12 years (Sumaila et al, 2012). When tools including certification, marine spatial planning, bycatch reduction, rights approaches and the range of ecosystem approaches are implemented, marine fisheries rebuild, lessening their ecosystem impacts, and securing dependent livelihoods (Worm et al, 2009, McLeod and Leslie, 2009, Grafton et al, 2006). However fishing overcapacity remains the biggest obstacle, it's links to subsidies are clear (Sumaila et al, 2010, UNEP 2011) and along with World Trade Organisation fishing subsidy negotiations stalling (IMF 2011, ICTSD 2012), other financial tools are being explored to leverage partnership funding and understand, and meet the costs of recovering marine ecosystems, and rebuilding fish populations (Ecosystem Marketplace 2010, World Bank 2012, Ye et al, 2012, OECD 2012, Sumaila et al, 2012, Rangeley and Davies, 2012, UNEP 2011b). These include adapting the UN Principles for Responsible Investment to fisheries (UNEP 2009), developing Fish 2.0 (Manta 2012) to create deal flow between investors and fisheries seeking investment and the new Global Partnership for the Oceans (See Appendix 8.5) which intends to:

'convene stakeholders to mobilize significant human, financial and institutional resources for effective public and private investments in priority ocean areas. These investments will improve capacity and aim to close the gap in implementing global, regional and national commitments for healthy and productive oceans.'

2.2 ECOSYSTEM SERVICES AND PAYMENT FOR ECOSYSTEM SERVICES

Ecosystem services (ES) link ecosystem processes and human well-being in terms of the direct and indirect benefits people obtain from ecosystems (MA 2005). Several initiatives have begun to mainstream ES in business, including the 2010 International Year of Biodiversity and The Economics of Ecosystems and Biodiversity (TEEB 2010). ES marries ecology and economics (Costanza 2012) and PES has become an umbrella term for market based, incentive approaches to manage ecosystems to produce ES (Wunder 2005, Sommerville et al, 2009). These have been used successfully terrestrially to promote conservation and improve livelihoods (Wunder 2005, Engel et al, 2008, Naidoo et al, 2011, Ecosystem Marketplace 2010, RedLAC 2010). Economic incentives in the marine environment have largely focused on fishing quotas, subsidies, ecolabelling, tourism supported marine protected areas and in using ES to control Eastern Pacific tuna fishing (Grafton 2006, Ecosystem Marketplace 2010). Marine ecosystem service (MES) discourse is gaining scientific and political currency as evidenced by the proposed TEEB Oceans (Baudoin 2012) and measurement tool development (Tallis et al, 2012). Terrestrial and freshwater PES experience provides insight to assess PES for fisheries and seafood (Fisher 2010, Ecosystem Marketplace 2010, RedLAC 2010, Naidoo et al, 2011). With this focus, this paper explores ES valuation and assessment to improve seafood sector ES understanding of their source fisheries, and whether this could enable them to effectively assess, forecast and account for fisheries improvement investments, and strengthen seafood sector corporate governance and fishery sustainability.

2.3 MAJOR NON-GOVERNMENT INITIATIVES to IMPROVE FISHERIES

The MSC is the most credible fishery certification and seafood ecolabelling programme and results in improved fisheries performance (Guitierrez et al, 2012, Ponte 2012) as Figure 2 demonstrates for target species management (Guitierrez et al, 2012:p.7).

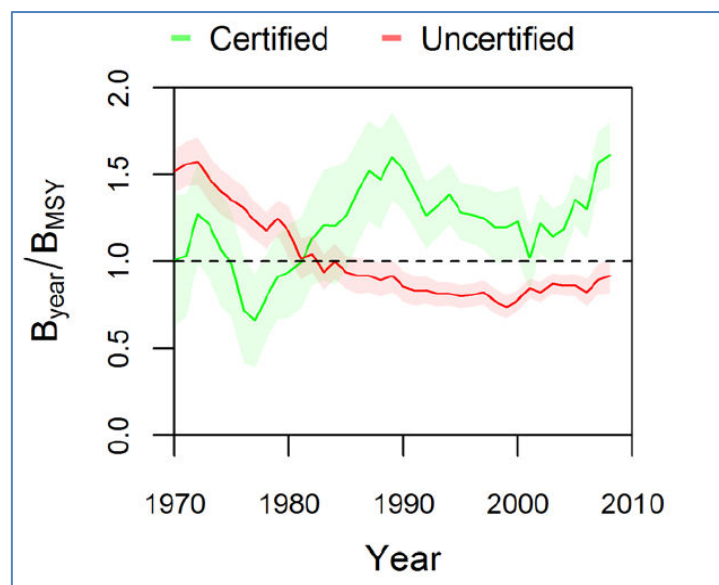


Figure 2: Performance of MSC-certified and uncertified fisheries. Long term trends (1970–2009) of biomass relative to their targets levels. B_{MSY} is set to 1 (broken line), (Guitierrez et al, 2012:p.7).

About 6% of global marine fishery landings are MSC certified and 4-5% seek certification. 1,600 companies in 80 countries have MSC Chain of Custody Certification and more than 194 seafood supply chain companies have committed to MSC (MSC 2011). Spurred by NGO campaigns, corporate social responsibility programmes and the growing public awareness of the state of marine fisheries and the oceans, the fishing industry also recognises the influence of NGOs as noted by Carter (2012):

‘Consumers are wary of vested interests from business and the government and the NGO sector are arbiters of consumers’ trust.’

Generally to deliver on these MSC commitments, seafood buyers assess their seafood supplies with consultant and NGO support, MSC certified products are then sourced, and where necessary FIPs are established. WWF, the conservation organisation, the Sustainable Fisheries Partnership (SFP) and some aquaria facilitate FIPs (CEA 2011) (Figure 3).

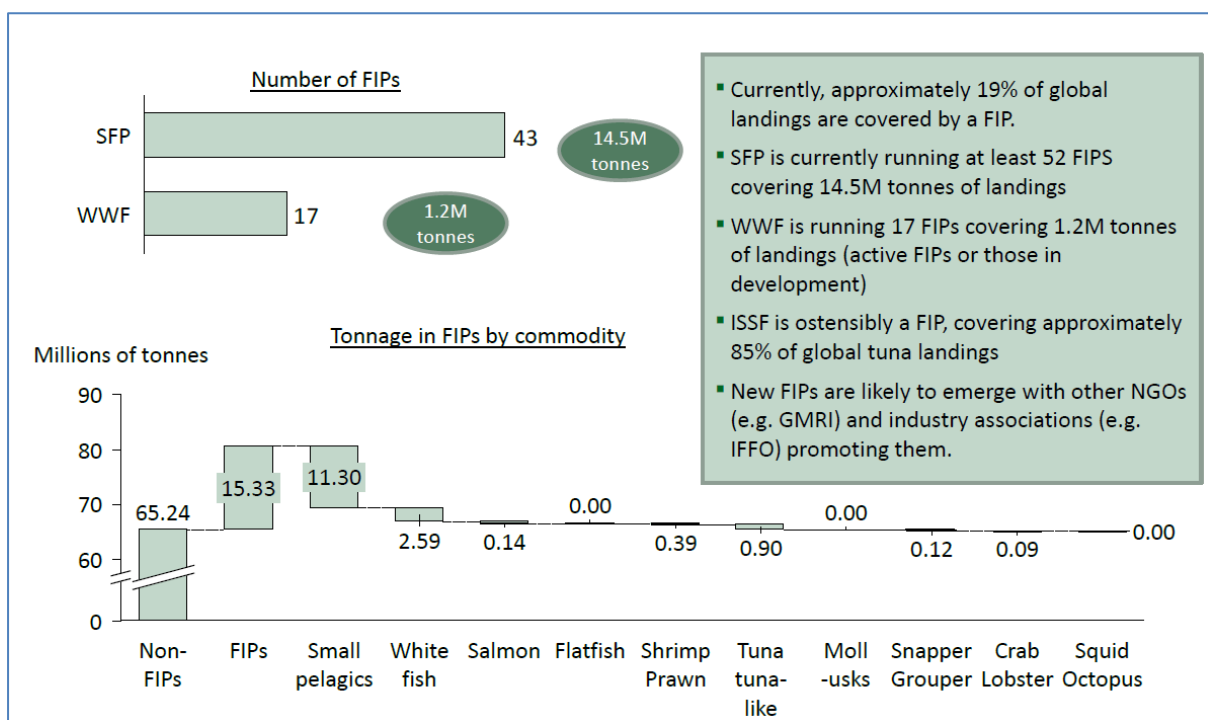


Figure 3: Summary of Fisheries Improvement Projects by NGO and commodity (CEA 2011).

The International Seafood Sustainability Foundation (ISSF) for tuna and the newer US National Fisheries Institute Crab Council are important FIP examples given their significant sector participation and innovative governance (Elliott 2012). The Philippine handline tuna FIP innovates by being community based and having the Swiss and German supply chains pay a percentage per transaction towards future improvements and post the initial German Investment and Development Agency funding (WCPFC 2012). The MSC, WWF and SFP endeavour to align approaches and although a comprehensive review of FIPs has not been done, Parkes et al, (2009) reviewed fish sustainability information schemes and found inconsistencies in key attributes that the FAO (2005a) recommend underpin assessment approaches including: scope; accuracy; independence; precision; transparency; standardisation; and cost effectiveness.

Adding the almost 11% of global landings that are in the MSC scheme to the 7.4% in FIPs excluding small pelagics (Figure 4), about 18.4% of global landings are in improvement processes and many more fisheries need to become engaged and improved to contribute to rebuilding fisheries and restoring marine ecosystems (Worm et al, 2009, Agnew 2012).

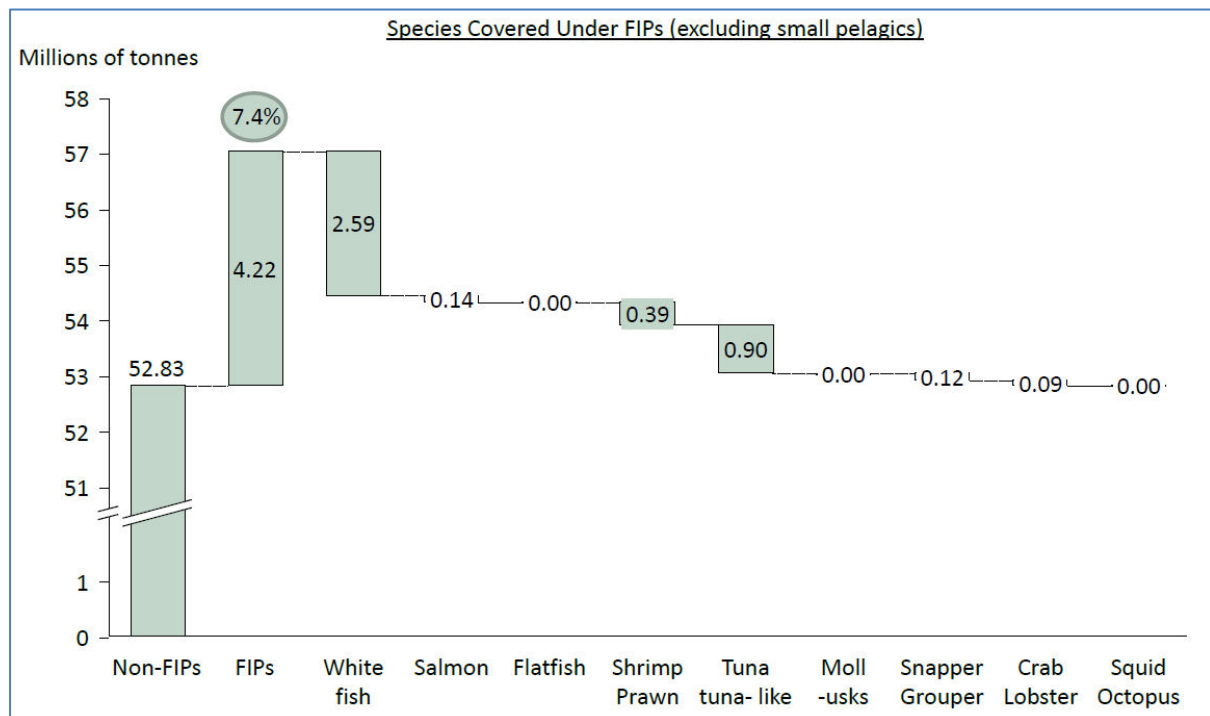


Figure 4: FIPS excluding small pelagics (CEA 2011).

Natural resources are capital assets from societies' point of view and fisheries rebuilding plans should also be considered investment programmes (OECD 2010, UNEP 2011b). However data are scarce about investment and which of the 194 supply chain commitments result in FIPs. Figure 5 conceptualises how these commitments influence FIPs and could be a source of finance and investment to scale up fisheries improvement.

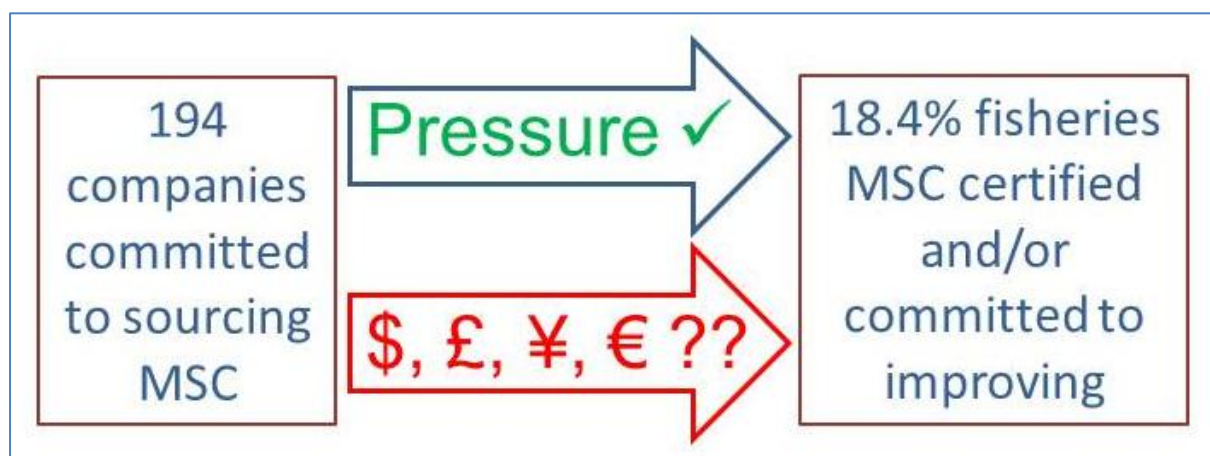


Figure 5: What is the scale of potential investment in improving fisheries from those making MSC sourcing commitments?

2.4 RESEARCH FRAMEWORK

2.4.1 Aim

To explore how greater seafood sector investment can be realised to strengthen marine fishery improvement and rebuilding.

2.4.2 Hypothesis

I explore the hypothesis that more, and more effective, supply chain investment can be secured to improve fisheries if; i) there is greater financial accountability, ii) greater conditionality on ecosystem performance, and; iii) that adapting PES to fisheries could enable this.

2.4.3 Objectives

1. To develop a conceptual model for seafood sector marine payment for ecosystem services to improve fisheries.
2. To test it in fisheries to identify the useful elements and challenges in marine fisheries.
3. To explore the potential for PES to strengthen current corporate social responsibility frameworks and their use by the seafood sector.
4. To develop recommendations for implementation.

3 METHODS

The study methods were literature review, conference participation and targeted key informant outreach. Over 250 journal papers and grey literature reports were accessed through metalib and google scholar and deeply explored using search terms: rebuilding fish*, ecosystem services, payment for ecosystem services, Marine Stewardship Council, corporate social responsibility, natural capital and governance, ecosystem service valuation, certification and fisheries improvement and investment. 45 Key Informants (KIs) from the related professional fields were identified from the relevant literature and professional networks (Schutt 2009). In fisheries, the potential sampling universe (Guthrie 2010) is the 44.9 million people directly engaged in capture fisheries, aquaculture or the seafood sector (FAO 2010). This was narrowed through preliminary literature review which showed marine ecosystem services had mostly been explored from a biodiversity perspective. The final KIs had expertise in fisheries, finance, ES and FIPs. The study was discussed in a semi-structured manner with 32 KI interviews (KIIs) through engaging the FIP facilitators described in Section 4.4.2. (See Appendix 8.1 for KIIs and FIP facilitator email). An early KII verified the research originality (Agardy 2012). Presentations at the New Zealand Seafood Industry Council and Ecosystem-Services Partnership conferences enabled testing of the study concepts and preliminary findings with KIs.

4 RESULTS

4.1 ECOSYSTEM SERVICES

Costanza et al, (1997) used the term ‘services’ when estimating nature’s worth at approximately USD\$33 trillion/year. ES discourse was significantly advanced by the Millennium Ecosystem Assessment’s (MEA) exploration of the consequences of ecosystem change for human well-being and in establishing the scientific basis for actions needed to enhance the conservation and

sustainable use of ecosystems (MA 2005). Figure 6 shows the 4 categories the MEA developed to assess ES across biomes: cultural, provisioning, regulating and supporting (MA 2005).

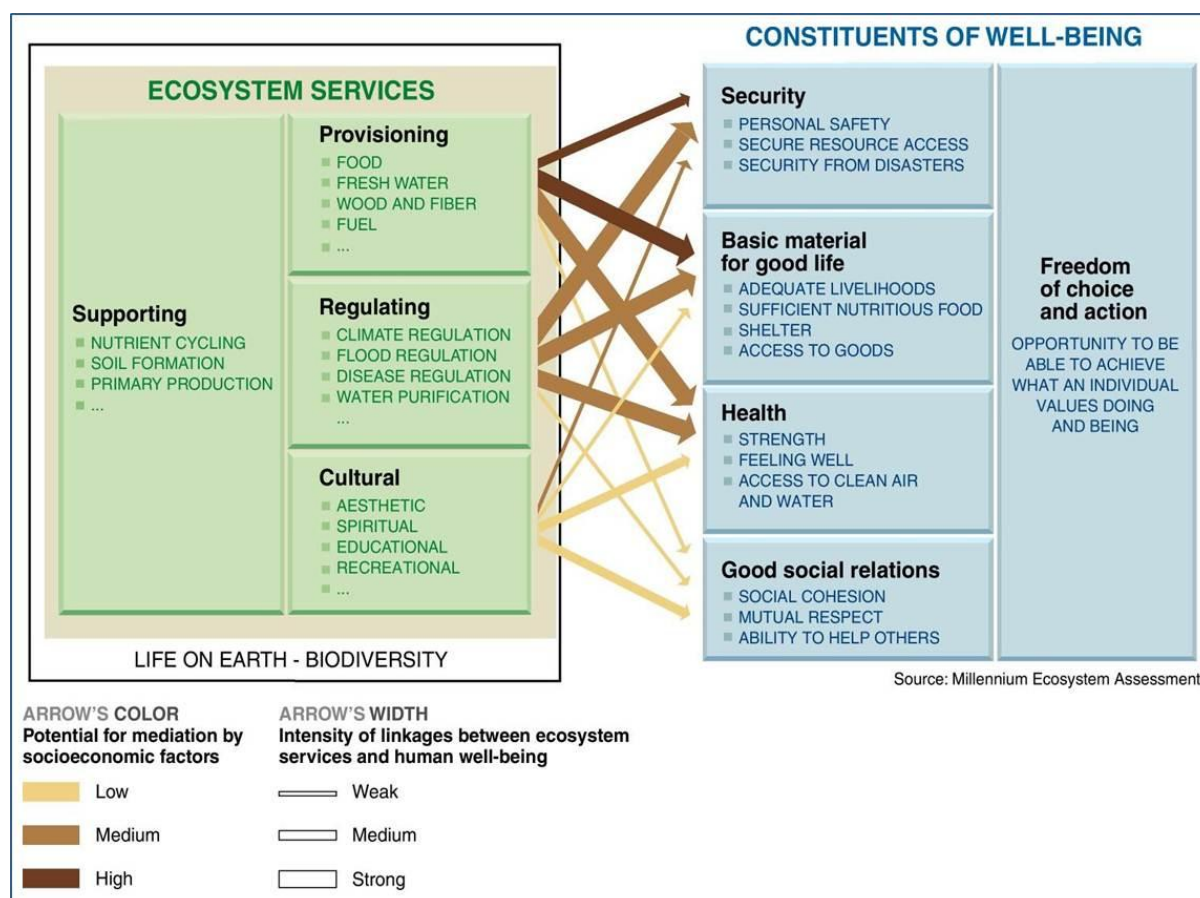


Figure 6: Ecosystem services and human well-being (MA 2005).

ES underpin the current international political discourse around green, and the ocean corollary, blue economy and were significant to Rio+20 negotiations (UNEP 2012). Learning from the Intergovernmental Panel on Climate Change, governments this year also established the Intergovernmental Platform on Biodiversity and Ecosystem Services as an interface between the scientific community and policy makers to build capacity for, and strengthen the use of, science in policy making. To build political support to account for ES, the World Bank Wealth Accounting and the Valuation of Ecosystem Services Partnership aims to operationalize natural capital accounting by governments (World Bank 2012) and the UN Integrated Environmental and Economic Accounting Framework has also been adapted to fisheries (FAO 2004, Harkness and Bain, 2007). ES is now more scientifically understood and technically applied, politically mandated and is becoming accessible to business (TEEB 2010). However even with humanity clearly exceeding its planetary boundaries (Whiteman, Walker and Perego, 2012, Rockström et al, 2009, Ehrlich 2012), the conservation advocacy and science communities' philosophical rejection of these approaches undermines ES application practically as evidenced by George Monbiot (2012) stating:

'Commodification, economic growth, financial abstractions, corporate power: aren't these the processes driving the world's environmental crisis? Now we are told that to save the biosphere we need more of them.'

A Key Informant (Costanza 2012) responds:

“In fact, the ecosystem services partnership is excited about the marriage between biological and economic language and that this is a necessary meeting of disciplines in order to resolve seemingly intractable problems.”

Section 4.2 discusses these cautions from a marine perspective.

4.1.1 Ecosystem Service Valuation

Whilst this study did not seek to deeply explore valuation techniques, it did find that they can be used to make sense of changes in the provision of marine ecosystem services and biodiversity and that the production function method has been identified as suitable to assess ecological damage from fishing (CIESM 2008). Intergenerational cost benefit analysis can assess ecosystem restoration over time (Sumaila 2004), and whilst ecosystem service valuation (ESV) is inherently a compromise process to empower decision makers, it can make biodiversity and ecosystem service values explicit (CIESM 2008, White, Halpern and Kappel, 2012). Thus the seafood sector could use ESV to: (i) understand challenges and trade-offs by estimating the relative importance of various ecosystems and their components; (ii) justify or evaluate decisions in particular places; (iii) resolve benefit distribution and cost-sharing for management; and, (iv) create innovative institutional and market instruments that promote sustainable ecosystem management (Chee 2004, Pagiola et al, 2005, Spurgeon 2012). Section 4.3 explores this for fisheries.

4.2 MARINE ECOSYSTEM SERVICES AND ECOSYSTEM-BASED MANAGEMENT

Marine ecosystems provide a wide variety of goods and services, including vital food resources for millions of people (Peterson et al, 1997). Total annual coral reef net present value has been estimated at US\$29.7 billion (Cesar et al, 2003) and total MES at more than USD\$20 trillion (Pagiola 2008). Human-dominated marine ecosystems are experiencing accelerating loss of populations and species (Worm et al, 2006) with fishing the most important direct driver of change (MA 2005). Table 1 presents a MES framework listing 13 Goods and Services in 5 Categories and EBM for fisheries is important given fish are embedded in ecosystems and generate ES (Holmlund and Hammer, 1999, Beaumont et al, 2007, Chan and Ruckelshaus, 2010, Fulton et al, 2011). Understanding what is at stake in terms of the economic benefits and values of coastal and marine ecosystems and their services is also important especially given increasing coastal populations (Barbier 2011). Given the fluid marine environment where the benefits arising from marine biodiversity are entirely dependent on the state of the whole ecosystem, the goods and services approach can be deemed to be very reductionist as the sum of the parts of the system is less than the value of the whole system, and the different goods and services provided are intrinsically connected (Beaumont et al, 2007). Designing marine ESV thus requires care and EBM and new metrics can aid this (Tallis et al, 2012, McLeod and Leslie, 2009).

Table 1: Framework of marine ecosystem services (Beaumont et al, 2007).

| Category | Good or Service |
|------------------------------|---|
| Production Services | 1 Food Provision |
| | 2 Raw Materials |
| Regulation Services | 3 Gas and climate regulation |
| | 4 Disturbance prevention (flood and storm protection) |
| | 5 Bioremediation of waste |
| Cultural services | 6 Cultural heritage and identity |
| | 7 Cognitive benefits |
| | 8 Leisure and recreation |
| | 9 Feel good or warm glow (non-use benefits) |
| Option use value | 10 Future unknown and speculative benefits |
| Overarching support services | 11 Resilience and resistance (life support) |
| | 12 Biologically mediated habitat |
| | 13 Nutrient cycling |

The Marine Ecosystem Services Partnership database lists 1490 valuations, 188 specifying fisheries, fishery and fish (MESP 2012). Fish are commonly valued as a good rather than also as a service which misses the board and lodging service the ecosystem contributes to producing the fish (Chan and Ruckelshaus, 2010, Trinidad 2012). This is also missed in single species management, models and policies which have not served us well (Pauly et al, 2002). These models usually aim for Maximum Sustainable Yield (MSY) which removes target species to levels that theoretically reflect the maximum rate of production of a given fish species and unless parameterised to do so, they don't factor in what target species eat and are eaten by. This paper is not designed to explore modelling however modelling fisheries rebuilding ecologically is important (UNEP 2011b), and as Costello notes (2012):

'...that estimates the value of rebuilding collapsed fisheries with different ecological and economic characteristics and the value of avoiding collapse of those fisheries to begin with...by explicitly accounting for economics, management, and ecology of size-structured exploited fish populations.'

Modelling tools that can consider ES include Ecosim (Cisneros-Montemayor et al, 2012), Atlantis (Fulton 2011, Chan and Ruckelshaus, 2010), In Vitro (Fulton 2011), Nereus (Christensen et al, 2011, Fisher 2012) and Marine InVest which is also developing an interface to enable model interaction (Guerry et al, 2012). These are powerful for posing 'what if' scenarios to understand the effects of specific, or a combination of, perturbations on complex ecological systems (Allain et al, 2012). Although applying ES would explicitly account for these relationships and enable analysis of management objective tradeoffs, they are not yet sufficiently mainstreamed in fisheries management (Fulton 2012) and little known by even some private sector sustainable seafood leaders (Blow 2011). Evaluating MSC as a delivery mechanism for ecosystem-based management of fisheries remains to be done (Stern-Pirlot 2011) and neither the MSC nor FIPS explicitly address ES. Cannon (2010) reviewed fisheries and PES and although SFP's website refers to ES in its bottom trawling policy, it is quoting the ecosystem values of marine protected areas (SFP 2012).

4.3 PAYMENT FOR ECOSYSTEM SERVICES

Terrestrially, PES models have evolved to be highly context specific, returned benefits to local communities, improved environmental and ecological outcomes and enabled public-private partnerships (Naidoo 2011, RedLAC 2010, Houdet et al, 2011). There are 5 commonly noted PES Criteria (Wunder 2005): 1. a voluntary transaction where, 2. a well-defined ES (or a land-use likely to secure that service), 3. is being 'bought' by a (minimum one) ES buyer, 4. from a (minimum one) ES provider and, 5. if and only if the ES provider secures ES provision (conditionality). Sommerville et al's, (2009) revised definition and framework is well suited to fisheries given it focuses on using positive incentives and conditionality to influence behaviour and emphasises both the importance of additionality of PES interventions, and of understanding the local institutional context.

4.3.1 Marine PES

Interest is growing in harnessing MES including carbon sequestration, coastal protection, fish nursery, water purification, and marine biodiversity through markets as well as by developing payments for this uncaptured value to finance their conservation (MA 2005, Ecosystem Marketplace 2010, Forest Trends 2010, Cannon 2010, Lau 2012). However supporting the accountability elements of the study hypothesis is this caution by Ruckelshaus and Chan (2010):

'...there are no good measures or accountability systems for most marine ecosystem services, so ecosystem service characterization, quantification, and modeling will be central to these efforts.'

Tallis et al, (2012) have since developed a MES measurement framework which could be used to design accountable marine PES and which includes: i) the condition of the ecosystem (supply metrics), ii) the amount of ocean resources actually used or enjoyed by people (service metrics), and iii) people's preference for that level of service (value metrics). Certification and ecolabelling are deemed PES mechanisms (Forest Trends 2010, CBD 2011a, Koellner 2012) as there is a preferential market for more sustainable products. MSC certified fisheries limit fish catch size which influences ES, such as the capacity of ecosystems to produce biomass which is a provisioning service (Koellner 2012, Gutierrez et al, 2012). Evidence is growing for financial benefits of the MSC (Roheim, Asche and Santos, 2011) to certified fisheries however the costs of implementing certification requirements can be at least three fold getting certified (Agnew 2012) and usually falls on the fishery. This reinforces the study's premise of the supply chain sharing these costs. Figure 7 presents a conceptual model for how the seafood sector can realise PES by investing in fisheries improvement.

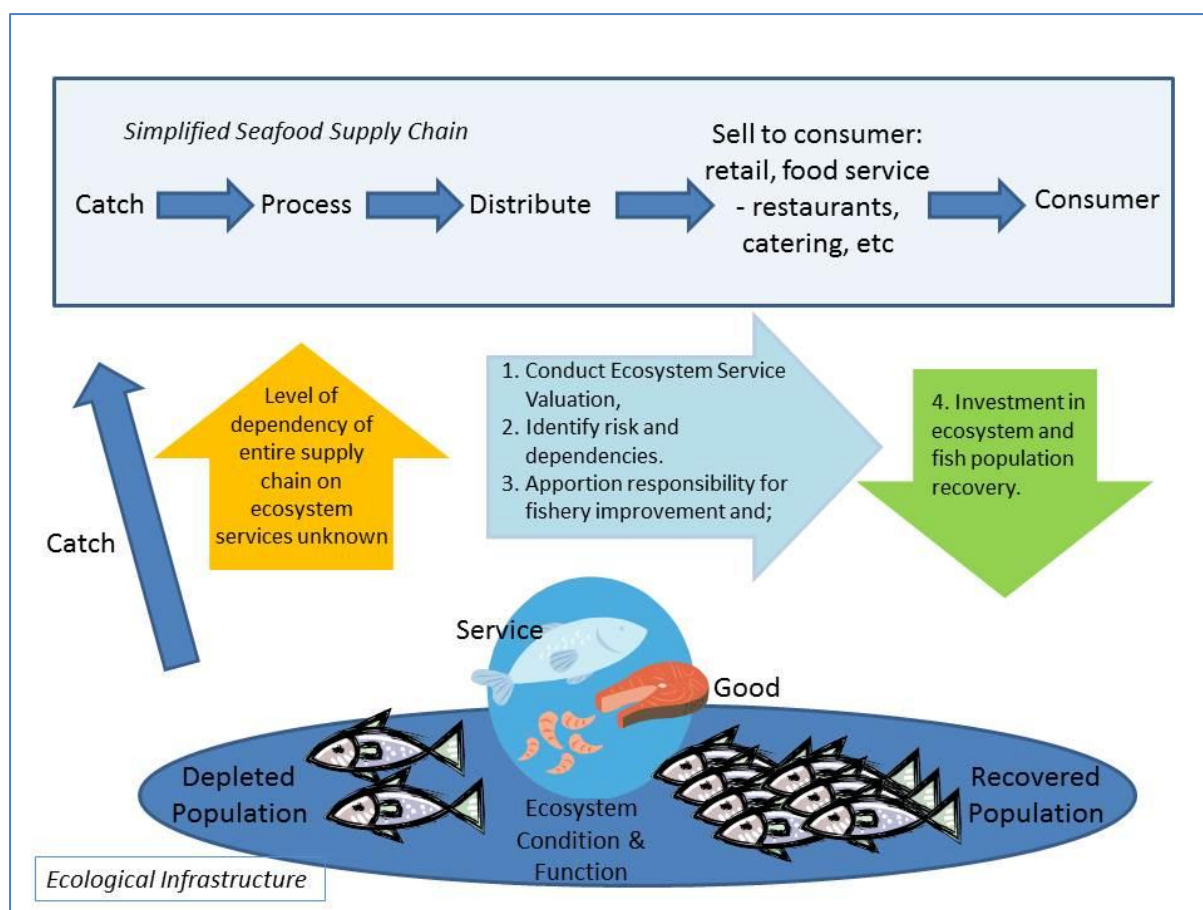


Figure 7: Conceptual model for seafood supply chain payment for ecosystem services.

Given the Forest Stewardship Council’s current assessment of what changes may be required for it to become an ES certifier and that using ESV could make the relationships between fisheries, seafood and ecosystem health more explicit, Table 2 shows that the MSC currently partially meets Wunder’s PES Criteria. In striving to interpret current ecological sustainability best practice, the MSC could consider its role in certifying ES through the 2013 Fisheries Standard review (MSC 2012) which the Board agreed:

‘Shall focus on a review of the performance of the default tree, ensuring that the operational standard is able to adequately assess fisheries against today’s understanding of ecological sustainability and best practice management.’

Table 2: Overview of the MSC’s potential to be a PES mechanism.

| Wunder’s Criteria | MSC | |
|-----------------------------------|-----|---|
| 1. Well-defined ecosystem service | X | MSC Principles and Criteria for Sustainable Fishing do not explicitly reference ES. |
| | ✓ | Principle 1: ...high productivity of target population(s) and associated ecological community – implies ES. Principle 2: Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends – is ES. |
| 2. Ecosystem service provider | ✓ | The fishery being certified. |
| | X | Currently not termed ES. |
| 3. Ecosystem | ✓ | The supply chain buying the certified fish. |

| | | |
|-------------------|---|--|
| service buyer | X | No systematic transfer of money to ES provider. |
| 4. Voluntary | ✓ | When a fishery puts itself forward. |
| | X | Not when their market insists with penalties for not doing so. |
| 5. Conditionality | ✓ | MSC's conditions of certification. |
| | X | Financial arrangements between parties are not specified by MSC. |

4.3.2 A Hypothetical PES in the Fijian South Pacific Albacore Tuna Fishery

This fishery is currently economically unsustainable given localised depletion (Banks, Short and Tuqiri, 2012, DeMers and Kahui 2012) and caught in archi-pelagic and offshore waters within the exclusive economic zone and on the high seas which makes management complex. Ecologically, tuna are highly migratory, upper trophic level pelagic predators (Dambacher 2010) that follow thermoclines and prey including sardines, anchovy and crustaceans (Beamish et al, 2005). Box 1 presents Pacific Albacore tuna's status in the Western Central Pacific – Convention Area (WCP-CA). Exported to Japan, the United Kingdom and United States, the Fijian South Pacific Albacore (SPA) fishery is seeking MSC certification however the lack of harvest strategies at Western Central Pacific Fisheries Commission (WCPFC) level and that Fiji, amongst other nations where SPA is caught, issues too many licences, are obstacles to certification (Intertek Moody Marine 2012). A FIP is mooted to address these issues (Hufflett 2012).

- WCP-CA total tuna catch US\$5.5 billion, up 15% on 2010. Purse seine, 56 % total value, longline, 33%. Of this Skipjack 48%, yellowfin 29%, bigeye tuna 17%, albacore (ALB) 7%.
- WCP-CA ALB catch 122,548 per tonne (t). Relatively stable, close to past decade average. North and SPA = 81% total Pacific Ocean ALB catch 152,195t. SPA catch 75,258t.
- Bangkok ALB market benchmark price averaged US\$2,778 t, up 11%. Thai frozen ALB import prices up 14% @US\$3,044t. US fresh ALB import prices up 8% @ US\$4.56 per kg. (USD\$4560t)
- Catches generally trending down. Value substantially up.
- Forum Fisheries Agency (FFA) members (including Fiji) reiterated concern about catch doubling since 2000, declining Catch Per Unit Effort, and effort increase for SPA, a fishery of special significance to many FFA members. FFA members suggested that a reduction of fishing mortality and SPA catch be recommended to WCPFC December 2012 Commission.

Box 1: 2012 Albacore Status in the Western Central Pacific – Convention Area (WCPFC 2012b).

Given the increase in ALB value and considering FIP funding, Table 3 presents a hypothetical PES management scenario for Fijian SPA showing Wunder's PES criteria could largely be met.

Table 3: A hypothetical management scenario for PES in the Fijian South Pacific Albacore Fishery.

| Wunder's PES Criteria | Criteria Met | Hypothetical Management Scenario | Explanation |
|-----------------------|--------------|---|---|
| Well-defined ES | ✓ | Science sets an ecosystem-based Total Allowable Catch (TAC). (Currently not established). | Albacore is both a good and a service given its TAC has been determined using ESV. The fishery also catches sharks which are also goods and services. |
| | X | | Requires improving albacore ecological knowledge and linking it to licence |

| | | | |
|------------------------------|---|---|--|
| | | | conditions. |
| ES Provider | ✓ | Government strictly sets fishing licence number. (Currently licence numbers are above scientific recommendations). | Government provides the ES in the form of the right to catch albacore. |
| ES Buyer | ✓ | Licences auctioned, TAC allocation occurs and is adjusted for fishing capacity of successful bidders and the agreed minimum profitability. (This is entirely new.) | New consortia of buyers emerge. |
| Voluntary | ✓ | | |
| Conditionality on the buyer | ✓ | Only responsible (i.e. MSC committed or certified) operators can bid. (Would be new.) | |
| Conditionality on the seller | ✓ | Licence revenue pays for fisheries management which supports responsible operators i.e. is a co-investment model with industry and protects natural capital base through strict Monitoring, Control and Surveillance and MSC. (Currently poor transparency about fisheries revenues.) | |

4.3.3 Potential Implementation Challenges

Table 3 identifies the following implementation challenges in establishing such a PES framework:

- Affordability, Equity and Rights Based Management:** The price of a licence could increase if: licence numbers are restricted, allowable catch is decreased following a science process to account for the value of Albacore in-situ (a service) as well as when caught (a good), and; the licence price includes fisheries management cost recovery. Allocating fishing rights via licence levels that follow scientific advice is the focus of current government efforts for SPA (Te Vaka Moana 2012). In this hypothetical model, could a group of committed supply chain participants buy into a licence/the right to fish with the local vessel owners to support a new approach to sustainability? Could accountable governance arrangements be developed to enable these financial transactions? To address equity, who would own the fish and would it be valued as a good, service or fishing right? How can alternative benefit sharing models and traditional harvesting knowledge and conservation structures be considered to support the conservation of in-shore juvenile tuna by Fijians and be conditional in quotas? (Mackinko and Bromley, 2002, Bromley, 2009, Hanich et al, 2010, Barclay 2010, DeMers and Kahui 2012) This is considered for the Coral Triangle's archipelagic waters (Wageningen 2010).
- Science:** An ES science foundation for tuna is being built given WCPFC's Science Committee support to pelagic ecosystem models to compliment stock assessment tools (Allain et al, 2012) and new research in the Eastern Pacific (Martin 2012).
- Capacity and Politics:** Tuna management is highly politicised and the historical distant water fishing nation (DWFN) dominance is being challenged by Western Pacific Small Island Developing States (SIDs) through the Parties to the Nauru Agreement and SPA focussed TVM. SIDs fisheries management capacity also remains weak (Hanich et al, 2010).

4.4 CORPORATE GOVERNANCE FOR SUSTAINABILITY

This paper approaches rebuilding fisheries through exploring the capture of private sector seafood supply chain investment to scale up fisheries improvement. Fisheries struggle to secure investment and new governance structures are needed for investments to produce returns and deliver accountable results (Manta 2012, UNEP 2011b). Current corporate social responsibility dates from the early 1990s (Henderson 2001) and its environmental mainstreaming is evident as Evison comments (CBD 2011b):

‘All businesses will need to stop making the potentially destructive assumption that nature will continue to provide its services free of charge’.

Business is increasingly aware that they are managing (or that they need to manage) the ES which influence their activities and which is also known as managing their biodiversity dependencies, natural capital or ecological infrastructure (Houdet et al, 2012). There is also much that sustainable management can learn from good business practice, such as powerful deal making which is reviewed for Amazon forest conservation by Linden et al, (2012). Traditional environmental management systems and due diligence tools are often ill-equipped to evaluate the full risks and opportunities arising from the use and degradation of ecosystems and companies increasingly see investments in “natural infrastructure” as important and sometimes mandatory (EcoForum 2012). Corporate Ecosystem Valuation (CEV) is one of several corporate governance tools produced by the World Business Council on Sustainable Development (WBCSD), Global Reporting Initiative (GRI), UN Global Compact (UNGC) and World Resources Institute (WRI), amongst others. CEV enables business to evaluate their relationships to biodiversity and ecosystem services (BES) and BES tools are listed in Appendix 8.3. Through assessing their dependencies and prioritizing ecosystems in business planning, performance measurement and investments, companies can: cut costs, reduce risks (operational, regulatory and legal, reputational, or market and financial), fuel growth and enhance brand, transparency (UNGC 2012), and staff morale (Short 2011). Triple bottom line and environmental profit and loss (EP&L) accounting are related sustainability accounting tools although Milne et al, (2008) note concerns:

‘...lacking neutral and authoritative verification, the majority of sustainability reports entirely lack credibility, and without recognized endorsement can be discounted for the purposes of meaningful evaluation or control of environmental behaviours. ‘Greenwashing’, the practice of promoting an image of social and environmental responsibility by emphasising superficial or incidentally sound activities whilst ignoring substantive environmentally negative practices, is widespread amongst those entities which are prominent in the movement promoting sustainability reporting as a voluntary, unregulated, corporate undertaking.’

4.4.1 Seafood Sector Corporate Governance

The seafood industry is already experiencing the consequences of unsustainable practice given depleted wild-fish stocks, regional biological collapses in fish farming, and entrenched stakeholder conflict (FMI 2012). The fishing sector also risks losing USD\$80-100 billion in income and 27 million jobs (TEEB 2010, UNEP 2011b). The seafood sector has taken longer than other sectors to react to social, environmental and ethical concerns and effective governance of seafood supply chains is increasingly important (UNEP 2008). Fisheries need business strategies and practices that go beyond impact mitigation and seek compromise between development and conservation (Houdet 2009). Commercial fishing and the seafood sector need to professionalise to ensure ongoing licence to

operate and adopting corporate governance tools can enable increase the burden of proof and transparency systematically (Wilburn 2011, UNGC 2012, Norse et al, 2012).

Labelling opens new opportunities for ES governance (Koellner 2012) and some seafood companies such as Findus and Sanford New Zealand Ltd have MSC certified products and use the GRI's Food Processing Sector Supplement to report annually. Although not exhaustively reviewed, the Sanford example is informative as although they have MSC certified products and have joined the Global Partnership on Oceans, their report's integrity is doubtful given: it defers to outdated New Zealand fisheries management (Wild 2008, WWF New Zealand 2012), their controversial deep water trawling for orange roughy (Norse et al, 2012), alleged slave labour aboard their foreign charter vessels (Stringer et al, 2011) and prosecution for bilge dumping in American Samoa (DOJ 2012). These events appear to also be costing the company given they correlate with their share price falling from NZD\$5.65 in April 2011 to NZD\$3.90 in August 2012 (Findata 2012). Furthermore, New Zealand corporate seafood sustainability reporting has been found in its voluntaristic, non-standardised and unverified form, to be ineffectual and even counter-effective in ensuring desirable corporate environmental behaviours (Wild 2008).

4.4.2 Fisheries Improvement Investment

To explore the potential for seafood sector investment, 17 FIP facilitators were asked whether the 194 companies committed to MSC, and who drive these FIPs, could invest in improvement at scale. (See Appendix 8.1). There was broad agreement that this is an important research question and willingness to invest has been explored for tropical forest supply chains (Koellner et al, 2010). Although data is limited, this study found several examples of seafood supply chain investment; Darden Seafoods pays USD 50c per pound of snapper traded into the red snapper FIP (Cannon 2012), Philips Seafoods donates USD 03c per pound of its finfish sales to SFP to fund FIPs (Seafood Source 2012), ISSF's financial mechanism incentivises improvement (Fox 2012), Blueyou Consulting directly invests in its FIPS (Benguerel 2012), four North American fisheries investments are described by Manta Consulting Inc. (2011) and the major Foundations currently spend 60% of their USD\$300 million marine conservation funding on fisheries (CEA 2012).

5 DISCUSSION

The study developed a conceptual model to explore the hypothesis that more, and more effective, supply chain investment can be secured to improve fisheries if; i) there is greater financial accountability, ii) greater conditionality on ecosystem performance, and; iii) that adapting PES to fisheries could enable this. The study found that theoretically ESV, PES and improved corporate governance can interact to enable the seafood supply chain to better understand the biodiversity risks associated with their supply fisheries, to determine their share of the responsibility, and thus investment for improving them, and for the improved value from more sustainable fisheries to be accountably distributed. The Marine Stewardship Council and a Fijian tuna fishery met some PES criteria although implementation challenges exist. Exploring modern corporate governance tools to professionalise the seafood sector shows that these hold some promise for more systematic transparency. However reliance upon voluntary corporate initiatives cannot ensure ongoing sustainability in global fisheries, for which robust regulation, monitoring and enforcement are essential, and NGO scrutiny is important. (Jacquet and Pauly, 2006, Milne et al, 2008, Wild 2008,

UNEP 2011b). Figure 8 presents a flow diagram of how the tools and approaches described in this paper could interact to mainstream ES into seafood business.

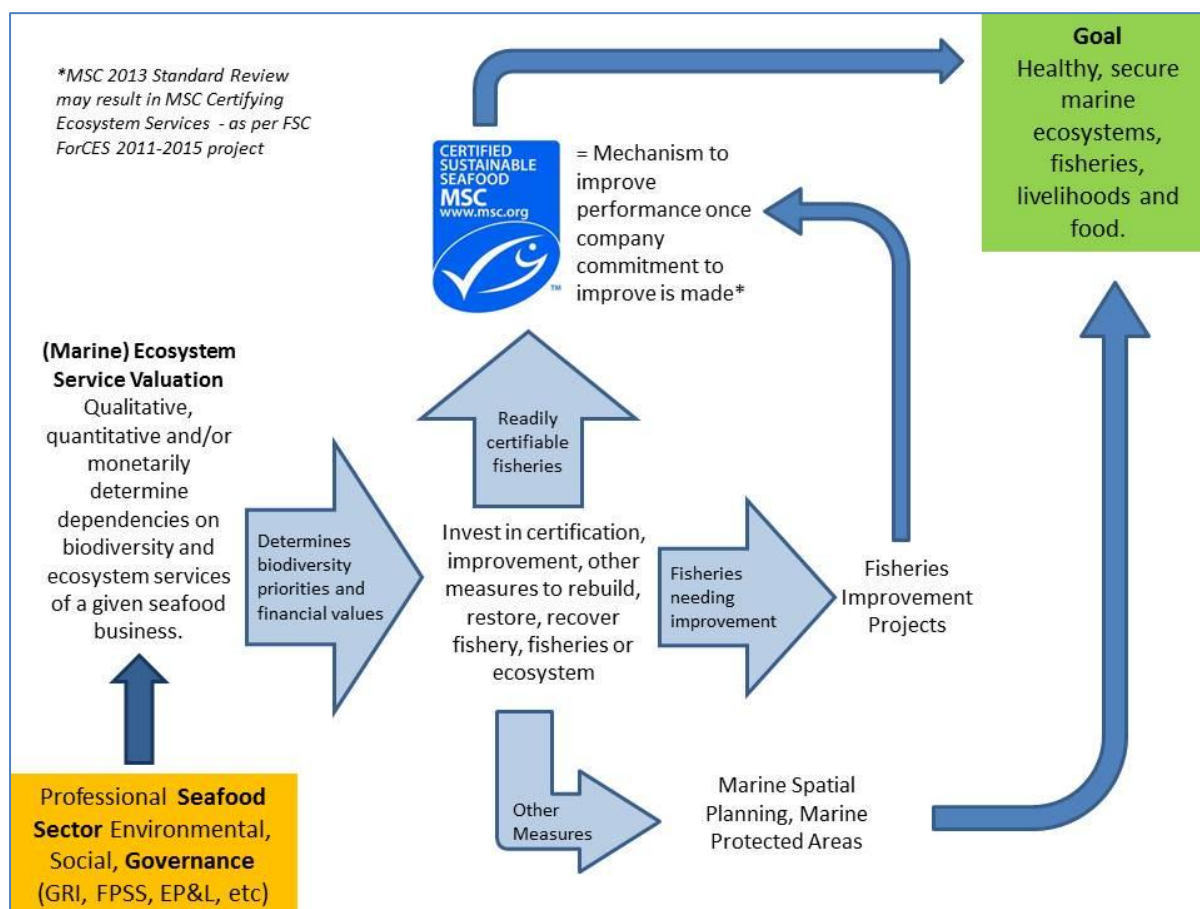


Figure 8: Flow diagram of tools interactions to mainstream ecosystem services in seafood business.

The study found that new ES valuation and financing tools could theoretically work in a seafood context, especially valuation to enable common accounting metrics, and context specific governance to manage co-investment and rights. An impediment to marine PES is the common property nature and lack of formally defined property rights in many fisheries (Naber 2008, Bostock 2012). This can be overcome by ensuring the right to fish is ecologically conditional (Grafton et al, 2006, DeMers and Kahui, 2012) and using context specific governance arrangements. These can be informed by experience from successful sustainable fisheries financing models including project finance for permanence (Linden et al, 2012), other exploited resources such as timber (Koellner 2010) and other common property models for the atmosphere and groundwater (Costanza 2000). The fisheries examples (Manta 2011, FMI 2012, SFP 2012, WWF 2012) demonstrate that when an interdisciplinary team gel and persevere around complex problems and have the tools and resources, that solutions and innovations are generated, and conservation, livelihoods and business security are strengthened.

5.1 A WAY FORWARD

'The urgent challenge today is to move from theory to real-world honing and implementation of ecosystem service tools and approaches to resource decisions taken by individuals, communities, corporations, governments and other organizations.' (Ehrlich et al, 2012)

Rebuilding fisheries makes good business sense (Sumaila et al, 2012, UNEP 2011b). The honing noted by Ehrlich et al, needs to occur in seafood business in order for it to support practical restoration ecology for the oceans alongside the extraction of marine resources for human food. Reconciling these goals provides a major challenge for fisheries ecologists, for the public, for management agencies, for the fishing industry (Pauly et al, 2002) and the seafood supply chain. An important early step is to empower seafood executives to understand their responsibility and potential to invest in restoring healthy marine ecosystems, services and productive capacity that underpin their seafood business. The tools and approaches described in this paper can make the relationship between their business and ecosystems accessible technically, financially and practically and could be developed further into professional seafood business guidance. Furthermore, drawing on lessons from existing institutional arrangements (Manta 2011, Rangeley and Davies, 2012), Figure 9 conceptually illustrates an institutional framework for a new trust or fund to support the seafood sector to vastly scale up fisheries improvement and ecosystem performance both towards, and as a result of MSC certification. This has four interrelated components that theoretically could generate private sector income to make the entity self-sustaining and which could leverage public sector funding for especially the public good components, denoted by *.

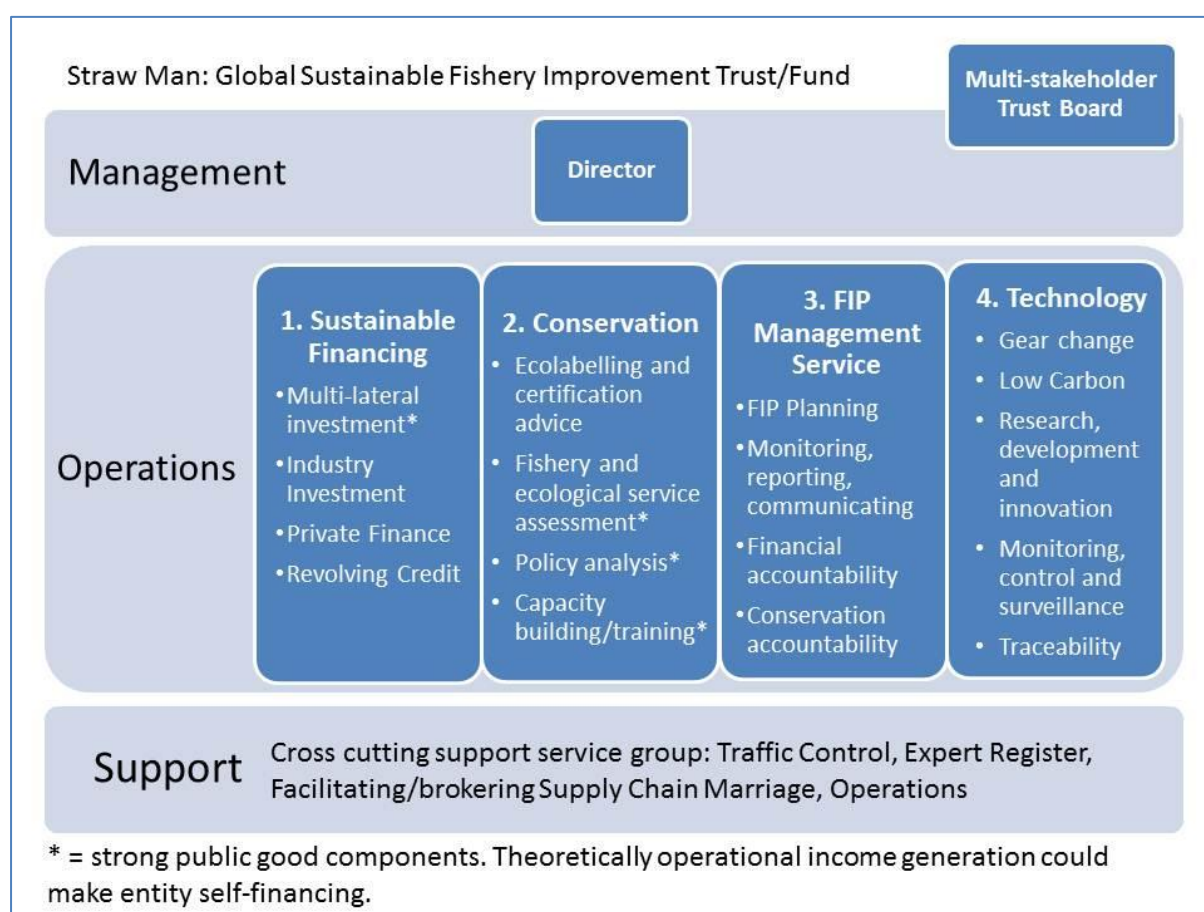


Figure 9: Conceptual framework for a new fishery improvement entity.

5.2 RECOMMENDATIONS

This study has uncovered some important new theoretical and applied research and development challenges to pursue.

Terrestrial and marine PES experience needs to be further analysed, through at least TEEB Oceans and the MSC 2013 Standard Review, from seafood supply chain and fisheries perspectives and the learnings communicated to replicate success.

Exploring how the latest valuation, economic, fisheries and ecological modelling tools can be translated into seafood business and operational strategies is needed. It could be powerful to add to fisheries rebuilding modelling (Costello 2012, Sumaila et al, 2012) by testing whether ESV can determine the share of private sector investment in rebuilding fisheries, and how this could relate to the actual financial terms of commitments to MSC.

Public sector seafood companies, at a minimum, need to test the value of building ES models and trialling ESV for their supply chains themselves. Doing this with science support and for example the best practice business entities such as WBCSD, GRI and WRI could enable monitoring and learning. A standardised ESV method for the seafood sector could be developed.

Little appears to be known about seafood sector fisheries improvement investment and this, along with assessing the corporate governance of the publically listed seafood companies committed to MSC, are important topics for further research. Lastly, further exploration of cooperative financing entities and/or trust funds, such as project finance for permanence and through the Global Partnership for the Oceans, could enable greater private and public sector funding to emerge.

6 CONCLUSIONS

Much is now known about the ecological basis of ecosystem services and the anthropogenic influences upon them (MA 2005). Overfishing is a pressing driver and this paper argues that although there are useful initiatives to address this, these will not deliver at the necessary scale to rebuild fisheries or restore ecosystem health. It contends that analysing seafood sector biodiversity dependencies and ecosystem services can enable strategic forecasting of investment in, and leveraged funding for, marine fishery rebuilding and ecosystem restoration, and that this, and adopting best practice corporate governance are essential for seafood businesses to maintain their social licence to operate.

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8 APPENDICES

8.1 KEY INFORMANTS AND FIP FACILITATORS

| | Name | Institution | KII | FIP Facilitator | Followed Up | Comments |
|----|-----------------------|----------------------------------|-----|-----------------|-------------|---|
| 1 | Jen Levin | Gulf of Maine Research Institute | x | ✓ | | Responded. Unable to help. |
| 2 | Nicolas Guichoux | Marine Stewardship Council | ✓ | ✓ | | "seriously struggling when it comes to define the level of investment those companies are ready to make." |
| 3 | Rupert Howes | Marine Stewardship Council | ✓ | ✓ | ✓ | Discussion 25 July 2012 |
| 4 | Amanda Stern-Piriot | Marine Stewardship Council | ✓ | ✓ | | Discussion March 2011 in UK. Personal communication email, 29 August, 2012. |
| 5 | David Agnew | Marine Stewardship Council | ✓ | ✓ | ✓ | Discussion 09 August 2012 |
| 6 | Dr Jose Ingles | WWF Philippines/Coral Triangle | ✓ | ✓ | | Discussion 18 July 2012 |
| 7 | Dr Geoffrey Muldoon | WWF Australia/Coral Triangle | ✓ | ✓ | | Discussion 20 July 2012 |
| 8 | Jesse Marsh | WWF US | x | ✓ | ✓ | No response. |
| 9 | Alfred Schumm | WWF Smart Fishing Initiative | x | ✓ | | Responded. No information available. |
| 10 | Dr William W. Fox Jnr | WWF US | ✓ | ✓ | | Pers.comm., Discussion at ISSF ESC Stakeholder Meeting. Guam. 22 March, 2012 |
| 11 | Marie de Longcamp | WWF US | ✓ | x | | Discussion 30 April 2012 |
| 12 | James Spurgeon | SustainValue | ✓ | x | | Discussion 27 July 2012 |
| 13 | Dr Jim Cannon | SFP | ✓ | ✓ | | Discussion 20 June 2012 |
| 14 | Heather Tausig | New England Aquarium | x | ✓ | ✓ | Email 15 July. "Very interesting work you're undertaking and I'm very interested to speak to you more about it. I think I/we might be helpful for some of these lines of thinking and would learn from the results of the others." Failed to confirm appointment. |
| 15 | Dr Tom Pickerell | Monterey Bay Aquarium | ✓ | ✓ | | Emailed FIP information 09 July 2012 |
| 16 | Matt Owens | FishWise | x | ✓ | | Discussion Guam. 22 March, 2012 |

| | | | | | | |
|----|------------------------|---|---|---|---|---|
| 17 | Barbara Best | USAID | x | ✓ | | Emailed response and couldn't help. |
| 18 | Ted van der Put | IDH | x | ✓ | | Emailed response and couldn't help. |
| 19 | Marc Nolting | GTZ | x | ✓ | ✓ | No response. |
| 20 | Lisa Monzon | The David and Lucile Packard Foundation | ✓ | ✓ | ✓ | Discussions 22 May and 29 July 2012 |
| 21 | Scott Burns | Walton Family Foundation | ✓ | ✓ | ✓ | 24 July 2012. "...an important question, trying to capture the investment potential." Follow up project under development. |
| 22 | Meredith Lopuch | Moore Foundation | ✓ | ✓ | | Discussion 30 July 2012 |
| 23 | Tris Lewis | Oak Foundation | x | ✓ | ✓ | Failed to make appointment. |
| 24 | Tim Bostock | World Bank | x | ✓ | ✓ | Email response 15 July. "Working with private sector is essential, they're extremely responsive when arguments are right. Fully agree that market mechanisms (demand side) are crucial, especially in leveraging governance reforms. It's supply side markets that are problematic given lack of effective tenure." |
| 25 | Glenn-Marie Lange | World Bank, WAVES | ✓ | | | Discussion 2 August 2012 ESP Conference |
| 26 | Rene Benguerel | BlueYou | ✓ | ✓ | ✓ | Email 3 July 2012 |
| 27 | Monica Jain | Manta Consulting | ✓ | | ✓ | Discussion 25 July 2012 |
| 28 | Lucy Blow | New England Seafoods | ✓ | x | | Discussion 2 January 2011 Vancouver Seafood Summit. |
| 29 | Matthew Elliott | California Environment Associates | ✓ | x | | Discussion 8 May 2012 |
| 30 | Robert Costanza | Portland State University | ✓ | x | | Discussion 4 August 2012 ESP Conference |
| 31 | Tundi Agardy | Forest Trends | ✓ | x | | Discussion 1 May 2012 |
| 32 | Rashid Sumaila | UBC Fisheries Centre | ✓ | x | | Discussion 29 August 2012 |
| 33 | Liam Campling | Independent researcher | x | x | | Received literature from him. |
| 34 | Yannick Baudoin | TEEB, UNEP Grid Arendaal | ✓ | x | | Key Informant Interview with Katherine Short, 02 August, 2012 |
| 35 | Carl-Christian Schmidt | OECD Fisheries | x | x | | Received literature from him. |
| 36 | Marcus Milne | Canterbury | x | x | | Email discussion, used |

| | | University | | | | literature. |
|----|----------------------|---|---|---|--|---|
| 37 | Abbie Trinidad | CTI GEF IW:Learn | ✓ | x | | Discussion 03 July 2012 |
| 38 | Paul Reenan | John West | ✓ | x | | Discussion 08 August 2012 |
| 39 | Becky Chaplin-Kramer | Natural Capital | ✓ | x | | Discussions throughout 2012 ESP Conference |
| 40 | Cath Wallace | Victoria University of Wellington | ✓ | x | | Discussion 17 May 2012 |
| 41 | Alison Green | TNC | ✓ | x | | Email re. Marine Conservation Agreements |
| 42 | Gabriella Bianci | UNFAO | ✓ | x | | Meeting at FAO Rome 29 May 2012 |
| 43 | Stephen Hall | World Fish Centre | ✓ | ? | | Meetings at FAO Rome week of 29 May 2012 |
| 44 | Dawn Martin | SeaWeb | ✓ | x | | Discussion 29 July 2012 |
| 45 | Melanie Siggs | HRH the Prince of Wales' International Sustainability Unit | ✓ | x | | Discussion 2 nd August 2012 |

8.1.1 Email Sent to FIP Facilitators 1 July 2012:

Dear....

I am writing to you as part of the research as I am looking into the challenge of increasing the ecological and financial accountability of fisheries improvement initiatives in what I term the 'pre-Marine Stewardship Council' realm and reaching out to a range of fisheries improvement facilitators including the funders of many of these initiatives.

The first Masters paper researched stakeholder (scientists, NGOs, fishing industry, seafood processing etc) perceptions of ecosystem-based management (EBM) of fisheries. I found that with increased accountability for outcomes, increased investment in furthering ecosystem-based approaches to fisheries are possible. This is good for marine fishery health, conservation and livelihoods - but as I know you are only too well aware, complex to achieve.

One point of departure for this second paper is that the scale of demand for fisheries improvement is now significant from across the range of actors driving this demand – retail, processing, government, NGO, fisheries themselves, MSC etc. A working assumption related to this is that this demand translates into investment to improve marine fisheries from a range of sources. I am trying to ascertain whether any numbers are available to start to quantify the current actual and future potential investment. Recognising that fisheries tend to be a lower public sector priority, I am especially interested in private sector investment in improving fisheries. i.e. buyer A buys x tonnes of fish. What is buyer A willing and/or planning to invest in improving the sustainability of that fish – where investment includes cash, human resources, research, sourcing modification costs, etc?

1. Would you be willing to share information and thinking about this? All data will of course be treated in confidence for academic purposes and any referencing agreed with the source.
2. Can we collaborate to quantify the scale of current and potential future investment in fisheries improvement?
3. Would you be willing to reach out to fisheries improvement actors to find out what they are investing?
4. What are they investing currently in improving fisheries?
5. How do they prioritise their investment?
6. What are their projections of investment over time?

My purpose is that we know that addressing the complex fisheries management challenges we face today, including rebuilding marine fisheries, require multi-sectoral collaboration such as the Global Partnership for Oceans. Being able to show what the various sectors are putting on the table will enable a) identification of what further investment is needed b) those funds to be found and b) and deployed through innovative approaches – likely on a case by case basis.

I very much look forward to your responses, any information you can provide and discussion about how that information may be used. Please let me know promptly if there is a need to clarify any of the above and in order to most effectively use any information you are able to send, I would welcome your response by July 23rd.

With kind regards

Katherine

Katherine Short
MRes Ecology, Evolution and Conservation (Part-Time)
Imperial College London

8.2 MSC COMMERCIAL COMMITMENTS, AS AT APRIL 2012.

Retail

1. **Edeka**, a key German retailer: their share of MSC labelled seafood amounts to 59 per cent up from 34 per cent in 2009.
2. **Lidl** and **Metro**, key German retailers: committed to continuously increasing the number of products carrying the ecolabel and introducing the program to stores in other European countries.
4. **Aldi Nord, Aldi Süd, Globus, Hit, Kaiser's Tengelmann, Kaufland, Real, Rewe Group, and Tegut**, key German retailers: committed to continuously increasing the number of products carrying the MSC ecolabel.
13. **CBL**, The Dutch retail association: By the end of 2011, around 85 per cent of CBL members' wild fish sold under private retail label were MSC certified – they are committed to increasing this to 100 per cent; 99 per cent of Dutch retailers are a member of CBL.
14. **Marks & Spencer**, UK retailer: introducing the ecolabel on all products from certified fisheries. All wild fish sold will be MSC certified by the end of 2012.
15. **Sainsbury's**, leading UK retailer: committed to MSC certification as a major part of their sourcing policy; announced their 100th MSC certified product, leading the way as the largest UK retailer of sustainably sourced seafood.
16. **Walmart**, the world's largest retailer: Walmart and Sam's Club require all their wild caught seafood products to be certified sustainable to MSC or equivalent standards in full assessment, or have developed work plans to achieve certification and report progress biannually. Plans must be finalised and underway by June 2012.
17. **Loblaw**, Canada's largest food retailer: a seafood sourcing policy that commits to sustainable seafood only by 2013; carries an extensive range of private label and national brands with the MSC ecolabel. National roll out for certification of fresh seafood cases is underway.
18. **Kroger** and **Supervalu**, two of the largest grocery retailers in the US: announced goals to source 100 per cent of their top 20 wild-caught species from fisheries that are MSC certified, in MSC full assessment, or engaged in a World Wildlife Fund fishery improvement project by 2015.
20. **Carrefour**, the largest retailer in Europe: committed to increasing the number of products bearing the MSC ecolabel; the MSC program is at the heart of their seafood sourcing policy.
21. **Migros** and **Coop**, the two largest Swiss retail companies: have made MSC certification a pillar in their seafood sourcing policy.
23. **Coop, Dansk Supermarked** and **SuperGross**, three large retailer groups in Denmark: have committed to sustainable seafood and will join forces in a nationwide MSC marketing campaign in 2012.
26. **ICA**, the largest retail chain in Sweden: 52 per cent of their private label seafood carries the MSC ecolabel.
27. **El Corte Inglés**, one of the largest stores in Spain: the first Spanish retailer to offer MSC labelled seafood, has already introduced five MSC labelled products and is working with suppliers to widen its range.
28. **Japanese Consumers' Co-operative Union, AEON, Izumi** and **Seiyu**, leading Japanese retailers: are among more than 40 Japanese retailers which offer over 200 MSC labelled seafood products; 6.7 per cent of Japanese Consumers' Co-operative Union's seafood range is MSC labelled.
32. **Woolworths, Coles** and **Aldi**, large Australian retailers: committed to sustainable sourcing, already providing more than 120 MSC labelled seafood products, with both Coles and Woolworths committed to increasing the number of certified products on its shelves this year.
35. **Pick n Pay** and **Woolworths**, leading South African retailers: committed to sustainable seafood and have made the MSC central to their procurement policies. Pick n Pay has committed to

sell only sustainable products across their entire fresh, frozen and canned seafood range by the end of 2015.

Foodservice

36. **McDonald's** introduced MSC certified seafood to 7,000 restaurants across 39 European countries in June 2011. All McDonald's Fillet-O-Fish in Europe carry the MSC ecolabel.
37. **Sodexo** signed a worldwide agreement in June 2011 with the MSC for wild caught fish, with the view to promoting MSC certified seafood across the 80 countries where it operates and maximising awareness and collaboration with both clients and consumers. **Sodexo Netherlands** and **Sodexo UK**: taking forward the Sodexo Group commitment to source fish from sustainable sources globally by 2015. The Dutch branch has certified over 1,000 sites and has set a future goal of sourcing 100 per cent MSC certified seafood. In the UK, all Sodexo sites, nearly 1,000, serve MSC certified and labelled fish. **Sodexo North America**, a leading foodservice provider in the US, Canada and Mexico: committed to 100 per cent MSC certification for all wild capture contract purchases by 2015.
38. **Sysco Corporation** in the US, a global leader in selling, marketing and distributing food products to the foodservice industry: pledged to source, by 2015, 100 per cent of its top ten Sysco brand wild caught seafood from fisheries that are either certified, under assessment by the MSC or involved in fishery improvement projects with World Wildlife Fund.
39. **Maredo**, restaurant chain in Germany and Austria: fish fingers on their children's menu across 57 sites are now MSC certified and carry the MSC ecolabel.
40. **Compass UK**, one of the largest contract caterers in the UK: committed to supporting the program in schools, universities, workplaces and restaurants where they provide seafood products. They have entered all 135 sites into the MSC program.
41. **Brakes** and **3663**, major UK foodservice distributors: providing seafood from MSC certified fisheries for UK primary school lunches.
42. **In the UK, 36 MSC certified restaurants**, including Feng Sushi and Michelin-starred Le Manoir Aux Quat' Saisons.
80. **In the Netherlands, 15 MSC certified restaurants**, including PUUR Restaurant Week award-winner Natuurlijk.
95. **The Shoreline Cafe** at the Two Oceans Aquarium in Cape Town became the first MSC certified restaurant in Africa in 2011.

Processors/Distributors

96. **The Iglo Group**, owner of Birdseye and the European market leader in frozen foods: set a target for all wild capture fish to be MSC certified by the end of 2012, and Birdseye Australia.
97. **Findus Group**, one of Europe's largest frozen food and seafood companies: committed to sourcing all the wild caught fish for its Young's and Findus retail brands across Europe from fisheries independently certified to the MSC standard.
98. **Frosta**, **Pickenpack** and **Royal Greenland** in Germany: offer a large range of MSC labelled products.
101. **High Liner Foods**, one of North America's leading processors and marketers of seafood: committed to sourcing all of its wild-capture seafood from MSC certified fisheries by the end of 2013.
102. **Janes Family Foods**, one of Canada's leading branded seafood companies: sells 100 per cent MSC certified fish for their wild capture products since 2011.
103. **Clearwater Seafoods**, one of Canada's top seafood companies: manages and supports a number of MSC certified fisheries, and is the leading supplier of MSC certified scallops and lobster.
104. **Abba**, a leading distributor exporting products to 30 countries around the world: reached its target of sourcing 100 per cent MSC certified herring.

105. **Amanda**, Denmark's leading manufacturer in canned high quality seafood products: committed to sourcing 100 per cent MSC certified seafood.
106. **Mars Petcare**, the world's largest petcare business: committed to using only sustainably sourced fish by 2020. Selected packs from Mars Petcare's SHEBA, and WHISKAS lines are already MSC certified and available in stores across Europe, offering consumers a choice of more sustainable pet food products for the first time.
107. **Princes**, a leading canned seafood brand in the UK and the Netherlands: adding the MSC ecolabel to all canned products from certified fisheries
108. **John West**, a leading canned seafood brand in the UK and Australia: uses the MSC ecolabel on all products from certified fisheries.
109. **Fishes Wholesale**, a pioneering sustainable seafood supplier: introduced its own Fishes brand, including frozen and canned products containing 100 per cent MSC certified seafood.
110. **Queens Products**, a Dutch frozen seafood brand operating on the international market: has introduced the MSC ecolabel on all its wild capture range.

Other

111. **London 2012 Olympics** commits to sustainable seafood served at the games, defined as MSC certified.
112. **UK Government** buying standards for centrally controlled purchases commits to sustainable seafood defined as MSC certified.
182. In Germany, the canteens of **over 70 universities** are MSC certified, serving over 560,000 students.
183. In Austria, **all university canteens** are MSC certified, serving nearly 240,000 students.
184. **Nutritional supplements** are a growing category in North America. Schiff Nutrition International, the maker of MegaRed® the market leader in krill oil supplements, and Lang Naturals, have converted their krill oil products to 100 per cent MSC certified. These products are sold in every major food, drug and mass retailer in the US and Canada.

Not on MSC's publication (found via online search terms: commit, marine stewardship council) – not exhaustive:

185. In the US, **Berkeley and Cornell Universities**.
187. **Ocean Nutrition Canada** (nutrition advisers).
188. **Wholefoods** (retail)
189. **Bamboo Sushi** (restaurant)
190. **Cold Storage** (retail)
191. **Restaurant Associates** (chefs)
192. **Relais & Chateaux** (chefs)
193. **SalmonBar** (restaurant)
194. **Delhaize** (retail)

8.3 OVERVIEW OF BES TOOLS

ARIES – Assessment and Research Infrastructure for Ecosystem Services Project

Tool for assessing, planning and valuing ecosystem services. <http://ecoinformatics.uvm.edu/aries>

Integrated biodiversity assessment toolkit – IBAT

Provides an overview for businesses on available tools and partnerships that can help them manage BES resources. <http://www.ibatforbusiness.org/>

Business and Biodiversity Offsets Programme – BBOP

Assessment on whether offsetting is appropriate and provides guidance on how to design offsets. Shows business how to use the mitigation hierarchy (avoid/minimize/restore/offset) to achieve no net loss or a net gain of biodiversity. <http://bbop.forest-trends.org/>

Proteus [UNEP WMCM – Business partnership]

Provides information on protected areas, BES relevant sites and status of marine and coastal systems. <http://www.proteuspartners.org/>

Guide to Corporate Ecosystem Valuation [WBCSD]

Framework that helps businesses to integrate ecosystem valuation into their accounting system. <http://www.wbcsd.org/work-program/ecosystems/cev.aspx>

Global Water Tool [WBCSD]

Maps water use by companies and assesses risks through their global operations and supply chains. <http://www.wbcsd.org/work-program/sector-projects/water/global-water-tool.aspx>

Business Ecosystems Training [WBCSD]

Free capacity-building programme to increase the knowledge and understanding of the links between ecosystems and business. <http://www.wbcsd.org/bet.aspx>

The Corporate Ecosystem Services Review [WRI, Meridian Institute, WBCSD]

Methodology to help managers develop strategies to manage business risks and opportunities. <http://www.wri.org/publication/corporate-ecosystem-services-review>

INVEST – Integrated Valuation of Environmental Services and Tradeoffs [Natural Capital Project]

Tools to map and value ecosystem services to help in decision-making and management choices. The tools can help estimate how the current location, amount, delivery and value of relevant services are likely to change in the future. <http://www.naturalcapitalproject.org/InVEST.html>

Global Action Network for Transparency in the Supply Chain

Tool to offer GRI-certified training and one-on-one support to their Small and Medium Enterprise Suppliers in preparing a GRI G3 sustainability report <https://www.globalreporting.org/reporting/reporting-support/support-for-supplychain/Pages/default.aspx>

Global Reporting Initiative GRI – Biodiversity supplement

Resource to help companies understand reporting in relation to biodiversity. <https://www.globalreporting.org/resourcelibrary/Biodiversity-A-GRI-Resource-Document.pdf>

Global Reporting Initiative – G3 Guidelines

G3 guidelines provide information on how to report and on what should be reported in terms of disclosure on management and performance indicators. In the environmental category there are 5 performance indicators that ask companies to report on various biodiversity-related issues such as size of land owned in protected areas, impacts of activities, strategies for managing impacts on biodiversity, etc. <https://www.globalreporting.org/reporting/latest-guidelines/g3-guidelines/Pages/default.aspx>

8.4 2011 AND 2012 GRI REPORTING USING THE FOOD PROCESSING SUPPLEMENT

The GRI (Maaiké Fleur pers. comm. Email 15 August 2012) notes the following companies having published a GRI report using the Food Processing Supplement in 2011 and 2012. Sanford also did in 2011 but not appearing on the GRI's list, there appear to be database anomalies.

| Company | Fish/Seafood? |
|---|-----------------------|
| AAK | |
| apetito | |
| BES | |
| Birra Peroni | |
| Bunge Brazil | |
| Centrale del Latte di Firenze Pistoia Livorno (Mukki) | |
| China Agri-Industries Holdings Limited | Some freshwater fish |
| Coca-Cola Femsa | |
| Colombina | |
| ConAgra Foods | Some seafood products |
| FEMSA | |
| Ferrero International | |
| Florida Ice & Farm Company (FIFCO) | |
| Grupo Codorníu | |
| Hershey's | |
| Hormel Foods | Some seafood products |
| Innovation Center for U.S. Dairy | |
| Lantmännen | |
| McDonald's Austria | Some seafood products |
| McDonald's Deutschland | Some seafood products |
| Nestle | Some seafood products |
| Nestlé Hungária | Some seafood products |
| PepsiCo | |
| Sara Lee Corporation | Some seafood products |
| Smithfield | |
| Strauss Group | |
| Swedbank | |
| Symrise AG | Some seafood products |
| Tassal Group Ltd | Farmed Salmon |
| Tchibo | |
| Unilever Brazil | Some seafood products |
| Union de Cervecerías Peruanas Backus y Johnston | |

8.5 GLOBAL PARTNERSHIP FOR OCEANS DECLARATION

FOR HEALTHY, PRODUCTIVE OCEANS TO HELP REDUCE POVERTY, JUNE 2012.

We the Participants in the Global Partnership for Oceans, commit to develop and help implement this Partnership, in recognition of humankind's dependence on healthy oceans to feed the planet's growing population, support millions of livelihoods, contribute hundreds of billions of dollars annually to the global economy, and to provide essential environmental services, including climate regulation.

Despite global commitments made to date as well as the efforts of many organizations, governments, enterprises and individuals, the oceans remain under severe threat from pollution, unsustainable harvesting of ocean resources, habitat destruction, ocean acidification and climate change.

Building upon and better coordinating existing efforts and programs, including in support of the United Nations Convention on the Law of the Sea, our Global Partnership will convene stakeholders to mobilize significant human, financial and institutional resources for effective public and private investments in priority ocean areas. These investments will improve capacity and aim to close the gap in implementing global, regional and national commitments for healthy and productive oceans.

The Partnership Will Work toward Meeting the Following Interrelated Objectives by 2022

Sustainable seafood and livelihoods from capture fisheries and aquaculture

In line with previous internationally agreed commitments* and taking into consideration growing impacts of climate change:

- Significantly increase global food fish production from both sustainable aquaculture and sustainable fisheries by adopting best practices and reducing environmental and disease risk to stimulate investment;
- Reduce the open access nature of fisheries by creating responsible tenure arrangements, including secure access rights for fishers and incentives for them to hold a stake in the health of the fisheries; and
- Enable the world's overfished stocks to be rebuilt and increase the annual net benefits of capture fisheries by at least \$20 billion, including through reducing subsidies that promote overfishing.

Critical coastal and ocean habitats and biodiversity

In line with previous internationally agreed targets and to address the growing impacts of climate change:

- Halve the current rate of natural habitat loss and reduce habitat degradation and fragmentation, by applying ecosystem-based approaches to management;
- Increase marine managed and protected areas, and other effective area-based conservation measures, to include at least 10% of coastal and marine areas; and
- Conserve and restore natural coastal habitats to reduce vulnerability and increase resilience to climate change impacts.

Pollution reduction

In line with previous internationally agreed commitments and taking into consideration the growing impacts of climate change:

- Reduce pollution to levels not detrimental to ecosystem function and biodiversity; and

- Support implementation of the Global Program of Action to reduce pollution, particularly from marine litter, waste water and excess nutrients, and further develop consensus for achievable goals to reduce these pollutants.

The Global Partnership for Oceans is an inclusive partnership of Governments, civil society organizations, private sector companies and associations, research institutions, UN agencies, multi-lateral banks and foundations whose membership will grow over time. We will contribute resources according to our respective comparative advantages which may include capability for implementation, knowledge, and/or monetary support towards investment on behalf of healthier oceans in a number of priority ocean areas.

A Global Partnership for Oceans Fund will be established and governed by a committee representative of the diversity of the membership and stakeholders of the Global Partnership for Oceans, and with an advisory process that will ensure that investment choices are evidence-based. Within the next six months, the partners will seek to finalize the governance and working arrangements for the Partnership.

**Note: The previously agreed international commitments and targets referenced in this Declaration include those made in Rio in 1992 in Agenda 21, and subsequently at Johannesburg in 2002 and in the Aichi Biodiversity Targets in Nagoya in 2010.*