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A qualitative meta-synthesis of the benefits of eco-labeling in developing countries

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Abstract

Eco-labeling (or environmental certification) is often promoted as a regulatory instrument capable of incentivizing sustainable resource use, even in the absence of stringent government environmental regulations. Despite slow uptake in developing countries and high producer costs, a growing body of case study evidence suggests that producers benefit in varied ways from certification. A qualitative meta-synthesis approach is applied to this body of evidence in order to assess the type and extent of producer benefits reported in case studies of Forest Stewardship Council (FSC) and Marine Stewardship Council (MSC) certification, in developing countries. While benefits from price premiums and market access appear to be limited, less tangible benefits were more common, including learning, governance, community empowerment, and reputational benefits. These benefits may justify the cost of certification.

1. Introduction

Beginning with the Forest Stewardship Council's (FSC) label for forest products, the past two decades have seen a proliferation of eco-labeling schemes in the forestry and, more recently, in the fishery sectors of many countries around the world. An eco-label, also known as environmental certification, is a market-based instrument that awards a label or certification to a company or product in recognition of having met certain environmental impact standards (Washington & Ababouch, 2011, p. 21). Certification and eco-labels, in theory, send a clear signal of 'environmental stewardship' to consumers who may be willing to pay a higher price in order to incentivize the joint production of sustainably-harvested commodities, like timber or fish, and ecosystem services (Ferraro & Kiss, 2002; Ferraro & Simpson, 2002; Groom & Palmer, 2010; Groom & Palmer, 2014). Arguably, to some extent the positive externalities of joint production might be internalized by producers, via 'price premiums' (Bulte & Engel, 2006).

Many Non-Governmental Organizations (NGOs), most notably the Worldwide Fund for Nature (WWF), have championed eco-labels as solutions to limited and often ineffective governance of forest and fishery resources in developing countries (Cashore, et al., 2006, p. 8). But while the global market share of eco-labeled products has grown rapidly over the past 20 years, most of this growth has been in developed countries (ibid). By contrast, certification uptake has been slow in developing countries despite the efforts of NGOs to subsidize certification costs, build consumer demand for certified products, and lobby for favorable regulatory environments in these countries (Gulbrandsen, 2010).¹ Common issues related to

¹ For the purposes of this study, 'developing countries' are defined as those classified as either middle-income or low-income by the World Bank (World Bank, 2014). Although over half the world's forests are located in these countries, over 80 percent of the FSC-certified forests are found in Europe and North America (FAO, 1997; FSC, 2015, p. 2). Similarly, developing countries provide "about 60 percent by volume and about 50

the adoption of eco-labels include high costs, excessive bureaucracy, a failure to achieve meaningful environmental stewardship, and an inability to address wider social issues (Greenpeace, 2009; Gulbrandsen, 2010; Higman & Nussbaum, 2002; Nussbaum, et al., 2001).

Previous work highlights the high costs of certification in developing countries (Fischer, et al., 2005; Nussbaum et al., 2001; UNEP, 2009). Yet, these may, under certain conditions, be outweighed by the financial benefits from certification. For instance, the WWF (2015) found that 'improved' premiums, access to high-value timber markets, and low post-certification costs led to substantive net financial benefits in a small sample of tropical timber producers. It also found that it took up to six years for producers to break even on their FSC investment. Research on eco-labelling in developing countries is, however, dominated by a growing body of qualitative, case study evidence, which suggests that producers in these countries may have benefited from certification in a number of previously unforeseen ways. A range of governance and social benefits, like improved stakeholder relations and strengthened resource tenure, has emerged. These government and social benefits also have the potential to benefit producers financially, albeit in the long-term.

This paper reviews the literature in order to identify and assess the extent of different types of benefits that have accrued to certified producers in developing countries. The hypothesis to be assessed is the proposition that certification may result in substantial governance and social benefits for producers, which have the potential to offset certification costs. In exploring this hypothesis, our review contributes to the literature in two ways. First, our review focuses on the less tangible benefits of certification. Research that examines the

percent by value of the global fish and fishery products" (Pérez-Ramírez, et al., 2011, p. 298). Yet, only 19 of the 231 MSC certified fisheries are located in such countries (MSC, 2015 & 2015 b).

benefits of certification typically focuses on price premiums and environmental impacts, likely because data on these topics are more readily quantifiable. Context-specific case studies, however, suggest a growing role for these less tangible benefits to producers. Despite having the potential to translate into long-term financial benefits, the extent of such benefits in the case study literature remains relatively unknown. Second, our review examines the benefits of certification in developing countries. By contrast, much of the current literature on certification benefits focuses largely on developed countries, in part, due to the limited uptake of certification schemes in developing countries.

We apply a relatively novel methodology, qualitative meta-synthesis, to the case study literature in order to understand the extent to which the findings in this literature may be context-specific or can be generalized to broader scenarios. Specifically, we compare and assess the benefits from participation in the certification programs of the FSC and its close cousin in the fisheries sector, the Marine Stewardship Council (MSC). These two eco-labels were selected for three reasons. First, they are two of the largest, most independent, and most global certification schemes (Eden & Bear, 2010, p. 89). Second, the primary objective of both labels is the environmental stewardship of a specific natural resource. Finally, and most importantly, the MSC was modeled after the FSC, and therefore the two eco-labels share similar governance frameworks, which allows for comparison.

Additional background to the FSC and MSC eco-labels, coupled with an overview of the costs and benefits of certification in developing countries, is presented in Section 2. In Section 3, we introduce the qualitative meta-synthesis methodology and define the criteria for case

study inclusion. Section 4 presents the findings of the meta-synthesis, which are discussed in Section 5, while Section 6 concludes.

2. Background

2.1 FSC and MSC certification

In order to compare outcomes of FSC and MSC certification, it is important to first understand the similarities and differences between these labels. As previously mentioned, the creation of the MSC was directly modeled after the FSC label. The circumstances under which each label was created, however, were different. The FSC program was created with broad stakeholder support in reaction to failed international forestry regulation (Gulbrandsen, 2005, p. 10; Auld et al., 2008 b, p. 189-190). The MSC label, on the other hand, was built on previously established international fishing agreements and was created as an NGO-business partnership between the WWF and Unilever, one of the world's largest suppliers of frozen fish (Gulbrandsen, 2010, p. 117, 122).

Although the governance frameworks of the FSC and the MSC are similar, there are important differences between the two labels. The FSC by-laws state that it was created to, "promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests" (FSC, 2002, p. 1). To this end, the main decision-making body of the FSC, the General Assembly, consists of three chambers: economic, environmental, and social (Garrelts & Flitner, 2011, p. 397). The MSC was created to address, "(1.) The state of target fish stocks, (2.) the impact of fishing on the ecosystem, and (3.) the performance of the fishery management system" (Gulbrandsen, 2010, p. 123). To achieve these goals, the MSC's

Stakeholder Council (similar to the FSC’s General Assembly) consists only of an economic (“Commercial”) and an environmental (“Public Interest”) chamber. In creating the MSC, it was decided to omit a focus on social issues in order to more efficiently address issues of environmental stewardship and economic development (Gulbrandsen, 2010, p. 118).

Both the FSC and MSC set their own standards for certification. The actual certification auditing process, however, is not conducted by the organizations themselves, but rather by external certification bodies. Both certification programs consist of two primary types of certification: the forest or fishery management certification, which attests to the forest or fishery’s compliance with certification standards; and, the Chain of Custody certification, which ensures that products are kept separate from non-certified products throughout the production and supply chain processes (FSC website, n.d.; Gulbrandsen, 2010, p. 126-127). This review is concerned with the former. Information on the two certification schemes, as well as guidelines for obtaining certification, is presented in Table 1 below.²

Table 1. Background and requirements for certification: a comparison of FSC and MSC.

	FSC	MSC
Year established:	1993	1997
Characteristics of the certified resource:	Natural forests and forest plantations	Marine capture fisheries and inland spawning grounds
Year of first certification:	1993 – Chain of custody certificate, USA 1993 – Forest management certificate, Mexico (first developing world certificate)	2000 - the Western Australia rock lobster fishery 2004 - Mexican Baja California red rock lobster (First developing world certificate)
Number of management certificates issued:	1365 certificates 184,917,833 hectares certified (as of November 2015)	265 certificates 9,000,000 metric tons certified (as of June 2015)

² For further information regarding the development, organizational structures, and certification processes of both the FSC and MSC, see Auld, et al. (2008), FSC (2002), Garrelts & Filtner (2011), Gulbrandsen (2005), Gulbrandsen (2009), Gulbrandsen (2010), MSC (n.d), and MSC (2012).

Number of management certificates in developing countries:	571 certificates (42% of total certificates) 39,442,497 hectares (21% of total certified area)	20 certificates (7.5% of total certificates) 961,759 metric tons (11% of total certified catch)
Type of organization:	FSC sets the standards Certification awarded through third-party certifiers	MSC sets the standards Certification awarded through third-party certifiers
Governing body structure:	General Assembly of FSC members Three chambers, environmental, social, and economic, each with equal voting weight. Each chamber is further sub-divided into northern and southern sub-chambers. The Board of Directors is made up of 12 elected members, four from each chamber of the general assembly	A Board of Trustees is advised by a Technical Advisory Board and a Stakeholder Council. The Stakeholder Council is divided into two chambers: <ul style="list-style-type: none"> • The Commercial Chamber (interests from the catch, processing, supply, retail and food service sectors) • The Public Interest Chamber (made up of interests from academia, science, management, and the marine conservation community).
Governing principles:	<ol style="list-style-type: none"> 1. Compliance with laws and FSC Principles 2. Tenure and use rights and responsibilities 3. Indigenous peoples' rights 4. Community relations and worker's rights 5. Benefits from the forest 6. Environmental impact 7. Management plan 8. Monitoring and assessment 9. Maintenance of high conservation value forests 10. Plantations 	<ol style="list-style-type: none"> 1. Status of the target fish stock 2. Impact of the fishery on the ecosystem 3. Performance and effectiveness of the fishery management system.
Criteria for certification:	<ul style="list-style-type: none"> • The governing principles are sub-divided into 57 indicators by which to measure the certifying firm. • National standards are developed for each country, tailoring the governing principles to local conditions 	<ul style="list-style-type: none"> • Certification is based on the governing principles and certification is applied to a combination of location, species fished, and gear used. • No national or regional standards are developed; certification bodies are given discretion to adapt the MSC principles to local conditions
Assessment process:	<ol style="list-style-type: none"> 1. Forestry firm contacts an accredited certification body 2. Firm is audited 3. Certification is awarded 	<ol style="list-style-type: none"> 1. Fishery firm contacts a certification body 2. Firm enters confidential pre-assessment phase with the goal of identifying the characteristics and limitations of the fishery 3. Firm enters public full-assessment phase in which the fishery is evaluated based on the MSC standards. The information about full-assessment is available to public scrutiny on the MSC website. 4. Certification is awarded
Duration of certificate:	5 years	5 years

Sources: Eden & Bear, 2010; FSC, 2014; FSC, 2015; MSC, 2015; MSC, 2015b

2.2 Costs and barriers to certification in developing countries

A wide literature discusses the barriers to certification for producers in developing countries. The most oft-cited barriers, in both the FSC and MSC certification programs, are the private costs of certification, lack of familiarity with certification programs, disputed access rights and land tenure, and a lack of government support to producers (Fischer, et al., 2005; Gulbrandsen, 2010; OECD, 2003).

Private economic costs of certification are incurred at all three stages of the certification process: preparation for certification, auditing, and compliance (Fischer, et al., 2005, p. 11-12). For example, to participate in FSC auditing, producers must pay all costs of auditing, including auditor travel and fees, as well as FSC oversight costs (Fischer, et al., 2005, p. 12). Producers are also often required to make potentially costly changes to operations or equipment in order to achieve certification. On the basis of data from a limited sample of six companies operating in tropical forests, pre-certification costs were estimated by the WWF (2015) to be US\$4.95 per cubic meter of wood harvested, almost twice the cost estimated for companies operating in boreal and temperate forests. By contrast, logs in the countries surveyed by the WWF, including Cameroon and Indonesia, typically fetched a minimum of US\$ 100-150 per cubic metre, a price which rises rapidly if logs are processed, e.g. for plywood (see ITTO, 2015). In addition to pre-certification costs, producers also incur post-certification costs, e.g. for recurring audits and monitoring, which were found to be lower in tropical forests (US\$3.47 per m³) than in boreal or temperate forests (US\$ 4.07 per m³) (ibid).

Although not directly comparable, MSC certification is also relatively costly. A UNEP study (2009) calculated the total costs of certification for some of the first MSC certified fisheries in the developing world, including pre-assessment, assessment, and annual auditing,

to range from \$85,000 to \$735,000 (p. 41). Whether certifying forests or fisheries, such costs often represent a substantial initial investment for producers in developing countries.

Recognizing this, initial funding often has come from or been subsidized by NGOs or governmental organizations (Pérez-Ramírez, et al., 2011 and UNEP, 2009). Without external funding, FSC certification can also be prohibitively costly for developing country producers, particularly small-scale producers (Nussbaum, et al., 2001, p. 3).

In addition to these costs, developing country producers face a number of other barriers that further raise the cost of certification. A lack of familiarity with certification programs and processes is one such barrier. The complexity of certification processes contributes to making FSC and MSC certification inaccessible to many developing country producers. Information about how to find an auditor, the requirements of certification, and the certification process itself, "...can be difficult to obtain, hard to understand, or not available in an appropriate language or format. Such obstacles are especially prevalent in areas with poor communication infrastructure and low literacy levels," (Stewart, et al., 2003, p. 4-5) as may often be the case in many rural areas of developing countries.

A third barrier to certification is disputed access rights to the resource and, in the case of forests, weak land tenure. To have a chance of being effective, certification programs require that the producer holds formal and reasonably well-documented access rights to the resource (Bass, et al., 2001, p. 27; Shanley, et al., 2008, p. 87). In the case of forestry, certification standards may be incompatible with land access structures in many developing countries, where traditional or usufructuary rights, rather than formalized land tenure, are the norm (see Stewart, et al., 2003; Fischer, et al., 2005). In the fisheries sector, disputed access rights are

compounded by the open access nature of fisheries and the mobility of fish stocks. Developing world fishers often must share fishing territory with fishers from outside their communities, including those from other nations. Even when access restrictions and management plans are in place, enforcement capabilities are often weak. In fact, many developing world fisheries practicing sustainable management are prevented from certifying due to the actions of other actors beyond their control (Gulbrandsen, 2010, p. 140).

A fourth barrier is a lack of government regulation. Although the FSC and MSC are voluntary programs, McDermott, et al. (2008) compared certification standards and government policies and found that certification is most effective when supported by strong, mandatory government regulation. Finding that, “certification standards frequently adopt the policy approach of the states they encompass with perhaps a slight increase in prescriptiveness” (p. 66), McDermott, et al. concluded that certification is most effective when “cross-fertilization” occurs between certification standards and strong government policy (p. 67). Unfortunately, many developing country governments have limited environmental institutional capacity, so the implementation of environmental certification is often weak.

2.3 Benefits of certification in developing countries

The literature on the benefits of eco-labeling in developing countries generally focuses on the environmental, financial, governance, and social benefits of certification. While environmental benefits lie beyond the scope of this paper, we note ongoing debate about the environmental impacts of certification in developing countries, for example, related to the caliber of certification standards and their application, as well as empirical inference of impact

(e.g. Auld, et al., 2008; Christian, et al., 2008; Gulbrandsen, 2010; Rametsteiner & Simula, 2003; Ward, 2008).³ Below, we identify a number of non-environmental benefits to producers from certification, and offer predictions for our meta-synthesis of case studies, beginning with those that have received most attention in the literature to date – price premiums and market access – followed by those loosely grouped as ‘governance and social benefits’.

2.3.1 Price premium

Given the aim of eco-labels to generate, capture, and then pass to producers some of the economic value from positive externalities associated with sustainable resource management, previous research has explored the existence and distribution of the price premium placed on certified products. Early research was inconclusive regarding the existence of a price premium. Sedjo & Swallow (2002) analyzed whether a consumer’s willingness to pay a premium for certified wood is a sufficient condition for a price premium in the market. They found that if overall demand for certified wood is small and if certification costs remain insignificant to some large producers, “then the market is less likely to generate a price premium for the certified product” (Sedjo & Swallow, 2002, p. 282). Gudmundsson & Wessells (2000) found that, even if a price premium exists for certified fish, it would not provide a sufficient incentive to sustainably manage fishery stocks. Wessells, et al. (1999) examined the

³ Problems of empirical inference relate to potential selection bias (certification may be achieved by producers already operating sustainably) and possible spillover effects (from the implementation of sustainable practices in places where unsustainability was the norm before). As a result, research to date has not been able to show whether FSC certification in tropical forests has reduced deforestation or enhanced forest conservation (Auld et al., 2008). These problems are also relevant for MSC certification (Gutiérrez et al., 2012).

willingness to pay a premium for certified seafood, and found that, although consumers are willing to pay, that willingness decreases as the size of the premium increases.

More recent studies, however, have found evidence of support for a price premium. In the forestry sector, Cashore, et al. (2006 b) found support for price premiums in the Asia-Pacific region (p. 18). Auld, et al. (2008) note that FSC certified products received a five to 51 percent premium in Bolivia, although only a three to five percent premium was observed in the United States (p. 195). However, the question then is the extent to which these premiums cover costs. Certified, small-scale tropical forest producers surveyed by the WWF (2015) did in fact obtain sufficient premiums in high-value export markets to offset these costs.

Debate within the price premium literature centers on to whom the premium primarily accrues: whether to the producers, middlemen, or retailers. There are limited data available on this topic with respect to either FSC or MSC certification, although Rotherham (2005) notes that, “it appears likely that the producer (who bears most of the costs of shifting to more sustainable production techniques) is not the main benefactor...” (p. vii).⁴ Indeed while a 2009 study of the fisheries sector by the University of Rhode Island found evidence of a price premium at the retail level, producers did not appear to profit from it (Washington & Ababouch, 2011, p. 40). Given limited evidence for a profitable price premium for certified goods, or more specifically, a premium that accrues to producers, we do not expect it to emerge as an important benefit in our meta-synthesis.

⁴ Although research has not specifically examined FSC or MSC certification with regard to this issue, an FAO study of certified bananas found that, although a 50 to 200 percent price premium can be found, the premium received by farmers averaged only 37.5 percent (Rotherham, 2005, p. 16).

Consumers may be willing to pay for certified products, but producers often have less market power than retailers. For both forestry and fishery products, producers often rely on large retailers, such as Home Depot or Unilever, to purchase their products. These retailers are often unwilling to pay a premium to suppliers. For instance, although Unilever has not committed to paying a price premium to producers, it gives preferred supplier status to MSC certified producers (Rotherham, 2005, p.18). Thus, retailers with sufficient market power can control access to markets for certified products.

2.3.2 Market access

Many scholars cite increased market access and regular supply contracts as a major factor driving developing country producers to adopt FSC and MSC certification. Following the example of firms like Unilever, many buyers groups and major global retailers have begun to make certification a prerequisite for accessing markets. Indeed, Auld, et al. (2008 b) found that for forestry, “certification has become more a market access requirement rather than a tool for eliciting premiums, greater product sales, or customer loyalty” (p. 195).

Suggestive of stronger retailer market power and bargaining power vis-à-vis producers, other studies confirm the essential role that market access plays in making certification a worthwhile endeavor for developing country producers. In the case of FSC certification, Van Kooten et al. (2005) found that, “concern about export markets does appear to play a major role in explaining why firms and/or landowners participate...” (p. 866). Evidence of increased exports of certified forest products can be found in Mexico, Guatemala, South Africa, and Malaysia (Cashore, et al., 2006 b, p. 18). More recently, the WWF (2015) found that FSC

certification either helped companies maintain their client base or gave them access to high-value export markets.

In the seafood sector, major industry players, such as Wal-Mart and Unilever, have pledged to source their fish from MSC certified fisheries (UNEP, 2009, p. 35). Rotherham (2005) also found that environmental certification not only increased market access for certified fish, but it also increased the predictability of market access through long-term supply contracts, giving producers the confidence to invest in the long-term sustainability of their operations.

Improved access to high-value, certified product markets may partly depend on the extent to which forestry and fishery products are consumed domestically, and, where exported, the level of demand for eco-labeled products in export markets. Fischer, et al. (2005) observes that, "About 80 percent of marketed wood and wood products produced in developing countries is also consumed in those countries" (p.13). Similarly, the majority of fish produced in developing countries is for local consumption. Fish that is exported is often sent to markets where the demand for eco-labeled products is low, such as Southern Europe and Asia (Tindall, 2009, p. 137-138). Small-scale developing country fisheries often have an additional limitation: the quantity and quality of the fish they produce may be highly irregular or they may not be reliably integrated into the cold chain.⁵ These limitations may further restrict a fishery's access to export markets and international retailers who demand regular and uniform product supply that meets stringent sanitary requirements (Stewart, et al., 2003, p. 5). Yet, for producers who managed to succeed in certifying with the FSC or MSC, we expect improved market access to

⁵ A cold chain is defined as, "a temperature-controlled supply chain." Properly conducted, a cold chain ensures the product quality and safety of perishable goods such as fishery products, and also extends their shelf-life. (Feidi, et. al., 2012, p. 64)

emerge as a relatively important benefit in our review.

2.3.3 Governance and social benefits

Price premiums and market access aside, there is also evidence of governance and social benefits from certification in developing countries. Social benefits are a cornerstone of FSC certification. Indeed, improved working conditions, higher literacy rates, and women's empowerment have been shown to be strongly correlated with FSC certification (Van Kooten, et al., 2005, p. 865-866 and Cashore, et al., 2006 b, p. 17). Other benefits from forestry certification documented in the literature include improved social capital through increased learning and increased democratic involvement in political decision-making (Van Kooten, et al., 2005, p. 862). Cashore, et al. (2006 b) found further evidence that FSC certification positively influences market transparency, taxation collection, and investment attractiveness. They also found that certification increased training opportunities for producers and instilled positive attitudes toward environmental issues (p. 18-19). Evidence for improved external stakeholder relations and staff morale, amongst other things, was reported by the WWF (2015). Heightened environmental awareness is also a common theme emerging from studies of both forestry and fishery certification and hence, is expected to emerge as an important benefit in our review.

In the fisheries sector, social benefits are less prominent in MSC certification. Yet, it has been associated with governance and social benefits. For example, MSC certification is seen as a path to increased learning, providing an opportunity for developing world fishers to gain input from outside experts, particularly with regard to developing management strategies, assessing stock status, adopting fishing techniques for reducing bycatch, or adopting processing

techniques for reducing product loss (Washington & Ababouch, 2011, p. 54). Certification also may give workers in fisheries sectors a stronger political voice. Gulbrandsen (2010) noted that developing world fisheries use certification as a way of demonstrating sustainable management practices to government regulators in order to gain favorable treatment (p. 141).

Overall, the literature suggests that governance and social benefits may be more common among certified developing world fisheries and forests than has been previously acknowledged. In the following sections, we categorize and define these benefits, and assess the extent to which they are generalizable in the qualitative case study literature.

3. Methodology

3.1 Qualitative meta-synthesis

To examine the extent of benefits from certifying with either the FSC or MSC in developing countries, the method of qualitative meta-synthesis is employed. This method has been described as, “the bringing together of findings on a chosen theme, the results of which should, in conceptual terms, be greater than the sum of the parts” (Finlayson & Dixon, 2008, p. 59-60). Qualitative studies are inherently difficult to compare, as methodologies and objectives can vary widely, even among studies of similar topics. The strength of the meta-synthesis method is its ability to identify common themes and build conceptual frameworks from such literature. Although this technique has been commonly applied in healthcare studies (e.g. Finlayson & Dixon, 2008; Walsh & Downe, 2005), social scientists have only recently adopted it to analyze large quantities of qualitative data that may not be amenable to quantitative analysis (e.g. Newig & Fritsch, 2009; Puaschunder, 2012). In contrast to meta-analysis, which uses

quantitative data and seeks to “increase certainty in cause and effect,” meta-synthesis “is more hermeneutic, seeking to understand and explain phenomena” (Walsh & Downe, 2005, p. 204).

Price premiums and certification costs can be measured objectively, unlike other benefits of eco-labeling, such as governance and social benefits. Existing studies that have sought to discern these latter benefits typically employ qualitative approaches. These methods include interviews, participant observation, and focus groups. We synthesize these qualitative studies in order to analyze the extent to which the findings from ex-post case studies of FSC and MSC certification in developing countries may be context-specific or can be generalized to broader scenarios.

3.2 Case study selection criteria

To improve transparency, rigor, and transferability to other studies, best practice in conducting meta-synthesis requires clearly stating the process used for gathering relevant research and the criteria used for selecting studies for inclusion. To produce a rigorous meta-synthesis analysis and avoid inaccurate results, the search process should be “systematic, explicit, and transparent” (Hoon, 2013, p. 531). Care was taken in the case study selection process to identify relatively comparable studies that, at a minimum, sought to analyze the broad benefits of certification. Such care was taken in an attempt to bypass the potential limitations of this methodology that may stem from the analysis of disparate studies.

We attempted to identify all case studies that have examined the outcomes of MSC or FSC certification in developing countries. To locate relevant research, searches were conducted using online journal databases (Science Direct, Swetswise, Wiley Online Library, Elsevier,

ProQuest, Lexis Nexis, and Google Scholar). FSC case studies were identified using the search terms “FSC AND case stud* AND (a country name).” Searches were limited to developing countries with FSC certified forest areas (for a complete list, see: FSC, 2015). Additional studies were identified by reviewing the bibliographies of the FSC case studies identified in this preliminary search. Scanning journals in which such studies were published (such as *Forest Policy & Economics* and *Forest Ecology and Management*) yielded additional relevant literature. Our preliminary search resulted in an initial sample of 28 FSC case studies.

As the MSC had certified only 16 fisheries in developing countries at the time this review was conducted, a much more targeted search was used to identify relevant fisheries case studies. The MSC search was conducted through the same online journal databases described for the FSC searches. Search terms used were “MSC AND case stud* AND (the specific fishery name),” searching all 16 fisheries. This initial search proved to be too narrow and yielded few results. As six of the MSC certified developing world fisheries only gained certification within the two years prior to conducting this review, it is unsurprising that relatively little research is currently available on these fisheries.

Expanding search terms to include “Marine Stewardship Council” instead of MSC, the country name instead of the fishery name, and variations on the term “certification” and “eco-label” (including various spellings: eco label, ecolabel, etc.) yielded additional results. A broader search was then conducted targeting journals in which related research was most commonly published (in particular *Marine Policy*), as well as by reviewing citations in case studies already identified. These preliminary searches resulted in an initial sample of 21 MSC case studies. In total, we began with an initial sample of 49 FSC and MSC studies, which can be seen in

Appendix A.

3.3 Case study inclusion and exclusion criteria

After identifying an initial sample of studies, inclusion and exclusion criteria were applied (see Appendix B). An initial screening of FSC studies resulted in the exclusion of one FSC article as a false positive, as its scope was irrelevant to this meta-synthesis. The remaining studies were then categorized as quantitative studies, qualitative studies, or illustrative studies (conceptual work or review articles). Best practice qualitative meta-synthesis stipulates that quantitative and illustrative studies should be excluded. With our interest in the benefits of certification to producers, the remaining 13 qualitative case studies were screened to ensure that they were ex-post studies and had a focus on a specific certified forest (or group of certified forests); all 13 passed this screening. Of these, nine studied small-scale forestry operations, while four studied large-scale or industrial forestry firms. Eight of the studies were cases from Latin America, two from Africa, and three from Asia. The final sample of forestry case studies consists of articles published in peer-reviewed journals, articles published by NGOs and intergovernmental organizations (IGOs), and unpublished master's and Ph.D. dissertations. Given the small size of the relevant literature, unpublished studies assumed greater significance. The inclusion of such studies, however, helps reduce the likelihood of publication bias. Care was taken to assess their quality, in particular paying attention to the degree of methodological rigor, thus ensuring comparability between studies found in the peer-reviewed and gray literatures.

The next step applied inclusion and exclusion criteria to the MSC studies. Of the initial

sample of 21 MSC studies, nine were identified as false positives and eliminated. Due to the limited research available on this topic, inclusion criteria were enlarged slightly for the MSC studies in order to gain a more comprehensive research sample. Similar to the FSC studies, the MSC studies were categorized as quantitative, illustrative, or qualitative studies. Again, quantitative studies were excluded. Both illustrative and qualitative studies were then screened to determine whether they were ex-post studies and whether the study focused on a particular MSC certified fishery. All qualitative studies passed this screening. Three of the six illustrative studies also passed this screening, were found to provide substantial contributions, and were therefore included. Of particular importance, they provided detailed case studies of a specific MSC certified fishery using secondary data. As such, they represent seminal studies in this field and are widely cited in this literature.

Of the initial sample of 21 MSC studies, seven were ultimately selected for inclusion in this meta-synthesis. Four of the seven case studies were of small-scale fisheries, while three were industrial. The geographical distribution of the MSC case studies was more evenly distributed than the FSC studies, with three studies from Latin America, two studies from Africa, and two studies from Asia. These seven fishery studies consist of articles published in peer-reviewed journals, articles published by NGOs and IGOs, and one unpublished master's dissertation. The dissertation was included due to its relevance to the topic, the limited availability of data on this topic, and its use of qualitative, primary data collection methods. In total, of the initial sample of 49 FSC and MSC studies, 20 were selected for inclusion in this meta-synthesis. These are highlighted in Appendix A.

3.4 Data Analysis

The selected case studies were analyzed using a grounded theory approach and data from these studies were coded using open coding techniques. In the context of this review, the grounded theory approach required assigning codes to any benefits of certification that were identified in the studies. A weakness of the meta-synthesis methodology is its inability to identify causal relationships between certification and benefits obtained. That said, care was taken to account for this weakness and assign codes to only those benefits, which were identified in the case studies as having resulted from certification. Since the review is limited to the information presented in cases where certification had taken place, the methodology is unable to generate counterfactual scenarios, thus raising the specter of selection bias. We return to these issues in Section 5.

NVivo software was used to manage and organize the 130 codes that were identified in the studies. Of these 130 codes, approximately 40 emerged repeatedly across the 20 studies for this review, including: collective management, working conditions, community participation, land tenure, transparency, technical assistance, price premium, market access, income, knowledge of environmental impact, management processes, and prestige. With the analysis of each additional case study, the assigned codes were organized into categories and sub-categories. For example, land tenure, transparency, and collective management were classified as “government support and empowerment.” The patterns that emerged through the classification of codes were used to devise a provisional explanatory framework about the general benefits of eco-labeling in developing countries. This framework was elaborated with the analysis of each additional case study. In this way, provisional explanations that emerged

from the data analysis were 'grounded' in reality through continual confirmation with the addition of each study (Corbin and Strauss, 1990, p. 10-11).

FSC and MSC case studies were analyzed separately in order to identify any potential variations in the way benefits were realized or perceived between the two certification schemes. This approach was necessitated by the substantial differences between fishery and forestry resources. In order to take into account the additional constraints posed by the mobile nature of fishery resources, analysis began with MSC certified fishery studies, which enabled the formulation of a preliminary framework. The analysis of the forestry studies was then incorporated into this framework, thus permitting a comparison of MSC and FSC producers and further development of the framework.

4. Results

The top two rows of Appendix C define the categories of benefits that emerged from our meta-synthesis. They were categorized first according to: financial benefits; learning, government support and empowerment; and, reputation. The sub-categories in the second row provide structure to the presentation of our results in this section. Summarized in the remainder of Appendix C, these results suggest a confirmation of the hypothesis that certification results in substantial benefits for producers, beyond immediate financial benefits, that have the potential to offset the costs of certification. We describe the extent to which these benefits may be context-specific or potentially generalizable to other certification cases, and any variation that may be contingent on resource characteristics, scale of operations and the demands of certification (FSC vs MSC). A more generalizable result is one that was found to

be present in a clear majority of the case studies (60 percent or higher).

4.1 Financial benefits

As expected, of the 20 case studies reviewed, only two reported evidence of a price premium, both FSC studies. One, Hinrichs, et al. (2008), found evidence of a significant price premium in one of the community-managed forests studied in Indonesia (p. 61). In the other study, by Humphries & Kainer (2006), timber produced by community-based forest enterprises (CFEs) in Brazil's western Amazon fetched a price that was more than four times the local market price (p.39). It was expressly stated in 50 percent of the studies that no price premium was experienced by producers, including all of the fisheries case studies.

More prevalent than the price premium was improved market access, although not to an extent that may be considered generalizable. As cited in almost half of the case studies, market access was more prevalent as a benefit in the fishery case studies (57 percent) than in the forestry cases (38 percent). These studies were cross-referenced with the size of the forestry or fishery operation and it was found that market access was cited as a benefit for over 60 percent of the industrial-scale operations, while only a third of the small-scale, community-managed forests and fisheries cited an improvement in market access.

The benefit of market access was perceived in two different ways. First, in the majority of case studies in which market access was a stated benefit, producers chose to certify as a proactive step in order to maintain future access to their current markets. All five of the industrial fishery and forestry operations that cited market access as a benefit fall in this category (Carlsen, et al., 2012; Ebeling & Yasué, 2009; Japp, 2008; Pérez-Ramírez, et al., 2012;

and Ponte, 2008). On the other hand, three case studies found that it was certification itself that facilitated access to new markets. These studies included the two forestry operations that experienced a price premium (Hinrichs, et al., 2008; Humphries & Kainer, 2006) and one fishery (Cano Chacon, 2013). All three involved small-scale and community-managed operations. Two firms also operated in high-value or niche markets, namely, supply to high-end furniture production (Hinrichs, et al., 2008) and lobster fishing (Cano Chacon, 2013).

Despite limited evidence of private economic benefits stemming from certification, in all cases producers expressed universal satisfaction with their decision to certify. From our analysis, producers experienced a number of additional, governance and social benefits from FSC and MSC certification, which may be the underlying cause of this satisfaction. These benefits are divided among three categories: learning, government support and empowerment, and reputation.

4.2 Learning

Learning was the most prominent and generalizable benefit of certification to emerge from our analysis (see Appendix C). As expected, all case studies showed evidence that certification promoted heightened producer awareness of environmental issues and the impact of their activities on the environment. For example, in certified Bolivian and Ecuadorian industrial-scale forestry operations, certification contributed to “fostering a constructive discussion about forest governance and logging practices” (Ebeling & Yasué, 2009, p. 1151). In the study of MSC-certified Argentinian fisheries, the study found that certification “encourages the industry’s understanding of stock status and marine environmental problems, making users

more careful with the exploited resources to maintain long-term business” (Pérez-Ramírez, et al., 2012, p. 1185).

Learning was also manifested through both increased stakeholder participation (evident in 90 percent of the case studies), including increased formal training opportunities (45 percent), and improved management efficiency (80 percent). Increased stakeholder participation is a generalized benefit of both FSC and MSC certification in developing countries, where it has, for example, facilitated a platform for community members to collaborate, air grievances, share knowledge, and resolve conflict.⁶

The extent of increased stakeholder participation was stronger in FSC-certified forests than in MSC-certified fisheries. It received only a general mention in the MSC case studies, while the FSC studies took great care to describe how it was organized and how it benefitted the community. Indeed, one of the major findings to emerge from a comparison of FSC and MSC certification was the difference in the extent to which participatory processes were deliberately promoted in the former. This is likely to be a direct consequence of the FSC’s stress on social issues in its framework. For example in Rio Cangrejal, Honduras, FSC accreditors required that, “certified forest groups establish mechanisms for efficient integration of the wider community into the decision making on forest management and the distribution of forestry income” (Bieri & Nygren, 2011, p. 6). By contrast, the omission of a social focus in the MSC organizational framework implies that there was no mandate for the deliberate facilitation of community participation in the fisheries case studies.

⁶ The single exception is the South African hake fishery, which was certified in the political-economic context of post-apartheid South Africa, where certification was reportedly used as a tool by the predominantly white, industrial fisheries to prevent the reallocation of their catch quotas to predominantly black, community fisheries (Japp, 2008; Ponte, 2008).

Formalized training, though less generalizable than stakeholder participation, was often an extension of increased stakeholder participation. Most of the FSC studies, 69 percent, describe formal training as part of efforts to improve stakeholder participation. This could range from training sessions that teach about the rules and regulations of certification (Acharya, 2007, p. 88), to training in safety, hygiene, nutrition, leadership, use of equipment, and firefighting (Cubbage, et al., 2010, p. 502). By contrast, no formalized training opportunities were even mentioned in case studies of MSC certification.

In addition to stakeholder participation, another generalizable learning benefit from certification is improved efficiency in resource management. This benefit was derived primarily from the deployment of new management techniques, enhanced monitoring, and enhanced data collection. This benefit was experienced by 92 percent of the forestry firms, but in fewer fishery firms (57 percent), and by both industrial and small-scale firms. Evidence of potential for efficiencies brought about by certification is illustrated by two forestry examples. In the first, certification of community forestry operations in Guatemala led to a reorganization of management, which helped to define and prioritize stakeholder roles (Lundin, 2010). In the second, new techniques, such as the use of GIS mapping technology improved the planning of access roads by forestry firms in Ghana and reportedly reduced forest destruction and construction costs (Carlsen, et al., 2012, p. 87).

In fisheries, improved efficiency of resource management was most evident in the industrial fisheries with a top-down management structure. For example, management structures in the Argentinian industrial fisheries were changed to meet certification standards, although these changes were made without consulting fish workers (Pérez-Ramírez, et al.,

2012, p. 1186). The PNA Western and Central skipjack tuna fishery, a cooperative comprised of multiple countries across the Pacific, experienced management changes that were negotiated at the international scale (Kirby, et al., 2014).

4.3 Government Support and Empowerment

A second broad theme that emerged from our analysis concerns the interrelated issues of improved governance and producer empowerment. In 70 percent of the case studies, evidence was found for some form of government support for certified firms. Of the six case studies lacking evidence of government support (Carlsen, et al., 2012; Cubbage, et al., 2010; Hinrichs, et al., 2008; Kirby, et al., 2014; Pérez-Ramírez, et al., 2012b; and Pomeroy, 2013), five explicitly noted that, at the time of publication, governments were considering ways to offer regulatory support in the future. This finding suggests a heightened awareness of the role government might play. Furthermore, this generalized benefit was found in over 83 percent of the small-scale studies and in over 76 percent of the forestry studies.

Government support of certified firms tended to take the form of regulatory relief, tax benefits, public good provision, and preferential treatment in the allocation of resource access rights. For example, the increased transparency and greater documentation required by the certification process entitled FSC certified forestry firms in Bolivia to an exemption from government audits as well as taxes (Ebeling & Yasué, 2009). In the Mexican Baja California red rock lobster fishery (Pérez-Ramírez, et al., 2012 b), government support for certification was provided through increased funding for the fishing community's development projects, such as the provision of electricity, increased road access, and infrastructural improvements to fish

processing plants.

The most prominent way in which governments have supported certification is by facilitating resource access rights. In 65 percent of the case studies, certification assisted producers in securing land- or fishery-use concessions, allocation of catch quotas, or legal recognition of customary rights. In the South African hake fishery (Ponte, 2008; Japp, 2008), certification was instrumental in ensuring the future security of the certified firm's catch quotas. In the Vietnamese Ben Tre clam fishery (Pomeroy, 2013), the government was actively seeking ways to support producers' fishing rights in the future (p. 54). In the Mexican Baja California red rock lobster fishery (Pérez-Ramírez, et al., 2012 b), certification greatly increased the likelihood of renewal of the fishery's 20-year government concession (p. 27). Similar examples are seen in the forestry sector. For example in Guatemala, producers were able to obtain 25-year land-use concessions after certification, something they had struggled to achieve in the ten years prior to certification (Lundin, 2010, p. 28, 36).

Certification also provided stakeholders with more information about their rights, helping them to obtain legal recognition of customary land tenure. In Nepal, certification helped to resolve long-standing disputes over forest access rights between community forest groups and yak herders. The customary access rights of both groups were given legal recognition, leading to an unprecedented land-share agreement (Acharya, 2007, p. 59). Without secure, long-term access rights, it is difficult for producers to invest in infrastructure or equipment that may aid in more environmentally sustainable resource management.

A side effect of increased government support is the empowerment of producers to make long-term planning decisions. This ability to plan for the future is cited as a benefit in 65

percent of the case studies. Cerutti, et al. (2014) found that certified forestry firms in the Congo Basin consistently took a longer-term planning approach than uncertified firms (p. 26). In the Nepalese community forestry operations, certified forest user groups were better able to plan for annual income and expenditures (Kandel, 2007, p. 15). In certified Argentinian fisheries, stakeholders perceived the ability to plan for the long-term as a benefit of certification (Pérez-Ramírez, et al., 2012, p. 1185). This benefit was especially prominent for industrial firms (75 percent) and forestry firms (69 percent).

Of the FSC case studies, just over half observed that certification improved transparency in resource governance, a benefit that was mostly prominent in small-scale forestry operations. A major benefit of improved transparency in accounting, record keeping, and other administrative tasks was a reported reduction in corruption and illegal logging. For example, in Nepal, survey respondents stated that budgeting and accounting is more transparent after FSC certification and a majority also stated that illegal cutting had decreased since certification (Acharya, 2007, p. 63, 70). Other examples can be found in Bieri & Nygren (2011), Cerutti, et al. (2014), Hinrichs, et al. (2008), Humphries & Kainer (2006), Kandel (2007), and Lundin (2010). Similar benefits were not reported in any of the MSC case studies.

4.4 Reputation

A final theme that emerged from our analysis is that producers benefitted from certification through improved reputation and prestige. It featured prominently in producer perceptions of the benefits of certification in 71 percent of MSC case studies and in 62 percent of the FSC studies. Furthermore, this benefit was much more common in cases involving small-

scale firms; it was cited as a benefit in 75 percent of these case studies, as opposed to only 50 percent of cases involving industrial firms. In the Lundin (2010) study of community forestry in Guatemala, where FSC certification was mandated, it was found that even if certification were made voluntary, producers would continue to maintain certification because of the prestigious reputation that comes with it (p. 37). In two case studies of lobster fisheries in Mexico (Cano Chacon, 2013; Pérez-Ramírez, et al., 2012 b), certification enabled the fishing cooperatives to differentiate their product as more reputable than that of competitors. Certification also gained them international recognition and prestige. Certification appears to produce important reputational benefits and the value of these benefits may be far from insignificant. Indeed, improved worker self-esteem and pride, even though they lack immediate private economic benefits, may in some cases be sufficient to drive continued sustainable resource management.

5. Discussion

On the basis of a qualitative meta-synthesis, this paper reviewed a sample of case studies of FSC and MSC certification in developing countries in order to assess the hypothesis that environmental certification resulted in substantial benefits for certified resource producers. We found support for this hypothesis, despite finding little evidence for price premiums and mixed evidence for market access. Given that the majority of MSC-certified fisheries, in particular, have only been certified within the last few years (MSC, 2015b), more time is probably necessary for financial benefits to be realized - if they are to be realized at all. Across FSC and MSC cases, three broad categories of non-financial benefit emerged: learning, government support and empowerment, and reputation. From these broad categories, we

argue that certification may be at least partly responsible for the following generalized benefits: improved awareness of environmental impacts; increased stakeholder participation; improved management efficiency; improved government support; a better ability to plan for the future; and, improved reputation and self-esteem.

Although an in-depth comparison with case studies undertaken in developed countries is outside the scope of this review, we note that some of these benefits are not confined to developing countries. For example, Blomquist et al. (2015) studied MSC-certified fisheries in Sweden, and emphasized the benefits from 'enhanced reputation of the fishery', as well as those benefits absent from our review such as 'increased credibility in the market'. Moore et al. (2012) surveyed FSC-certified producers in Canada and the United States, which similarly emphasized the benefits from 'better management systems' and 'better planning and implementation'. In addition, they identified benefits not found in our review, such as 'the strategic position of the organization', 'corporate social responsibility', and 'marketing/sales tool'. Consistent with our results, both of these studies downplayed the benefits of price premiums while emphasizing the importance of gaining (or maintaining) market access.

Given the lack of evidence for generalized benefits from price premiums and market access, most, if not all of the governance and social benefits found in developing countries provide a number of possible channels through which producers might benefit financially from FSC and MSC certification in the long-term. For example, heightened environmental awareness can potentially help firms to identify and mitigate long-term risks (e.g. fish stock collapse or adverse impacts to tree growth as a result of climate change). Further examples include learning and improved working conditions, which have the potential to increase the

productivity of workers, and improved management efficiency (e.g. through training) or operational efficiency (e.g. through the adoption of new technologies), which could, in time, help reduce production costs.⁷ Where these benefits have yet to materialize, non-market valuation techniques could be used to assess the potential benefits, e.g. from enhanced reputations. Such values could usefully enter into economic cost-benefit analyses of certification, building on those undertaken by the WWF (2015).

Much of the literature claims that a lack of government support is a major barrier to certification in developing countries (see Bass, et al., 2001; Fischer, et al., 2005). While we note that government support was mostly addressed superficially in the case studies, it emerged as a generalized benefit in our review. Causal inference is, however, unclear, i.e. whether certification increased government support or support increased the likelihood of certification. A lack of initial support in some cases could imply support as an outcome of certification rather than the other way around. Producers in all of the case studies were certified, and baseline data or information on government support prior to certification was lacking in most cases.⁸ Thus, there were few if any counterfactual scenarios against which to assess changes in government support due to certification. It is therefore not possible to conclude that certification had caused improved government support; only that it may be associated with it.

Government support may, however, only have transpired among early-adopters of certification, and this support, in turn, may have encouraged other firms to consider certifying.

Further research is needed to understand the type of government support offered, the

⁷ We note that improving operational efficiency may also provide a channel through which environmental outcomes improve, as illustrated by Carlsen et al. (2012) for the case of Ghana, and in more recent FSC cases researched by the WWF (2015).

⁸ This is what Miteva et al. (2012) define as 'with-without' and 'before-and-after' comparisons of outcomes with respect to the empirical assessment of conservation measures.

intensity of this support over time (pre- and post-certification), and whether support to some firms encouraged other firms to consider certifying. Early adopters may also have had to contend with insecure access rights and weak tenure. A number of the case studies claimed that secure access rights to fishery and forestry resources were quicker and easier to obtain after certification. But again, counterfactual data is needed to demonstrate, in a robust manner, that property rights had indeed improved as a consequence of certification.

Assessing the extent of other benefits, like improvements in management efficiency and environmental awareness is also subject to the same problem of empirical inference. Indeed, it is possible, for instance, that some producers were already efficient or environmentally aware and it is this which helped them obtain certification (sample selection bias – see Auld et al., 2008). In the absence of counterfactual scenarios, either generated through baseline information from the sample or from a similar ‘matched’ sample of uncertified producers, it is not possible to know whether these benefits would have been realized in the absence of certification. Thus, our understanding would benefit from future research comparing the benefits of both certified (adopters) and uncertified producers (non-adopters). Such a comparison could, in principle, be either qualitative or quantitative, e.g. utilizing producer-level panel data in the spirit of Blackman and Guerrero’s (2012) study of ISO 14001 certification in Mexico.

Although similarities were found between the benefits enjoyed by FSC and MSC producers, and between small-scale and industrial firms, notable differences were also identified. Many of these differences may stem from the fundamental differences between the two resources, the size of the producer, and underlying differences between the FSC and MSC

frameworks. For example, market access was experienced as a benefit to a greater extent in industrial fisheries than in small-scale fisheries or forestry firms. Due to their size, industrial firms are likely better positioned to fulfill the demands of international fish markets and are more likely to establish buyers agreements with large corporations such as Unilever.

Furthermore, fish retailers may be more sensitive to heightened consumer pressure for sustainable goods because, as a food item, richer consumers have many alternatives to eating fish.

Other benefits that are more prevalent in one but not both sectors are improved management efficiency and improved formal training opportunities. Improved management efficiency is a benefit that was more prevalent in forestry studies. As a stationary resource, it may be simpler to efficiently manage forestry resources. Fishery management depends on many other factors outside of the fishery firm's control, including migratory characteristics of the stock, fishing pressure on the resource from outside the regulated zones, and changes to food chains and ecosystems.

Improved formal training opportunities were also more prevalent among forestry firms. This difference is a direct result in the differences in the FSC and MSC frameworks. As the FSC specifically requires addressing social issues in order to qualify for certification, one way to satisfy this is through formal training; there is no such emphasis in the MSC framework. Future study should attempt to better understand the differences in the way benefits accrue to FSC-certified and MSC-certified producers. An example would be to examine the extent to which the omission of a social development goal in the MSC framework may result in fewer social benefits for producers.

Benefits that are experienced differently depending on the size of the certified firm include an improved ability to plan for the future and reputational benefits. Future planning was more prevalent among industrial firms. This is logical in that industrial firms have the resources to capitalize on opportunities to invest in the firm's future. On the other hand, reputational benefits were most prevalent among small-scale firms. Again, this result is logical in that small-scale firms are likely to have shorter supply chains and more direct contact with final consumers, thus potentially helping to facilitate stronger relationships with consumers and to transmit reputations for producing quality products. Furthermore, workers within small-scale firms were also more likely to be the direct owners of the firm, therefore magnifying the pride felt in their accomplishments. We argue that differential treatment of industrial and small-scale firms may be warranted when developing policies to incentivize or support certification. For example, small-scale firms may require more initial government support in order to offset high, initial certification costs.

In addition to its inability to generate counterfactual scenarios and infer causality, we acknowledge that the qualitative meta-synthesis method has other limitations. Although the strength of this method is its ability to extrapolate broad patterns and common themes, one of its chief limitations is the potential loss of context during the analysis. Care was taken to retain contextual meaning for each case study. Yet, we acknowledge that some degree of political-economic, historical, or cultural context may have been sacrificed in the process of analysis.

Furthermore, most of the current research on eco-labeling consists of case studies and many use methodologies that do not readily lend themselves to comparison. Case studies included in the sample thus have diverse research methodologies as well as differing objectives.

This meant that the absence of a benefit in a case study could not be taken to mean that this benefit did not exist; it may mean, instead, only that it was not addressed in that particular study. The establishment of methodological guidelines for case studies of certification would greatly assist further assessment of research across individual producers. Also, the diversity of approaches in the case study literature meant that it was not possible to distinguish between different sources of information on benefits, although we acknowledge that the perspective of a worker is likely to be very different from that of a manager.

Finally, the policy implications of these benefits should be explored. For example, this review sheds light on the reputational benefits that result from certification. Future research should examine the way policy can promote and capitalize on the reputational benefits brought about by certification. Indeed, many studies have shown the motivational benefits of self-esteem and pride in the workplace, especially in the face of tasks with high initial costs (see Pierce, et al., 1989; Williams & DeSteno, 2008). A better understanding of the value of reputation and pride could be useful to policy makers. Governments are in a position to play an important role in promoting the achievements of certified producers, helping to further improve their reputation at individual, domestic, and international levels.

6. Conclusions

The results of this review provide support for the hypothesis that certification produces substantial benefits for producers. Moreover, the results suggest that these benefits may be sufficient to justify the high costs of certification, even when the benefits from price premiums and market access are limited. By identifying and assessing the extent of less tangible benefits

of certification, this review provides a more detailed understanding of the range of costs and benefits of environmental certification in developing countries. This broader understanding can help motivate developing country forestry or fishery firms to undertake wide-ranging economic cost-benefit analysis when considering certification and evaluate ex-post certification impacts. Governance and social benefits have potential for being realized financially. Our review highlights areas where further research could help demonstrate how they might be realized, and the conditions under which benefits are monetized by producers. This, in turn, can aid governments and other policymakers concerned with policy that aims to incentivize or facilitate the certification process, particularly in situations where there might be environmental benefits from doing so.

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Appendix A – Initial Case Study Sample

FSC Case Studies:

	Author, date	Full Citation
1	Acharya, 2007	Acharya, B. (2007). Practice and Implementation of Forest Certification in Nepal: A Case Study from some CFUGS in Dolakha District (Master's thesis). Available from < http://www.forestrynepal.org/images/thesis/MSc_BP Acharya.pdf >
2	Bieri & Nygren, 2011	Bieri, M. & Nygren, A. (2011). The Challenges of Certifying Tropical Community Forests: A Case Study from Honduras. <i>The Journal of Environment and Development</i> , 20:2, p. 145-166. DOI: 10.1177/1070496511405154.
3	Carlsen, et al., 2012	Carlsen, K., Hansen, C., & Lund, J. (2012). Factors affecting certification uptake — Perspectives from the timber industry in Ghana. <i>Forest Policy and Economics</i> , 25: p. 83-92. DOI: 10.1016/j.forpol.2012.08.011.
4	Cashore, et al. 2006	Cashore, B., Gale, F., Meidinger, E., & Newsom, D. (2006). Forest Certification in Developing and Transitioning Countries... Part of a Sustainable Future? <i>Environment</i> , 48:9, p. 6-25. Retrieved from < http://search.proquest.com/docview/224015019?accountid=9630 >
5	Cashore, et al., 2006 b	Cashore, B., Gale, F., Meidinger, E., & Newsom, D. (Eds.). (2006 b). <i>Confronting Sustainability: Forest Certification in Developing and Transitioning Countries</i> (Yale F&ES Publication Series, Report No. 8). New Haven, CT: Yale Publishing Services Center. Retrieved from < http://www.yale.edu/forestcertification/pdfs/2006/Confronting%20Sustainability.pdf >
6	Cerutti, et al., 2011	Cerutti, P., Tacconi, L. Nasi, R., & Lescuyer, G. (2011). Legal vs. certified timber: Preliminary impacts of forest certification in Cameroon. <i>Forest Policy and Economics</i> , 13:3, p. 184-190. DOI: 10.1016/j.forpol.2010.11.005.
7	Cerutti, et al., 2014	Cerutti, P., Lescuyer, G., Tsanga, R., Kassa, S., Mapangou, P., Mendoula, E., Missamba-Lola, A., Nasi, R., Eckebil, P., & Yembe, R. (2014). Social Impacts of the Forest Stewardship Council Certification: An Assessment in the Congo Basin (Occasional Paper 103). Bogor, Indonesia: Center for International Forestry Research (CIFOR). Retrieved June 20, 2014 from < http://assets.worldwildlife.org/publications/674/files/original/CIFOR_FSC_Social_Impact_Study_-_Full_Report.pdf?1396829697 >
8	Cubbage, et al., 2010	Cubbage, F., Diaz, D., Yapura, P., & Dube, F. (2010). Impacts of forest management certification in Argentina and Chile. <i>Forest Policy and Economics</i> , 12:7, p. 497-504. DOI: 10.1016/j.forpol.2010.06.004.
9	Del Gatto, et al., N.D.	Del Gatto, F., Dávila, D., Kanstrup, J., Herrera, S., López Ramos, C., Mildam, A., & Polanco, N. (N.D.). A Brief History of the COATLAHL Cooperative: At Last a Little Optimism (Report commissioned by the International Tropical Timber Organization). Washington, D.C.: Rights and Resources Initiative, Forest Trends. Retrieved June 27, 2014 from < http://www.rightsandresources.org/documents/files/doc_224.pdf >
10	Ebeling & Yasué, 2009	Ebeling, J. & Yasué, M. (2009). The effectiveness of market-based conservation in the tropics: Forest certification in Ecuador and Bolivia. <i>Journal of Environmental Management</i> , 90:2, p. 1145-1152. DOI: 10.1016/j.jenvman.2008.05.003.
11	FSC, 2008	FSC. (2008). Small, low intensity and community forests. Port Townsend, WA: Forest Stewardship Council. Retrieved June 26, 2014 from < http://www.proforest.net/publication-objects/smallholders%20briefing%20notes%20and%20case%20studies.pdf >
12	Guedes Pinto & McDermott, 2013	Guedes Pinto, L. & McDermott, C. (2013). Equity and forest certification — A case study in Brazil. <i>Forest Policy and Economics</i> , 30, p. 23-29. DOI: 10.1016/j.forpol.2013.03.002.
13	Hinrichs, et al., 2008	Hinrichs, A., Muhtaman, D., & Irianto, N. (2008). Forest Certification on Community Land in Indonesia. Jakarta, Indonesia: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). Retrieved June 23, 2014 from < http://forestclimatecenter.org/files/2008%20Forest%20Certification%20on%20Community%20Land%20in%20Indonesia.pdf >
14	Humphries & Kainer, 2006	Humphries, S. & Kainer, K. (2006). Local perceptions of forest certification for community-based enterprises. <i>Forest Ecology and Management</i> , 235:1-3, p. 30-43. DOI: 10.1016/j.foreco.2006.07.027.
15	Kandel, 2007	Kandel, P. (2007). Effects of forest certification towards sustainable community forestry in Nepal. <i>Banko Janakari: A journal of forestry information for Nepal</i> , 17:1, p.11-16. Retrieved from < http://www.nepjol.info/index.php/BANKO/article/viewArticle/654 >
16	Kukkonen, et al., 2008	Kukkonen, M., Rita, H., Hohnwald, S., & Nygren, A. (2008). Treefall gaps of certified, conventionally managed and natural forests as regeneration sites for Neotropical timber trees in northern Honduras. <i>Forest Ecology and Management</i> , 255:7, p. 2163-2176. DOI: 10.1016/j.foreco.2007.12.030.
17	Lundin, 2010	Lundin, H. (2010). The FSC-certification, as a policy instrument to promote successful co-management? – A case study on community forestry in Guatemala (Master's thesis). Available from < http://www.skogsinitiativet.se/upload/doc/doc95.pdf >
18	Markopoulos, 1998	Markopoulos, M. (1998). <i>The Impacts of Certification on Community Forest Enterprises: A Case Study of the Lomerio Community Forest Management Project, Bolivia</i> . Oxford, UK: Oxford Forestry Institute (OFI). Retrieved June 20, 2014 from < http://r4d.dfid.gov.uk/pdf/outputs/forestry/r7285impacts_of_certification_on_community_forest_enterprises.pdf >

19	Markopoulos, 1999	Markopoulos, M. (1999). The Impacts of Certification on Campesino Forestry Groups in Northern Honduras. Oxford, UK: Oxford Forestry Institute (OFI). Retrieved June 20, 2014 from < http://r4d.dfid.gov.uk/pdf/outputs/forestry/r7285impacts_of_certification_on_campesino_forestry_groups.pdf >
20	Markopoulos, 1999 b	Markopoulos, M. (1999 b). Community Forest Enterprise and Certification in Mexico: A Review of Experience with Special Reference to the Union of Zapotec and Chinantec Forestry Communities (UZACHI), Oaxaca. Oxford, UK: Oxford Forestry Institute (OFI). Retrieved June 21, 2014 from < http://www.ccmss.org.mx/descargas/markopolous_certification.pdf >
21	McGinley & Cubbage, 2011	McGinley, K. & Cubbage, F. (2011). Governmental regulation and nongovernmental certification of forests in the tropics: Policy, execution, uptake, and overlap in Costa Rica, Guatemala, and Nicaragua. <i>Forest Policy and Economics</i> , 13:3, p. 206-220. DOI: 10.1016/j.forpol.2010.10.002.
22	Morris & Dunne, 2004	Morris, M. & Dunne, N. (2004). Driving environmental certification: its impact on the furniture and timber products value chain in South Africa. <i>Geoforum</i> , 35:2, p. 251-266. DOI: 10.1016/j.geoforum.2003.09.006.
23	Nebel, et al., 2005	Nebel, G., Quevedo, L., Jacobsen, J., & Helles, F. (2005). Development and economic significance of forest certification: the case of FSC in Bolivia. <i>Forest Policy and Economics</i> , 7:2, p. 175-186. DOI: 10.1016/S1389-9341(03)00030-3.
24	Njovu, 2004	Njovu, F. (2004). Forest Certification in Zambia. Paper presented at the symposium: Forest Certification in Developing and Transitioning Societies: Social, Economic, and Ecological Effects (p. 1-34). Retrieved June 23, 2014 from < http://www.yale.edu/forestcertification/symposium/pdfs/zambia_symposium.pdf >
25	Quaedvlieg, et al., 2014	Quaedvlieg, J., Garcia Roca, I., & Ros-Tonen, M. (2014). Is Amazon nut certification a solution for increased smallholder empowerment in Peruvian Amazonia? <i>Journal of Rural Studies</i> , 33, p. 41-55. DOI: 10.1016/j.jrurstud.2013.10.004.
26	Thornber, 2003	Thornber, K. (2003). Certification: A Discussion of Equity Issues. In E. Meidinger, C. Elliott, & G. Oesten (Eds.), <i>Social and Political Dimensions of Forest Certification</i> (p. 63-82). Remagen-Oberwinter, Germany: < www.forestbuch.de >
27	van Wilgen & Richardson, 2012	Van Wilgen, B. & Richardson, D. (2012). Three centuries of managing introduced conifers in South Africa: Benefits, impacts, changing perceptions and conflict resolution. <i>Journal of Environmental Management</i> , 106, p. 56-68. DOI: 10.1016/j.jenvman.2012.03.052.
28	Ward, 2013	Ward, D. (2013). Why should we certify our forests? Factors that influence the adoption and maintenance of forest certification in Quintana Roo, Mexico (Ph.D. dissertation). Available from < http://search.proquest.com/gate2.library.lse.ac.uk/docview/1527127471/abstract?accountid=9630 >

MSC Case Studies:

	Author, date	Full Citation
1	Bush, et al., 2013	Bush, S., van Zwieten, P., & Bailey, M. (2013). Commentary: BESTTuna: Benefiting from equitable and sustainable trans-boundary tuna fisheries in the Western Pacific. <i>Australian Journal of Medicine and Ocean Affairs</i> , 5:3, p. 104-111. Retrieved from < http://search.proquest.com/docview/1462336748?accountid=9630 >
2	Cano Chacon, 2013	Cano Chacon, M. (2013). The role of the information of the Marine Stewardship Council certification process in developing countries: A case study of two Mexico MSC fisheries certified in Mexico (Graduate research project). Available from < https://dalspace.library.dal.ca/handle/10222/37026 >
3	Christian, et al., 2013	Christian, C., Ainley, D., Bailey, M., Dayton, P., Hocesvar, J., LeVine, M., Nikoloyuk, J., Nouvain, C., Velarde, E., Werner, R., & Jacquet, J. (2013). A review of formal objections to Marine Stewardship Council fisheries certifications. <i>Biological Conservation</i> , 161, p. 10-17. DOI: 10.1016/j.biocon.2013.01.002.
4	Cooper, et al., 2014	Cooper, R., Leiman, A., & Jarre, A. (2014). An analysis of the structural changes in the offshore demersal hake (<i>Merluccius capensis</i> and <i>M. paradoxus</i>) trawl fishery in South Africa. <i>Marine Policy</i> , 50:A, p. 270-279. DOI: 10.1016/j.marpol.2014.06.006.
5	Crosoer, et al., 2006	Crosoer, D., van Sittert, L., & Ponte, S. (2006). The integration of South African fisheries into the global economy: Past, present and future. <i>Marine Policy</i> , 30:1, p. 18-29. DOI: 10.1016/j.marpol.2005.06.013.
6	Japp, 2008	Japp, D. (2008). Overview and Analysis of the Marine Stewardship Council Certification of the South African Hake-Trawl Fishery (A UNEP commissioned report). Cape Town, South Africa: Institute for Security Studies. Retrieved June 24, 2014 from < http://www.unep.ch/etb/areas/fisheries%20country%20projects/south%20africa/Overview%20and%20Analysis%20Hake-Trawl%20Fishery%20Dave%20Japp.pdf >
7	Kirby, et al., 2014	Kirby, D., Visser, C. & Hanich, Q. (2014). Assessment of eco-labelling schemes for Pacific tuna fisheries. <i>Marine Policy</i> , 43, p. 132-142. DOI: 10.1016/j.marpol.2013.05.004.
8	Ley-Cooper, 2010	Ley-Cooper, K. (2010). Developing Sustainability Principles and Criteria for Management and Eco-labelling in the Sian Ka'an and Banco Chinchorro Biosphere Reserves, Mexico. Paper presented at the Proceedings of the 63rd Gulf and Caribbean Fisheries Institute (p. 52-59). Retrieved June 23, 2014 from < http://nsgl.gso.uri.edu/flsgp/flsgpw10002/data/papers/009.pdf >

9	Macfadyen, et al., 2013	Macfadyen, G., Banks, R., & Davies, R. (2013). Tropical shrimp trawling: Developing a management blueprint and adapting and implementing it in specific countries and fisheries. <i>Marine Policy</i> , 40, p. 25-33. DOI: 10.1016/j.marpol.2012.12.036.
10	Morales-Yokoboria, et al., 2011	Morales-Yokoboria, M., Prenski, L., & Blanco, G. (2011). A sight on the Marine Stewardship Council semi-quantitative analysis applied to an Argentinean fishery. <i>Procedia Environmental Sciences</i> , 7, p. 122-127. DOI: 10.1016/j.proenv.2011.07.022
11	MSC, 2013	MSC. (2013). Net Gains: Marine Stewardship Council and Developing World Fisheries. London, UK: Marine Stewardship Council. Retrieved June 26, 2014 from < http://www.msc.org/documents/developing-world/net-gains-marine-stewardship-council-and-developing-world-fisheries/net-gains-marine-stewardship-council-and-developing-world-fisheries-english >
12	Pérez-Ramírez, et al., 2012	Pérez-Ramírez, M., Lluch-Cota, S., & Lasta, M. (2012). MSC certification in Argentina: Stakeholders' perceptions and lessons learned. <i>Marine Policy</i> , 36:5, p. 1182-1187. DOI: 10.1016/j.marpol.2012.03.011.
13	Pérez-Ramírez, et al., 2012 b	Pérez-Ramírez, M., Ponce-Díaz, G., & Lluch-Cota, S. (2012 b). The role of MSC certification in the empowerment of fishing cooperatives in Mexico: The case of red rock lobster co-managed fishery. <i>Ocean & Coastal Management</i> , 63, p. 24-29. DOI: 10.1016/j.ocecoaman.2012.03.009.
14	Pirie, 2013	Pirie, R. (2013). Exploring Marine Protected Areas: A baseline governance assessment of the Sian Ka'an Biosphere Reserve (Undergraduate thesis). Available from < https://dalspace.library.dal.ca/handle/10222/22049 >
15	Pomeroy, et al., 2009	Pomeroy, R., Nguyen, K., & Thong, H. (2009). Small-scale marine fisheries policy in Vietnam. <i>Marine Policy</i> , 33:2, p. 419-428. DOI: 10.1016/j.marpol.2008.10.001.
16	Pomeroy, 2013	Pomeroy, R. (2013). Governance of Tenure in Capture Fisheries in Southeast Asia. <i>Land Tenure Journal</i> , 1:Thematic issue on fisheries tenure, p. 39-65. Retrieved from < http://www.fao.org/nr/tenure/land-tenure-journal/index.php/LTJ/article/view/73/109 >
17	Ponte, 2008	Ponte, S. (2008). Greener than Thou: The Political Economy of Fish Ecolabeling and Its Local Manifestations in South Africa. <i>World Development</i> , 36:1, p. 159-175. DOI: 10.1016/j.worlddev.2007.02.014.
18	Ponte, 2012	Ponte, S. (2012), The Marine Stewardship Council (MSC) and the Making of a Market for 'Sustainable Fish'. <i>Journal of Agrarian Change</i> , 12, p. 300–315. DOI: 10.1111/j.1471-0366.2011.00345.x
19	Sinana & Whitmarsh, 2010	Sinana, H. & Whitmarsh, D. (2010). Wealth-based fisheries management and resource rent capture: An application to the Maldives marine fisheries. <i>Marine Policy</i> , 34:3, p. 389-394. DOI: 10.1016/j.marpol.2009.09.001.
20	Standing, 2009	Standing, A. (2009). The growth in certification of marine fisheries in Southern Africa: A discussion on the potential benefits and challenges (A UNEP commissioned report). Pretoria, South Africa: Institute for Security Studies. Retrieved June 24, 2014 from < http://dspace.africaportal.org/jspui/bitstream/123456789/31065/1/ISS%20FISHERIES%20REPORT-1.pdf?1 >
21	Tarte, 2014	Tarte, S. (2014). Regionalism and Changing Regional Order in the Pacific Islands. <i>Asia & the Pacific Policy Studies</i> , 1:2, p. 312-324. DOI: 10.1002/app5.27.

**Studies that were selected for inclusion in the meta-synthesis are highlighted.*

Appendix B – Case Study Inclusion and Exclusion Criteria

FSC Case Studies:	STEP 1	STEP 2			STEP 3			STEP 4
Author, date	False Positive	Quantitative	Illustrative	Qualitative	Ex-post?	Specific Case Study/Country?	Publication Type	Decision
1 Acharya, 2007				Interviews, P.O., F.G.	Yes	Nepal	Unpublished	Include
2 Bieri & Nygren, 2011				Interviews, P.O., F.G.	Yes	Honduras	Journal Article	Include
3 Carlsen, et al., 2012				Interviews	Yes	Ghana	Journal Article	Include
4 Cashore, et al. 2006			Review					Exclude
5 Cashore, et al., 2006 b			Review					Exclude
6 Cerutti, et al., 2011			Conceptual					Exclude
7 Cerutti, et al., 2014				Interviews, F.G.	Yes	Cameroon, Congo, Gabon	NGO/IGO Publication	Include
8 Cabbage, et al., 2010				Interviews	Yes	Argentina, Chile	Journal Article	Include
9 Del Gatto, et al., N.D.			Review					Exclude
10 Ebeling & Yasué, 2009				Interviews	Yes	Bolivia, Ecuador	Journal Article	Include
11 FSC, 2008			Review					Exclude
12 Guedes Pinto & McDermott, 2013		Quantitative						Exclude
13 Hinrichs, et al., 2008				Interviews, F.G.	Yes	Indonesia	NGO/IGO Publication	Include
14 Humphries & Kainer, 2006				Interviews	Yes	Brazil	Journal Article	Include
15 Kandel, 2007				Interviews, F.G.	Yes	Nepal	Journal Article	Include
16 Kukkonen, et al., 2008		Quantitative						Exclude
17 Lundin, 2010				Interviews	Yes	Guatemala	Unpublished	Include
18 Markopoulos, 1998			Review					Exclude
19 Markopoulos, 1999			Review					Exclude
20 Markopoulos, 1999 b			Review					Exclude
21 McGinley & Cabbage, 2011				Interviews	Yes	CR, Nicaragua, Guatemala	Journal Article	Include
22 Morris & Dunne, 2004			Conceptual					Exclude
23 Nebel, et al., 2005		Quantitative						Exclude
24 Njovu, 2004			Conceptual					Exclude
25 Quaedvlieg, et al., 2014				Interviews	Yes	Peru	Journal Article	Include
26 Thornber, 2003			Conceptual					Exclude
27 van Wilgen & Richardson, 2012	Irrelevant							Exclude
28 Ward, 2013				Interviews, P.O.	Yes	Mexico	Unpublished	Include

Appendix C – Case Study Analysis

Basic information				Financial benefits		Learning			Government support and empowerment			Reputation
Study author/date	FSC or MSC	Country	small-scale or Industrial operation	Existence of price premium	Market access	Awareness of environmental impact	Increased stakeholder participation	Improved management efficiency	Regulatory relief Tax benefits Access rights	Better ability to plan for the future	More transparency Less corruption Less illegal activity	Improved reputation Self-esteem Pride in work
Acharya, 2007	FSC	Nepal	Small	No	No	Yes	Yes (formal training)	Yes	Yes	No	Yes	Yes
Bieri & Nygren, 2011	FSC	Honduras	Small	No	No	Yes	Yes (formal training)	Yes	Yes	Yes	Yes	Yes
Hinrichs, et al., 2008	FSC	Indonesia	Small	Yes	Gained access to new markets	Yes	Yes (formal training)	Yes	No (possible in future)	Yes	Yes	Yes
Humphries & Kainer, 2006	FSC	Brazil	Small	Yes	Gained access to new markets	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kandel, 2007	FSC	Nepal	Small	No	No	Yes	Yes	Yes	Yes	Yes	Yes	
Lundin, 2010	FSC	Guatemala	Small	No		Yes	Yes (formal training)	Yes	Yes	Yes	Yes	Yes
Quaedvlieg, et al., 2014	FSC	Peru	Small		Maintained current access	Yes	Yes (formal training)	Yes	Yes		no	Yes
Ward, 2013	FSC	Mexico	Small		No	Yes	Yes (formal training)	Yes	Yes			Yes
McGinley & Cabbage, 2011	FSC	Costa Rica, Nicaragua, Guatemala	Small	No		Yes	Yes	Yes	Yes	Yes		
Carlsen, et al., 2012	FSC	Ghana	Industrial	No	Maintained current access	Yes	Yes (formal training)	Yes	No (possible in future)	Yes	No	
Cerutti, et al., 2014	FSC	Cameroon, Congo, Gabon	Industrial			Yes	Yes (formal training)	Yes	Yes	Yes	Yes	
Cabbage, et al., 2010	FSC	Argentina, Chile	Industrial	No	No	Yes	Yes (formal training)	Yes	No (possible in future)	Yes		Yes
Ebeling & Yasué, 2009	FSC	Bolivia, Ecuador	Industrial		Maintained current access	Yes	Yes		Yes	No		

Basic information				Financial benefits		Learning			Government support and empowerment			Reputation
Study author/date	FSC or MSC	Country	small-scale or Industrial operation	Existence of price premium	Market access	Awareness of environmental impact	Increased stakeholder participation	Improved management efficiency	Regulatory relief Tax benefits Access rights	Better ability to plan for the future	More transparency Less corruption Less illegal activity	Improved reputation Self-esteem Pride in work
Cano Chacon, 2013	MSC	Mexico	Small		Gained access to new markets	Yes	Yes	Yes	Yes			Yes
Pérez-Ramírez, et al., 2012 b	MSC	Mexico	Small	No	No	Yes	Yes		Yes	Yes		Yes
Pomeroy, 2013	MSC	Vietnam	Small			Yes	Yes	No	No (possible in future)			
Kirby, et al., 2014	MSC	Parties to the Nauru Agreement	Industrial			Yes	Yes	Yes	No			
Japp, 2008	MSC	South Africa	Industrial	No	Maintained current access	Yes	No	Yes	Yes	Yes		Yes
Pérez-Ramírez, et al., 2012	MSC	Argentina	Industrial		Maintained current access	Yes	Yes	Yes	No (possible in future)	Yes		Yes
Ponte, 2008	MSC	South Africa	Industrial	No	Maintained current access	Yes	No		Yes	Yes		Yes

*Blank boxes indicate that the case study did not address the given topic

**No responses indicate that the case study expressly noted a negative outcome with regard to the topic.