



Trade Measures to Combat IUU Fishing:

Comparative Analysis of Unilateral and Multilateral Approaches

Gilles Hosch



International Centre for Trade
and Sustainable Development

Issue Paper

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LIST OF ACRONYMS

CCAMLR	Convention for the Conservation of Antarctic Marine Living Resources
CCS	Catch Certification Scheme (EU)
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CDS	catch documentation scheme
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMM	RFMO conservation and management measure
Code (the)	1995 FAO Code of Conduct for Responsible Fisheries
CRFM	Caribbean Regional Fisheries Mechanism
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOCA	1993 FAO Compliance Agreement
FOC	flag of convenience
HS	harmonised system
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
IPOA-IUU	2001 International Plan of Action to Prevent, Deter, and Eliminate IUU Fishing
IUU	illegal, unreported, and unregulated (fishing)
LSTLV	large-scale tuna longline vessel
MSRA	2007 Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSY	maximum sustainable yield
NAFO	Northwest Atlantic Fisheries Organization
PSMA	2009 Agreement on Port State Measures
RFMO	Regional Fisheries Management Organisation
SCRS	Standing Committee on Research and Statistics (ICCAT)
SIDS	small island developing states
TAC	total allowable catch
TDS	trade documentation scheme
TIS	trade information scheme
TREM	trade restrictive measure (trade embargo)
TTIP	Transatlantic Trade and Investment Partnership
UNCLOS	1982 UN Convention on the Law of the Sea
UNFSA	1995 United Nations Fish Stock Agreement
WCPFC	Western Central Pacific Fisheries Commission
WTO	World Trade Organization

FOREWORD

Illegal, unreported and unregulated (IUU) fishing is a pervasive problem affecting the world's fisheries, undermining marine governance as well as efforts to manage fisheries resources sustainably. Healthy fisheries are crucial to sustainable development, providing a source of food security and nutrition, livelihoods and national revenue. Around 36 percent of all fisheries production is traded, so trade policy should play a meaningful role in addressing the problem of fish caught illegally and traded internationally.

The E15 Initiative Oceans and Fisheries expert group convened by ICTSD and the World Economic Forum proposed policy options relating to the use of trade measures to address IUU fishing. The policy options recognise that while multilateral approaches are preferable, unilateral measures, which should be effective and coordinated, could respond to the urgency of the IUU challenge. Trade policy's role in this context is not its traditional one. Rather than managing the exposure of domestic firms to international competition, the role of trade policy and trade frameworks in addressing IUU fishing trade involves restricting trade that has negative environmental and social externalities; an intervention to address a market failure.

This wide-ranging research paper, written by Gilles Hosch, follows on from this work. Gilles is an independent technical adviser with extensive experience advising governments on the design of traceability systems and measures to address IUU fishing. The paper provides an analysis of the state of play and impact of trade measures used to address IUU fishing, including catch documentation schemes and trade-restrictive measures adopted at a multilateral level by regional fisheries management organisations and unilaterally by large markets, in particular the European Union and the United States.

The paper is designed to support two objectives. The first is to encourage policymakers designing, and responding to, trade measures to address IUU fishing to understand how distinct approaches could be made more coherent. The second is to provide technical input to a conversation about how trade frameworks, including potentially the WTO, could be used to support a more coherent but also more inclusive, ideally multilateral, approach to the IUU challenge. In support of these objectives, the paper provides a range of suggestions as to how both multilateral and unilateral catch documentation schemes and trade-restrictive measures could be made more effective and more coherent. It suggests, for example, that governments might use regional trade agreements to enhance the coherence of trade-restrictive measures they adopt to address IUU fishing, and that governments could eventually consider developing a multilateral approach to these measures in the World Trade Organization.

The use of trade measures to address IUU fishing is a technically challenging and politically sensitive area of policy. Perspectives on whether and how these measures should be used vary tremendously. We hope that this paper provides a useful source of analysis and ideas for policy-makers and stakeholders involved on all sides of this debate.



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EXECUTIVE SUMMARY

Illegal, unreported, and unregulated (IUU) fishing is a persistent and global problem that undermines the achievement of sustainable fisheries, a challenge encapsulated in Target 14.4 of the Sustainable Development Goals. It can have harmful impacts on sustainable development priorities such as food security, economic development, and fighting organised crime. Fish is one of the most valuable renewable resource commodities exploited today, and a significant proportion of global fish production enters international trade. Trade policy should, therefore, play a critical part in combatting IUU fishing.

Key trade-related measures to combat IUU fishing fall into two distinct categories; trade restrictive measures (TREMs), sometimes referred to as “trade sanctions” enacted by one or more market-states, and catch certification schemes, of which two specific variants (trade documentation schemes (TDS) and catch documentation schemes (CDS)) have been developed and implemented to date. This paper assesses the merits and limits of unilateral and multilateral approaches with regard to both types of instruments.

TDS have been used by a number of tuna regional fisheries management organisations (RFMOs) since the early 1990s. A key attribute of TDS is their capacity to detect flag of convenience (FOC) vessel operations. Trade measures taken on the basis of TDS appear to have led to trade in specific species from FOC states such as Bolivia or Honduras subsiding completely. The economic impact of these measures on FOC states has been limited since tuna trade bypassed these states both physically and financially. The outcome has, however, profoundly influenced the IUU profile of global tuna fisheries; today, over 95 percent of IUU fishing operations in the most important tuna fisheries are perpetrated by legally registered and licensed fishing vessels, undertaking illegal activities such as misreporting or under-reporting of catches that can be eliminated effectively by well-designed CDS.

Multilateral CDS are operated by three RFMOs. These schemes provide a mechanism for certification (by the flag state) of the legality of the harvest of the species covered and are relatively simple to police and to enforce. These schemes—when well designed and implemented by relevant state actors along the supply chain—can be effective in eliminating under-reporting by otherwise compliant, registered, and licensed fleets. Under-reporting of Atlantic bluefin tuna is believed to have fallen from double the total allowable catch (TAC) to close to nil when important market states—including Japan—started to enforce the relevant CDS. Imports of Atlantic bluefin tuna into Japan fell by 90 percent following implementation of the scheme. Importantly, there is a strong correlation between the introduction of the CDS systems and the beginning of recovery of affected tuna stocks.

In value terms, the price of illegal product under a CDS is diminished because it cannot be legally brought to market, severely reducing the financial incentives to engage in IUU fishing. Legally certified Patagonian toothfish has been shown to trade at prices 20-30 percent higher than non-certified product, and non-certified Atlantic bluefin tuna in the Mediterranean has been reported to lose 85 percent of its legal international market value. While enforcement of a CDS is likely to cause short-term economic and social costs, the long-term economic and social impact of stocks recovering as a result are positive from both developed and developing country perspectives. Current impacts of multilateral systems are mostly limited to industrial fisheries and developed countries.

Only the EU currently operates a unilateral CDS, although a unilateral US system is poised to come online in late 2016. The EU system is paper based and does not operate a central data registry, impairing traceability and hence the exclusion of illegally harvested products from certified supply streams. No evidence of impact on trade has been detected since the system came into force. The

US system is likely to differ from the EU system, notably by targeting at-risk species, and because of how data will be collected, submitted, and validated.

Unilateral CDS are inherently difficult to enforce since fisheries products may circulate through most of the supply chain without being covered by certificates. Most importantly, multilateral systems cover and protect entire fish stocks, while unilateral systems only partially cover many stocks. The potential for direct positive impact of multilateral systems on the sustainable management of individual stocks is therefore greater.

The EU also uses TREMs in the form of yellow cards (identification of non-cooperating countries) and red cards (ban on imports). Four countries have been red-carded since 2014. States can only become the object of EU trade measures in their capacity as flag states; port or market states that actively participate in the laundering of IUU products cannot be targeted. These trade restrictions are applied broadly to all fish and all fleets of a particular country regardless of the IUU fishing that triggered the identification, which means they are more likely to have disproportionate impacts on small-scale fisheries. Small-scale fisheries are inherently unable to escape embargoes on their flag state, while industrial operators generally have the option of reflagging their vessels to avoid flag state-related restrictions.

The US has identified third countries involved in IUU fishing since 2009 in biennial reports submitted to Congress by the Secretary of Commerce. To date, none of these identifications has led to a “negative certification”—the equivalent of an EU red card. US TREMs can, however, be designed to target only fleets, species, and product types directly tied to the IUU fishing that has given rise to the identification.

This paper argues that the EU system of identifying countries is opaque and that the standards on which decisions to identify (or not to identify) specific countries are based are unclear. In the US, on the other hand, biennial reports to Congress provide detailed information on cited infractions, the reasons behind a country’s identification, and the reasons for an identified country’s positive certification. The countries identified by the US and the EU are fundamentally different. Only three countries out of 51 identified appear on both lists. EU identifications are currently confined to Africa, Asia, the Caribbean, and the South West Pacific; 48 percent are small island developing states (SIDS). US identifications are more evenly distributed between world regions and target more developed fishing nations. The largest number of identifications is of South American countries, closely followed by EU member states, which represent 25 percent of all US identifications.

EU identifications appear to have pushed some identified countries to improve frameworks for fisheries governance, but there is no clear evidence as yet that this has translated into actual reductions in IUU fishing. It is also not clear what tangible effect the US system has had on IUU fishing because no sanctions have been implemented to date. More broadly, however, the impact of unilateral TREMs on IUU fishing, and hence on fish stocks, may in fact be greater than that of unilateral CDS. A unilateral identification and sanctioning process is likely to be more effective in changing the behaviour of countries if they export significant amounts of seafood to the market imposing the sanctions. If soft flag, port, and processing states can be pushed, through the application of transparent and fair trade-restrictive measures, into becoming more responsible, the impact of unilateral TREMs could be substantial.

In finishing, the paper provides the following conclusions and recommendations.

RFMOs should be supported and strengthened so that they can continue to deliver and expand multilateral solutions to the problem of IUU fishing in shared fisheries. Unilateral end-market CDS

may protect markets from sourcing a wide range of illegally harvested products, but because they close off only one market to IUU products, they may have limited overall impact on IUU fishing and the sustainable management of individual fish stocks.

Policymakers looking to improve the effectiveness of multilateral and unilateral CDS could consider focusing on the following:

1. Systems should be based on a technically sound design which achieves verifiable traceability and encompasses supply chain operators at flag, port, processing, and market state levels in an even-handed manner;
2. Systems should be designed around a central certificate (or data) registry spanning the full supply chain to achieve verifiable traceability;
3. Verifiable traceability requires online electronic submission and validation of data within a centralised repository at every step along the supply chain;
4. CDS ought to be risk based and apply only to fisheries suffering from established and serious IUU fishing issues.

Policymakers looking to improve the effectiveness of multilateral and unilateral TREMs could consider focusing on the following:

5. Ensuring that TREMs are as species- and product-specific as possible, in order to address IUU problems with precision and minimise undue economic and social impacts;
6. Ensuring there are clear standards regarding what constitutes IUU fishing, clear rules and procedures for the identification of countries, and transparent public records on dialogues with potential targets of TREMs;
7. Designing TREM provisions in a way that allows countries to be identified in their capacity as flag, coastal, port, or market states, and to be sanctioned in those same capacities;
8. Using regional trade agreements (RTAs) as an avenue for enhancing the regulatory coherence in the design and application of unilateral trade instruments. Eventually, governments could consider adopting a multilateral approach to TREMs, for example in the World Trade Organization (WTO).

A further focus for work could be how to improve the coherence, and eventual multilateralisation, of various CDS initiatives. In this regard, policymakers could consider the following:

9. New and existing unilateral schemes ought to devise means for mutual recognition and equivalence of their certificates. Systems could then be aligned. The merging of unilateral CDS would eventually produce de facto multilateral systems, which could then be opened up for expanded end-market state membership;
10. The international community could assess the feasibility of the development and operation of global multilateral CDS systems, designed to apply to specific species of fish in need of protection from IUU fishing throughout their global geographic range.

1. INTRODUCTION

Illegal, unreported, and unregulated (IUU) fishing is regarded as one of the fundamental issues that is preventing governments and Regional Fisheries Management Organisations (RFMOs) from achieving sustainable fisheries. Although IUU fishing is not the only phenomenon to blame—ineffective fisheries management regimes, coupled with “bad” subsidies, play their part in unsustainable fishing—IUU fishing remains one of the key issues that the global community must effectively address in order to improve fisheries management outcomes in substantive terms and address broader sustainable development objectives, including supporting food security and maritime governance.¹

In general terms, the cardinal responsibility for management (and oversight) of fishing vessels and their operations has traditionally fallen to the flag state of a vessel. This principle is enshrined in UNCLOS for all seagoing vessels,² and for fishing vessels in particular in the fisheries-related instruments that followed.³ It is the flag state that must ensure that fishing vessels operating in waters under national, foreign, or high-seas jurisdiction comply with the terms of their licences and management and conservation regimes applying to waters managed by RFMOs or third coastal states. However, flag state jurisdiction as a means for enforcing fisheries management regimes has largely failed, leading to a situation in which IUU fishing has been allowed to flourish (Doulman 2003; Rayfuse 2004), and is continuing to do so to this day.

New approaches to addressing IUU fishing, reaching beyond the primacy of flag state control and its failings, pursue the potential to combat IUU fishing through port and market state measures. Such “non-flag state” approaches to fisheries law enforcement find one of their most important and recent expressions in the 2009 Agreement on Port State Measures (PSMA) (FAO 2009), calling on port states to subject foreign vessels to stringent inspections and apply sanctions as appropriate, regardless of whether infractions have occurred in waters under the jurisdiction of the port state or in areas beyond national jurisdiction.

Other non-flag state control mechanisms in the form of trade measures have gradually also started to emerge; trade-related instruments focusing on combatting IUU fishing have started to multiply in recent years. A limited body of formal research into the effects of these instruments has been published to date (e.g. Elvestad and Kvalvik 2015). This research paper sets out to provide a comparative analysis of the merits, limitations, and impacts of existing (or planned) unilateral and multilateral trade measures addressing IUU fishing.

The paper is structured into seven parts including the Introduction. Part 2 looks at the implications of trade in IUU products for sustainable development, providing insights into where and how IUU fishing impacts are most important from a sustainable development perspective, and how trade affects the equation. Part 3 analyses the landscape of trade

1 Target 14.4 of the Sustainable Development Goals in the United Nations 2030 Agenda for Sustainable Development singles out IUU fishing as one of the issues to be eliminated by 2020 in order to achieve Sustainable Development Goal 14: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development.” (see United Nations General Assembly Resolution A/RES/70/1, distributed 21 October 2015).

2 UNCLOS Article 94: Duties of the Flag State.

3 These binding or voluntary instruments include the 1993 FAO Compliance Agreement (FAOCA), the 1995 UN Fish Stocks Agreement (UNFSA), the 2009 Agreement on Port State Measures (PSMA), the 1995 FAO Code of Conduct for Responsible Fisheries (the Code) and the 2001 International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (2001). In particular, see UNFSA Article 18 Duties of the Flag State, and FAOCA Article 3 Flag State Responsibility.

measures in fisheries, and presents unilateral and multilateral catch documentation schemes (CDS) and trade restrictive measures (TREMs) as the key trade-related measures addressing IUU fishing—the central object of enquiry of this paper. Parts 4 and 5 assess the state of play of multilateral and unilateral trade-related measures, highlighting the application of these measures and their impacts on trade, the environment, economies, and related social dimensions. Because the EU alone has implemented a unilateral Catch Certification Scheme (CCS) to combat IUU fishing, and has

embargoed seafood imports from third countries on the basis of their IUU fishing profile, impacts in part 5 largely focus on the EU scheme, while the unilateral documentation scheme planned in the US is discussed in terms of what knowledge has been made public to date. Part 6 synthesises the challenges and opportunities that fishing and fish-trading nations face or can derive from the implementation of trade-related measures, and prepares the ground for part 7, which provides a set of conclusions and recommendations for the future development of these instruments.

2. SUSTAINABLE DEVELOPMENT IMPLICATIONS OF TRADE IN IUU FISH PRODUCTS

“Illegal, unreported, and unregulated fishing” encompasses three distinct dimensions: illegal, unreported, and unregulated activity. The widely accepted and adopted definitions for these three dimensions are found in the second chapter of the 2001 International Plan of Action to Prevent, Deter, and Eliminate IUU Fishing (IPOA-IUU) (FAO 2001).

Generally speaking, the first two dimensions of IUU fishing (i.e. illegal and unreported fishing) are closely related, as under-reporting, misreporting, or non-reporting of catches and/or bycatch are often understood as particular (and highly detrimental) forms of illegal fishing. The third dimension—unregulated fishing—on the other hand, largely relates to the failure of the state to regulate fisheries in national waters or to ensure vessels flagged to the state comply with RFMO rules when operating in waters beyond national jurisdiction. Unregulated domestic fishing, which may lead to depletion of national resources, is often the lesser considered dimension of IUU fishing. It is broadly safe to say that the terms “IUU fishing” and “illegal fishing” are often used interchangeably.

In absolute value terms, fish is one of the most important renewable natural resources extracted and traded today. In 2013, an estimated 37 percent of global fish production entered trade (FAO 2014a). Given the considerable proportion of harvested fish that is traded, it is clear that trade can play a critical role in either fuelling or in deterring IUU fishing. In 2012, developing countries provided 61 percent of all fish exports by quantity and 54 percent by value. Their net export revenues (exports minus imports) reached US\$35.3 billion, higher than those for other agricultural products including rice, meat, milk, sugar, and bananas combined (FAO 2014b). It follows that developing countries may be especially vulnerable to the impact of IUU fishing on their ability to manage fisheries sustainably and

therefore to develop and sustain healthy fish trade.

While some regions and/or fisheries are more affected by IUU fishing than others, the problem is systemic. Fisheries in which all operators comply with all of the rules all of the time do not exist. Consequently, rather than being a simple binomial “yes or no” affair, IUU fishing is a matter of gradient. Owing to its multi-dimensional, illegal, and concealed nature, IUU fishing is difficult to qualify and to quantify. The most authoritative reference, published in 2009, estimates that global IUU fishing amounts to a value of between US\$10 and US\$23.5 billion annually, equating to a total annual catch ranging between 11 and 26 million tons (Agnew et al. 2009). Considering that the global marine catch in 2009 amounted to 79.9 million metric tons (FAO 2010), IUU harvests may make up a full third of global catches. This means that, overall, as many as one in three fish entering international trade could come from IUU fishing.

The first key sustainable development implication of IUU fishing is that it undermines fisheries governance. The Agnew et al. (2009) study found that IUU fishing incidence correlated strongly with governance indicators. Given that the study did not consider the “unregulated” dimension of IUU fishing, which is especially important in developing countries with limited institutional capacity, the figures obtained should be considered conservative for developing countries in particular.

In the author’s experience, a prevalence of weak governance means that fisheries in developing countries are often afflicted by a multitude of forms of IUU fishing, of both domestic and foreign origin. Small-scale fisheries themselves can be a significant source of IUU fishing. In 2013, 86 percent of Caribbean Regional Fisheries Mechanism (CRFM) members identified domestic small-scale fisheries as

the source of one of the “most persistent and damaging forms of IUU fishing” across the CARIFORUM/CARICOM region, while an average of 37 percent identified foreign entrants as the source of the same type of problems. These responses underline that in countries with limited institutional capacity, domestic fishing operations can trend towards very high levels of illegality (CRFM 2013). If IUU fishing is defined as a fishing operation affected by some form of non-compliant behaviour, a high proportion of fishing operations taking place in the waters of many developing countries would have to be qualified as IUU.⁴ A particular issue is therefore how well trade measures to address IUU fishing can account for the effects of weak fisheries governance affecting many developing countries.

IUU fishing is often found to go hand in hand with other forms of serious and organised crime, such as drug running, arms and migrant smuggling, or other human rights violations and abuses, including child labour, slavery-at-sea, and murder (UNODC 2011). IUU fishing can be a major form of, and a component of, transnational organised crime. Interpol has become more involved in handling international IUU fishing cases in recent years, including through its project “Scale” launched in 2013 (Interpol 2013).

A further sustainable development implication is the impact of IUU fishing on the health of fish stocks and the marine environment. IUU fishing has a tendency to undermine sustainable

resource management and social and economic development. IUU fishing undermines fisheries research and stock assessment, as unknown portions of catch are unaccounted for. The implementation of fisheries management regimes is impaired to various degrees, leading to problems relating to fishing capacity and pressure, stock abundance, environmental degradation, diminished catches and—at its worst—stock collapse.

The poor performance of a fishery can trigger social and economic challenges. Diminished catches generally lead to smaller returns, more effort, calls for more subsidies, and more pressure to indulge in illegal practices, and social unrest may ensue.⁵ It is thought that the food crisis and the exodus of young men and women from West Africa are partly fuelled by diminished marine fish resources, chiefly attributed to endemic IUU fishing (Global Initiative against Transnational Organized Crime 2015).⁶ As the national fishery economy shrinks, livelihoods are embattled, social problems can flare, and government revenue through licensing and tax revenues is diminished owing to falling activity, returns, and margins.

Trading in products derived from IUU fishing is a form of profiteering from resources that have been stolen from their rightful owners—the coastal states and nations depending on these resources—and can negatively impact communities, countries, economies, and sometimes entire regions over time. In this sense, poorly regulated trade enables a

4 Myanmar’s recent National Plan of Action to Prevent, Deter, and Eliminate IUU Fishing notes for small-scale inshore fisheries that “the operation of gears which do not conform to regulatory gear specifications has been observed to be the rule, rather than the exception” (Hosch 2016a).

5 One of the best documented cases of a collapsed fishery and its social and economic consequences relates to the 1992 collapse of the North West Atlantic cod fishery off Canada’s Atlantic coast (Gien 2000; Hamilton and Butler 2001; Kennedy 1997). When the stock collapsed, 35,000 people across 400 communities lost their income, and a dedicated government fund of several billion USD was implemented to provide income assistance. Newfoundland, one of the hardest hit regions, underwent environmental, industrial, economic, and social restructuring, including considerable emigration. The stock never recovered. It has been estimated that the potential annual income foregone from a sustainable Canadian cod fishery is in the order of a billion Canadian dollars (MacGarvin 2001). From a recurrent source of natural wealth, jobs, incomes, livelihoods, and cultural identity, the North West Atlantic cod fishery turned into a liability with socialised costs ranging in the billions of USD.

6 Agnew et al. (2009) qualify the incidence of IUU fishing in the Central East Atlantic (off West Africa’s seaboard) as the highest globally, characterised by an important foreign component.

malfunction to persist and to flourish, robbing stakeholders of their sustainable development prospects. Like flag or port state enforcement, trade and trade measures are an immediate and potentially effective avenue that can bar IUU products from market access. Since all IUU fishing is motivated by marginal financial

surplus gains over legal forms of fishing (Becker 1968; Sumaila, Alder, and Keith 2004), obstacles to (or denial of) access to markets, achieved through effective trade measures, can contribute to erasing those margins and thus the financial drivers underpinning IUU fishing.

3. TRADE MEASURES TO COMBAT IUU FISHING; WHAT ARE WE TALKING ABOUT?

Trade-related measures aimed at achieving sustainable fisheries management can be broadly grouped into three distinct types. Rather than just focusing on IUU fishing, trade measures can also be designed to promote the protection of endangered species, or to promote the sustainable management of fishery resources. This paper focuses exclusively on trade measures designed to eliminate IUU fishing. It is therefore useful to highlight briefly which types of trade measures exist, in broad terms, and which particular trade measures are the object of this paper.

The first type of trade measure is those designed to protect endangered fish species protected under the auspices of the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Sixteen species of fish have been listed in Appendix I of CITES to date (CITES 2013). Appendix I lists species that are threatened with extinction and for which, generally, commercial trade is prohibited. Eighty-seven fish species are listed in Appendix II; these species may become threatened unless subject to trade restrictions, and trade in these species requires an export permit from the exporting country.

The listing of a commercial fish species in a CITES appendix as a means to combat IUU fishing is a complex and politically sensitive matter, as reflected by two unsuccessful past attempts to list major commercial and high-value species: the first attempt to include toothfish under CITES Appendix II in 2002, and the second attempt to list Atlantic bluefin tuna under CITES Appendix I in 2009. The inclusion of a species under CITES Appendix I, in particular, could potentially prove effective in protecting a stock from collapsing, as it would proscribe international trade in the species and limit any exploitation to markets supplied by their own fishing vessels. There are 181 countries that are parties to CITES (CITES n.d.). Such a large membership and the fact

that only seven World Trade Organization (WTO) members (WTO n.d.) are not currently parties to CITES, make a challenge of a CITES trade ban in the WTO unlikely. On the other hand, the listing of a commercially fished species in a CITES Appendix II—subjecting international trade of a particular species to a certification system establishing the legality of the production method—would also be politically sensitive, primarily because the principal management mandate for species of international commercial interest generally falls to RFMOs (as is the case for both toothfish and bluefin tuna). However, a CITES listing could provide a non-RFMO based alternative to address IUU fishing of a species that is in need of protection from illegal exploitation.

The second type of trade measure is unilateral and focuses on a particular species (or groups of species) harvested in a specific manner. Measures in the form of particular mandated harvesting approaches or technologies to reduce the impact of fishing on the environment have been enacted by importing states in the past. What often occurs in these cases is that a coastal state implements a specific management rule in domestic fisheries, such as the mandatory installation of turtle exclusion devices (TEDs) in demersal trawls, as an environmental protection measure and later extends the rule to also apply to imports of species harvested with the same type of gear. The initial domestic management rule is a conservation measure designed to ensure the direct protection of a species or a habitat, and the extension of the rule to imports is generally implemented to expand its environmental impact. Extension of the rule also protects domestic operators from competition from foreign imports of the same species (or group of species) that are not bound by the same rules, and might therefore be in a position to bring products to market at lower prices, undermining the competitiveness of the domestic industry. Such measures have been contested as barriers to trade, for example in

the 1996 “US-Shrimp” dispute (brought by India, Malaysia, Pakistan, and Thailand against the US) in the WTO.⁷

The third type of trade measure comes in the form of trade documentation schemes (TDS), and CDS. Unilateral and multilateral documentation systems apply to given fish and fish products, as they move through the supply chain. TDS, which have been applied multilaterally by tuna RFMOs, establish the origin of the product as it enters trade—as opposed to when (or before) it is landed. Catch certificates establish the legal source of the products and generally identify the source fishing vessel. Trade and catch documents, and related export and/or re-export documents (referred to as trade certificates throughout this paper) are issued and/or validated by competent government authorities along the supply chain, and must be presented at the border before products may be allowed to enter the territory of a port, or a processing or an end-market state. The more recent version of these systems, CDS, is essentially a trade measure that seeks to positively identify legal products and to deny illegal products (not covered by certificates) market access at all levels of the supply chain—from landing through processing and importation into the final consumer market.

A fourth type of trade measure is IUU-related TREMs that may be applied unilaterally or multilaterally. TREMs, also referred to as trade embargoes or trade sanctions, are punitive in nature, and are put in place with respect to countries that are perceived by the party applying the TREMs to be failing in their duty to combat IUU fishing. To date, virtually all TREMs have been enacted against states failing to fulfil their obligations as flag states under international law. TREMs may be triggered in relation to incriminating evidence generated

through TDS or CDS systems, or they may be enacted on the basis of evidence obtained through other sources.

These latter two types of trade measures directly and exclusively address illegal fishing at the market level in the widest sense and are the object of this paper. Port state measures, which can restrict the transshipment or landing of fish presumed to be stemming from IUU fishing, are enforcement measures applied directly to individual fishing operations, and are generally not constructed as market-related measures, even though they may effectively restrict the introduction of given harvests into given markets.⁸ However, the existence of solid port state measures (PSM) is an important element for securing supply chains, and supporting the effective performance of a CDS. The PSMA, for example, requires port inspection to formally establish whether the party preparing to land is in “compliance with applicable catch documentation scheme(s)” and in “compliance with applicable trade information scheme(s).”⁹ The coming into force of the PSMA in 2016 is therefore also an important step in the strengthening of existing CDS systems.

CDS are covered in the IPOA-IUU (FAO 2001) under the chapter on Internationally Agreed Market-Related Measures (Articles 65 to 76). In the absence of an internationally agreed definition of CDS, this paper uses the term to refer to the types of schemes that are currently in operation—including their shared general design characteristics, particularly their ability to trace fish catch from vessel to final market of importation. In July 2015, the FAO held an Expert Consultation on Catch Documentation Schemes in Rome and the resulting draft guidelines currently embody the most authoritative source of an internationally

7 Full case files: “United States - Import Prohibition of Certain Shrimp Products” (WTO, 2001)

8 The PSMA, which came into force in June 2016 and whose central mode of action is to deny port entry or a landing authorisation to a foreign fishing vessel suspected of IUU fishing, has been conceived as a non-trade measure to combat IUU fishing. In the PSMA, IUU fishing is addressed at the level of the fishing operation of which port entry and landing are the final actions.

9 See paragraph d) in Annex B (“Port State Inspection Procedures”) and items 33 and 34 in Annex C (“Report of the Results of the Inspection”) of the PSMA 2009.

recognised definition of a CDS (FAO 2015).¹⁰ The FAO Technical Consultation on Catch Documentation Schemes which followed, and

which was held in Agadir, Morocco, in April 2016 was adjourned without consensus regarding a final text.

10 Draft definition: “Catch documentation scheme—a system that tracks and traces fish from the point of capture through unloading and throughout the supply chain. A CDS records and certifies information that identifies the origin of fish caught and ensures they were harvested in a manner consistent with relevant national, regional and international conservation and management measures. The objective of the CDS is to combat IUU fishing by limiting access of IUU fish and fishery products to markets.”

4. MULTILATERAL MEASURES ADDRESSING TRADE IN IUU FISH PRODUCTS: STATE OF PLAY

4.1 Existing Multilateral Trade Measures to Address IUU Fishing

The original multilateral documentation schemes were trade documentation or trade information schemes (TDS/TIS) implemented by tuna RFMOs to monitor trade in fish species they governed. The TDS can be regarded as the “forebears” of the multilateral CDS for combatting IUU fishing; CDS systems evolved from TDS systems.

The first TDS was developed and implemented by ICCAT in 1992, covering Atlantic bluefin tuna. TDS schemes were particular to tuna and billfish, and aimed to gather more information about the proportions of catch of given species entering international trade in order to gain a better understanding of trade flows. To achieve this, statistical documents were issued by flag states of vessels fishing the specific species covered by the scheme, and these documents had to accompany consignments of the fish in international trade. The information they contained was similar to today’s catch certificates, but omitted most of the information relating to the early part of the supply chain, including the precise location of the fishing trip (only the ocean was indicated), transshipment operations, port and date of landing, splits, and details of first sale (e.g. ICCAT 1994a). Members of the RFMO were required to demand that consignments be accompanied by a TDS document before importation of the species was allowed into their territory. Species covered were limited to: Atlantic bluefin tuna, bigeye tuna, and swordfish in ICCAT; southern bluefin tuna under the TIS operated by Commission for the Conservation of Southern Bluefin Tuna (CCSBT) as of 2000;

and bigeye tuna in IOTC and IATTC as of 2002/3 (Clarke 2010).

The TDS systems fell short of expectations in improving the overall understanding of harvesting and trade dynamics, owing to flaws in the traceability design and exemptions under these schemes. However, an unintended consequence was a much better insight into who was harvesting the fish, because flag states validated TDS documentation. TDS documents enabled the identification of exports of covered species sourced from unregulated fishing vessels flying the flags of RFMO non-member states, who are barred under FAOCA, UNFSA, and RMFO rules from harvesting the species covered by the RFMO.

Nine out of 17 RFMOs (Webster 2015), including ICCAT, IOTC, and CCSBT, have adopted resolutions allowing their members to impose TREMs upon states identified as failing to meet their obligations under international fisheries law (IOTC 1999; CCSBT 2000; ICCAT 1994b, 2006). Other RFMOs, such as CCAMLR, WCPFC, and NAFO,¹¹ have not yet put in place provisions that would allow them to enact such restrictions. While some RFMOs, such as IATTC-adopted resolutions targeting both non-compliant IATTC members and non-members as potential objects of TREMs (IATTC 2006), most RFMOs limited the application of these instruments to non-members. The relevant 1999 IOTC resolution explicitly described the potential targets of TREMs as “Flag of Convenience States” that tolerated vessels flying their flag operating illegally in the organisation’s area of competence. Many RFMOs also provide for elements of TREMs in resolutions covering other compliance matters, such as the IATTC 2004 resolution establishing an IUU fishing vessel list

11 The NAFO Performance Review of 2011 notes under its Compliance and Enforcement section that it: “Encourages Contracting Parties to further consider possible improvements to NAFO trade or market-related measures, in accordance with the requirements of international law. In the PRP’s view this is crucial for the prevention, deterrence and elimination of IUU fishing in the NAFO Regulatory Area. To the extent possible, NAFO efforts for trade related measures should take into consideration similar measures being implemented elsewhere” (NAFO 2011).

(IATTC 2004), or by encouraging members to adopt unilateral trade measures on the basis of specific types of incriminating evidence (e.g. listed IUU vessels).¹²

TDS, combined with the application of TREMs, proved an effective mechanism for identifying and eliminating the operations of fishing vessels flagged to flag of convenience (FOC) states (see section 4.3). Subsequently, the idea of the CDS—in the form of a TDS with expanded functionalities—emerged to overcome some of the critical shortcomings of TDS systems. CDS were designed to start with the certification of the legality of the harvesting operation (rather than the origin of the trade), allow for the identification and certification of units of legally landed catch, and then track these units through international trade to the end market. The interplay between authorities at the harvesting end certifying the legality of the catch, authorities in port and processing states checking the existence of catch certificates and issuing trade certificates, and authorities at the market end demanding the existence of duly validated certificates to authorise the importation of the product at the border, would thus seal off markets to illegally sourced product.

While TDS systems remain in place in four out of five tuna RFMOs, and remain the only multilateral trade documentation mechanism in IOTC and IATTC, both ICCAT (ICCAT 2011b) and CCSBT (CCSBT 2013b) have moved on and developed CDS systems which were put in place in 2008 and 2010 respectively. WCPFC, the latest tuna RFMO to have been created (2004), has none of these documentation systems in place.¹³ CCAMLR, with a mandate to oversee toothfish fisheries in Antarctic waters, developed a CDS as early as 2000 (CCAMLR 2014a). While other RFMOs, such as the North East Atlantic Fisheries Commission, operate PSM schemes, stimulating tighter oversight over landings to strengthen compliance at the level of the fisheries operation, the CCAMLR, ICCAT, and CCSBT CDS are currently the only fully fledged multilateral documentation schemes that cover the full supply chain, with the objective of combatting IUU fishing.

The ICCAT CDS covers two stocks (western and eastern) of Atlantic bluefin tuna. CCSBT covers one single stock, which is southern bluefin tuna. CCAMLR covers two distinct species of toothfish (Patagonian and Antarctic toothfish). Table 1 summarises this coverage.

Table 1. Fish stocks covered by ICCAT, CCSBT, and CCAMLR CDS.

RFMO	Stocks covered
ICCAT	Western and eastern stocks of Atlantic bluefin tuna
CCSBT	Single stock of southern bluefin tuna
CCAMLR	Patagonian and Antarctic toothfish (2 species)

Source: Author's own elaboration.

¹² In this context, the 2011 NAFO Performance Review notes in its Compliance and Enforcement section that: “Most NAFO Contracting Party Port States have also implemented trade-related provisions in their national legislation. This includes the timely development and adoption, as well as effective realization, of combined port control and trade-related measures. These developments serve to prevent port access, or the landing of fish products by non-compliant vessels. The PRP notes that such measures are likely to have contributed significantly to the absence of IUU vessels in the NAFO Regulatory Area since 2006. The PRP also welcomes the establishment and wide dissemination of NAFO IUU fishing vessel lists” (NAFO 2011).

¹³ WCPFC launched the development of a tuna CDS in 2006. The process is ongoing.

The two tuna CDS together cover less than 1 percent of global tuna harvests by volume—all commercial species combined—while the three RFMO CDS combined cover substantially less than 0.1 percent of world catch by volume (Hosch 2016b).

IATTC, IOTC, and WCPFC are in various stages of planning and/or developing CDS systems for some or all of the tuna species they cover (e.g. IOTC 2009).

4.2 Modus Operandi of Existing CDS Systems

CDS are complex systems and their form and functions differ somewhat between RFMOs. The following paragraphs outline in broad terms the commonalities of the systems.

All existing multilateral CDS systems apply to all harvested fish of a given species covered by the relevant RFMO, although there are exemptions to the rule. A CDS can cover more than one species without adding layers of complexity to the scheme's architecture, as shown by the CCAMLR CDS. A national competent authority is designated by RFMO member states to operate the scheme with regard to its vessels, its ports, its processors, and traders. There is a central registry system in place in which copies of all catch and trade certificates are deposited following issuance. These registries are operated by the secretariat of the RFMO.

The CDS itself is made up of a document system that consists of a catch certificate and a trade certificate. The catch certificate is issued for the catch unloaded from a fishing vessel, and provided to the first buyer; a trade certificate is issued every time product that has been acquired is exported or re-exported. Catch and trade certificates have different designations under the respective schemes, but serve the same function. Catch certificates and trade certificates are linked

sequentially via their document numbers, ensuring a hard traceability link between transactions along the supply chain. Trade documents can be issued as many times as product from a given source continues to move through the supply chain. Trade certificates exclusively cover export/import transactions. With the notable exception of the landing, recorded in the catch certificate, CDS generally traces movements of product through international trade rather than within the territory of a member state.¹⁴ Member states are implicitly responsible for ensuring that minimum conditions for traceability in support of effective CDS operation are given within their territories and laws.

The sequential linking of certificates and the registration of all certificates in the registry are the centrepiece of the CDS, and should allow for “mass balance monitoring” occurring throughout the supply chain, ensuring that no more than the original product received under any particular certificate can re-enter international trade. In theory this set-up should allow for the detection of IUU fish being laundered into legally certified supply streams. The traceability standard is “back to the source fishing vessel” across all schemes.

With the exception of the CCAMLR CDS, the systems currently in place were still paper based at the time of writing. CCAMLR launched its electronic platform in 2005, and the electronic submission of all documents became mandatory in 2010. ICCAT has been developing an electronic platform in recent years. In 2015 a number of member states had started to generate certificates electronically using the system, and it is hoped that ICCAT's e-CDS may be complete and fully operational by mid-2016 (ICCAT 2016a). In 2012, CCSBT also launched consultations and studies to transfer its CDS onto an electronic platform (CCSBT 2013a) and work on this is in progress. Internationally, e-CDS is clearly understood

¹⁴ ICCAT's CDS presents an exception to this rule, as it does trace transactions within the state of landing to the point of exportation. However, this function may be dropped when the system goes fully electronic—which is expected to happen in 2016.

as the way forward (Joint Tuna RFMOs 2011), as paper-based systems are unable to accommodate some of the traceability needs—and hence core CDS functions—arising in complex supply chains (Hosch 2016b).

Fisheries supply chains can be extremely complex. Harvesting units—especially those operating in commodity-scale industrial fisheries with globalised markets for trading, processing, re-processing, and marketing—often do not supply markets directly. Companies operating fishing fleets are often in contractual relationships with traders supplying inputs and buying catch but not with end markets, although the prevalence of this mode of operation depends on the fishery and the region. Traders may distribute catch to processing units, or sell straight into end markets, based on short-term developments in markets (supply, demand, and exchange rates). CDS frameworks need to be flexible enough to allow for the effective tracing of product through complex and variable supply chains.

The effective implementation by flag states, port states, processing states, and end-market states of different parts of the scheme's operation is critical to the effectiveness of all CDS schemes. Flag states verify and validate submissions for catch certificates, port states check (and possibly counter-validate) the legality of all landings via the existence of a validated catch certificate, and processing states issue and validate trade certificates, ensuring that the balance of products flowing into and out of the territory is healthy. An end-market state must verify the existence of valid certificates at importation, even though they may not, or cannot, provide feedback on such importation if they are not RFMO members. Feedback upon final importation is not a critical element of any scheme, as the schemes permit trade with, and the sale of products to target any country, including RFMO non-members.

It flows from this that a CDS is not capable of effectively addressing all forms of IUU fishing in the same manner. In cases where pirate vessels are authorised to land illegal catch in ports of non-compliance, through which harvests are channelled to markets of non-compliance, a CDS may have no impact at all and other forms of law enforcement are required to eliminate IUU activity. In most other cases, where duly registered and licensed vessels operate in fisheries where flag, port, and market states perform their duties along the supply chain, illegal fishing and misreporting can be detected and mitigated effectively.

The design and implementation of CDS varies between RFMOs and several issues affect the effectiveness of these schemes.

The first issue relates to exemptions. The ICCAT scheme, for instance, exempts operators from having CDS documents validated if individual fish are physically tagged. This induces a situation where a significant proportion of the overall catch is not recorded in the central registry.¹⁵ Without a full record of total catch, the CDS system cannot be used to monitor the filling of quotas, which a CDS could otherwise do in near real time and in lieu of annual official member state catch declarations. The exemptions also undermine the solidity of the overall traceability system because there is no official issuance and validation of documents for a significant proportion of catch at the beginning of the supply chain.

Secondly, paper-based central registries are not operated in the same way between schemes and are more vulnerable to fraud. In ICCAT, only the state issuing the catch certificate and the state receiving a trade certificate submit copies to the secretariat. In CCSBT, both the issuing and receiving states are required to submit copies to the secretariat. In the latter case, the secretariat matches up all individual trades, and irregularities are

¹⁵ In 2013, catch certificate copies submitted to the ICCAT Secretariat covered only 66% of the total harvest reported by the Contracting Parties (Hosch 2016b).

detected by the secretariat at the level of individual transactions; letters to address and rectify these are sent by the secretariat to member states. A list of “open” transactions is submitted annually to the compliance committee for consideration. In ICCAT, this is not possible. The detection of fraud at this level is consequently diminished. In the electronic system of CCAMLR, the electronic logging and validation of certificates makes the paper-based process of copies and verifications superfluous, and eliminates errors and potential certificate fraud (e.g. forgery) at the source.

Thirdly, oversight mandates for CDS implementation and evaluation differ substantially between RFMOs. The CCSBT secretariat has a strong mandate to access and analyse CDS data, to uphold consistency of trade transactions, and to prepare recurrent reports specifically advising the annual meeting of the Commission and its subsidiary bodies of the discrepancies the system has detected. While CCAMLR started the process of developing such a mandate for its secretariat in 2014, neither the ICCAT secretariat nor any other body of ICCAT is mandated to analyse CDS data from a discrepancy and compliance perspective.

Fourthly, certificates themselves vary greatly between RFMOs. In the ICCAT system, the first trade (export) is recorded in a specific section of the catch certificate. In CCSBT it may be recorded on the catch certificate or as a separate trade certificate, depending on the scenario. In CCAMLR, only the first point of sale at landing is indicated on the catch certificate (as is the case for the other two schemes), but any export is always the object of a trade certificate—clearly separating the two functions of catching and landing, on one hand, and trading on the other. Overall, the analysis provided in FAO’s Design Options for the Development of Tuna Catch Documentation Schemes concludes that separating the functions of catch and trade certificates makes for simpler and more effective systems (Hosch 2016b).

Finally, all three schemes suffer from an imperfect linkage between catch and trade certificates. In all three schemes, it is possible (and usual practice) for exporters to indicate more than one source certificate for the products listed in the trade certificate. This practice induces an unintended break in the hard traceability link between mother and child certificates, implying that the detection of fish laundering is difficult or impossible in longer supply chains where mixing of batches and re-exportations are common. While long supply chains concern only a small fraction of the overall volumes of fish traded across the three existing schemes, this would constitute a much more serious fraud-enabling avenue in other fisheries with longer and more complex supply chains.

These shortcomings underline the requirement for schemes to be based on technically rigorous designs that eliminate loopholes and provide for traceability throughout complex and long supply chains. The need for electronic centralised registries for catch and trade certificate data has been recognised by all three RFMOs, partly owing to insights gained during the Kobe process (Joint Tuna RFMO Working Group 2007), and these are being implemented, developed, or are in the process of being refined. Sealing off supply chains to illegal product implies the statutory participation of all supply chain actors in their capacities as flag, port, processing, and end-market states in the schemes’ operation. In order to achieve this, all of these actors must—as a minimum—formally cooperate with the RFMO operating the scheme. This does not always happen, particularly because ports and markets of non-compliance continue to provide an outlet for fish products harvested in violation of RFMO rules.

4.3 Impact on Trade in IUU Products

TDS systems were instrumental in identifying FOC operators fishing illegally in the geographical areas of RFMOs that operated these schemes. The TREMs imposed on the basis of evidence from the TDS shifted patterns of trade between RFMO members and non-members. Later CDS schemes also

had a major impact, in some cases, on trade in particular species.

4.3.1 TDS-based trade measures and flag of convenience fishing

ICCAT issued a number of TREMs starting in the mid-1990s. Most of these were issued against FOC states when it became clear, on the basis of TDS-generated data, that vessels flagged to those states had been fishing illegally in the RFMO area.¹⁶ ICCAT TREMs called on members to freeze trade (through import prohibitions) in specific tuna products originating from such flag states. Identified states saw their tuna products covered by TDS schemes barred from legal (and lucrative) RFMO member-state markets. As explained below, soon afterwards and likely as a result, identified non-member states either joined the RFMO or de-registered the fishing vessels that had been identified as fishing illegally in the RFMO area.

In 1996, ICCAT recommended that its members take measures to prohibit the importation of Atlantic bluefin tuna from the non-member countries of Belize, Honduras, and Panama. This was the first time multilateral TREMs were issued by an RFMO (Chaves and Schneider 2000). The import ban on products from Panama was lifted in 1999 (ICCAT 1999) following efforts to bring its fishing operations in line with ICCAT CMMs, and after joining the organisation as a member in 1998. Belize and Honduras were identified again in 1999, and TREMs banning the importation of swordfish from both countries were enacted. In 2000, Belize and Honduras, along with Cambodia and Saint Vincent and the Grenadines, were identified pursuant to ICCAT's 1998 resolution concerning IUU catches by large-scale longline vessels in the convention area (ICCAT 1998). As a result, trade sanctions were imposed on the importation of bigeye tuna from these countries. Table 2 summarises these measures.

Table 2. Selected TREMS adopted under ICCAT 1996-2002.

Year of TREM	Target countries	Target species
1996	Belize, Honduras, and Panama	Atlantic bluefin tuna
1999	Belize and Honduras	Swordfish
2000	Belize, Honduras, Cambodia, and St. Vincent and the Grenadines	Bigeye tuna
2002	Bolivia	Bigeye tuna

Source: Author's own elaboration.

¹⁶ ICCAT TREMs were not exclusively targeting FOCs and RFMO non-members. In 1999, ICCAT also imposed an import ban on Atlantic bluefin tuna from Equatorial Guinea, an ICCAT member, for exceeding its allocated bluefin tuna catch limits (which were nil). The ban was lifted in 2004.

Figures 1 to 3 below illustrate the trade flows of tuna products across seven harmonised system (HS) categories¹⁷ (based on 1988-92 HS nomenclature) from three selected countries against which TREMs were enacted, i.e. Belize, Honduras, and Bolivia. The Comtrade dataset (UN Comtrade n.d.) used for the analysis looks at trade data reported by all importing countries globally because reporting of exports by the three countries was generally patchy and provided only a fraction of actual export data. Members of the relevant RFMOs were also responsible for the majority of global imports of each species, so the global import figures used below can be assumed to reflect most of the trade in each species between the countries involved. No other changes in global trade in tuna at the time are likely to have significantly influenced the trade flows examined, so we can be relatively confident that the changes observed were caused by TREMS.

The sanctions had the medium-term effect of almost completely halting tuna exports from Belize and Honduras—the first countries identified (see Figures 1 and 2). The time lag between the first TREM issued and the virtual cessation of trade in all forms of tuna was about six years (1996-2002). Trade data show that EU members and Japan, two important tuna import markets and RFMO members applying the restrictive measures, continued to import tuna from Belize and Honduras until

2000, but this may reflect ongoing imports of other tuna species and swordfish, which under the 1988-92 HS nomenclature are not distinguished from Atlantic bluefin tuna, and which were only subject to TREMS from 2000. The EU started to enact TREMs as of 1998.¹⁸ When the EU and Japan applied the TREMs against a range of countries exporting bigeye in 2001¹⁹ and 2002 respectively, the impact was immediate, and all exports of tuna (across all HS categories) from these countries plummeted.

The TREMs against Belize were lifted in January 2004 (ICCAT 2002b), and Belize became a member of ICCAT in 2005. Exports from some flag states that chose to join the RFMO and to participate legally in the fishery gradually resumed once the sanctions were lifted, as is seen in the case of Belize (Figure 1). Exports from other flag states fell back to zero and have not resumed, probably because vessels under their flag de-registered and re-registered elsewhere, even if, as in the case of Honduras, the state later joined the RFMO and the TREMs were lifted (Figures 2 and 3).²⁰ Market access for other countries' legitimate fishers and exporters to RFMO member markets is unlikely to have been affected by the TREMs and the lifting of them, although they may have resulted in some market share being picked up by other states as catch from FOC fishing vessels was gradually excluded from the RFMO market.²¹

17 030231: Fresh or chilled albacore or longfinned tunas; 030232: Fresh or chilled yellowfin tunas; 030233: Fresh or chilled skipjack or stripe bellied bonito; 030239: Fresh or chilled tunas, nes (residual category); 030341: Frozen albacore or longfinned tunas; 030342: Frozen yellowfin tunas; 030342: Frozen skipjack or stripe bellied bonito; 030349: Frozen tuna, nes (residual category). Note that none of the tuna species (including swordfish) which were the object of TREMs had specific HS codes assigned to them at the time, restricting the analysis to look at overall flows of tuna products as a proxy. ("nes": not elsewhere specified)

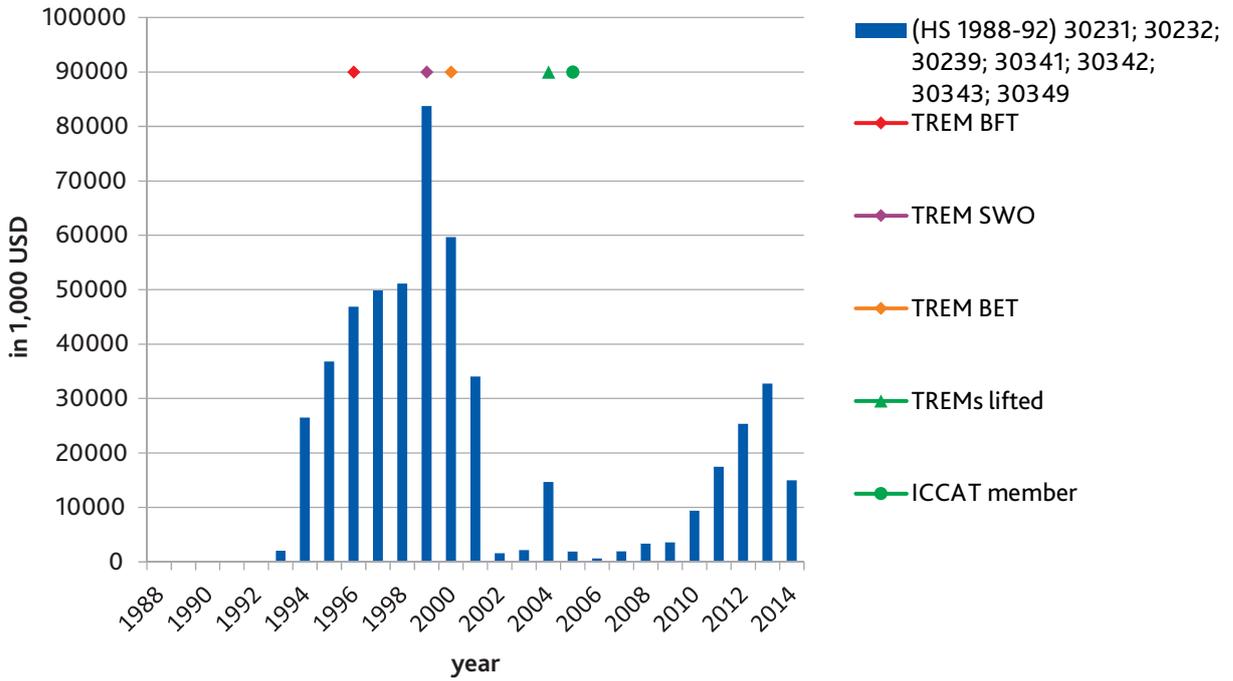
18 See: Council Regulation (EC) No. 1435/98 of 29 June 1998 prohibiting imports of Atlantic bluefin tuna (*Thunnus thynnus*) originating in Belize, Honduras, and Panama AND Council Regulation (EC) No. 2093/2000 prohibiting imports of Atlantic swordfish (*Xiphias gladius*) originating in Belize and Honduras.

19 See Council Regulation (EC) No. 1036/2001 of 22 May 2001 prohibiting imports of Atlantic bigeye tuna (*Thunnus obesus*) originating in Belize, Cambodia, Equatorial Guinea, Saint Vincent and the Grenadines, and Honduras.

20 Bolivia has not become an ICCAT Member. Honduras joined ICCAT as a Member in 2001 and TREMs were lifted in 2002.

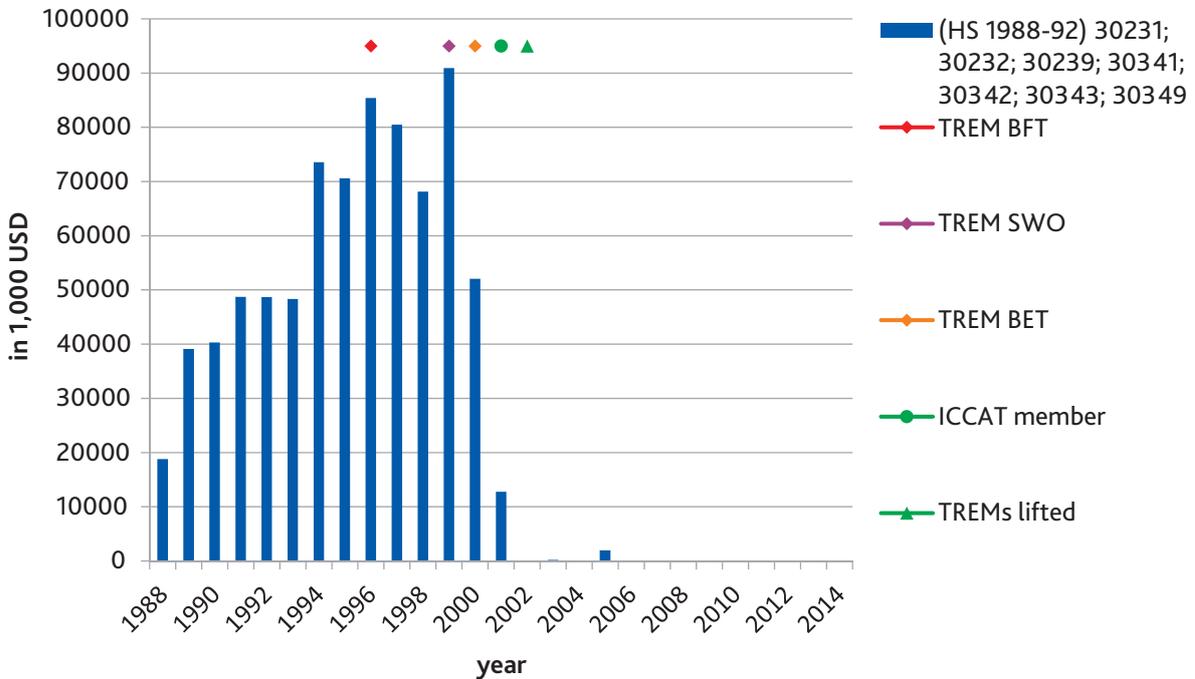
21 Between 2002 and 2004, Comtrade data show that global imports of tuna from Chinese Taipei rose in value by 21 percent (from US\$686.5 to 834 million), suggesting that an important share of the trade from FOC vessels with Chinese Taipei ownership flagged to countries subject to TREMS may have been re-captured through re-registration of the fishing vessels in their country of beneficial ownership.

Figure 1: Tuna imports from Belize (all existing and relevant 1988-92 HS tuna categories and importing countries reporting).



Legend: BFT: Atlantic bluefin tuna; SWO: Swordfish; BET: Bigeye tuna
 Source: Comtrade dataset.

Figure 2: Tuna imports from Honduras (all existing and relevant 1988-92 HS tuna categories and importing countries reporting).

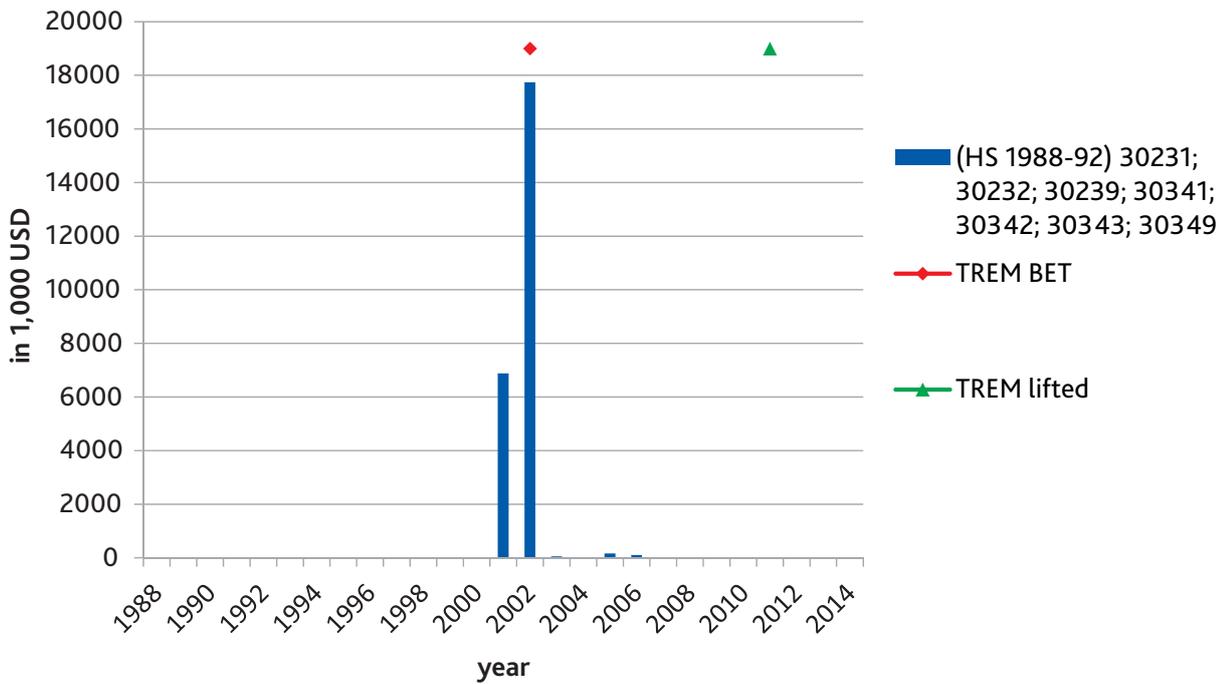


Legend: BFT: Atlantic bluefin tuna; SWO: Swordfish; BET: Bigeye tuna
 Source: UN Comtrade dataset.

In 2002, Bolivia was identified under the same 1998 resolution (ICCAT 1998), and its bigeye tuna exports were also subjected to TREMs (ICCAT 2002a). The impact on Bolivian exports was immediate and global tuna

imports from Bolivia fell by 99.7 percent between 2002 and 2003 (see Figure 3). The TREMs against Bolivia were lifted in 2011 (ICCAT 2011a), having remained in place for nine years.

Figure 3: Tuna imports from Bolivia (all existing and relevant 1988-92 HS tuna categories and importing countries reporting).



Legend: BET: Bigeye tuna
 Source: Comtrade dataset.

Other countries that were also sanctioned include Sierra Leone, Georgia, and Equatorial Guinea.

No trade sanctions related to TDS or other systems have been imposed by other RFMOs. The last time CCSBT undertook steps under its 2000 “Action Plan” was in 2005. In both the CCSBT and IOTC, initiated identification procedures were halted on the basis of explanations received from identified states.

In general terms, the economic impact of sanctions issued under the TDS systems on countries acting purely as flags of convenience for fishing and exporting IUU products to third countries is assumed to have been

minor. Vessels flagged to FOC states are not genuinely linked to these states beyond flying their flag. IUU operators register vessels in such jurisdictions in order to escape the grip and oversight of more stringent flag states in which the beneficiary owners reside and/or from where they operate. Identified FOC states were generally not earning any government income beyond recurrent vessel registration fees, which are minor when compared to the general operating costs and the value of the catches of these vessels. However, in cases like Belize, which was also identified and had trade sanctions imposed by ICCAT, hundreds of such vessels were registered, and were subsequently de-registered in response to the sanctions that were imposed (ICCAT 2003).

The impact of the TREMs on the overall shape of the fishing industry was substantial. As a result of the TDS and associated TREMs, the phenomenon of large-scale tuna longline vessels (LSTLVs), mostly owned by Chinese Taipei operators and registered in lenient FOC jurisdictions to exploit ICCAT stocks, was largely eliminated in the space of less than seven years. The number of FOC LSTLVs estimated to be operating in 1999 (248) fell by more than 80 percent to some 30 vessels in 2003, representing about 2 percent of the estimated existing global LSTLV fleet (Hanafusa and Yagi 2004). Trade measures implemented by ICCAT on the basis of TDS identifications are recognised as one of the driving forces that produced these results (Hanafusa and Yagi 2004). The same authors conclude that “trade tracking and its resulting accumulation of information by market countries is an enormous task but it provides the most important fundamentals for the creation of effective measures to combat IUU fishing.”

Pressure exerted through TDS/TREMs combined with overcapacity and rising operational costs have driven a marked decline in the global LSTLV fleet from the late 1990s until today (Miyake et al. 2010). Capacity reduction programmes led by the governments of Japan and Chinese Taipei also contributed to reducing global LSTLV overcapacity. The Organization for the Promotion of Responsible Tuna Fishing, founded in 2000 to address overcapacity, IUU fishing, and bycatch in tuna fisheries, covers over 90 percent of LSTLV owners globally (Hamilton et al. 2011). The total number of vessels operated by its members, including the diminishing proportion flagged to FOC states, fell from a peak of 1,454 in 2004 to 933 in 2015, marking a decline of 36 percent over the 11-year period (OPRT n.d.). In summary, with TREMs in place, the most lucrative global markets for specific tuna products were restricted to RFMO members, making the operation of IUU fleets exploiting those stocks economically

unviable, and contributing to substantial changes in the tuna fishing industry over a relatively short period of time.

As of today, fishing and trading of tuna and swordfish subject to TDS or TIS systems by FOC states has been largely eliminated. A recent major study on the quantification of IUU fishing in the Pacific Islands region confirms that the historically important FOC activity remains low:

Estimates of IUU are dominated by the licensed fleet [...] accounting for over 95 percent of the total volume and value of IUU activity estimated here. This proportion rises to 97 percent if unlicensed fishing by vessels that are otherwise authorised to fish in the Pacific islands region [...] is considered part of the ‘licensed’ fleet. (MRAG 2016)

In the Pacific Islands, and in other regions as we will see below, the nature of the IUU problem has shifted: illegal fishing by FOC states has declined, but other forms of IUU fishing undertaken by vessels licensed to fish remain a problem.

4.3.2 Catch documentation schemes

The impact of CDS on trade took place following the TDS experience, and against a very different context. By the time CDS started to be put in place in tuna fisheries in the late 2000s, FOC vessel operations had substantially diminished in importance. In the two bluefin tuna fisheries where the CDS systems were implemented (ICCAT and CCSBT), the most pressing IUU fishing issue was endemic under-reporting by otherwise legal operators flying the flags of RFMO members. Both species of Atlantic and southern bluefin tunas were evolving at the edge of stock collapse, and total allowable catches (TACs) had been falling for years to become some of the smallest TACs known to the fishing industry.²² The amounts of under-reporting

²² In 2014, for instance, the Spanish fleet harvested its annual Atlantic bluefin tuna quota of 2,540 metric tons in two days. See Jimenez (2014).

by regular ICCAT members, such as France or Italy, were estimated to exceed by more than double the official allocated quota (Wilson and Canet 2010; ICCAT 2015a), eliminating any chance for management measures and catch limits to permit the rebuilding of stocks, let alone managing them sustainably. Japan, the most important end market for all bluefin tuna, absorbing an estimated 90 percent or more of all product at the time, was found to have been operating non-reported trade since the mid-1980s (ICIJ 2012). This finding is consistent with the context at the time, as large amounts of valuable product needed a market to absorb them. In CCSBT, Japan was accused of massive under-reporting of its catches of southern bluefin tuna entering its own market, although it should be noted that under-reporting in these fisheries was not limited to Japan (CCSBT 2006).

It appears, however, that these two CDS schemes generated significant changes in trade flows, and that the endemic under-reporting that previously existed in both bluefin tuna fisheries has been substantially scaled back since the schemes came into force. Scientific evidence provided recently by ICCAT's Standing Committee on Research and Statistics (SCRS) indicates that the IUU catch of the eastern Atlantic bluefin stock dropped sharply after 2008, the year the ICCAT CDS for Atlantic bluefin tuna came into force, and that catches fell in line with TACs. In 2014, the Committee noted that "current controls appear sufficient to constrain the fleet to harvest at or below TAC" (ICCAT 2015a). While other novel management and control measures were also introduced in ICCAT (e.g. ICCAT 2010a) and CCSBT before and since 2008 and 2010, respectively, the CDS is a key instrument which—if well designed—is capable of directly addressing and eliminating misreporting of catch. Since

only fish covered by a catch certificate can be traded, unreported fish (including illegal catches flouting quota allocations) can no longer be marketed. In the case of Atlantic bluefin tuna, the scheme appears to be working.

Japan is the main global market for fresh, high-quality tuna, and in particular for the valuable bluefin tuna covered by the ICCAT and CCSBT CDS schemes. Indications are that Japan has been applying both ICCAT and CCSBT schemes strictly as an end-market state since they came into force, and that no bluefin tuna can now be traded to Japan through official channels and ports without being accompanied by the necessary paperwork, signalling a marked change over earlier more lenient policy.²³

Figures 4 and 5 below track the volume, value, and price of Atlantic bluefin and of southern bluefin tuna imported into and caught by Japan between 2006 (just before the CDS came into force) and 2014. The analysis below is based on the assumption that all Japanese-caught bluefin tuna enters the Japanese market; while this assumption is a simplification, the largest share of the catch of the Japanese fleet is likely to go to Japan first as primary products, while some primary and secondary products may then be re-exported.

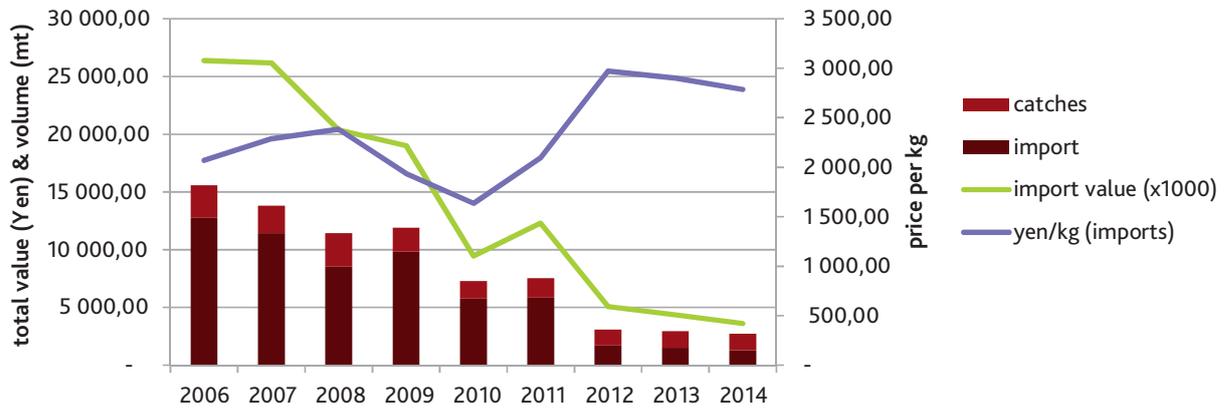
The evidence of trade fluctuations resulting from the enforcement of both tuna CDS—and the supply constraints they engendered—needs to be considered in the context of a rapidly contracting Japanese market for sashimi-grade tuna, driven by exogenous factors relating to consumer preferences and changing eating habits, that happened at the same time. Imports of sashimi-grade tuna into the Japanese market declined sharply from a peak of 650,000 metric tons in 2002 to

23 The impact on Japanese imports of tuna is recorded in: "A Change in Japan?[...]: Relying on the new Bluefin Tuna Catch Document Scheme, which gives each catch a unique identifying number allowing regulators to track a catch from vessel to market, Japanese officials started to closely scrutinize suspicious shipments. By the end of the year, they had taken the unprecedented step of refusing entry to more than 3,500 tons of Atlantic bluefin—a sixth of their entire supply that year. Among the issues flagged by the Japanese: holes and inconsistencies in the paperwork; bluefin that had been fattened so rapidly that the rates were biologically impossible; ranches that had reported killing more fish than they ever acquired; and bluefin that failed to meet the minimum legal size" (Walker and Foster 2010).

341,000 metric tons in 2008, and continued that trend thereafter (Hamilton et al. 2011). It is, however, possible to detect patterns within this overall decline. Japan's imports of higher-priced Atlantic bluefin tuna covered

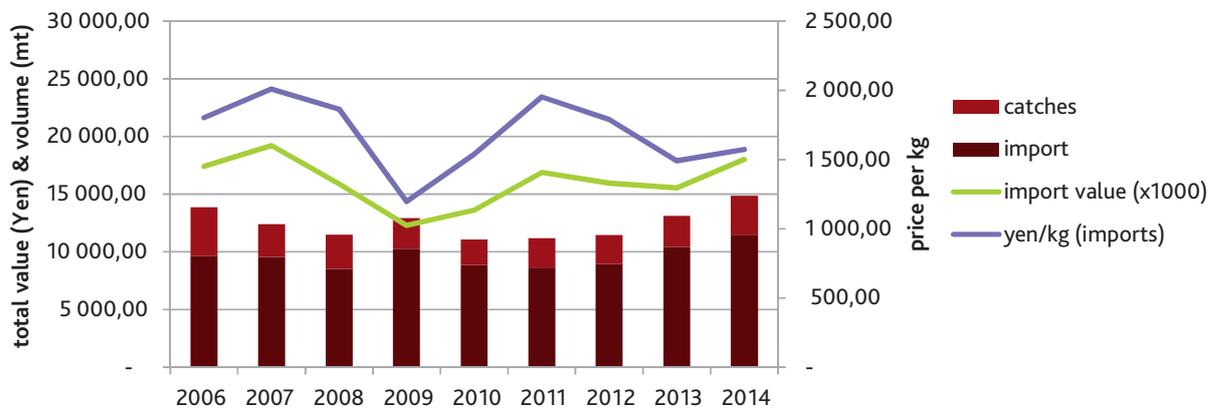
by the CDS fell by 89 percent between 2007 (the year preceding the introduction of the CDS) and 2014 (Figure 4), while imports of cheaper southern bluefin tuna remained level between 2009 and 2014 (Figure 5).

Figure 4: Total bluefin tuna (BFT) available to Japan (imports plus catches) between 2006 and 2014.



Source: Author's elaboration based on data from Ministry of Finance, Japan (n.d.); and ICCAT (2016c).

Figure 5: Total southern Bluefin tuna (SBT) available to Japan (imports plus catches) 2006 and 2014.



Source: Author's elaboration based on data from Ministry of Finance, Japan (n.d.) and CCSBT (n.d.).

Assuming both systems were enforced with equal rigour, this suggests that the CDS may have effectively eliminated large amounts of imported illegal Atlantic bluefin tuna from the Japanese market. The situation regarding southern bluefin tuna is less conclusive on the basis of import trade data. This may be the result of important amounts of allegedly under-reported southern bluefin tuna being landed illegally in Japan by its own fleet prior to the scheme coming into force, which will obviously not appear in the data. Other than the factors discussed above, however, no major changes in bluefin tuna imports into Japan that are likely to account for the changes observed above occurred at the time.

The situation of the CCAMLR CDS was quite different. In CCAMLR, IUU fishing for toothfish in the Convention area by non-licensed “pirate” vessels, and landing into ports of non-compliance was, and may remain, the most pressing issue, as opposed to the under-reporting by RFMO members that plagued ICCAT and CCSBT. The overall incidence of IUU fishing in CCAMLR was also not of the same magnitude as in the bluefin tuna fisheries.²⁴

While the US is the main market for the products from this fishery, it does not hold the same strong end-market position as Japan did for bluefin tuna, leaving more room for illegally fished product to be landed into ports of non-compliance and to be traded to end-market states of non-compliance. In its 2014 report on the Implementation of Conservation Measure 10-05, CCAMLR’s Catch Documentation Scheme, the CCAMLR Secretariat noted:

The number of non-Contracting Parties that may be involved in the harvest and/or trade of *Dissostichus spp.* while not cooperating with CCAMLR by participating in the CDS continues to increase. As of September 2014, 23 non-Contracting Parties have been identified over the last five years to be possibly involved in the harvest and/or trade of *Dissostichus spp.* while not cooperating with CCAMLR by participating in the CDS. (CCAMLR 2014b)

Known transit, processing and/or end-market destinations in South-East Asia for toothfish include, but are not limited to, Thailand, which has been reported as having regularly accepted the landing, importation, processing, and re-exportation of toothfish without duly established CCAMLR certificates.²⁵ Pirate vessels continue to operate in the southern seas, and high profile pursuits of detected IUU fishing vessels such as the Viarsa I in 2003 or the Kunlun in 2015 continued to occur into 2016 (COLTO 2015).²⁶

Clearly, the key element that made the ICCAT CDS a success is the fact that a limited number of responsible end-market states, applying the CDS rigorously, control the largest share of the import trade for the species, thereby sealing off the lucrative end markets to illegally sourced fish. In CCAMLR, the number of ports of non-compliance and rogue end-market states means that fishing illegally for toothfish may remain a more lucrative proposal (CCAMLR 2014b). While this does not undermine the effectiveness of the CCAMLR CDS in the elimination of illegally sourced product flows through and into compliant

24 CCAMLR estimated that IUU fishing within its vast boundaries accounted for about 39 percent of the total catch in 2000/01—a fraction of the estimated under-reporting that occurred in ICCAT. By 2014, this figure had dropped to around 6 percent (COLTO 2016).

25 For a more complete account of recent efforts to eliminate pirate fishing in the CCAMLR area, including details on illegal toothfish traffic through Thailand to Vietnam, see Pala (2015).

26 With the sinking of the F.V. Thunder off the coast of São Tomé in April 2015, and the blowing up of the poaching vessel F.V. Viking by Indonesian authorities in March 2016, the last two of the six most notorious pirate fishing vessels having operated persistently and illegally in the CCAMLR area (referred to as the “Bandit Six”) have been removed. This result was achieved through the work of environmental protection groups (such as Sea Shepherd), Interpol, and vigilant coastal and port states cooperating in information sharing and sea patrolling. This underlines that certain forms of IUU fishing—such as poaching and landing into ports and markets of convenience—often require other, more muscular types of law enforcement in order to achieve desired outcomes. See Bever (2015).

markets, it does limit its overall potential in terms of eliminating IUU fishing occurring in the convention area in isolation from other forms of policing and enforcement (Österblom et al. 2015; Bodin and Österblom 2013).

Both toothfish and bluefin tuna CDS schemes can still be undermined, allowing operators to continue to trade illegal and unreported fish even into vigilant and compliant markets (ASOC 2004).²⁷ For example, it has been reported that before Canada joined the CCAMLR CDS scheme, toothfish was smuggled illegally across the border from Canada into the US market (ASOC 2004). The toothfish landed in Thailand from the Kunlun in 2015 had been mislabelled as “grouper,” which does not require the issuance of a catch certificate. In the latter case, and especially when fish has been processed into fillets at sea, genetic testing may be required to firmly establish mislabelling fraud. Addressing such avenues for fraud requires solid PSMs and state parties cooperating with a CDS along the entire supply chain in their capacities as port, processing, and end-market states.

Overall, CDS appear to have the largest impact on closing down trade in IUU (and in particular misreported or unreported) fish products when port and market states cooperate with flag states in enforcing the CDS along the entire supply chain. It is clear that in the absence of complementary forms of law enforcement, starting with effective PSMs, a CDS on its own is not able to stop all illegal trade in a fishery resource.

It is important to remember that TDS-related results were achieved by applying TREMs to findings detected through TDS implementation. In the case of CDS, the application of a self-enforcing mechanism—in the context of effectively cooperating flag, port and market states—closes off markets to illegally sourced products, and is largely capable of achieving solid results as a stand-alone mechanism to combat IUU fishing.

4.4 Impact on Fish Stocks

Fisheries management is a multi-faceted undertaking and, generally, a number of different measures are applied to specific stocks. When measures are applied, some existing measures may be modified or dismissed, and new measures may be added. All of the measures combined are, if effective, assumed to have the desired effect on the stock, which is to maintain managed stocks slightly above maximum sustainable yield (MSY) levels. Similarly, many factors can directly impact a stock’s welfare and evolution. Such factors may be fisheries related (fishing pressure, fishing areas, fishing gear, illegal, and unreported fishing, etc.), and they may also be fisheries-unrelated (climate change, pollution, and naval drills, etc.). Understanding the evolution of a stock is thus a multifactorial undertaking, and it is difficult to attribute an observed positive trend to a single management measure, such as a CDS, alone. However, there is a strong correlation between the introduction of the tuna CDS schemes and the beginning of stock recovery, which suggests the measures could be contributing to improved stock protection.

In 2010, bluefin tuna stocks were estimated to have declined in estimated standing stock biomass by up to 97 percent from before exploitation began (CCSBT 2010; ICCAT 2010b; Ichinokawa, Kai, and Takeuchi 2010), and to evolve well below B_0 (i.e. the standing stock biomass at which the stock is exploited at MSY). Of both Atlantic and southern bluefin tuna stocks, the latter was assessed to be the most badly exploited and affected.

The situation of toothfish stocks was and remains totally different, with both stocks evolving well above B_0 (Cameron 2013; Day, Haddon, and Hillary 2015). This implies that the environmental impact of effective anti-IUU fishing measures in the toothfish fisheries would have an effect that would be much

27 “Although CCAMLR’s CDS requires stringent controls of Toothfish shipments by flag states, exporting and importing countries, important loopholes in the system are currently enabling poachers to evade the regulations. [...] illegal operators can conceal their illegal activity—and make use of the CDS in a way that may not be apparent even with the closest inspection by diligent customs agents” (ASOC 2004).

more difficult to distinguish from base stock assessment data, which themselves continue to be affected by important uncertainties.

The outlook in CCAMLR is very positive from a fisheries management point of view because measures to combat IUU fishing in the form of a CDS were adopted as one specific tool within a system designed to manage relevant sources of fishing mortality holistically at a time when stocks were still close to being unexploited. In 2015, the Coalition of Legal Toothfish Operators (COLTO) estimated the proportion of the unreported/illegal catch to be 6 percent of the total annual harvest, crediting the CDS as one among several effective enforcement actions instrumental in achieving this result (COLTO 2016).

In bluefin tuna fisheries, stocks were heavily over-exploited before RFMO members agreed to adopt enhanced IUU-combatting measures. In this case (in theory), if the range of management measures in place is adequate, IUU fishing is removed, and all other fisheries-unrelated factors remain equal, then there ought to be a marked signal in the stock's performance towards recovery. In reality, of course, management measures themselves may be inadequate, and the effective removing of the IUU component may still not result in such a signal—even though measures addressing IUU fishing may be effective in their own right.

In fact, the Scientific Committees of both CCSBT and ICCAT have recorded signs of a recovery of their respective stocks since about 2010 (Boustany 2011; ICCAT 2015a), following the introduction of CDS in both fisheries. This trend, more modest in the case of CCSBT, is continuing. In 2015, this led to the first major TAC increase in a decade of Atlantic bluefin tuna in ICCAT. By 2015, CCSBT's southern bluefin tuna TAC had gradually increased by 33 percent since its CDS came into force in 2010. Hence, for tuna, there appears to be a

correlation between the introduction of the CDS and the onset of stock recovery.

While measures other than the CDS may have played some role in the positive developments in the two tuna RFMOs, it is very likely that the ICCAT and CCSBT CDS, combined with the end-market state enforcement exerted by Japan and other responsible port and market states, is directly—and to a substantial degree—the immediate cause of the recovery trend that can be observed in those fisheries today. None of these, however, rival the mix of sea patrolling and non-CDS related law enforcement exerted in (and beyond) the CCAMLR area, which has played a key part in eliminating the activities of many of the most persistent perpetrators of IUU fishing in the convention area.

4.5 Economic and Social Impact

The economic impact of the CDS in closing down trade in IUU fish catch is likely to have been felt particularly in the fishing sector itself, in ports handling the fish, and in the price of fish in importing countries applying the CDS.

The most important economic impact that CDS have had—and which is essential to their success—is that their effective implementation has created a price premium for legally caught and traded fish. Price differentials between legal and illegal catches arise under CDS because illegal product can only be brought to compliant markets with great difficulty—and at great risk. It was reported in 2004 that duly certified toothfish was fetching a 20-30 percent price premium over non-certified catches (Agnew and Barnes 2004). In the Mediterranean, illegally landed Atlantic bluefin tuna in domestic EU black markets has been found to trade 85 percent below market price, at only 15 percent of its potential international trade value (Hosch 2016b). This finding reveals that the value of illegal product may be effectively eroded

by the CDS, undermining incentives to fish illegally.²⁸

Ironically, however, a potentially positive economic impact of the ICCAT and CCSBT CDS appears not to have been realised to the extent that could have been expected. Legal bluefin tuna exporters to the Japanese market did not benefit as much as they might have from a CDS-induced supply squeeze raising prices because Japanese demand for sashimi-grade tuna had started to soften from 2005. Over the period 2006-15, annual Atlantic bluefin tuna imports into Japan plummeted by close to 90 percent, while the average import price over the 2009-15 period was only 7 percent higher than the 2006-08 average (Figure 4).²⁹ The analysis above also reveals that the total value of Atlantic bluefin tuna imports into Japan fell from ¥26.17 billion in 2007—the year before the ICCAT CDS was introduced—to ¥3.52 billion in 2015. Imports of southern bluefin tuna, to an extent a substitute for Atlantic bluefin, increased only marginally (6.8 percent) over the same time period and the 2011-15 average price was 2.6 percent lower than the 2006-10 average—indicative of possibly softer demand even as price fluctuated with supply.

The value of the black market (or illegal) trade in Atlantic bluefin tuna over the first decade of the new millennium has been estimated at US\$3-4 billion by various analysts (Mielgo 2009; ICIJ 2012), and although greatly reduced over time, has not completely subsided.³⁰ To the extent that this black-market trade has been largely destroyed by the coming into force of the ICCAT CDS, the restriction has probably had an impact on the jobs, wages,

and untaxed profits related to this illegal activity in the fishing countries. The EU's eastern Atlantic bluefin tuna fisheries (and fattening) operators, responsible for some 60 percent of the catches³¹ (ICCAT 2015b; ICCAT 2016) and exports, had to weather the largest share of this impact, but operators from other countries, including Morocco, Tunisia, and Turkey, were also affected. In fact, the restriction may have exacerbated the vast overcapacity that existed in the Atlantic bluefin tuna fleet (and tuna fattening sector) before the CDS came into force (Miyake et al. 2010).

The economic and social impacts of existing CDS schemes on developing countries are likely to be quite different. To the extent that the CDS in operation cover fish that are mainly caught by industrial fisheries and sold in developed markets, their most direct economic impact, and that of measures like the PSMA, on developing countries is through the restrictions they place on where product can be landed: on the business of ports. Many ports of non-compliance for toothfish landings operated by CCAMLR non-members continue their operations, even though important former ports-of-convenience, such as Mauritius, no longer tolerate illegal landings of toothfish. For a country like Mauritius, to which port-related operations and income are an important part of the national economy, and which used to service IUU vessels operating in a lucrative fishery (ISOFISH 1998), the implementation of a CDS and the evolution into a port of compliance have resulted in it forfeiting important sources of income for the national economy (Mauritius Board of Investment 2010; Indian

28 Note, however, that if the introduction of a CDS does not result in a significant reduction in supply (because a majority of imports comply with the CDS) existing market prices for legally harvested fish may remain stable. It is the value of the illegally harvested fish that drops sharply. This drop in price will not be detected in compliant markets, where pricing may seem wholly unaffected by the CDS. The relevant measure—which is difficult to obtain—is the price difference between product entering ports with certificates (legally) and without certificates (illegally) in CDS-managed fisheries.

29 It is worth noting that this price increase occurred in an otherwise largely deflationary economy, in which five of the seven years (2009-15) recorded negative or close to nil inflation rates. See Statistics Bureau of Japan (2016).

30 In 2015, there were at least 28 reported seizures of illegally caught Atlantic bluefin tuna, exceeding 70 metric tons in total, in the waters off Italy alone. These seizures capture only a portion of the illicit activities occurring in the fishery. See MedReAct (2015).

31 2000-13 average EU catch of the eastern bluefin tuna stock (as reported to ICCAT).

Ocean Observatory 2015).³² While PSMs are an essential part of addressing IUU fishing and are critical to supporting international governance and environmental efforts, it is important to appreciate that compliance in some cases may have had real economic impacts on the countries concerned.

Social impacts related to IUU fishing are rarely studied and poorly understood and social impacts related to CDS, reversing the effects of IUU fishing, even less so. In industrial fisheries, social impacts are often closely associated with employment. When these fisheries occur in coastal waters of developing countries, livelihoods, household income, and food security impacts are potentially more important.

The current RFMO-based CDS systems cover resources which are generally not directly targeted by small-scale fishing operations in either the developed or the developing world. This is especially true of toothfish, and it is also largely—albeit not entirely—the case for the bluefin tuna fisheries. Social impacts relating to livelihoods, protein supply, and food security of coastal communities that may depend heavily on these resources are therefore relatively less important in these mostly offshore and high-seas fisheries, which involve catching high-value species for luxury gourmet markets, and partly require high levels of skills, technology, and investment.

The schemes may have a potential direct employment-related impact on some developing countries, however. Many vessels fishing illegally—most specifically the pirate vessels that operate in the CCAMLR area—often employ fishermen from developing countries under slave-like conditions (Field 2014; Agnew and Barnes 2004). To the extent that eliminating operations of pirate vessels has reduced the incidence of other forms of crime—including modern-day slavery at sea—its social impact can be viewed as being generally positive in particular for developing countries.

Beyond the employment link, it is not likely that the introduction of the CCAMLR, ICCAT, and CCSBT CDS systems has had an appreciable immediate impact on social welfare in developing countries. The schemes are likely to have had more palpable effects in developed countries whose fleets targeted resources illegally before these schemes came into force. Some employment is likely to have been lost in fleet segments operating illegally when the schemes came into force, as enormous amounts of illegally generated income from those fisheries dried up. Vessels that were not scrapped may have been re-fitted to target other resources, or their operations were scaled back or halted. This raises the point that IUU fishing also creates employment and generates income, and that certain immediate social and economic sacrifices will have been made in segments traditionally associated with IUU fishing. This is one of the reasons why combatting IUU fishing may be politically more complicated than one might otherwise expect, as short-term social and economic policy implications may compete with longer-term sustainable resource management considerations—and their expected longer-term beneficial social impacts. It also raises the question of whether a degree of adjustment support might need to be provided to facilitate a transition from illegal to legal fishing.

In any future CDS applied to fisheries exploited equally by both coastal states and distant water fishing nations (DWFNs), however, there is potential for considerable adjustment costs for developing country exporters, as well as a positive social impact in the medium to long term—mainly through the protection afforded to stocks against reckless over-exploitation and resource destruction related to IUU fishing. If successful, expanded CDS efforts could contribute to the protection of livelihoods, household income, and food security at the level of coastal state communities, regardless of their level of economic development.

³² Mauritius acceded to the 2009 PSMA in January 2016, further underlining its national resolve to operate a port of compliance policy.

The effective implementation of CDS schemes in bluefin tuna fisheries, for instance, and the consequent rebuilding of resources, could lead to more resources becoming more available to coastal communities in both developed or developing countries. This will be of specific importance in the Mediterranean Atlantic bluefin tuna fisheries, for example in countries such as Malta or Italy where small and medium-sized enterprises operating tuna longliners, or running traditional and seasonal trap and *Matanzas* operations, are likely to gain from a stock recovery. Meanwhile, many of these operators remain in business and target other resources, such as swordfish, and continue to make a living. Their financial, social, and cultural situations are likely to improve once TACs and quotas for bluefin tuna start to increase.

4.6 Summary of Impacts of Multilateral Market-based Measures

TDS, combined with multilateral TREMs issued by ICCAT, have had a profound impact on the global tuna fleet, drastically bringing down the numbers of LSTLVs and eliminating the operation of these vessels from FOC states almost entirely. This outcome has profoundly influenced the IUU profile of global tuna fisheries; today, over 95 percent of IUU fishing operations in some of the most important tuna fisheries worldwide (MRAG 2016) are estimated to be perpetrated by legally registered and licensed fishing vessels, undertaking illegal activities such as misreporting or under-reporting of catches—forms of fraud that can be detected and eliminated effectively by well-designed CDS.

Multilateral CDS—when well designed and implemented by relevant state actors along the supply chain—can be effective in eliminating under-reporting of otherwise compliant, registered, and licensed fleets. This has recently been shown by the ICCAT experience, where under-reporting is believed to have fallen from double the TAC to close to nil. Where CDS are implemented effectively, TREMs may not be

necessary (none have been enacted to date by any RFMO operating a CDS), as the CDS achieves real-time market exclusion of illegal products from the supply chain. In fisheries where under-reporting and quota over-fishing are the worst forms of fraud, and have contributed to decimating the stocks under management, the CDS is the tool of choice to address IUU fishing, and to move stocks towards recovery—provided that the existing biological stock management measures, including TACs, are fit for purpose.

In fisheries where pirate fishing is the main source of IUU fishing, and where ports and lucrative markets of convenience absorb those catches, the CDS on its own is insufficient. Complementary and more muscular forms of fisheries law enforcement, such as sea patrols, intelligence gathering, and information sharing, are necessary to eliminate such forms of IUU fishing. The CCAMLR CDS experience shows this clearly. However, once ports and markets apply the scheme, pirate or FOC vessels are left without markets to sell into and their operations become economically unviable, putting an end to their operations.

Impacts on trade have been verified in the case of TDS/TREMs—with trade from FOC states subsiding completely. Following the implementation of the ICCAT CDS, Atlantic bluefin tuna imports into Japan diminished by 90 percent and a price hike followed, albeit a modest one in the context of a generally deflationary economy. In value terms, the price of illegal product under a CDS is diminished because it cannot be legally brought to market, severely reducing the financial incentives to engage in IUU fishing.

While short-term economic and social costs are likely to arise, especially in sectors intimately associated with IUU fishing and having derived substantial amounts of incomes from such activities and/or trading in such products in the past, the long-term economic and social prospects from stocks recovering are positive from both developed and developing country perspectives.

5. UNILATERAL MARKET-RELATED MEASURES ADDRESSING IUU FISHING: STATE OF PLAY

5.1 Existing Measures

There are currently two states (or blocks of states) that are at the forefront of developing and/or operating unilateral market-related measures for combatting IUU fishing: the US and the EU.

Two types of market-related measures that specifically address IUU fishing stand out and are similar to those operated at a multilateral level. These are: a) CDS, which aim to ensure that only legally harvested fishery products may enter the market, and b) the identification or certification of third countries against which TREMs may be applied for perceived shortcomings in fulfilling their obligations to address IUU fishing under international law.

So far only one unilateral CDS targeting IUU fishing is in operation—the EU IUU Regulation and the “Catch Certification Scheme” central to it.³³ This piece of law was passed by the Parliament of the European Union in 2008, and came into force on 1 January 2010 (EU 2008; EU 2009). In 2014, the US announced its intention to develop a unilateral “Catch Documentation and Traceability” system to address IUU fishing, emulating the EU approach. Indications on how this system might operate have been published, and are reviewed and discussed in section 5.3 below.

Unilateral documentation schemes differ fundamentally from multilateral schemes in that they primarily regulate what may enter a specific market, and in doing so hope to contribute to curbing IUU fishing,³⁴ while multilateral schemes regulate how resources may be extracted from a given fishery, and under what conditions they may enter international trade. Multilateral schemes are fully fledged features of fisheries management regimes, conferring direct protection on specific stocks in their totality. In contrast, unilateral schemes only cover the proportion of product harvested from any given fishery that is traded to the end market operating the scheme.³⁵

A key implication, from a resource management perspective, is that the effectiveness of a unilateral scheme depends on the lucrative appeal of the market being strong enough to incentivise IUU operators in specific affected fisheries to stop fishing illegally, rather than simply targeting other equally lucrative markets not operating the unilateral CDS. Multilateral schemes applying to the entire stock unit—if effectively implemented—generally have a narrower scope (species-wise), but are in a much stronger position to address all IUU fishing in a single fishery and to effectively eliminate relevant forms of it.

From a legal perspective, multilateral schemes are enshrined in binding international

33 The “CCS” acronym is specific to the EU system, and is more logical than the more widely used “CDS” acronym, owing to the fact that certificates are issued (Hosch 2016b). Since “CDS” is the internationally accepted term and acronym for a certification system addressing IUU fishing, it is used consistently throughout this paper, also when referring to the EU’s CCS.

34 EU IUU Regulation; Preamble (9): “[...] As the world’s largest market for, and importer of fishery products, the Community has a specific responsibility in making sure that fishery products imported into its territory do not originate from IUU fishing. A new regime should therefore be introduced to ensure a proper control of the supply chain for fishery products imported into the Community.”

35 In theory, a unilateral scheme may also be operated by a processing state, as opposed to an end-market state. In general terms, the current operator of the sole unilateral scheme in existence, the EU, receives far more product in its capacity as end market and final consumer, rather than as a processor and re-exporter.

law, and apply to all fishers, traders, and processors handling products originating from a fishery covered by such a scheme.³⁶ The multilateral CDS and the related paperwork are not optional; they must be complied with at every step along the supply chain, although, as explained previously, the verification and enforcement mechanisms of different CDS schemes vary in strength. In unilateral systems, which are established in and enforced under the national law of the market state, the CDS and its paperwork may be required at every step along the supply chain if the product is ultimately meant to enter the market operating the scheme, but is otherwise optional. This implies that the lawful handling of products and CDS paperwork can be applied and enforced from the fishery onward, at each step along the entire supply chain, in multilateral systems, but only from the market state backwards for products that are being imported into markets with unilateral CDS requirements. Because it is not always known what end-market(s) harvested products will ultimately be traded to, a large proportion of product may freely circulate without being covered by certificates or other means of providing a relevant or sufficient degree of traceability. Unilateral schemes can only be enforced at the time the product is presented at the border for importation, limiting the scope and the range of law enforcement options under the scheme, and providing an increased range of options for fraud to occur throughout the supply chains affected by the schemes.

Regulations allowing for the issuing of TREMs against third countries for perceived failures to address IUU fishing have been put in place by the US and the EU, which emulate TREM-related CMMs enacted by a range of RFMOs. While many countries may have broader and more non-specific provisions to issue TREMs against third countries with regard to trade of

illegal or illegally harvested products, the EU and US measures are specific to IUU fishing, and are discussed in the following sections. Two key differences appearing between multilateral and unilateral approaches are the scope of the TREMs that can be applied and the degree of linkage to CDS.

RFMOs issued TREMs against specific countries with regards to specific species. In contrast, TREMs issued more recently by the EU restrict all fisheries products originating from identified flag states into the EU.

While unilateral TREMs may be issued as a response to non-compliance with a CDS—as can happen in the EU—they may also be issued in response to other shortcomings unrelated to the operation of a CDS. This applies especially to the case of the US, where anti-IUU fishing TREM provisions are in place, but a (unilateral) CDS does not yet exist.

5.2 The EU IUU Regulation, CDS, and Identification Process

The EU IUU Regulation consists of a law (EC 1005/2008) passed in 2008, and an implementing regulation (EC 1010/2009) adopted in 2009. Both texts define a new legal EU regime to bar products derived from IUU fishing from entering the EU market. In its preamble, EC 1005/2008 states that this initiative is meant to respond to the tenets of the IPOA-IUU. The regulation consists of a catch documentation requirement for all imports of marine fish into the EU and a separate but related rule involving the possible restriction of fisheries imports from countries identified as having unsatisfactory control of IUU fishing by their flag vessels.

5.2.1 *Modus operandi of the CDS*

The EU IUU Regulation covers marine wild caught harvests—with some exceptions, such

³⁶ A lot of legal analysis has been carried out to assess how far RFMO CMMs are binding on non-parties to the RFMO, considering UNCLOS and the UN Fish Stocks and Compliance Agreements. While there is no definite clear-cut answer, the author (not being a legal expert) sides with the view that RFMO CMMs are binding on non-parties, regardless of whether they have signed, acceded to, or ratified any of the relevant instruments, including UNCLOS. Neither this opinion—nor its opposite—fundamentally influences the foundation of the main findings and conclusions of this paper.

as molluscs—which are landed or imported into the EU, and which have originated from non-EU flag vessels. All products must be certified to be of legal origin, regardless of whether they are sourced from fisheries known to be affected by major IUU problems or not.

The regulation requires flag states to issue catch certificates for catch harvested by their vessels that is to be exported to the European Union. Flag states must notify a competent authority validating catch certificates to the EU Commission, which is formally approved or rejected. Only countries with a formally approved competent authority may export to the EU. When foreign catch is imported by a processing state for re-export to the EU, a processing statement must be issued at the time of exportation, linking the source products and foreign catch certificate(s) with the end products in the consignment. Since 1 January 2010, either a catch certificate (the direct importation scenario) or a processing statement with attached catch certificates (the indirect importation scenario) must accompany each consignment of wild captured marine fish to be imported into the EU.

Vessels flying an EU flag are also covered by the scheme if they land catch outside the EU and the products, processed or un-processed, later enter the EU market. EU vessels landing product directly into EU ports are not normally required to produce a catch certificate, unless the product is to be exported to a third country outside the EU, for example for processing, and re-importation into the EU. The processing statement is not required when catch from EU-flagged vessels is landed and processed in EU countries.

The operation of the CDS along the supply chain before EU market entry is covered by just two key articles in the 2008 regulation text

that define direct and indirect importation scenarios,³⁷ and a further article in the 2009 text that provides for a simplified catch certificate to be used in artisanal fisheries.³⁸ Certificate models are appended to the regulation. All other articles directly relating to the CDS regulate the entry of foreign fishing vessels into EU ports and administrative procedures at EU level regarding the handling of paperwork prior to and following importation. Bearing in mind that RFMO CDS systems have dedicated resolutions that are several pages long and contain dozens of articles detailing the technical operation of the CDS applying to single fisheries, the regulatory substance provided for the EU CDS applying to all marine capture fisheries products worldwide is limited.³⁹

The EU CDS is a paper-based system and operates in the absence of a central certificate registry. This means that EU authorities, whether central or national, or any other competent authorities worldwide complying with the system, do not know how many certificates are in circulation and what products they cover—nor do private sector supply-chain actors acquiring and dispatching products under given certificates. The authenticity of any certificate can only be ascertained through a lengthy process involving direct communication and feedback requests from the authorities that issued the original—a process which falls under what the EU IUU Regulation refers to as “mutual assistance.”⁴⁰ Any such action by EU border authorities implies delays and demurrage costs to operators, regardless of the legal or illegal nature of consignments. It is not known how many consignments covered by how many certificates have entered the EU since the scheme came into force, or how many times any specific certificate has been used to import fisheries products into the EU market (DG MARE 2014).

37 Articles 12 “Catch certificates” and 14 “Indirect importation of fishery products.”

38 Article 6 “Simplified catch certificate.”

39 In order to address the lack of specificity of the regulation, the EU has made available a “handbook,” which aims to provide answers to private and public sector stakeholders regarding the practical application of the scheme. See: European Commission (2009) and European Commission (n.d.)

40 Article 51.

The absence of a central registry, through which certificates are linked every time a product is moved along to the next stop in the supply chain implies that the CDS is missing the necessary core elements that would allow it to establish verifiable traceability. Mass balance integrity along the supply chain can neither be monitored nor enforced, opening the system up to the laundering of non-originating fish into legally certified supply streams. In theory, a copy of any certificate in circulation can be used to import fish into the EU market, and the fraud—if the source certificate was issued legally by a competent authority—is almost impossible to detect, particularly in longer, more complex supply chains.⁴¹ Sufficient evidence that this happens in practice on a substantial scale has been gathered and reported through a variety of channels for it to be a real concern (Clarke and Hosch 2013; Palin et al. 2013). The lack of a framework for ensuring verifiable traceability means the guarantees of legality provided through the EU CDS are very weak in all but the simplest of supply chains. This finding has been corroborated by independent reviews of the scheme early in its implementation (e.g. Lutchman, Newman, and Monsanto 2011).⁴²

The EU CDS relies on the cardinal principle of flag state validation, placing little formal emphasis on the roles to be played by port, processing, and trading states. For

example, the date and place of landing are not indicated on the catch certificate and port state authorities are not required to check, validate, or counter-validate catch certificates attached to catch that moves through their ports.⁴³ This partly weakens the potential strength of a CDS, since these systems were conceived as a means to overcome the ineffectiveness of control regimes limited to flag state enforcement, and to tap the potential of port and market state jurisdictions and controls within a single, largely self-regulating and self-enforcing system.

The trade certificate in RFMO schemes, which is an officially numbered and registered document, and which can be issued as many times as necessary along long and complex supply chains, finds its counterpart in the processing statement issued by authorities in processing states, as noted above. This document is un-numbered, and makes the link to the original catch certificates, but only if the catch was imported into the processing state before being exported to the EU (the indirect importation scenario in the EU regulation). If the catch is sourced from the processing state's own fishing fleet, a "deferred" catch certificate is issued following processing and prior to export to the EU. This means that in this quite common scenario a basic trade document

41 The absence of a central registry means that a competent authority that has lawfully issued and validated a catch certificate, generally has no—or no direct—means of verifying where products that were certified nationally have been traded to. Therefore, when the EU requests verification of authenticity of a particular catch certificate, a third-country competent authority can merely confirm (or deny) having issued a given certificate. It is similarly impossible, except through the conduct of an international investigation, to establish whether portions of lawfully certified products have been traded to other jurisdictions via more than one stop in the supply chain, and whether derivatives of the original product are now lawfully exported into the EU market. This applies to all trade under the EU CDS that involves complex supply chains spanning more than one stop.

42 According to Lutchman, Newman, and Monsanto (2011): "The analysis concluded that the catch certification scheme as it stands is not working to prevent illegally fished products from entering the EU market as the paper certificates are open to fraud."

43 Under the EU CDS, port authorities in third countries may countersign catch certificates attached to transshipments in port, but they are not formally recognised or notified as competent port state authorities. Port state authorities in transshipment ports have in the past refused to countersign EU CDS paperwork, explaining that there is no obligation to do so, especially when the same port state has not designated a competent [flag state] authority under the EU scheme. Importantly, port state authorities are not required, or even allowed under the scheme to confirm and/or counter validate the correctness of landings as they are recorded in catch certificates and validated by the flag state. In distant water fishing operations, this is one of the only solid means of verification under a CDS to ensure that fishing vessel operators are reporting their catches and landings correctly, and failure to do so is arguably out of line with the spirit and provisions of the PSMA.

to link certified landings to consignments of processed goods does not exist.⁴⁴ To date, the EU has not provided effective guidance on how catch certificates ought to be completed when consignments are derived from more than one domestic landing or mixed domestic and foreign landings, hinting at important regulatory voids in the regulation.

Article 51.2 of the regulation on mutual assistance refers to the establishment of an automated information system, called the “IUU fishing information system,” designed “to assist competent authorities in preventing, investigating and prosecuting IUU fishing.” In 2015 the EU Commission announced its intention to develop this IUU fishing information system in the form of an electronic database, the main function of which, judging from descriptions released so far, appears to be to electronically record the entry of certificates and processing statements into the EU. In theory, such a database could enable competent authorities of EU member states to detect over-usage of particular certificates. However, the system would not provide any further evidence as to which importer has knowingly or unknowingly been involved in importing products covered by fraudulent certificates, and where in the supply chain document fraud has been committed. Nor would a system limited to registering certificates on imports into the EU address the circulation of non-recorded and non-secured paper copies of certificates along global supply chains. Therefore, it is not clear that the database as currently outlined will solve the fundamental problems in the EU CDS, nor effectively implement Article 51.2, whose aim appears to be the development of a system that would enable all competent authorities—including those in

third countries—to confidently operate the scheme and to eliminate fraud.

The current state of affairs regarding the operation of the EU IUU Regulation underlines the importance of a solid and effective document system design, that can practically accommodate the most complex supply chain permutations, including, but not limited to, transshipments, splits, partial landings, partial transshipments, mixing of domestic and foreign products, semi-processing and re-processing chains, and mixing of materials in final products.

Despite its weaknesses, the EU IUU Regulation does provide some useful elements of good practice. Equivalence is provided under the scheme for existing RFMO CDS, meaning that any products covered by RFMO certificates imported into the EU are exempted from the requirement to provide EU catch certificates. This is an important first degree of coherence between unilateral and multilateral schemes. The EU system also allows for the recognition of equivalent national systems. A number of developed countries, such as Norway (see below), Canada, and New Zealand, have developed “national CDS” systems to respond to the requirements of the EU CDS, and have been formally approved by the EU; these systems are considered to provide the same degree of assurance.

The EU IUU Regulation (EU 2009) also accommodates the challenge that the implementation of fully fledged catch certificates would present for artisanal fisheries, by providing a functional best-practice model of a simplified procedure for the collection of harvest information from small-scale fisheries, through the simplified catch certificate.

⁴⁴ Deferred catch certification is further “regulated” through the “Weight-in-Catch-Certificate” notes issued by the EU on its website (see European Commission, Fisheries n.d.) in mid-2010, and the “Additional Information on Products Processed in the Flag State to Be Exported to the EU” note issued in mid-2011. In this quite common circumstance the supply chain stops of harvesting, transshipping, landing, and processing are therefore neither covered nor traced by the CDS. The fact that the “catch certificate” under this scenario is only established at the time of exportation turns this part of the CDS into a de facto TDS—the limitations of which were formally established by the international community in the mid-1990s. It also renders other parts of the catch certificate, such as the section on transshipments, impossible to comply with as these have to be filled in (and validated) before fish is landed.

5.2.2 *Modus operandi of the identification process and TREMs*

The EU IUU Regulation also provides for the “identification of non-cooperating third countries.”⁴⁵ Third countries can be identified⁴⁶ by the EU pursuant to the review of information related to a series of chapters of the regulation. These chapters cover the CDS, but also extend to other matters such as compliance with EU port entry rules, compliance with RFMO conservation and management measures, control over nationals, the existence of IUU-listed vessels, and the performance of third states with regard to “mutual assistance requests” formulated by the EU Commission.

The EU began identifying the first countries at the end of 2012, through a procedure which is now widely referred to as the “yellow and red card” approach. As part of this procedure, the EU Commission has initiated “dialogues” with as many as 50 countries.⁴⁷ The list of countries the Commission formally engages with is not public. These dialogues take place pursuant to Article 51 of the EU IUU Regulation, and are initiated as “mutual assistance requests.” Under this process, a country may receive a visit by a delegation composed of EU Commission and/or European Fisheries Control Agency staff, who may then issue a report regarding their findings to the EU Commission.

Based on these reports, the Commission decides on whether it is satisfied with the third country’s performance regarding IUU fishing. If it is not, the EU Commission may request that the third country implement changes

that the EU Commission deems necessary in order to avoid formal identification under the regulation. If this dialogue is successful, the third country may avoid entirely a formal identification under the regulation. While this dialogue process appears to be very consultative, it is not particularly transparent: none of these bilateral exchanges or reports are made public, so gauging their effectiveness is impossible.

If mutual assistance requests formulated by the EU Commission and bilateral dialogue do not produce results that the EU Commission deems satisfactory, then it will formally “pre-identify” the country, by issuing a formal Commission decision listing the third country’s shortcomings (i.e. issue a “yellow card”).^{48,49} The Commission’s pre-identification decisions are public and establish fairly long lists of shortcomings, which collectively serve to identify the country’s failure in addressing IUU fishing and provide the justification for the identification. While the design of the identification system suggests it can be linked to non-compliance with the CDS requirement, in the first Commission decision of 15 November 2012 (EU 2012), none of the shortcomings listed in respect of the eight countries related to non-compliance with the EU CDS. All of the red card identifications that have been issued to date were initiated with this decision.

After receiving a yellow card, the country is then required to formulate an official response and to provide a formal roadmap (or plan) to the EU Commission including timelines showing how it intends to rectify the situation. A formal dialogue process, involving

45 Article 31 “Identification of non-cooperating third countries.”

46 This paper uses the term “identification” to designate both pre-identification (yellow card) and formal listing as an identified country (red card), for the sake of simplicity. “Pre-identification” per se is not formally provided for under the EU IUU Regulation, and Article 32 on “*Démarches* in respect of countries identified as non-cooperating third countries” is ambiguous regarding “identification” (as the title of the article implies), or “the possibility of being identified” (as para. 1 of the same article suggests), and unspecified regarding the procedure to be followed. The green carding of yellow carded countries—as it is practised—implies that a formal identification (regardless of its nature) had occurred, and that it has been formally lifted.

47 See European Commission (2015a).

48 See European Commission (2016) for access to all decisions.

49 The idea that bilateral dialogue is “more formal” following yellow-carding of a country, and by implication “less formal” before the issuing of a yellow card, can be gleaned from European Commission (2014a).

country visits by official EU delegations to the identified country is then initiated. At the end of the process—which may go through several extensions—the Commission decides if the country has provided sufficient assurances that existing IUU issues have been addressed. If so, the country’s identification is lifted (i.e. a “green card” is issued). If not, the country is then formally identified (i.e. a “red card” is issued), and a trade embargo on all fisheries products originating from vessels flagged to that country is then instituted.⁵⁰ The red card, proposed by the EU Commission, must be confirmed by the EU Council.

“Green cards” lifting “yellow cards” do not detail what or how the country has addressed the shortcomings listed in the pre-identification. A “notice of information of the termination of the *démarches*” issued by the Commission simply states that the country “introduced the necessary measures for the cessation of identified IUU fishing activities and for the prevention of any such activities in the future, rectifying any act or omission that led to their notification of the possibility of being identified as a non-cooperating country in fighting IUU fishing” (e.g. EU 2015a). This implies that all identified IUU fishing issues have been effectively addressed and eliminated by the third country. Only “green cards” lifting “red cards,” published in the

form of a Council Implementing Decision, provide a very short summary as to why the lifting of the red card is warranted (e.g. EU 2014). Only the Philippines managed to be delisted (green carded) within a period of less than a year. It typically took other identified countries about two years or longer to return to non-identified status (see Table 4.).

The reasons for identifications (red cards) listed in Commission Implementing Decisions can include the third country failing to discharge its international obligations to combat IUU fishing in its capacity as a flag, a port, a coastal, or a market state.⁵¹ In the first such decision (EU 2013), Cambodia, Belize, and Guinea were identified for the shortcomings listed in Table 3 below. Under each broad category, the number of perceived shortcomings or violations of international obligations can include more than a dozen specific points. For the first three red-carded countries, most shortcomings related to their capacity as flag states, failing to exercise a relevant degree of control over their fleets, to prosecute and sanction offenders effectively, and to cooperate effectively with RFMOs—including meeting reporting obligations. However, other shortcomings, such as the failure of the coastal state to protect its resources effectively from over-exploitation (through combatting of IUU fishing) were also listed.⁵²

50 Processed fisheries products may still be imported from a red-carded country, as long as such products are derived from harvests not caught by vessels flying the flag of that same state—underlining the flag state focus of the regulation. The fact that a red carded state may also be involved in the acquisition, processing, and exportation of IUU products, and may thus be actively or passively involved in facilitating the laundering of such products, bypasses the remit of the regulation entirely. Hence, a competent authority that may no longer validate EU catch certificates [for its vessels] may continue to validate processing statements for consignments processed in its territory and headed to the EU market.

51 See Article 31.3.

52 See recital 164 of Commission Implementing Decision C346/02 with regard to Guinea.

Table 3. Broad categories in Commission Implementing Decision C 346/02 under which the reasons for the red carding of Belize, Cambodia, and Guinea were identified.

Broad category	EU IUU Regulation clauses cited	Belize	Cambodia	Guinea
Recurrence of IUU vessels and IUU trade flows	Article 31(4)(a) Recurrent IUU fishing suitably documented as carried out or supported by fishing vessels flying its flag or by its nationals, or by fishing vessels operating in its maritime waters or using its ports.	x	x	x
Failure to cooperate and to enforce	Article 31(5)(b) Effective enforcement measures in respect of the operators responsible for IUU fishing, and in particular whether sanctions of sufficient severity to deprive the offenders of the benefits accruing from IUU fishing have been applied.	x	x	x
Failure to cooperate and to enforce	Article 31(5) (c) The history, nature, circumstances, extent, and gravity of the manifestations of IUU fishing considered.	x	x	
Failure to cooperate and to enforce	Article 31(5) (d) For developing countries, the existing capacity of their competent authorities considered.	x	x	
Failure to implement international rules	Article 31(6) (a) the ratification of, or accession of the third countries concerned to, international fisheries instruments, and in particular the UNCLOS, the UN Fish Stocks Agreement and the FAO Compliance Agreement; (b) the status of the third country concerned as a contracting party to regional fisheries management organisations, or its agreement to apply the conservation and management measures adopted by them; (c) any act or omission by the third country concerned that may have diminished the effectiveness of applicable laws, regulations, or international conservation and management measures.	x	x	x

Source: Author's own elaboration.

As of 1 May 2016, 23 countries had been issued yellow cards by the EU Commission, four of which have later been issued red cards. To date, two red-carded countries have been re-instated (issued green cards) namely Belize and Sri Lanka, and eight yellow-carded countries have been re-instated. The table below lists the countries—in chronological

order—indicating the dates of the respective yellow, red, and green cards, as applicable.

A number of observations can be made from Table 4. With a few notable exceptions, most of the countries appearing on the list are not normally recognised as major fishing nations, or major suppliers of seafood to the

EU market.⁵³ In fact, over 43 percent of the identified countries (10/23) had not notified a competent authority under the EU IUU Regulation, and had no established seafood trade to the EU market.⁵⁴ At the time of identification, Guinea was under DG SANCO embargo for reasons related to sanitary and phytosanitary measures (which remained in place in early 2016), and consequently was not trading seafood to the EU. As a result, 48 percent of the countries identified to

date were not trading seafood to the EU at the time of their identification. This trend is continuing, as none of the latest three countries identified in 2016 exported fish products to the EU at the time of their pre-identification. This suggests that the identification process fulfils a different objective from the CDS in targeting countries with perceived IUU problems, rather than protecting the EU market from the products of IUU fishing.

Table 4. Third countries having been yellow, red and/or green carded by the EU under Articles 31, 33, and 34 of the EU IUU Regulation (status as of 01 August 2016).

Country	Yellow card	Red card (Council decision)	Green card	Months under identification
Belize	15/11/2012	24/03/2014	15/12/2014	25
Cambodia	15/11/2012	24/03/2014		>45
Fiji	15/11/2012		15/10/2014	23
Guinea	15/11/2012	24/03/2014		>45
Panama	15/11/2012		15/10/2014	23
Sri Lanka	15/11/2012	26/01/2015	16/06/2016	43
Togo	15/11/2012		15/10/2014	23
Vanuatu	15/11/2012		15/10/2014	23
Korea	26/11/2013		29/04/2015	17
Ghana	26/11/2013		02/10/2015	22
Curaçao	26/11/2013			>33
Papua New Guinea	10/06/2014		02/10/2015	16
Philippines	10/06/2014		29/04/2015	11
Solomon Islands	12/12/2014			>20
Saint Kitts and Nevis	12/12/2014			>20
Saint Vincent and the Grenadines	12/12/2014			>20
Tuvalu	12/12/2014			>20
Thailand	21/04/2015			>16
Comoros	01/10/2015			>10
Chinese Taipei	01/10/2015			>10
Kiribati	21/04/2016			>4
Sierra Leone	21/04/2016			>4
Trinidad and Tobago	21/04/2016			>4

Source: Author's own elaboration.

⁵³ The combined exports of the first eight countries identified at the end of 2012 represented 0.6 percent of total EU fishery and aquaculture product imports in 2011. (Palin et al. 2014).

⁵⁴ Cambodia, Togo, Vanuatu, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Tuvalu, Comoros, Kiribati, Sierra Leone, and Trinidad and Tobago

Figure 6. compares the distribution of identified countries with the number of countries in FAO world regions,⁵⁵ revealing that identifications are currently confined to Africa, Asia, the Caribbean, and the South West Pacific. 83 percent of the identified countries are developing nations and almost half, 48 percent, are small island developing states (SIDS).⁵⁶ By 2016, 38 percent of all existing South West Pacific Island nations, and 30 percent of all Caribbean nations had been identified by the EU. Even though generally recognised IUU “hotspots” can shift, depending on the availability of fish stocks and the strength of national and regional enforcement measures, the South West Pacific is not normally recognised as an IUU hotspot—in contrast to other world regions such as West Africa. Agnew et al. (2009) reported that “in the Southwest Pacific increasing control by coastal states has led to a significant reduction in illegal fishing over the last 20 years.” The most recent and authoritative report on the status of IUU fishing in the South West Pacific (MRAG 2016) states that “estimates of IUU volume and value generated here are lower than the most commonly quoted estimate of IUU fishing in the WCPO [Western Central Pacific Ocean] region” (originating from the aforementioned Agnew et al. (2009) paper).⁵⁷

This raises questions as to the standards that are applied in the EU’s identification process, beyond the fact that it is basing its decisions on the general and broad line-up of criteria listed in Article 31 of the EU IUU Regulation. A DG MARE communication on the EU Commission’s website broadly notes in this respect that:

The Commission has focused its enforcement action on geographic areas where IUU fishing activities are most widespread and have the most disastrous impact—not only on the marine resources, but also on the livelihoods of local communities, like West Africa or the Pacific Region.⁵⁸

It also raises questions about how the EU applies the provisions of Article 31.5 of the EU IUU Regulation, which stipulates that “For the purposes of paragraph 3 [i.e. identifying non-cooperating third countries], the Commission shall take into account: [...] (d) for developing countries, the existing capacity of their competent authorities.” In the majority of Commission decisions implementing yellow or red cards, short recitals mention that no evidence could be provided as to how the “developing” status of individual identified countries, and the related human, financial, or institutional constraints, could have given rise to the shortcomings identified in the decisions.

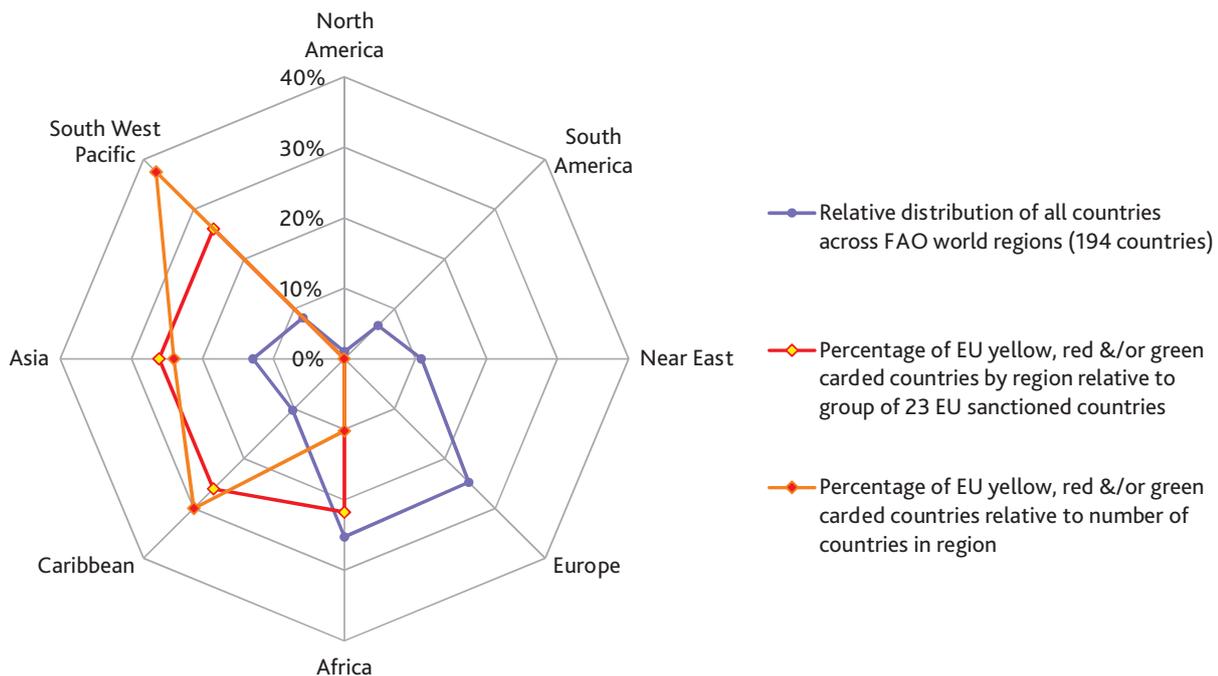
55 Using the FAO system of regions and splitting Latin America and the Caribbean into two separate regions, world regions (with number of countries in brackets) are North America (2), South America (10), Near East (21), Europe (48), Africa (49), Caribbean (23), Asia (25), and the South West Pacific (16), giving a total of 194 countries.

56 Developing countries are defined according to their Gross National Income (GNI) per capita per year. Countries with a GNI of US\$12,476 and less are defined as developing (World Bank, 2013).

57 The study estimated that annually, 306,440 metric tons of product harvested or transhipped “involved IUU activity” in Pacific tuna fisheries in which some 2.5 million metric tons are harvested per year. This implies that all forms of IUU fishing affects in the order of 13 percent of all harvested tuna—a figure that must be regarded as significantly lower than estimates of IUU incidence reported in other regions (e.g. Agnew et al. 2009; Pramod et al. 2014).

58 See European Commission (2014b)

Figure 6: Analysis of the global distribution of the first 23 allocated EU yellow/red cards.



Source: Author's own elaboration.

A recent report (UNCTAD 2016) shows that SIDS are the type of country most vulnerable to seafood trade sanctions, since an average of 7 percent of all of their exports are fish, and an average of 1.8 percent of GDP is generated from seafood trade. This compares to an average of less than 0.4 percent of average contribution to GDP for all other types of nations.⁵⁹

Overall, the intensity with which South West Pacific countries and SIDS in general have been identified does not appear to match the documented global distribution of IUU incidence and facilitation (e.g. Agnew et al. 2009; Pramod et al. 2014).

Identified countries with more important fishing fleets and seafood trade profiles constitute only 39 percent of the group of identified countries. These are often located in regions with higher estimated rates of IUU fishing incidence and include processing

states, namely Fiji, Sri Lanka, Korea, Ghana, Papua New Guinea, the Philippines, Solomon Islands, Chinese Taipei, and Thailand. Only a few countries in this group are generally recognised as having serious IUU fishing profiles. That said, some of the countries in the list certainly are or have been widely recognised in the past as FOC states.

While the process of identifying, issuing, and withdrawing “cards” through an intensive dialogue process is designed to be very consultative (Young 2015), concerns have been raised about the general lack of transparency regarding the implementation of the regulation (e.g. Lutchman, Newman, and Monsanto 2011), and more specifically regarding the opaque procedure of identifying third countries (van der Marel 2017). Because so little information has been released by the EU Commission regarding the process or logic of identifying third countries, it is unclear who the Commission has formally entered into

⁵⁹ In the case of EU red cards, this effect would of course only be felt if the SIDS had established trade with the EU at the time of its identification.

dialogue with and what standards are used to determine whether a country will ultimately be identified or not. A 2014 DG MARE study reported that EU member states requested greater transparency regarding evaluations of third countries in order to better maintain risk-based management systems, a challenge which partly relates to the fact that information on dialogue processes and evaluation reports are not published (DG MARE 2014).

It is also difficult to judge, objectively, what real changes and actions with measurable results have been implemented by identified third countries. Many of the changes made in response to EU yellow and red cards were in the form of updated legal frameworks and planning documents⁶⁰ which are of course an essential first step in addressing issues, but whose effectiveness depends on their implementation. This ought to be the object of unbiased scrutiny for recently green-carded countries in the coming years, and the detailed Commission decisions establishing the basis for yellow and red cards provide a solid foundation for such assessments to be conducted in a fair and transparent manner.

Despite its imperfect design and lack of transparency, however, it is widely accepted that the identification procedure implemented by the EU has contributed substantially in signalling to countries, especially flag states trading seafood into the EU, that continued failure to address IUU fishing in a proactive manner can bear significant consequences. More broadly, it is possible that this specific threat of IUU-related TREMs may gradually contribute to improving the global situation of IUU fishing.

5.3 The US Traceability Proposal and Identification and Certification Process

The US has a long history of punishing importers of illegally obtained wildlife goods into the US market. The Lacey Act of 1900 covers products of IUU fishing imported into the US, and specific fisheries cases with an international dimension have been prosecuted successfully under the Act in the past, leading to the sanctioning of individuals for offences involving trade in seafood that was illegally obtained at source.⁶¹

US legislation touching on the subject matter of IUU fishing, identification, and TREMs is complex and spread across many acts. The most important for our purposes are: the High Seas Driftnet Fishing Moratorium Protection Act (the Moratorium Protection Act) (16 USC 1826d-k), which establishes a process for identification and certification of nations for IUU fishing, bycatch of protected living marine resources, and unsustainable shark fishing; and the Magnuson-Stevens Fishery Conservation and Management Reauthorisation Act of 2006 (MSRA), which amended the Moratorium Protection Act.

This section will focus on the recent heightened activity directed specifically at combatting IUU fishing through market-related measures, in particular the biennial reports by the National Oceanic and Atmospheric Administration (NOAA) to Congress, filed under the provisions of the MSRA, and a regulation under development to track and certify the legal source of imports of certain fish species “at risk” from IUU fishing.

60 A Ghanaian Minister was quoted in the press regarding actions to respond to EU yellow card, as follows: “Some of the corrective actions the Minister noted were enhancing the fisheries legislative framework; adoption of a National Plan of Action against IUU fishing; adoption of system dissuasive sanctions and strengthening of monitoring, control and surveillance system” (ALLAfrica n.d.)

61 See for instance Michigan State University (n.d.)

5.3.1 Identification, certification and TREMs under the MSRA

The MSRA requires the US government to strengthen RFMOs and to address IUU fishing and bycatch of protected living marine resources. The Moratorium Protection Act requires the Secretary of Commerce (through NOAA Fisheries) to produce a biennial report to Congress that lists nations that the US has identified for IUU fishing and/or bycatch of protected living marine resources and shark catches on the high seas. Interestingly, the definition of IUU fishing in the Moratorium Protection Act departs significantly from the widely accepted definition of IUU fishing provided by the IPOA-IUU, and adopted by the EU in its IUU Regulation.⁶²

The US, under this definition, limits the definition of IUU fishing to operations in international fisheries in which it is directly involved, either as a member of an RFMO or as a party exploiting a high seas resource not yet managed by an RFMO. The last part of the definition is broader, as it also covers fishing that affects specific marine habitats, whether these habitats have any relevance to US fishing operations or not. This last point is interesting from an IUU fishing point of view as its sole intent is to protect vulnerable marine ecosystems or habitats distinct from the fish stock(s) themselves.

The US definition, with its focus on US interests, stands in stark contrast to the broad FAO definition adopted by the EU, on the basis of which the EU can identify a third

country for failing to adequately manage fisheries resources within its own Exclusive Economic Zone (EEZ).⁶³

The rules for identification and certification are provided for in the MSRA (Section 609), and are further detailed through the final rule published in the Federal Register in 2011 (Vol. 76, No. 8).⁶⁴ A country is “identified” if, in the view of the US administration, it has vessels under its flag engaged in IUU fishing. The “certification” which follows can be positive, in which case the identification is lifted, or negative, and TREMs may be imposed. This procedure is similar to the yellow, green, and red card approach of the EU, with the difference that the identification under the MSRA (equivalent to an EU yellow card) is a formal step in a regulated process. Under the MSRA, the process starts with identification, and a two-year consultation and cooperation process follow “for the purpose of encouraging such nations to take appropriate corrective action with respect to the IUU fishing activities described in the biennial report” (Federal Register 2011). Identification can only relate to IUU activities that occurred over the preceding three years.⁶⁵ In EU law and practice, no such limitation applies and consultations in the form of less formal or more formal cooperative dialogue are conducted at all stages.⁶⁶

Potential TREMs under the Moratorium Protection Act may be issued in relation to specific fish or fisheries products from given countries that have been negatively certified. This implies—potentially—that the

62 For the purpose of the Moratorium Protection Act, IUU fishing means:

- (1) Fishing activities that violate conservation and management measures required under an international fishery management agreement to which the United States is a party, including but not limited to catch limits or quotas, capacity restrictions, and bycatch reduction requirements;
- (2) Overfishing of fish stocks shared by the United States, for which there are no applicable international conservation or management measures or in areas with no applicable international fishery management organization or agreement, that has adverse impacts on such stocks; or,
- (3) Fishing activity that has a significant adverse impact on seamounts, hydrothermal vents, cold water corals and other vulnerable marine ecosystems located beyond any national jurisdiction, for which there are no applicable conservation or management measures, including those in areas with no applicable international fishery management organization or agreement. (See MRSA section 609.)

63 See recital 164 of Commission Implementing Decision C346/02 (EU 2013) with regard to Guinea.

64 Full text: Department of Commerce, NOAA Final Ruling. See NOAA Fisheries (2011).

65 The original two-year period has recently been expanded to three years under the amendment effected under Section 101 of the Illegal, Unreported, and Unregulated Fishing Enforcement Act of 2015.

scope of US TREMs would be limited to specific products, rather than a blanket embargo on all fish products. Another type of potential sanction under the Moratorium Protection Act would bar fishing vessels from a negatively certified nation from entering US ports, adding PSMs to the measures that may be issued. Countries are negatively certified only in their capacity as flag states. This implies that states would be unlikely to face US TREMs for failing to combat IUU fishing in other capacities as coastal, port, or market states. Under the EU

IUU Regulation, states can be identified for lack of action in all capacities (flag, coastal, port, market), although the application of EU TREMs is limited to products derived from an identified state's fishing vessels.

To date, four biennial reports have been submitted to Congress, providing four rounds of identifications (2009, 2011, 2013, and 2015), and three rounds of certifications (2011, 2013, and 2015). Table 5 below lists the countries and the violations for which they were identified.

Table 5. Third countries identified by the USA under the MSRA.

Country	Year of identification	Basis for identification	Year of certification	Months under identification
France	2009	Violation of ICCAT Recs. 03-04 and 06-05	2010 positive	22
Italy*		Violation of ICCAT Recs. 03-04 and 06-05	2010 positive	22
Libya		Violation of ICCAT Rec. 06-05	2010 positive	22
Panama		Violation of IATTC Rec. C-02-03 and vessels on NAFO IUU list	2010 positive	22
People's Republic of China		Vessels on CCAMLR IUU list	2010 positive	22
Tunisia		Violation of ICCAT Recs. 03-04 and 06-05	2010 positive	22
Colombia	2011	Violation of IATTC Recs. C-09-01, C-00-06, and C-02-03	2013 positive	24
Ecuador		Violation of IATTC Recs. C-09-01, C-00-06, and C-02-03	2013 positive	24
Italy		Violation of ICCAT Rec. 03-04	2013 positive	24
Panama		Violation of IATTC Recs. C-09-01, C-00-06, and C-02-03	2013 positive	24
Portugal		Violation of NAFO CMM Chapter I, Articles 13 & 13.6	2013 positive	24
Venezuela		Violation of IATTC Rec. C-09-01	2013 positive	24

66 In 2011, the biennial NOAA report developed a section entitled "Countries 'of Interest' Not Identified," which is not required or provided for under the MSRA 2006. It is understood to be a form of "pre-identification" that serves to highlight detected problems, and to signal to third countries that the US administration is actively monitoring the way in which they handle presumed offences that have been reported, and relating to which the administration may have sought and received satisfactory responses. In 2011, this section covered 10 pages and 11 countries of interest, formally recording which bilateral dialogues the US had engaged in and with regard to which matters, indicating in each case the reason why the outcome did not lead to an identification.

Table 5. *Continued*

Country	Year of identification	Basis for identification	Year of certification	Months under identification
Colombia	2013	Violation of IATTC Recs. C-05-03 and C-04-05	2015 positive	24
Ecuador		Violation of IATTC Recs. C-05-03 C-04-05, C-09-04, C-11-03, and C-11-01	2015 positive	24
Ghana		Violation of ICCAT Recs. 05-09, 04-01, 11-01, and 06-11	2015 positive	24
Italy		Violation of ICCAT Rec. 03-04	2015 positive	24
Mexico		Violation of IATTC Res. C-05-03, C-04-05, C-11-01	2015 positive	24
Panama		Violation of IATTC Recs. C-05-03, C-04-05, and C-11-01	2015 positive	24
Republic of Korea		Violation of CCAMLR TAC	2015 positive	24
Spain		Violations of NAFO CMM Chapter IV, Article 24.1 and violation of IATTC Recs. C-11-01	2015 positive	24
Tanzania		Vessels on CCAMLR IUU list	2015 positive	24
Venezuela		Violation of IATTC Recs. C-04-05 and C-11-01	2015 positive	24
Colombia	2015	Violation of IATTC Recs. C-11-03, C-12-01, and C-04-05 Rev 2	to be determined in 2017	
Ecuador		Violation of IATTC Recs. C-11-03, C-04-05 Rev 2, and C-12-01		
Mexico		Unlicensed fishing in US EEZ & over-fishing of red snapper		
Nicaragua		Violation of IATTC Recs. C-04-05 Rev 2, C-11-03, and C-12-01		
Nigeria		Vessels on CCAMLR IUU list		
Portugal		Violations of NAFO CMM Articles 28.1, 38.1, 27.1, 38.1(n) and Chapter I Article 13.2(b) and ANNEX III.B.2		

* *n.b.* countries identified several times are listed in bold type face

Source: Author's own elaboration.

Since 2009, 28 countries have been identified under the MSRA as having had vessels engaged in IUU fishing. Some of these countries, including EU member states, appear on the list several times, indicating that there is no immediate limit on how many times a country may be identified, delisted, and re-identified. The reasons for the identification are published in the biennial reports to Congress and are posted online (NOAA Fisheries 2006). With very few exceptions, reasons provided for the identification pertain to established and documented infringements of fishing vessels to specific RFMO conservation and management measures.

To date, no country has been certified negatively under the MSRA's international IUU provisions, and no TREMs have been enacted as a consequence. Positive certification decisions (equivalent to EU green carding) are accompanied by extensive background material and reasoning, and cover in detail the actions undertaken by the flag state to address the established violations which led to its identification. If a specific violation is addressed to the satisfaction of US authorities, the country is positively certified, regardless of whether the same type of violation has been established anew for the following cycle.⁶⁷ This suggests that only the refusal of a third country to address issues raised in an identification could potentially lead to a negative certification, while repeated

offences of the same type are unlikely to have this effect.

Figure 7 shows the distribution of countries identified by the US. This differs substantially from the list of countries identified by the EU, notably in the absence of any identified South West Pacific Island states or any SIDS on the US list. A limited number of countries (Panama, Ghana, and Korea) have been identified by both parties.

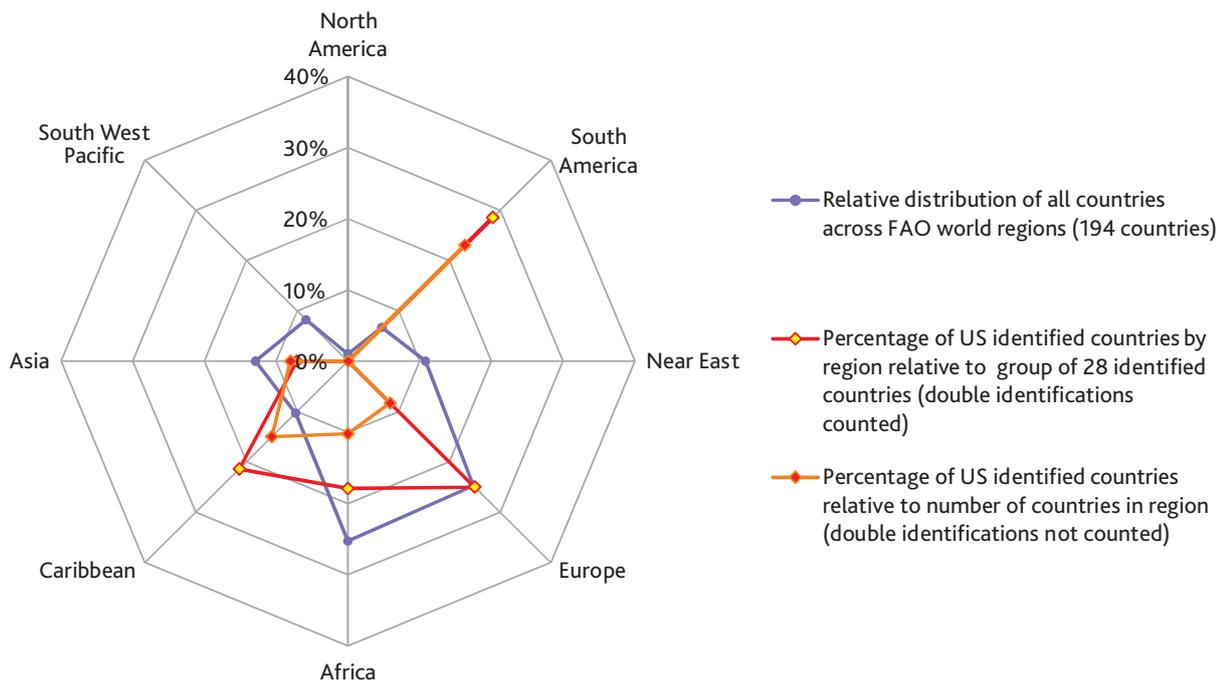
In relative terms, the US identified most countries (29 percent of all US identifications)—some repeatedly—in South America; a regional group in which the EU has not yet identified any countries.⁶⁸ South American countries are closely followed by EU member states, representing 25 percent of all US identifications. Otherwise, the distribution of identified countries between regions appears more or less balanced across world regions. Around 32 percent of the countries identified by the US are developed countries, versus only 17 percent for the EU,⁶⁹ which suggests a stronger willingness by US authorities to identify major developed fishing nations (China, Republic of Korea, France, Spain, Italy, Portugal) for violations perpetrated by their operators. The importance of IUU fishing perpetrated by Chinese, Korean, and EU flagged vessels globally, notably off the West African coast (Belhabib et al. 2015), has been widely documented and remains a major cause for concern.

67 Italy, an EU member state, was identified in 2009, 2011, and 2013 for fishing vessels flying its flag engaging in illegal drift-netting in the ICCAT area of competence (violation of ICCAT Rec. 03-04), without this leading to a negative certification.

68 The identification of an important number of Latin American countries partially reflects the fact that they neighbour the US, and that the US identifies countries for IUU fishing that directly impact their interests.

69 These figures treat China as a developed country in the context of international fisheries.

Figure 7: Analysis of the global distribution of the first 28 countries identified under the MSRA .



Source: Author's own elaboration.

The repeated identification of same countries for the same violations, the focus of bilateral dialogue on specific violations and their resolution, and the lack of negative certifications over the course of the first seven years of MSRA implementation raises questions as to how effective this mode of identification and certification is in terms of pushing other nations into becoming more effective monitors and enforcers of international fishery laws. The US procedure is much more transparent, is based on clearer standards⁷⁰ and procedural rules, and appears to involve less uncertainty and risk than the process of identification under the EU IUU Regulation, but unlike the EU system has not yet led to trade measures being imposed.

5.3.2 Projected operation of a US CDS

In June 2014 the Office of the President of the USA released a Memorandum (The

White House (2014) entitled "Establishing a Comprehensive Framework to Combat Illegal, Unreported, and Unregulated Fishing and Seafood Fraud."⁷¹ The document established, inter alia, a Presidential Task Force on Combating IUU Fishing and Seafood Fraud. The Task Force submitted 15 "recommendations for the implementation of a comprehensive framework of integrated programs to combat IUU fishing and seafood fraud that emphasises areas of greatest need" by mid-December of the same year, in a document called the Action Plan for Combating Illegal, Unreported, and Unregulated Fishing and Seafood Fraud (Task Force 2014). The recommendations span a wide array of domains relevant to the combatting of IUU fishing, including PSMs, free trade agreements, and bilateral customs cooperation. Recommendations 14 and 15 provide for a "traceability program," which encapsulates the plan for the creation of the US's unilateral CDS.

⁷⁰ Notably because a more limited and concise definition of IUU fishing is provided under the MSRA.

⁷¹ Section 1 of the Memorandum provides the basic objective of the initiative, which is to develop a unilateral trade instrument to prevent illegal seafood from entering the US market, reflecting the intent of the EU IUU Regulation.

An implementation plan published in March 2015 establishes the objective of the US being “a world leader in fighting IUU fishing,”⁷² and includes an outline of the proposed Traceability Program (Task Force 2015), whose objective is to “prevent the entry of illegal goods, including illegally harvested or produced seafood, into U.S. commerce” and which would be “consistent with U.S. international legal obligations, including U.S. obligations under the World Trade Organization.”

A proposed rule outlining the design of a “Seafood Import Monitoring Program” was published in the US Federal Register (Vol. 81, No. 24) on 5 February 2016. The proposed rule embodies most of what is currently known about the upcoming programme, and it forms the basis of most of the technical substance presented in this section.

The legal basis of the Seafood Import Monitoring Program is section 307(1)(Q) of the Magnuson-Stevens Fishery Conservation and Management Act, which makes it “unlawful to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any fish taken, possessed, transported, or sold in violation of any foreign law or regulation or any treaty or binding conservation measure to which the United States is a party.” The rule sets out to establish filing and recordkeeping procedures relating to the importation of certain fish and fish products.

Under the scheme, the National Marine Fisheries Service would require importers to be holders of an annually renewable International Fisheries Trade Permit and specific data and

information for defined fish and fish products to be filed and retained as a condition of import. The additional data requirements would apply only to imports of “at-risk” species, and derived products thereof, which would be identified by HS codes. Importantly, the programme actively seeks to integrate the new reporting requirements with existing electronic infrastructure, and the proposed rule also establishes how duplication with other existing programmes⁷³ should be avoided. For instance, it is proposed that information to be filed under the scheme be collected at the time of importation, making use of an electronic single window consistent with existing systems.

Currently available information indicates that the Seafood Import Monitoring Program will not develop a dedicated documentation scheme, the centrepiece of all other existing CDS in existence. Instead, it will require importers to collect information on source fishing vessels, fishing licences, areas of operation, date and place of landing, and first buyers, etc. on the basis of existing information, and to log this information at the time of importation. No recording of data would be required as products pass through the supply chain from harvest towards the US market. Existing documents, such as landing reports, catch certificates, or port inspection reports may be used by importers to establish the validity of vessel identity, trip, and landings data submitted by them into the International Trade Documentation System (ITDS). In theory, it would appear on the basis of the proposed rule that even catch certificates established under the EU CDS could serve to establish the foundation of data submitted by importers. The validation or counter-validation of

72 The EU is not identified in the document as the originator of unilateral trade instruments combating IUU fishing. However, response No. 35 to public consultation feedback in the Federal Register Notice (referenced in the following footnote), with regard to the EU IUU Regulation states that: “[...] the Working Group does not believe it is appropriate to establish a principle based on country of origin. In addition, the U.S. government does not have active involvement with the EU country-based IUU fishing risk identification system. Therefore, the Working Group did not include a principle that would identify at-risk species based on whether they are associated with nations that have been issued a yellow or red card under the EU system.” This suggests a distancing of the Task Force’s Working Group from the EU’s flag state-centred notification, certification, and identification approach, to focus its approach on “at-risk” fisheries instead.

73 Notably the Tuna Tracking and Verification Program (TTVP) under the Dolphin Protection Consumer Information Act (DPCIA) (16 U.S.C. 1385).

industry-generated information by designated competent authorities along the supply chain would not be required, as is currently the case in varying forms in all existing other schemes.

Information regarding the movement of fish between the point of landing and its entry into the US market would not be recorded within the system, but would have to be collected by the importer on the basis of documents and records that are normally issued along supply chains,⁷⁴ and such records would have to be kept by importers for five years at their place of business.

Information regarding supply chain relationships (suppliers/clients) and pricing are the most sensitive and highly protected types of information in seafood trade (see Hosch 2016b). It is highly unlikely that an importer could be given a transparent insight into where products he/she is importing have been channelled through in longer and more complex supply chains. In the absence of a dedicated documentation system, linking and recording product flows each step along the supply chain (with applicable data confidentiality rules), verifiable traceability between the presumed source fishing vessels indicated at importation, and the fisheries products being imported, is unlikely to be achieved. The critical process of monitoring mass balance at individual supply chain stops, enabling the detection of fish laundering, would also be difficult to achieve under the system as it is currently presented.

The list of “at-risk” species that will fall under the remit of the scheme under the programme’s initial phase was refined and republished through the proposed rule in February 2016. The list includes species that can naturally fall both under the management mandate of RFMOs, and/or

under the management mandate of individual countries.⁷⁵ Species covered by existing RFMO CDS systems are listed, specifically Atlantic and southern bluefin tuna. Bluefin tuna had not been covered in the earlier published version of the rule (Federal Register 2015), and had been classified as “not at-risk” owing to the multilateral mechanisms already in place—echoing practice under the EU CDS. It is now included “in order to establish consistent treatment of tuna species, and avoid possible concerns that one species of tuna may be treated less favourably than others.” (Federal Register 2016). It is anticipated, however, that “compliance with the entry data collection requirements of these schemes would for the most part meet the data reporting and recordkeeping requirements of the traceability program proposed here,” meaning that an RFMO CDS duly complied with would provide an importer with all data needed to fulfil the needs of the Seafood Import Monitoring Program. In as far as the system allows for a degree of mutual recognition of RFMO CDS, the US system follows a similar approach to the EU with regard to mutual recognition.

More broadly, however, based on the limited information available regarding the nascent US system, indications are that it is likely to differ markedly from the system implemented by the EU. Once the US system is implemented, it will be important to assess how it compares to its EU precursor, especially in ensuring verifiable traceability and the quality of the assurances it provides—specifically with regard to detecting and eliminating laundering of fish. According to the implementation plan, the US CDS is scheduled to come online in late 2016, to be monitored and to be expanded in phases, as appropriate, and based on lessons learnt.

74 According to the proposed rule: “Such information would include records regarding each custodian of the fish and fish product, including, as applicable, transshippers, processors, storage facilities, and distributors. The information contained in the records must be provided to NMFS upon request and be sufficient for NMFS to conduct a trace back to verify the veracity of the information that is reported on entry.”

75 The list includes abalone, Atlantic cod, blue crab, dolphinfish, grouper, king crab (red), Pacific cod, red snapper, sea cucumber, sharks, shrimp (cold- and warm-water), swordfish, albacore tuna, bluefin tuna, bigeye tuna, skipjack tuna, and yellowfin tuna.

The fact that two of the world's largest seafood markets are moving towards substantially different designs for unilateral trade measures to address the same problem indicates that the risk of a proliferation of non-harmonised unilateral trade instruments to combat IUU fishing is real. For fishers and supply chain actors that already do, or may in the future, seek to sell to or process catch for both the EU or the US, the costs of complying with two different systems are likely to be considerable, even if the US system, as it appears, may recognise EU catch certificates. In addition to the immediate costs of developing and operating different systems, the lack of coherence between them could lead to fisheries trade being diverted between the two or to less demanding third markets.

More generally, the lessons from each scheme's impact could serve to inform the other, and any other unilateral schemes to be developed, as could lessons from WTO jurisprudence around the design of environmental trade measures (see Young 2015).

5.4 Impact on Trade in IUU Products

There are few estimates of how much seafood of IUU-fishing origin entered the EU before the EU IUU Regulation came into force. In 2007, the EU estimated the value of IUU fish imported into its market to be in the order of €1.1 billion just before the regulation was adopted, this value being "the equivalent of 9 percent of the tonnage imported into the EC (500,000 tons) and 10 percent of the value of the imports" (EU 2007), but provided no details on how this estimate was obtained. A more recent EU estimate indicates that more than 16 percent of imported seafood may be originating from IUU fishing (DGIP 2013). A recent study of the US market estimates that "Illegal and unreported catches represented 20-32 percent by weight of wild-caught seafood imported to the USA in 2011, as determined from robust estimates, including uncertainty, of illegal and unreported fishing activities in the source countries" (Prمود et al. 2014). This estimate is more in line with global estimates of IUU fishing incidence,

and given the similarities between US and EU seafood import markets, this higher estimate is also a more likely reflection of the level of IUU-fish imports into the EU market.

Because the US is not yet operating a CDS, and because it has not yet negatively certified a single third country, the impact of its actions under the MSRA on its apparently substantial imports of illegally sourced fish products are likely to have been minimal. More formal research into the effects of the international identification and certification provisions under the MSRA are needed to qualify their impact on trade.

If the CDS in the EU IUU Regulation was effective in eliminating IUU fish from entering the EU market, then changes in trade patterns would have had to occur since it came into force—assuming that engrained and worldwide IUU fishing practices persisted and that the CDS would have eliminated the entry of those products into the EU market. At least 10 percent of imports would have had to be substituted by similar products from other sources or some product categories would have been gradually substituted for other categories—partially or altogether.

A study carried out during the fourth year of operation of the EU IUU Regulation analysed trade of marine fishery products imported into the EU under Chapter 03 and Tariff Headings 1604 and 1605 of the Combined Nomenclature, using a range of information sources including Eurostat and COMEXT trade statistics, and TRACES databases. The study found that "with the information used (analysis of trade statistics, Member States analysis and discussions with EU traders), the results showed that no impact on trade in relation with the IUU Regulation can be detected" (DG MARE 2014). While this does not provide conclusive evidence that the EU CDS is not preventing at least some IUU fisheries products from entering the EU market, it does raise the question of whether similar levels of IUU fisheries products certified under the EU CDS as being of legal origin might still be entering the market.

At the time of publication of the 2014 DG MARE study, no red cards had yet been issued. Official imports from red-carded countries (trading seafood to the EU) would naturally be expected to diminish substantially once red cards were in place, as fish harvested by their vessels could no longer be traded to the EU. This effect would be noticeable especially for countries whose exports consisted mainly of artisanal fisheries products, whose fishers were landing harvests in their own country, and were unable to re-flag their vessels.

In commodity-level fisheries such as tuna or whitefish, in contrast, catches from particular flags are often sourced globally by processing states. Processors could and probably would switch sourcing options away from vessels flying the flag of a red-carded state, while trying to maintain stable output. This shift is likely to hide potentially noticeable changes in trade patterns in the process, as trade data (e.g. Eurostat) would normally tend to reflect the country of processing and exportation, rather than the flag state (and thus the origin) of the fish. Also, industrial-scale vessels flying the flag of a red-carded country—such as large purse seiners, longliners, or trawlers—may simply switch flags to continue fishing and have harvests exported to the EU. Some traders in the EU trading in tropical tunas quietly admit that quantities of yellowfin tuna sourced from Sri Lankan fishing vessels continued to enter the EU market, regardless of Sri Lanka's red-carded status.⁷⁶ This is rendered possible by the loopholes and the flag state-focused sanctions inherent to the EU CDS. The greater attachment of artisanal fleets to their flag states also implies that the potential impacts of broad EU TREMs applied to flag states and their harvests are likely to be felt more by small-scale operators, lacking the flexibility of industrial-scale operators to relocate and/or to re-flag. This situation is naturally exacerbated in SIDS.

In theory, trade impact should only be felt once a red card is issued, as yellow-carded countries can still export to the EU; the EU IUU Regulation does not provide for specific risk-related treatment of consignments from yellow-carded countries. However, some EU member states, notably Spain, have developed a position whereby products from a yellow-carded country can be denied market access, implying a de facto yellow card-related TREM. Ghana, which is operating a number of Ghanaian-flagged tuna purse seiners and which was also exporting tuna products to Spain, was directly affected by Spain's position during the 22 months in which it was yellow-carded, as were global tuna trading houses such as Trimarine.⁷⁷ Under the US MSRA and the final rule of 2011, only negative certification can lead to trade restrictions and have an impact on exports (see section "Effect of Certification Determinations" in Federal Registry Notice 76/8 of 2011). A country's "identified" status does not lead to any additional risk-based management of consignments headed for the US.

5.5 Impact on Fish Stocks

The ultimate goal in combatting IUU fishing is to achieve sustainable fisheries management by reducing the incidence of illegal activity. There is currently very little hard evidence that the EU's CDS or TREMs have had a direct impact on fish stocks, although there is anecdotal evidence that the identification process is leading to actions that may lead to improvements in fisheries governance in identified countries.⁷⁸

Since the EU IUU Regulation takes a non-risk based approach to certification under its CDS (i.e. all marine fish imported into the EU must be certified, regardless of the IUU-profile of the fishery), and applies this to harvests sourced from within EEZs of third countries as well as harvests derived from

76 Personal and anonymous communication.

77 Trimarine: personal communication.

78 See for example European Commission (2014b, 2015b)

the high seas, any environmental impacts related to the elimination of IUU fishing are dispersed among marine ecosystems and many fish stocks worldwide. In the case of the US, the projected CDS is risk based, and the number of species covered, at least initially, is going to be much more limited. Any impact on the welfare of stocks is most likely to be significant where a) there is high incidence of IUU fishing, and b) where a sufficiently important proportion of the catch is exported to the state applying the unilateral market-based measures. However, there are currently few fisheries from which an overwhelming majority (>90 percent) of catches are exported to the EU or the US market.

Even if certification under the EU and US CDS was (or were to become) highly effective and loopholes were eliminated, effectively barring all IUU products from entering these markets, the same products could still be traded to other seafood markets worldwide not operating similar unilateral trade mechanisms. In fact, it has been hypothesised that putting in place an effective unilateral certification system raising effective barriers to trade in IUU products, and implying important investments by third countries to abide by its rules, may push products from questionable sources to simply export to more lenient and accommodating market states (Oceanic et al. 2009). This would potentially undermine any unilateral scheme's ability to exert a significant positive influence on the minimisation of IUU fishing and, consequently, sustainable resource management.

Given this situation, direct environmental impacts of a unilateral CDS can only be achieved—potentially—for resources where the unilateral operator of the scheme is also the custodian of the largest share of the world market for that specific resource, or alternatively, if several unilateral schemes

combine to achieve such a result. Currently, no evidence of such impacts at the stock level, related to the EU CDS, has been advanced in the literature. In comparison, at least in the case of ICCAT's multilateral CDS, strong evidence of direct and positive impact of multilateral measures at the stock level is starting to emerge.

Turning to the impact of TREMS, the fact that identifications under the US MSRA can be repeated biannually for the same countries, the same fleets, and the same types of infringements in the same fishery (e.g. Italy's longline fleet identified for illegally operating driftnets in the ICCAT area of competence in 2009, 2011, and 2013) also diminishes to a large extent the impacts that may be expected at this level.

With respect to the EU's TREMs, a recent more optimistic paper “focusing on the dynamic relationship between soft and hard forms of enforcement” suggests that “the [EU IUU] regulation has produced important results in the fight against IUU fishing by promoting improved flag state performance” (Elvestad and Kvalvik 2015). Possibly the clearest signals to date that this could be the case are emerging from Thailand. Thailand's yellow card appears to have been extended by the EU Commission in early 2016, in light of its perceived efforts to address gross human rights abuses in its supply chains,⁷⁹ and to register important non-registered segments of its domestic fleet, which are believed to involve thousands of vessels.⁸⁰ Thailand's recent efforts to address these long-standing issues are understood to have been fuelled to a large extent by the yellow card it was issued in April 2015. Other bilateral mechanisms may also have played a part: the US State Department downgraded Thailand's designation to a Tier 3 trafficking nation in June 2014, due to its failure to curb trafficking in persons in the seafood industry, among others.⁸¹

79 On reported abuses, see for example Stokes, Kelly, and Kelly (2015).

80 See for example BenarNews (2015).

81 See US Department of State (2014).

Taking into account the arguments above, the impact on illegal fishing, and therefore on fish stocks, of unilateral TREMs may in fact be greater than that of unilateral CDS. A unilateral identification and sanctioning process is likely to be more effective in changing the behaviour of countries that are generally understood to be a part of the IUU fishing problem if they export significant amounts of seafood to the market imposing the sanctions, they value the revenue generated in that market, and seek to maintain market access. If soft flag, port, and processing states among the major producer countries can be pushed into becoming more responsible, through the use of transparent and fair trade measures, the impact of unilateral TREMs could be substantial.

5.6 Economic and Social Impact

The economic impact of trade sanctions can be very diverse, and will normally be felt at both the importing and exporting ends of markets. The examples of Sri Lanka, Ghana, and Thailand demonstrate the various kinds of economic impact the EU's measures may have had.

All of the countries that have so far received a red card from the EU came from the first group of eight countries identified in 2012. As a group, the volume and value of their exports to the EU was minor. The impact of the sanctions in the EU market could thus have been assumed to have been limited. However, this is not the case.

Of the three countries that remained red-carded in early 2016, only Sri Lanka had an established seafood trade with the EU. The lion's share of that trade consisted of exports of fresh yellowfin tuna. EU traders in the UK have reported that, as a result of the sanctions, yellowfin tuna prices have been consistently higher throughout 2015, and that the need to substitute for Sri Lankan yellowfin has contributed to significant price inflation. In the UK, yellowfin tuna was trading between 30 and 60 percent higher over 2014 prices and, while prices had steadied somewhat towards

the end of 2015, fluctuations remained important (ATUNA 2016).

Depending on the type of imported species and the supply constraints resulting from red cards, price hikes inside the EU are thus a potential result of unilateral TREMs, which may impact consumer access to fish. Fish in the EU is generally expensive and inflationary pressures on fish prices may make it more difficult for less well-off people to access seafood and its benefits as a healthy food choice.

The government of Sri Lanka reported US\$75 million in lost revenue after seven months under sanction (ATUNA 2016), which is likely also to have led to the loss of jobs and livelihoods. It is, however, not only red-carded countries that suffer financial losses.

The Ghanaian Minister of Fisheries and Aquaculture Development reported that the yellow card issued to it in late 2013 had cost the country US\$100 million over two years (Megapesca 2015). These costs could partly relate to investments in monitoring, control and surveillance infrastructure, such as patrol vessels or vessel monitoring systems. While these are arguably positive investments in fisheries management and enforcement, immediate costs are substantial. Ghanaian tuna processors are highly dependent on the EU market because they can trade processed tuna into the EU under the preferential trade regime as an ACP (African, Caribbean or Pacific) country. Since an important share of the country's tuna exports is derived from Ghanaian flagged vessels, a red card could potentially have led to the closing of some of the major factories, putting thousands of jobs on the line and seriously affecting the national economy.

For Thailand, the situation is different. Thailand has a much more diversified market base. In 2014, only 12 percent of Thai seafood exports went to the EU (EIC 2015) and for many of the traded commodities, little raw material is sourced from Thai fishing vessels. Up to 90 percent of tuna exported by Thailand

following processing comes from imports (Oceanic 2009). As a result of both these factors, the economic impact of an EU red card on Thailand would be more limited than the impact on a country with preferential trade ties with the EU, processing catch from domestic fishing fleets and a limited portfolio of export markets. In 2014, the total value of Thailand's seafood exports was US\$6.426 billion (EIC 2015). A study released in July 2015 estimated that a maximum of US\$200-300 million worth of exports would be directly affected by an EU red card—4 percent of the overall export value—and predicted that tuna and shrimp sectors would likely be spared entirely (EIC 2015).

Impacts of the sanction system would also have been felt by EU owners and operators involved in the operation of fishing vessels flagged to, and companies operating in, the first set of eight yellow-carded countries—several of which are often cited as FOC countries. An online analysis of the ownership of the fishing vessels flagged to the eight yellow-carded countries in 2012 (Trygg Mat 2012) found that:

- 27 percent of vessels with known owners are owned by EU-based companies
- 24 percent of vessels with foreign operators are operated by EU-based companies
- EU-based companies were involved in one or other capacity in 66 of the vessels, including two vessels on RFMO IUU lists
- A total of 50 companies from 14 different EU member states were involved
- More vessels were controlled by EU-based companies than by any other single state.

The global distribution of EU fishing interests and investments means that the yellow-carding (and particularly red-carding) of flag states is also likely to affect the economic performance of EU operators and companies

directly. In the case of Sri Lanka, at least one factory exporting to the EU that was built and is operated by a British seafood company in Sri Lanka (Ceylon Fresh Seafood), has been directly affected by the identification.⁸²

Overall, it is clear that the process of identifying countries is disruptive to the business climate in identified countries. Fleets flagged to and fish factories located in identified countries risk becoming ineligible to export to the EU and/or US markets over the short or medium term, and may face significant uncertainty about how soon they will be allowed to export again. Business climates marked by growing uncertainty are known to have a stunting effect on investment (Keynes 1936), which implies that substantial costs related to lost opportunities must be added to the mix of adverse economic impacts. Given that periods of identification under the EU system generally last two years, it is likely that the pace of development of seafood sectors in these countries slows during this time, which is detrimental to any national economic sector operating in a competitive globalised trade environment.

These uncertainty costs may be larger under the EU system than the US. The identification and certification procedure under the US MSRA is regulated in more detail, and transparency regarding identification, dialogue, and outcomes is greater. After three full rounds of biennial reporting to the US Congress identifying and certifying countries, the climate of uncertainty surrounding the implementation of the TREM provisions under the MSRA is significantly more subdued than that relating to TREM implementation under the EU IUU Regulation.

The burden of compliance with the CDS for exporting countries is also important. Because the scope of the CDS in the EU IUU Regulation is so wide, all countries exporting marine capture fisheries products to the EU must comply with the scheme, regardless

82 Personal communication: Peter Stagg (Le Lien Co Ltd).

of the volume of trade. This implies that all exporting countries have had to develop administrative procedures to comply with the scheme's requirements. In the case of RFMO's, only countries fishing and exporting specific species had to do this.

With regards to the US, only countries trading in "at-risk" species identified under the MSRA will be affected by the provisions of the Moratorium Protection Act. Because US regulation puts the onus on importers of seafood into the US to collect supply chain information about the legality of catch they buy, the burden of compliance—human and financial—on third-country administrations with the US CDS may therefore be lighter. However, US importers are presumably likely to demand the required information of suppliers throughout their supply chain. The burden of providing this information, in the absence of a dedicated document system and competent authority verifications and validations along the supply chain, may fall more on private actors in third countries.

The volumes of paper that must be handled and accounted for by processors and competent authorities along the supply chain can take on colossal proportions under the EU CDS (Palin et al. 2013). This has led numerous processors and a majority of fisheries administrations worldwide to re-assign or to create new full-time equivalent staff positions, tasked with administering the scheme. The combined annual investment and operating cost of implementing the scheme in third countries, to both private and public sectors, is substantial and may amount to several million euros,

depending on the country and the importance of seafood exports to the EU. Some countries, like Norway,⁸³ have developed fully fledged and outsourced electronic platforms operated by private sector companies established—at least initially—for the sole purpose of complying with the EU CDS.

At EU Commission level, no figures relating to the cost of implementing the EU IUU Regulation are available. Added to EU Commission expenses are the costs borne by EU member states, where it is estimated that a minimum of 474 people had been allocated new functions tasked with the implementation of the scheme, reporting an average of 18 positions per member state (DG MARE 2014). This represents an estimated EU-wide yearly staff cost of €15 million.⁸⁴ In contrast, ICCAT, CCSBT, and CCAMLR all estimate that annual costs to operate their CDS—including the operation of electronic platforms—amount to the full-time equivalent of the compliance officer's position.^{85,86,87}

Instances of staff hired in the private and public sectors to chiefly or exclusively administer multilateral schemes—and amounting to full-time equivalents—are few, but do exist; they are likely to be limited to the administrations of key exporting and importing states. Therefore, estimated costs of RFMO CDS to the operator and the users of these schemes are significantly lower. The EU CDS, on the other hand, is estimated to have engendered total global costs (operator and users combined) of several hundred million euros since its inception.⁸⁸ Though the scope of unilateral and multilateral CDS is

83 See for example www.catchcertificate.no (n.d.).

84 Author's estimation, based on a gross yearly salary of €31,000 per position. The median gross salary of a civil servant in the UK in 2013 was £24,380 (equivalent to €37,800 in 2013). See UK Office for National Statistics (2013).

85 Personal communication and estimate of the ICCAT secretariat.

86 Personal communication of the CCSBT secretariat.

87 Personal communication of the CCAMLR compliance officer.

88 Author's estimation. EU-wide member state staff costs relating to the operation of the scheme alone are likely to exceed a total of €100 million by the end of 2016. Added to these costs are EU member state costs for developing IT solutions and administrative procedures. There are also the costs borne by the EU Commission itself (staff, travel, external contracting) for operating and enforcing the scheme, and important budgets have been made available in the context of bilateral EU cooperation programmes for assisting third countries in implementing the EU IUU Regulation. Then there are the costs borne by the EU private sector to comply with the regulation. Finally, and most importantly, there are the globalised total costs borne by the public and private sectors in all third countries exporting seafood to the EU, which have not been formally estimated to date, but which are known to be considerable. At the time of writing (August 2016), 98 countries, were DG SANCO approved to export seafood to the EU (European Commission DG SANCO. n.d.), and had to develop their systems to comply with the EU CDS.

vastly different—clearly one of the sources of differences in operational costs—the question arises as to which type of CDS is more efficient from a cost/benefit point of view. Relevant information to answer that question will only become available in time.

One of the most prominent social concerns associated with unilateral systems relates to the impact of the identification system on small-scale fisheries. While a very large proportion of shortcomings identified in EU yellow cards to date relate to industrial-scale fishing, non-compliance, and the failure of the state to regulate and enforce, it is small-scale fishers and their livelihoods that may end up being most severely affected in red-carded countries. Their inextricable bond with the flag state means that small-scale fisheries are exposed to the full brunt of a broad trade embargo targeting all of a flag state's fish exports. Small-scale fishing vessels typically cannot re-flag, and small and medium-sized facilities processing artisanal products

are generally fully dependent on national supplies—especially in SIDS.⁸⁹ In the context of the Sri Lankan red card, private sector actors have estimated that around a million Sri Lankans depended for their livelihoods on the fishing industry (Ramsden 2016). Next to Sri Lanka, Ghana, and the Philippines are typical examples of cases where this likely effect could have been verified, had a red card been handed to them. For developing countries, and SIDS in particular, this raises the question of whether the impact of EU-style blanket-TREMs is proportionate to the problem they are trying to solve.

The US TREM provisions under the MSRA are more targeted, and allow for the application of TREMs to specific products and species from specific fisheries where the IUU fishing of concern has been identified. Unwarranted economic and social costs relating to the application of fisheries- or product-specific TREMs would thus be expected to be much more limited.

⁸⁹ This is not necessarily so in all artisanal fisheries, such as in West Africa, where some small-scale fishers can be highly mobile (Failler and Binet 2012). This, however, is the exception, rather than the rule.

6. CHALLENGES AND OPPORTUNITIES FOR FISH EXPORTING AND IMPORTING COUNTRIES

One of the challenges facing national governments and the international trade system in the context of fisheries trade is how the design and the coherence of, and between, multilateral and unilateral approaches to trade in IUU products could be improved. There are at least four elements to this question: expanding the scope of multilateral trade measures, improving the design and the coherence of unilateral CDS, improving coherence between unilateral and multilateral CDS, and improving the application and coherence of unilateral TREMs—both to increase their effectiveness and to enable their potential multilateralisation in the long run.

6.1 Expanding the Limited Scope of Multilateral Trade Measures

This paper has shown that RFMO-based TDS, combined with TREMs have been effective in virtually eliminating the operation of large-scale FOC tuna longline vessels—one of the most important sources of IUU fishing in global tuna fisheries—in the late 1990s and early 2000s. RFMO-based CDS have in some cases been very effective at protecting fish stocks from IUU fishing, even without the application of TREMs. Well-designed CDS achieve market exclusion of illegally harvested products, erode the financial incentives to engage in IUU fishing, and do therefore diminish the need to resort to TREMs to achieve the desired compliance by state actors. This paper has shown that the key to success of any CDS resides in its effective implementation along the supply chain by flag, port, and important market states.

However, only transboundary and straddling fish stocks fall under the purview of RFMOs with statutory management powers. This naturally limits the number of stocks and the percentage of world fisheries resources that can gain protection from IUU fishing under multilateral CDS implemented by RFMOs. With regard to tuna RFMOs, currently less than 1 percent of global commercial tuna catches (by volume) are subjected to a CDS (Hosch 2016b). Most RFMOs do not operate a CDS at all, or have no provisions enabling an RFMO to issue TREMs for consistent failure in complying with CMMs; this leaves substantial room for expansion of RFMO-based trade measures in fisheries facing persistent IUU fishing challenges.

There is a significant opportunity for countries that exploit shared fish stocks to improve the coherence of future multilateral documentation schemes by expanding beyond established RFMO boundaries. The power of multilateral documentation schemes resides in the fact that they can be designed to cover a fish stock or fish species across its entire geographical range,⁹⁰ and that the bodies enacting multilateral trade-restrictive measures are grounded in international law as multilateral environmental agreements (WTO 2005), which probably strengthens the general compatibility of such measures with WTO rules.⁹¹ RFMOs generally do not cover the entire geographical expanse of species they manage.⁹² FAO's upcoming Design Options for the Development of Tuna Catch Documentation Schemes point out that for future CDS covering the remaining commercial

90 See the 1995 Code of Conduct for Responsible Fisheries Article 7.3.1: "To be effective, fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account previously agreed management measures established and applied in the same region, all removals and the biological unity and other biological characteristics of the stock. [...]"

91 Roheim and Sutinen (2006) argue that: "Given that the WTO prefers multilateral over unilateral approaches, trade actions taken by a group of countries under the auspices of an international agreement, such as an RFMO, would be viewed more positively than a unilateral action, particularly if the RFMO includes all the producing and consuming countries relevant to that particular species or group of related species."

92 This is notably the case for all commercial tunas other than Atlantic bluefin and southern bluefin tuna. CCAMLR, ICCAT, and CCSBT, covering the entire geographical range of the species they developed a CDS for, are the exception to the general rule.

tuna species to be effective, schemes ought to cover species across their entire geographical range—implying harmonisation and unification of CDS covering such species between RFMOs (Hosch 2016b). Such CDS would thus straddle RFMOs, and could be managed by a central international operator established under a framework agreement with global reach. This would be a first important step in building a coherent global CDS framework covering both catch and trade in tuna species, and the model could be expanded to cover other transboundary and straddling stocks globally.

The strength of such an approach lies in the fact that entire stocks stand to gain effective protection from IUU fishing, and that the electronic platforms to operate these fisheries-specific documentation schemes could be harmonised by adopting the same standards, electronic platform, and modes of data submission across fisheries covered. This would effectively reduce costs, and minimise the burden on economic operators harvesting and trading the species covered, as well as the national fisheries and trade authorities managing and overseeing them. CITES, and its electronic permit system, covering many different species harvested and traded globally under the convention, provides a functional model.

6.2 Addressing the Proliferation of Unilateral CDS

The implementation of the EU's unilateral CDS in 2010 and the planned launch of a unilateral US American CDS by the end of 2016 point to the beginning of a proliferation of unilateral documentation schemes.

Large import markets that choose to implement unilateral CDS face the challenge of designing schemes that are WTO compliant, that resource-poor exporters can comply with, and that are effective in addressing IUU fishing. Effectiveness may be the key challenge of the three. This paper has shown that unilateral CDS, by definition, can only cover and regulate the proportion of product that is traded into their markets, and that

they are second-best options to multilateral CDS. The latter cover, and have been shown to be capable of effectively protecting entire stocks from widespread forms of IUU fishing. Fish are managed as stocks, and unless IUU fishing is eliminated from a fishery as a unit, the positive effects of unilateral trade measures on any given fishery worldwide may remain elusive. This suggests that in order to be effective, unilateral schemes should at a minimum be made coherent with those of other large markets for at-risk species.

In the short to medium term, the most important challenge for fisheries exporters related to unilateral CDS is the risk that economic operators will have to comply with several schemes individually, multiplying the burden of compliance. Required data and forms will have to be supplied across different platforms, in order to ensure that downstream buyers can supply any unilaterally regulated end market with products acquired upstream. Should other large import markets like China and Japan announce their intention to also develop similar but different unilateral CDS, this challenge would be multiplied. Administrative costs, uncertainty, and risks in seafood trade would likely grow as a result. A potentially incoherent approach is obviously not conducive to facilitating efficient trade flows—nor to effectively combatting IUU fishing.

Whether multilateral or unilateral, and particularly when more than one scheme applies, compliance with these frameworks is onerous. The burden of complying with complex and decentralised systems (i.e. systems not operating a centralised electronic platform) is particularly difficult for developing countries, their industry and their administrations and, in some cases, this may be beyond their means. In such cases, the technical dimension of proliferating unilateral instruments may reveal itself as a de facto barrier to trade. An essential part of improving the effectiveness of unilateral measures will therefore be to provide support to developing country private and public sectors to support their compliance with these systems.

For all buyers and sellers of fish, the net effect of increased risk and uncertainty related to the proliferation of unilateral trade measures across global seafood markets is the likely increase of seafood prices in end markets operating unilateral trade measures, and for inflationary price trends to then spread to other markets. Such an effect has been observed in relation to the EU-Sri Lanka red-card case and the trade of fresh yellowfin tuna into the UK market, as noted above. A more coherent approach to the development of both multilateral and unilateral measures could therefore play a role in balancing the use of trade measures to close the market to IUU fish with ensuring that trade continues to support access to fish and fish products, thereby supporting food security.

6.3 “Building Block” Unilateral CDS

In the longer term, there is a clear international consensus that unilateral trade measures are, from a resource management perspective, second-best responses to IUU fishing.

The IPOA-IUU underlines this point in Article 70, stating that “stock or species-specific trade-related measures may be necessary to reduce or eliminate the economic incentive for vessels to engage in IUU fishing.” Based on this and other considerations, the IPOA-IUU discourages, in plain terms, the introduction of unilateral trade-related measures (Article 66), and refers in Article 69 to CDS from an exclusively multilateral perspective.⁹³ Similarly, one of the conclusions from a meeting between the European Commission, national governments, industry, and NGOs in Brussels in October 2015 indicated that “[...] IUU fishing is a global problem, necessitating a multilateral response. Participants agreed

that multilateral approaches should be preferred, where available [...]” (IUUWatch 2015).

As a first step towards coherence, countries developing unilateral CDS could look beyond how such an instrument will regulate and affect trade flows into their single market, and consider all facets relating to the fishery and the trade of the commodity globally. If unilateral CDS are to have any real impact on the economics of IUU fishing, their design will need to be adapted to the industry’s complex supply chain realities. CDS should be designed to trace fish products from the origin (the vessel) through complex supply chains into the end market, providing a solid step-by-step data acquisition platform, and eliminating avenues for laundering IUU fish into supply streams through this process. FAO’s work through various avenues, including expert and technical consultations on the matter (FAO 2015), will be key in advancing the improvement of existing CDS in the coming years.

A second step towards coherence between unilateral and multilateral documentation schemes could be to ensure the mutual recognition of certificates, as is currently the case with RFMO certificates covering imports of fishery products into the EU. In time, unilateral electronic platforms could be harmonised in order to reduce the burden of compliance on third parties and to enhance the system’s effectiveness in terms of combatting IUU fishing. A convergence of unilateral schemes could gradually be merged into a single multilateral framework.⁹⁴

However, the mutual recognition of catch certificates is only one part of the solution. In the absence of automated mass balance

93 “Trade-related measures to reduce or eliminate trade in fish and fish products derived from IUU fishing could include the adoption of multilateral catch documentation and certification requirements, as well as other appropriate multilaterally-agreed measures such as import and export controls or prohibitions. Such measures should be adopted in a fair, transparent and non-discriminatory manner. [...]”

94 Such an approach is consistent with the EU’s initial textual proposal on “Trade and Sustainable Development” in TTIP, made public on 6 November 2015, stating in Article 14.2., (highlight by the author): “To this end, the Parties shall: g) implement Catch Documentation or Certification Schemes established by RFMOs, of which it is a member, for trade of fisheries products and work together towards the establishment of multilateral catch documentation and certification systems, including electronic schemes.” (Source: EU 2015b).

monitoring routines (or catch accounting) across systems, it will be impossible to know how much of the initial product is moving from point of harvest (and certificate issue) into which markets operating unilateral CDS. For example, the same catch certificate could be used to certify the importation of a given amount of legal catch into the EU, and then, attached to a different shipment, into the US. To prevent certificate over-usage, the two systems would need not only to recognise each other's certificates but to operate a central electronic certificate registry between them.

6.4 Fine-tuning Unilateral TREMs

This paper has shown that RFMO-enacted TREMs have been successful in largely eliminating the problem they sought to address. The power of multilateral TREMs lies in the fact that the most lucrative markets globally are closed off to the targeted products, making the operation of IUU fleets economically unviable and leading to their dismantling over a short period of time. Unilateral TREMs—by definition—only eliminate access of products to a single market, regardless of the global importance of this market. Although they may have an impact, it is not clear that they are able to create economic incentives strong enough on their own to lead to a cessation of IUU operations altogether. This paper has also shown that if a CDS, well-enforced by market states, is effective at protecting a given fishery, resorting to TREMs may become unnecessary altogether. However, it is widely accepted that unilateral TREMs, if applied judiciously by important end markets, are likely to have a more profound impact on combatting IUU fishing than the implementation of unilateral CDS.

This paper also introduces the notion that broad and indiscriminate TREMs against particular states—in their capacity as flag states—may cause economic and social impacts that are disproportionate to the scale of the problem they seek to address. They are also potentially unfair, causing impacts in fisheries sector segments that may have

no fault in the IUU fishing phenomena that such TREMs seek to correct. RFMO practice has shown that species- and product-specific TREMs can be successful at eliminating IUU practices of concern. TREMs provided in US legislation appear to be designed to be similarly targeted, should use be made of them.

Limiting the potential of TREMs to flag states and products derived from their fishing vessels defeats part of the purpose of TREMs. If states are found to be facilitating the laundering of IUU-derived fish products through their ports (now a violation of PSMA provisions, for those party to the agreement), or allowing the processing and exporting of IUU-derived fish products into international markets, TREMs ought to be designed in a way that they can also be applied against such port and market states. In such cases, particular products from these countries ought to be the object of TREMs, regardless of the (presumed) flag state origin of such products.

The paper also highlights the issue of the standards applied in identifying third countries, and the transparency of the identification processes, with large differences arising between EU and US practice. On the whole, US identifications seem more reflective of the incidence of serious IUU fishing and of IUU state facilitation globally. The global distribution of EU identifications raises questions as to how standards based on a very broad definition of IUU, even if agreed multilaterally, are applied. The US provides detailed records of the content of dialogues held with third countries to address and resolve IUU issues, which could be considered closer to best practice.

The EU's actual red-carding of third countries is likely to be a more effective way of enabling TREMs to have a tangible impact than the US practice of identifications issued repeatedly for the same type of IUU fishing in the same fishery by the vessels flying the flag of the same country, without a negative certification.

In light of the above, TREMs ought to be as specific as they can be with regard to the products involved in IUU fishing, and standards and procedures applying to the imposition of trade measures should be clear and be applied in a transparent manner. This will reduce risk and

uncertainty in the markets that may be affected. TREMs ought to be designed in a flexible way which allows countries to be identified in their capacity as faltering flag, coastal, port, or market state and, most importantly, to be facing the prospect of TREMs in those same capacities.

7. CONCLUSIONS AND RECOMMENDATIONS

While many factors combine to determine the success or failure of multilateral trade instruments implemented by RFMOs, indications are that existing multilateral CDS and TREMs operated and issued by RFMOs, when strongly enforced by port and market states, have substantially curbed targeted forms of IUU fishing and contributed to achieving the protection of specific fisheries, with the most conclusive evidence emerging from ICCAT experiences since the late 1990s.

RFMOs are still the organisations best positioned to facilitate practical and effective solutions to combat IUU fishing in specific fisheries. They should be supported and strengthened so that they can continue to deliver multilateral solutions to the multilateral problem of IUU fishing in shared fisheries and trade in products derived from those fisheries.

Unilateral end-market CDS—when based on effective design—may protect markets from sourcing a wide range of illegally harvested products, but because they close off only one market to IUU products, these CDS may have limited overall impact on IUU fishing and the sustainable management of individual fish stocks. Policymakers looking to improve the effectiveness of multilateral and unilateral CDS could consider focusing on the following:

1. CDS should be based on a technically sound design which achieves verifiable traceability, and encompasses supply chain operators at flag, port, processing and market state levels in an even-handed manner. In order to achieve this, more technical guidelines such as FAO's 2016 Design Options for the Development of Tuna Catch Documentation Schemes and COFI-mandated Voluntary Guidelines for Catch Documentation Schemes (process ongoing) should be developed, and applied,⁹⁵ while current schemes should be subjected to candid performance reviews in order to establish what works, and to fix what does not.
2. CDS should be designed around a central certificate (or data) registry spanning the full supply chain, to achieve verifiable traceability, and to enable the effective detection of fraud (in the form of non-originating product laundering) within the supply chain to a degree which is sufficient to force illegal operators into compliant behaviour. Given the vast amounts of trade in fish products, these mechanisms need to be designed to be flexible, largely automated, and self-enforcing in order to be effective.
3. The efficient achievement of verifiable traceability in complex supply chains is only possible through the implementation of electronic solutions implying online electronic submission and validation of data within a centralised repository, every step along the supply chain. Source harvest data in small-scale fisheries can be acquired through a simplified procedure for which the EU IUU Regulation (EU 2009) provides a functional best-practice model.
4. CDS ought to be risk based, and apply only to fisheries suffering from established and seriously damaging IUU issues. Blanket CDS approaches applying to all products from all countries are more likely to have a disproportionately broad and unwarranted impact on trade and the global economy.

Multilateral TREMs have been shown to be potent instruments that can induce fundamental changes in IUU dynamics. Unilateral TREMs stand to gain from the experience gathered since the late 1990s in the application of multilateral TREMs. Policymakers looking to

⁹⁵ Note that formal technical guidelines for the design, development, and implementation of CDS are largely absent in the technical literature.

improve the effectiveness of multilateral and unilateral TREMs could consider focusing on the following:

5. Ensuring that TREMs are as species- and product-specific as possible, in order to address IUU problems with precision, minimising undue economic and social impacts in segments of fisheries and supply chains unrelated to the IUU fishing being subjected to sanctions.
6. Ensuring there are clear standards regarding what constitutes IUU fishing, clear rules and procedures for the identification (or yellow- and red-carding) of countries, and transparent public records on dialogues with potential targets of TREMs, in order to improve transparency and reduce risk and uncertainty related to TREMs to a minimum.
7. Designing TREM provisions in a way that allows countries to be identified in their capacity as flag, coastal, port, or market states, and to be sanctioned in those same capacities. As a supply-chain driven and facilitated phenomenon, IUU fishing is allowed to flourish through the continued existence of lax coastal, port, and market states accepting fishing operations and trade to occur in waters or territories under their jurisdiction. Trade instruments have been designed specifically to overcome the limitations of flag state enforcement, and therefore TREMs ought to be designed in such a way that they may be applied in as flexible and encompassing a manner as possible.
8. Nations operating unilateral trade instruments, including TREMs, could use regional trade agreements (RTAs), e.g. Transatlantic Trade and Investment Partnership (TTIP) between the US and the EU, as an avenue for enhancing the regulatory coherence in the design and application of these instruments.⁹⁶ RTA

provisions could provide guidance on definitions and standards applying to identification and transparency, and provide for the mutual recognition of negative and positive identifications. Eventually, governments could consider adopting a multilateral approach to TREMs, for example in the WTO.

A further focus for work could be how to improve the coherence, and eventual multilateralisation, of various CDS measures. In this regard, policymakers could consider the following:

9. New and existing unilateral schemes ought to devise means for mutual recognition and equivalence of their certificates, in the same vein as unilateral systems recognise (or plan to recognise) equivalence of RFMO certificates. This would reduce the burden of compliance on economic operators, and likewise the costs associated with the operation of these schemes. These systems could then be aligned, with a view to adopting harmonised mass balance accounting approaches and electronic platforms. The merging of unilateral documentation systems would eventually produce de facto multilateral systems, which could then be opened up for expanded end-market state membership—thus avoiding the proliferation of schemes, and the negative impacts related to that. As more end-market states join the same scheme, the effectiveness of unilateral CDS in generating positive impacts at the stock level could be improved.
10. The international community could assess the feasibility for the development and operation of global multilateral CDS systems, designed to apply to specific species in need of protection from IUU fishing. A risk-based framework of mandatory multilateral schemes could be harmonised by virtue of being

⁹⁶ Regulatory cooperation is the object of a dedicated chapter under TTIP.

managed by the same organisation, based on the same approach and platform, and thus reducing the overall global costs and burden of compliance to a minimum. Instead of having single or multiple CDS operated by several RFMOs, for specific species, a central operator could provide a centralised and globalised CDS platform to any RFMO that would determine that a CDS would be beneficial for combatting IUU fishing in its fisheries. The impact of such

global schemes—in terms of sustainable fisheries management outcomes—would be maximised. An appropriate organisation and forum to discuss such an initiative would be the FAO's Committee on Fisheries (COFI), which meets biennially in Rome to discuss and approve the Organization's biennial work plans in the domain of fisheries. COFI could provide FAO with a mandate to formally assess the feasibility of such an approach, working with the trade system.

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