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TRADE AND ENVIRONMENT REVIEW 2016

FISH TRADE



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Acronyms

ABS	Access and Benefit Sharing
AMLC	Association of Marine Laboratories of the Caribbean
APC	Africa, Caribbean and Pacific Group
APEC	Asia-Pacific Economic Cooperation
ASC	Aquaculture Stewardship Council
ASCM	Agreement on Subsidies and Countervailing Measures.
BAP	Best Aquaculture Practices
BGI	Blue Growth Initiative
CAF	Development Bank of Latin America
CARICOM	Caribbean Community and Common Market
CARICOMP	Caribbean Coastal Marine Productivity Program
CARIFORUM	Caribbean Community and Dominican Republic
CARPAS	Regional Fisheries Advisory Commission for the Southwest Atlantic
CBD	Convention on Biological Diversity
CDS	Catch Documentation Schemes
CEPAL/ECLAC	Economic Commission for Latin America and the Caribbean
CESI	Committee for Environmental and Social Impact
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
CPPS	Permanent South Pacific Commission
CS	Commonwealth Secretariat
CSD	Commission on Sustainable Development
CTE	Committee on Trade and Environment, WTO
CTS	Committee for Trade in Services, WTO
DDA	Doha Development Agenda
DFID	Department for International Development
EBSA	Ecologically or Biologically Significant Area (under CBD)
EEZ	Exclusive Economic Zone
EGA	Environmental Goods Agreement
EGS	Environmental Goods and Services
ENSO	El Niño-Southern Oscillation
EPA	European Partnership Agreement
EPPs	Environmentally Preferable Products (EPPs)
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investment
FoF	Friends of the Fish
FoS	Friends of the Sea
GAAP	Global Aquaculture Advancement Partnership
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GSSI	Global Sustainable Seafood Initiative
ICT	Information and communication technologies
ICZM	Integrated coastal zone management
IDB	Inter-American Development Bank
IEAE	International Atomic Energy Agency
IFPRI	International Food Policy Research Institute
IMO	International Maritime Organisation
IOC	Intergovernmental Oceanographic Commission
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Areas
IsPOA	Istanbul Programme of Action for Least Developed Countries
ITQ	Individual Transferable Quota
IUU	Illegal, unreported and unregulated fishing

LDCs	Least Developed Countries
LPAA	Lima Paris Action Agenda
MAF	Ministry of Agriculture and Fisheries of Oman
MARPOL Convention	International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978
MDGs	Millennium Development Goals
MEAs	Multi-lateral Environmental Agreements
MFN	Most Favourable Nations
MIF	Multilateral Investment Fund
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSP	Marine Special Planning
MSY	Maximum Sustainable Yield
Nagoya Protocol	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity
NAMA	Non Agriculture Market Access, WTO
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
OECS	Organisation of Eastern Caribbean States
OLDEPESCA	Latin American Organization for Fisheries Development
PES	Payment for Ecosystem Services
PIC	Pacific Island Countries
PIF	Pacific Island Forum
PPMs	Process Product Methods
PPP	Purchasing Power Parity
R&D	Research and development
RFBs	Regional fisheries bodies
RFMO/As	Regional fisheries management organizations and arrangements
RTAs	Regional Trade Agreements
SDG	Sustainable Development Goals
SDT	Special and Differential Treatment
SIDS	Small Island Developing States
SVE	Small and vulnerable economies
TPP	Trans-Pacific Partnership Agreement
TURF	Territorial Use Rights Fisheries
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Seas
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNWTO	United Nations Tourism Organisation
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WCPO	Western and Central Pacific Ocean
WECAFC	Western Central Atlantic Fishery Commission
WEF	World Economic Forum
WTO	World Trade Organisation
WTTC	World Travel and Tourism Council
WWF	World Wildlife Fund

Foreword

A fish story: From a tragedy to a triumph of the commons

Among all of the economic activities that the human race carries out upon the world's oceans, fishing is perhaps the oldest and mostly closely connected with our development. Recent finds of crafted fishhooks in the caves of Okinawa have demonstrated that this connection has persisted for more than twenty thousand years. Yet if current patterns regarding the ways in which we harvest the seas and consume our catch are not subject to meaningful and effective overhaul, then a relationship that has probably nurtured our species since our first steps away from the cradle of civilization will be lost.

Today our marine resources, particularly fish, are facing anthropogenic pressures that pose unprecedented sustainability risks. Both the current capabilities and future potential of oceans to sustain these resources are being severely impacted factors such as over-fishing practices, illegal fishing activities and poor management. In addition, rising surface temperatures, higher sea levels, acidification of sea water, maritime transport activities and related externalities, pollutants, and damaging extractive seabed activities serve only to exacerbate the situation.

Fishing plays a major role in contributing to sustainable development, economic growth, food security and livelihoods. Fish, molluscs and crustaceans, as well as other organisms such as seaweeds, form a central component of our diet, particularly for coastal and lake populations. In many Least Developed Countries (LDCs) and Small Island Developing States (SIDS), fish consumption contributes to at least 50 per cent of daily protein intake.

In 2014, global exports of fish and fish products reached an all-time high of US\$ 146 billion. In volume terms, after highs in the 1990s, the level of marine and fresh water fish catch remains steady at about 90 million tonnes, probably due to the natural limits of extraction of an already overexploited resource. Furthermore, as developing countries now account for 56 per cent of total world exports, these nations should have a strong voice in the methods used to safeguard the future of these resources.

Alarming, 87 per cent of the world's marine fish stocks are rated as fully exploited, overexploited or depleted by the Food and Agriculture Organization (FAO). This is a ratio that has been increasing steadily. Currently, half of the fish stocks located off of the West African coast are classified as overharvested, meaning they will be unable to recover. This underlines the severe deterioration of the overall state of global fish resources worldwide and the need for immediate action.

Transforming our world: the 2030 Agenda for sustainable Development and the 17 Sustainable Development Goals (SDGs) outline, for the first time, a charter in a stand-alone global goal that addresses the health of marine resources and ecosystems, with specific regard for fish. SDG 14 lays out several targets directly oriented towards preventing fish stocks from becoming the first global tragedy of the commons.

Despite the circumstances in which we find ourselves, advancing SDG 14 and its related targets will not be easy. There are many challenges to be faced, including the complexities of oceans and fisheries governance, weak regulatory frameworks, harmful subsidies, and – in fishing nations among developing countries – poor implementation and a lack of financial and technical resources. Some of these key challenges, as well as innovations to advance the implementation of SDG 14, such as responsible and sustainable wild fish harvest, aquaculture production and trade, are discussed in this Trade and Environment Review (TER). The Review brings together the contributions of over 20 prominent experts and practitioners on fish governance systems; fish harvest, production and consumption; unsustainable fishing practices; fish and marine ecosystems management; and fish trade.

UNCTAD as the focal point of the United Nations system for trade and development, in collaboration partners that include the FAO, the Commonwealth Secretariat and International Oceans Institute, advocates the promotion of sustainable oceans economy and sustainable fishing trade. In the last two years, UNCTAD has conducted several expert discussions on ocean economies and produced a report with the Commonwealth Secretariat entitled "Sustainable Fisheries: International Trade, Trade Policy and Regulatory Issues". This joint report proposes an agenda for sustainable fisheries that promotes the conservation of fish stocks, as well as the sustainable consumption and trade of fish by all.

At UNCTAD 14, held in Nairobi in July 2016, UNCTAD joined together with FAO, the United Nations Environment Programme (UNEP), 91 member States, four International Governmental Organizations and 11 International Civil Society Organizations to issue the Fish Subsidies Declaration, which serves as a roadmap towards ending harmful fishing subsidies. Further, paragraph 100 (t) of the newly agreed Nairobi Maaikiano gave UNCTAD a specific mandate on the oceans economy. This new, unprecedented mandate arises as a consequence of a need to implement and advance trade related aspects of SDG 14, and will require UNCTAD to intensify its work in this area as a response.

It is through this expansion and these types of concerted, coordinated responses that we can ensure that the benefits of sustainable practices accrue to fishing nations and their populations, particularly in developing countries. Only when this happens, will we truly be able safeguard our marine resources for future generations.

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29 November, 2016

Executive Summary

For the next 15 years, the implementation of the 2030 Agenda for Sustainable Development and the achievement of the related Sustainable Development Goals (SDGs) will command international attention. Achieving the 17 global goals and 169 related targets requires, inter alia, careful assessment and practical suggestions on implementing this transformative agenda on a global scale on an urgent basis. In this direction, UNCTAD's 2016 Trade and Environment Review brings together a collection of independent articles by leading experts providing succinct diagnosis and novel suggestions on the implementation of SDG 14 which seeks to "Conserve and sustainably use the oceans, seas and marine resources".

Oceans contribute to food security, nutrition and to ending hunger, fostering culture and identity, supporting agriculture, mitigating the effects of climate change, providing educational opportunities and safeguarding sacred sites. The conservation of oceans and sustainability of marine resources and ecosystem is thus essential to the very basis for human wellbeing in coastal communities and beyond. Oceans are of major importance to coastal States, especially LDCs and SIDS. For all SIDS, for example, their marine territory is several times large than their land area signifying the potential huge marine resources available to them from the oceans.

SDG 14 brings international spotlight on the overexploitation of oceans and marine resources by humans to the extent that their sustainability and resilience is threatened on a wide scale. Particular emphasis is placed on oceans health and economics especially international trade, marine resources primarily fisheries, and resilient growth, sustainable development and poverty eradication. In particular it points to a pressing need for the international community to address the issue of the conservation and the rebuilding of global fish stocks that have been so quickly depleted as a result of many factors including the industrialization of the fisheries sector to date.

The TER 2016 is structured into three complementary parts that examine issues pertinent to the promotion of sustainable use of living marine resources mainly fish in healthy oceans and seas. It focuses on trade in fish within the context of the oceans economy, often also referred to as the blue economy, in terms of challenges and opportunities for the global community in implementing Agenda 2030 and specifically SDG 14.

Part I focuses on the international and regional (governance and legal) framework for oceans and sustainable fisheries and to future trade trends and prospects, including the potential impact of climate change. This part discusses the effective implementation of two global governance frameworks that provide the legal basis consisting of rights and obligations of Member States over life on seas and for the development of sustainable fisheries, including through engendering a multitude of complementary international instruments at the global and regional levels.

The two frameworks are the "Convention" and "Agreement", respectively the 1982 United Nations Convention on the Law of the Sea and the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. The TER 2016 also discusses the important role of the United Nations General Assembly in promoting sustainable fisheries, and it calls the attention of the global community on implementing the Convention and the Agreement, and developing policy and providing guidance at the global level. It will also contribute to global surveillance of the implementation of SDG 14 with the initiative to convene the high-level United Nations Conference to support the implementation of Sustainable Development Goal 14 from 5 to 9 June 2017 in New York.

Trade regulations affecting oceans and marines resources such as fisheries comprise an integral aspect of the matrix of oceans governance frameworks. Thus international trade initiatives are part of the solution to sustainable oceans and fisheries development. To that extent such initiatives need to support the implementation of the goals and related legal and policy frameworks for sustainable oceans and fisheries

development, with due consideration for national circumstances. Upon reflection what becomes apparent is the requirement for better synergies and coherence amongst these levels of oceans, fisheries and trade policy making in order to promote healthy oceans and global sustainable fisheries management and use more effectively.

A number of international institutions, regional organizations and national Governments have elaborated and implemented oceans or blue growth development strategies. These include for example the FAO's Blue Growth Initiative, UNCTAD's ocean economy work stream, the European Union's Blue Growth Strategy, Mauritius Oceans Economy strategy, Seychelles Blue Economy strategy, 2050 African Integrated Marine Strategy, and Pacific Islands Regional Ocean Policy and Framework for Integrated Action.

These development strategies clearly recognize that fisheries, marine ecosystems and climate change are interdependent. Climate change affects oceans temperature, salinity and currents, winds, sea levels and seasonal fluctuations that in turn affect fish habitats and fish populations. Fisheries, for example, have been historically affected by regional climate variability, such as the El Niño Southern Oscillation, in varying intensity with geopolitical and economic consequences. The sustainability and diversity of fish populations in terms of age, size and geography impacts positively marine ecosystems and ecosystem services. Overfishing and excessive exploitation of fish reduces in turn undermines the sustainability, resilience and natural ability of fish species to adapt to climate change. Oceans, marine resources including fish, and climate change have an interdependent relation that can be beneficial or detrimental depending on the intensity and variability of impact.

Part I also makes links to trade-related agreements under the World Trade Organization (WTO) and recent regional trade agreements such as the Trans-Pacific Partnership (TPP) Agreement. In this regard, the TPP is pioneering in its provisions on marine resources conservation and fish subsidies including prohibition, capping and notification. The Pacific Rim countries that signed the TPP include 12 major fishing nations. They inter alia agreed to prohibit (not grant and maintain) the most harmful fishing subsidies and Illegal Unreported and Unregulated (IUU) fishing, refrain from introducing new ones or extending existing ones, and notify each parties' subsidy schemes. Enforcement of TPP clauses including on fisheries subsidies are subject to dispute settlement.

Part II of the TER provides a prognosis of international trade in fish and fish products by 2035. The interaction between instruments seeking the conservation of wild fish stocks and marine species on the one hand, and instruments determining the trade regime on the other, will shape the way in which fish is harvested, processed and traded. Three main trends are worth noting. One trend points to a selective and incremental incorporation of marine life and fish conservation measures in the multilateral trading system, and in particular into regional trade agreements. The implementation of SDG 14 through trade instruments is thus likely to be influenced more strongly by regional and plurilateral efforts.

Another clear trend is that by 2035, wild fish catch will grow only slightly beyond current harvest levels while aquaculture harvest will rise substantially to fill the gaps in addressing increasing demand. Issues linked to aquaculture fish are thus likely to feature more heavily in the concerns of countries in terms of food security, nutrition, jobs and incomes. The conservation of marine fisheries will feature more prominently.

A third trend is that market conditions affecting fish and fish products will primarily consist of non-tariff measures as opposed to tariffs, including sustainability standards, traceability, eco-labeling and others. Unfair trade practices such as harmful subsidies and IUU fishing activities will continue to be discussed at the multilateral and regional levels as incipient efforts to address them will start to show some impact.

The three trends point to a future in which fish harvest, processing and trade will continue to grow to meet the needs of a growing population, while the global efforts to improve ocean health, marine resources

resilience and sustainability and marine ecosystems as per SDG 14 will depend more on efforts at regional and national levels, backed up with regular monitoring, stock-take and identification of necessary policy measures at the global and multilateral level.

Part II also examines challenges and opportunities for harvest and trade in sustainable fisheries from wild catch and aquaculture, private standards affecting market entry conditions, and the potential of organic aquaculture. It also presents some national experiences in building sustainable fisheries sectors. The global market for oceans products and services is estimated at US\$ 1.35 trillion per annum, accounting for about 2 per cent of global gross domestic product. Around 350 million jobs are directly or indirectly created by the oceans economy. Oceans and fisheries also support, and indeed increase, the profitability of other drivers of economic growth, such as marine-oriented tourism – commonly referred to as sea, sun and sand tourism - and agriculture.

Fish is one of the most traded commodities worldwide. International trade in fish and seafood reached a record value of US\$ 146 billion. In volume terms, world fishery trade rose from about 15 million tonnes in 1991 to about 45 million tonnes in 2014. About 56 per cent of this trade in 2014 was accounted for by developing countries indicating their growing major role as suppliers of marine products. The main driver of fish supply growth in the future will be aquaculture. Growing at an annual rate of 8 per cent, aquaculture harvest is expected to represent 62 per cent of total fish output by 2030. In contrast, wild marine fish catch, is estimated to stabilize at around the 80 million tonnes reached in 2010 and remain so for the foreseeable future unless effective action is undertaken in improving fish management systems.

Important factors in fish harvest and trade are market-based, voluntary sustainability standards, eco-labeling and traceability systems for wild catch and cultivated (aquaculture) fish. These have been growing rapidly over the past two decades with the growth of fish production, trade and consumption. Seafood production certified under global sustainability initiatives grew 40-fold from 2003 to 2015 and now represents more than 14 per cent of global production. There are more than 50 voluntary seafood standards in operation which are tailored to specific supply chains or regions. They are mostly limited to a number of highly visible species consumed in developed countries such as salmon, cod, tuna, mackerel, and shrimp. Sustainability production methods, sometimes also included in standards, are becoming a market entry requirement for some developed country markets. The ability of voluntary sustainability initiatives to deliver on a needs-based approach to sustainable development will require a concerted effort by both supply chain actors and policy-makers toward the facilitation of supply and demand of certified production among developing countries, particularly across Asia.

Sustainability standards and traceability systems are a positive step towards promoting sustainability of fish and seafood production. They however face some hurdles, one of which is that obtaining the necessary certification necessitates an increase in production costs, which can be prohibitive in the case of most small-scale fishers in developing countries. Such fishers are then locked out of the more lucrative fish markets and also are not integrated into the wider effort to assure sustainability of fish resources.

Aquaculture is one of the fastest growing food-producing sectors, increasing at an annual rate of 8 per cent and providing nearly half of all fish consumed by humans. Environmental and social questions have been raised regarding the potential negative impacts of aquaculture. To address these concerns several private standards like Marine Stewardship Council (MSC), Friends of the Sea (FoS), and Aquaculture Stewardship Council (ASC) have been established to promote minimum environmental and social requirements, which producers need to meet to achieve sustainability standards certification. Standards are prevalent in the organic market segment of aquaculture that are linked to health consciousness of consumers and reflected in premium prices for such fish. Beyond sustainability standards, many consumers seek additional guarantees to ensure that the fish products they consume are not only sustainably, but also organically produced. Hence the market for sustainable and organic aquaculture is evolving.

In three developing countries – Oman, Morocco and Ecuador – fisheries play a major role in the national economy, especially through linkages with the tourism sector. Ecuador developed ecotourism linked to fish in fishing villages and Galapagos Island marine protected areas, as well as recreational fishing in Guayaquil and elsewhere. Oman developed ecotourism linked to fish in fishing villages, through integrating fish into restaurants and hotels and encouraging sea turtles and whale watching in marine protected areas as well as promoting recreational fishing. Morocco is promoting fish consumption into restaurants and hotels sectors, processing canned sardines, encouraging tourism in artisanal fishing villages, developing oceans-souvenir industry and promoting recreational fishing.

However, the continuation of benefits from oceans and fisheries depends on the health of oceans and sustainability and resilience of marine living resources, especially fish stocks which are being challenged by factors such as overfishing due to overcapacity of fishing fleets, IUU fishing, certain types of fisheries subsidies, destructive fishing practices, climate change and ecosystem degradation. Quite alarmingly, more than 85 per cent of global fish stocks are fully exploited or overexploited, according to the FAO.

Part III of the TER addresses the difficult matter of harmful incentives that facilitate overfishing and leads to fish stock depletion, primarily in terms of IUU fishing and fisheries subsidies. Addressing harmful fishing incentives is thus an important part of the toolkit to restore fish populations, foster sustainable fisheries and deliver substantial economic and social gains. IUU fishing is estimated to catch 11 to 26 million tonnes of fish annually, which is a staggering 25 per cent of fish harvested annually from the oceans, and valued at up to US\$ 23 billion. This is the value that is lost each year to legitimate fishers.

A key to arresting and eliminating IUU fishing is to develop an overarching traceability system of traded fish from vessel to final consumer. This however would require major upgrading of institutional and technical implementation capacities, which many developing countries are often not capable of developing due to limited financial resources.

Importantly, the recent entry into force of the FAO Port State Measures Agreement in June 2016 following ratification by 30 Members will make IUU fishing more difficult. The agreement requires ratifying countries to designate specific ports for use by foreign vessels (for example for fueling purposes) that would make control over such vessels easier, and to deny entry or inspect ships that have been involved in IUU fishing.

Fisheries subsidies by governments comprise three types. Those that foster sustainable management of fisheries resources, such as those directed at research and development and fish management, especially by fish dependent and vulnerable countries like SIDS, are considered positive incentives. Those that facilitate overfishing or illegitimate fishing by enhancing fishing capacities or production or IUU fishing are harmful incentives. The third category are those that are ambiguous in that these can promote or undermine the sustainability of fish stocks depending on various circumstances. In general capacity enhancing subsidies are important to distant water fishing nations in maintaining and industrializing their fishing fleets and the related jobs and incomes generated.

Fisheries subsidies have been estimated by academic sources to be as high as US\$30-35 billion globally in 2013, of which developed countries give about 65 per cent. Approximately 60 per cent of global subsidies are estimated to contribute to fishing overcapacity and overfishing. Fuel subsidies are estimate to account for 22 per cent of total global fishing subsidies. It is clear that without subsidies to sustain them many high seas fishing operations would be largely unprofitable. The provision of capacity-enhancing subsidies is one of the key policy failures that have intensified the degradation of marine fisheries while also increasing inequality among fishers.

Addressing government incentives that drive unsustainable fisheries practices is not just an environmental imperative. Government subsidies in the fisheries sector can also have severe negative social and economic impacts for the most vulnerable countries and communities. This is recognized globally however efforts to

address harmful subsidies so far have had limited success. SDG 14 target 14.6 requires countries to prohibit harmful subsidies, eliminate subsidies for IUU fishing, and refraining from introducing new ones by 2020. It brings hope to addressing this unfair situation.

The upcoming United Nations Conference to Support the Implementation of Sustainable Development Goal 14 in 2017 should provide a new opportunity to consider further practical actions at multilateral and national levels to implement target 14.6 as well as other SDG 14 targets. One suggestion on the considerable resources that would be saved if harmful fisheries subsidies were prohibited is that these funds could be spent to secure the implementation of other SDG 14 targets for example through establishing a Blue Fund.

Fisheries subsidies, with appropriate attention to special and differential treatment to developing countries, were identified as a trade issue ripe for discipline in the context of the Doha round of negotiations of the WTO. Despite tremendous negotiating efforts invested by WTO members to clarify and strengthen disciplines on fisheries subsidies, including through a prohibition of certain forms of fisheries subsidies that contribute to overcapacity and overfishing, there has been no concrete agreed outcome so far (see Fish Subsidies Groups in the Annex). Disciplining and removing fisheries subsidies would have policy implications for all countries including developing coastal and island states, such as Pacific Island States overseeing the valuable tuna fishery in the Western and Central Pacific Ocean.

Inaction on the matter at the latest 10th WTO Ministerial Conference December 2015 – three months after the adoption of the SDGs – was not an encouraging sign. However, some Members keen on addressing the matter issued a joint Ministerial declaration calling for achieving ambitious and effective disciplines on fisheries subsidies, to commit not to provide such subsidies, to refrain from introducing, extending or enhancing such subsidies and to recognize special and differential treatment that is appropriate, and appropriate enhanced WTO transparency and reporting.

More recently, UNCTAD, FAO and UNEP backed by more than 90 countries issued a statement titled: “Regulating fisheries subsidies must be an integral part of the implementation of the 2030 sustainable development agenda” at the UNCTAD 14 Conference in Nairobi in July 2016. This statement made an international call to member States and the international community to move forward and deliver on target 14.6 of the SDGs to prohibit by 2020 certain fisheries subsidies that lead to overcapacity and overfishing, to eliminate subsidies that contribute to IUU fishing and to refrain from adopting such subsidies. It is hoped that as a consequence of these multilateral efforts that WTO members at the 11th WTO Ministerial Conference in 2017 would take up this and other proposals and effectively deliver on this target.

PART 1

INTERNATIONAL AND REGIONAL FRAMEWORKS FOR SUSTAINABLE FISHERIES

1.1

ALIGNING NEGOTIATING STRATEGIES AND PROMOTING SUSTAINABLE FISHERIES MANAGEMENT

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ABSTRACT

In September 2015, the international community agreed on the 2030 Agenda for Sustainable Development including the adoption of 17 Sustainable Development Goals. These goals, established for the next 15 years, are rightly ambitious with full support of the Commonwealth. However, this should not obscure the scale of the challenges ahead. Urgent actions are required to advance this development agenda. Sustainable Development Goal 14 urges the international community to “conserve and sustainably use the oceans, seas, and marine resources”. This points to a pressing need for the international community to address the issue of the conservation and the rebuilding of global fish stocks that have been so quickly depleted as a result of the industrialisation of the fisheries sector to date. This article reflects on the capacity of bilateral, regional and multilateral trade policy to manage sustainable fisheries effectively. Upon reflection what becomes apparent is the requirement for better synergies and coherence amongst these levels of trade policy making in order to promote global sustainable fisheries management more effectively.

Introduction

According to the Commonwealth Secretariat, 25 out of 53 Commonwealth member states are SIDS. Many other countries within the membership have large maritime zones. Consequently, the oceans and resources therein are fundamental to the well-being of the Commonwealth. This is particularly so for the SIDS which may possibly not have other significant natural resources.

The data clearly demonstrates the high importance of the Oceans to this group of vulnerable countries. For example:

- The Bahamas has an Exclusive Economic Zone (EEZ) of an estimated 629,292 square kilometres (km²) compared to a land area of 13,942 km².

- Kiribati comprises 33 islands with a total land area of just 810 km² but with about 3.5 million km² of marine waters.
- Mauritius has a land mass of 2,040 km² and an EEZ of 1.3 million km².

These facts render the ocean economy, including sustainable fisheries management, of fundamental and critical importance to these countries

The global ocean market is estimated to be valued at approximately US\$1,345 billion per annum, contributing approximately 2 percent to the world's Gross Domestic Product. Approximately 350 million jobs globally are linked to the oceans through fishing, aquaculture, coastal and marine tourism and research activities. Furthermore over a billion people depend

on fish as their primary source of protein. Conversely, experts have issued a stark warning; if we continue on the current trajectory, only one third of the amount of fish available from capture fisheries in 1970 will still be available by 2050. This trend underlines the critical need to conserve and rebuild the global fish stocks that have been mainly affected by the industrialisation of the fisheries sector over the past decades.

Last year was central to these efforts. In July, at the financing for development conference in Addis Ababa, I noted how a collective effort is crucial towards the establishment of a more equitable, more inclusive and sustainable future for all of humanity. This collective effort is equally pertinent as we look for feasible approaches and frameworks to ensure that multilateral and regional trade policy negotiations can (and should) contribute to more sustainable fisheries.

Agenda 2030 and interface with the Global Trading System

There are hopes for Agenda 2030 to reinvigorate and help to establish momentum at the multilateral level. However, we believe attention must now shift to the implementation agenda and to policy sequencing. This includes translating the goals into practical action by the WTO members within the existing framework of multilaterally agreed trade rules. In this regard, the outcomes from the 10th WTO Ministerial Conference (MC10) reflected in the “Nairobi package” were sub-optimal.

The fact remains that despite more than 14 years of negotiations, consensus on all facets of the Doha Development Agenda has not been reached and thus the tenets of the Doha agreement remain inaccessible for WTO members. Notwithstanding the fact that the outcomes from MC10 include a commitment to abolish export subsidies for farm exports, some members have called for a more result. In particular, for reinvigorated action by WTO members on ambitious and effective disciplines on fisheries subsidies. This is reflected in an initiative led by a subset of WTO members which gained some momentum at MC10 which calls for international action to eliminate harmful fishing subsidies (McClay, 2015). Many of these were commonwealth members; New Zealand, Australia, Brunei Darussalam, Canada, Fiji, Pakistan, Papua New Guinea, Solomon Islands, Vanuatu, Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia, and St Vincent and the Grenadines.

The current landscape is one in which outcomes have fallen short of that which was originally envisaged in the Doha Development Agenda and round of negotiations- the first since the WTO inherited the multilateral trading system in 1995. As Agenda 2030 places such great emphasis on effectively concluding the Doha round, failure to move forward on this front may also impede the achievement of Agenda 2030.

In reality some 260 regional trade agreements have been notified to the WTO. The main difference between regional and multilateral or bilateral trade negotiations often boils down to the level of ambition in terms of rule-setting. The speed at which bilateral and regional trade negotiations have been concluded relative to the respective rounds of negotiations under the multilateral trading system and the WTO is testimony to this. Nevertheless, as recently noted by the WTO Director-General Roberto Azevêdo, the wider the gap between regional and multilateral disciplines, the more challenging the trade environment becomes.

Aligning negotiation strategies

Goal 14 of Agenda 2030 builds upon many of the provisions for oceans and fisheries conservation within the context of the Rio+20 outcome document. This includes the Samoa Pathway and the Istanbul Programme of Action (IPOA) – an initiative led by the LDCs which expires in the year 2020. The emphasis on creating a coherent strategy for developing countries, includes a recognition of the need for special and differential treatment and technical cooperation (Goal 14.7) for SIDS and LDCs. Hence, it is important that global actions: are consistent with these objectives, serve to promote global policy coherence and also ensure sustainable fisheries management becomes a reality.

The achievement of targets such as the end of overfishing and destructive fishing practices and in addition the implementation of science-based management plans to restore fish stocks by 2020 (Goal 14.4) will be challenging to achieve. We need to draw on the lessons learned from the experiences of the Millennium Development Goals and these include, for example, that:

- Many SIDS and LDCs cannot produce output with a consistent enough quality, to meet demand and hence, need to integrate into high-value fisheries supply chains (domestic, regional or global).
- Technical as well as financial barriers to sanitary

and phytosanitary (SPS) requirements and similarly adherence to standards, which may be legitimate non-tariff measures (NTMs) can inhibit market access.

- Rules of origin (RoO) are often too complicated and burdensome to allow many SIDS and LDCs to utilise the trade preference available within existing trade agreements effectively.

We think there is a need for more targeted aid for trade (AfT) disbursements to address productive capacity shortfalls amongst SIDS and LDCs. The amount of resources disbursed compared to demand, have so far been underwhelming (Razzaque and Te Velde, 2013). The fulfilment of NTMs in the fisheries sector have not been sufficiently considered in the AfT initiative to date. Furthermore although NTMs are in principle legal and legitimate in their objectives, they may impede market entry where technical as well as financial barriers exist.

The first joint UNCTAD-Commonwealth meeting on “Sustainable Fisheries Management”, (UNCTAD, 2015) yielded solid outcomes that we believe serve as recommendations which will advance the SDG 14 implementation agenda. This includes; the need for further mapping, convergence and harmonisation of NTMs, with a view to promoting the mutual recognition of documentation and certification. For instance, in practice although compliance standards may be adhered to by artisanal producers in SIDS and/or LDCs, the need for documentation and proof – can be a major challenge without commensurate support.

It should not be assumed that lack of capacity to report and present the appropriate documentation implies an illegal origin. There has been wide spread recognition of the need to address illegal fishing practices, however more needs to be done to support countries’ capacity to address unregulated and unreported fishing; including through capacity-building. In addition national schemes, seeking to tackle IUU fishing should be based on international law, without being arbitrary,

discriminatory or obstructive to trade.

RoO should be made more flexible for developing country parties in order to facilitate value addition and stimulate the emergence of new production networks. For example, the same RoO given under Free Trade Agreements could be extended to Least Developed Countries, included as part of the agreement reached under the LDC package.

Aligning governance structures

There is a need for effective governance structures to underpin Agenda 2030. Monitoring progress on the implementation of SDG 14 should be a priority. Embedding a review process and mechanism within the WTO’s existing trade policy review procedure could be one solution.

In view of the multiplicity of legal instruments that govern the fisheries sector, further coherence among existing legal institutions and instruments should be promoted. There is a wide array of international law, soft laws, rules and frameworks dealing with the conservation, harvesting, and trading of fish in the high seas and countries EEZs. At our meeting in September 2015, experts indicated the need to promote the participation and ratification of these instruments by the international community.

We will continue to work with UNCTAD to design effective implementation strategies of SDG 14 in order to achieve a more sustainable trade landscape for our membership and LDCs. In our view multilateral and regional trade policy negotiations can and should contribute to more sustainable fisheries. To bolster their contribution, aligning negotiation strategies, with a view to promoting much needed global policy coherence should enable the achievement of the oceans and marine specific Agenda 2030 objectives. The international community has been urged to take actions to “conserve and sustainably use the oceans, seas and marine resources for sustainable development,” and we shall respond.

1.2

PROMOTING SUSTAINABLE FISHERIES THROUGH THE EFFECTIVE IMPLEMENTATION OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA (1982) AND THE UNITED NATIONS FISH STOCKS AGREEMENT (1995)

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ABSTRACT

Fisheries have the potential to be a major contributor to sustainable development, as evidenced by their inclusion in the 2030 Agenda for Sustainable Development. However, the continuation of benefits from fisheries depends on their sustainability, which is being challenged by factors such as overfishing, IUU fishing, destructive fishing practices and ecosystem degradation. The 1982 United Nations Convention on the Law of the Sea (“the Convention” / UNCLOS) sets out the overarching international legal framework for all activities on the oceans and seas, including the conservation and sustainable use of living marine resources. It is complemented by the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (“the Agreement”). The latter sets out a comprehensive legal framework for the implementation of the provisions of the Convention relating to the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks. Together, these two instruments form the base of a solid legal framework for the development of sustainable fisheries at all levels, including a multitude of complementary international instruments at the global and regional levels. However, various challenges in the implementation of these instruments have hampered their overall effectiveness. The United Nations General Assembly has played an important role in promoting sustainable fisheries through the implementation of the Convention and the Agreement, as well as by developing policy and providing guidance at the global level. It is important that trade initiatives relating to fish and fish products aim to support the implementation of this legal and policy framework, and maintain consistency with the rights and obligations of States established therein.

Introduction

Given the contribution of oceans to sustainable development and the importance of sustainable fisheries to poverty reduction, livelihoods and food security, as well as ecosystems health and resilience, the conservation and sustainable use of marine living resources is firmly incorporated in the international community’s 2030 Agenda for Sustainable Development. While fish consumption impacts food security and nutrition, trade in fish and fish products contributes to local, regional and global economies. Fish continues to be one of the most traded commodities in the world, as well as a source of direct employment for tens of millions of people worldwide.

Nonetheless, the potential benefits of the world’s capture fisheries are under threat due to a number of stressors to the sustainability of stocks, overfishing, destructive fishing practices, ecosystem degradation

and IUU fishing. In 2011, almost 30 per cent of the world’s fish stocks were fished at biologically unsustainable levels (FAO, 2014). In addition, environmental stressors, such as climate change, ocean acidification, pollution and coastal development, can negatively impact fish stocks by deteriorating the ecosystems they inhabit and depend upon.

Effective implementation of the international legal framework for oceans, as reflected in the Convention and the Agreement for the conservation and management of straddling fish stocks and highly migratory fish stocks, is key to achieving sustainable fisheries. The General Assembly, through its annual resolutions on oceans and the law of the sea and on sustainable fisheries, plays an important role in promoting this international legal regime, as well as further developing global policy on oceans.

The regime for sustainable fisheries in the Convention

The Convention, often referred to as the “Constitution for the Oceans”, provides a comprehensive legal framework for all activities in the oceans and seas, including fisheries. It sets out the extent of various maritime zones and the rights and obligations of States in these zones. With regard to fisheries, it provides for, inter alia, the sovereign rights of coastal States for the purpose of conserving and managing marine living resources in their EEZs (e.g. articles 56, 61 and 62) and the freedom of fishing on the high seas (e.g. articles 87 and 116).

These rights are accompanied by the responsibility to ensure the long-term sustainability of those resources. Pursuant to the rights and obligations set out in Part V of the Convention, the coastal State must determine the allowable catch of the living resources in its EEZ, and its capacity to harvest those resources (articles 61 and 62).

When a coastal State lacks the capacity to harvest the entire allowable catch in its EEZ, it is required to give other States access to the surplus through agreements or other arrangements, having particular regard to the rights of land-locked States (article 69) and of geographically disadvantaged States (article 70), especially in relation to developing States (article 62). In giving access to other States to its EEZ, the coastal State must take into account all relevant factors, including the significance of the living resources of the area to its economy and other national interests (article 62(3)).

Nationals of other States who fish in the EEZ are required to comply with the conservation measures established in the laws and regulations of the coastal State, which must be consistent with the Convention (article 62(4)). They may relate, inter alia, to regulating seasons and areas of fishing; the types, sizes and amount of gear; and the types, sizes and number of fishing vessels that may be used. In exercising its sovereign rights to explore, exploit, conserve and manage the living resources in the EEZ, the coastal State may take such measures – including boarding, inspection, arrest and judicial proceedings – as may be necessary to ensure compliance with its laws and regulations (article 73).

The Convention also requires States to take or cooperate with other States in taking measures as needed in regards of their respective nationals for the

conservation of the living resources of the high seas (article 117) and cooperate with each other in the conservation and management of living resources in the areas of the high seas (article 118).

In addition, the Convention contains a number of provisions directly relevant to straddling fish stocks and highly migratory fish species. These provisions require the coastal State and the States fishing in the adjacent area in the high seas to seek to agree upon measures necessary for the conservation of straddling fish stocks, directly or through appropriate sub-regional or regional organizations (article 63(2)). Similarly, the Convention requires the coastal State and other States whose nationals fish in the region to cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of highly migratory species throughout the region (article 64). In this regard, it requires the States involved to cooperate in establishing appropriate international organizations in regions where they do not exist, and participate in their work.

The significance and main elements of the Agreement

Highly migratory fish stocks (such as tuna, swordfish and oceanic sharks) and straddling fish stocks (such as cod, halibut, pollock, jack mackerel and squid) are amongst the most commercially important marine capture fish stocks in the world (FAO, 2014). These stocks require international cooperation to manage them due to their cross-boundary nature. Effective implementation of applicable international law is critical to ensuring the long-term sustainability of such stocks and, consequently, the continuation of benefits accrued through international trade in such stocks.

The Agreement sets out a comprehensive legal framework for the implementation of those provisions of the Convention that relate to the long-term conservation and sustainable use of straddling and highly migratory fish stocks. In particular, it gives effect to, and elaborates on, the duty to cooperate set out in the Convention, as enshrined in articles 63(2), 64 and 116 to 119.

It does this, inter alia, through the establishment of general principles for management, with specific provisions on the application of the precautionary and ecosystem approaches (articles 5 and 6 as well as Annex II); minimum standards for data collection

and sharing (articles 5 and 14 as well as Annex I); mechanisms for compliance and enforcement of measures (articles 19-23); compatibility of conservation and management measures established for the high seas and those adopted for areas within national jurisdiction (article 7); and dispute settlement procedures (articles 27-32). The provisions on compliance and enforcement include an article that details measures that port States may take for the promotion of the effectiveness of conservation and management measures (article 23). The innovative provisions of the Agreement serve to support and strengthen the regime set out in the Convention by providing a detailed framework for its implementation, allowing for the incorporation of robust and modern tools and management approaches in its implementation.

Regional fisheries management organizations and arrangements (RFMO/As) constitute the primary mechanism for cooperation between coastal States and high seas fishing States under the Agreement. They have substantial responsibilities in the conservation and management of straddling and highly migratory fish stocks, as well as non-target and associated/dependent species. Thus, their effectiveness is at the heart of the legal framework established by the Agreement.

Importantly, the Agreement recognizes the special requirements of developing States, including in the development of their own fisheries and in their participation in high seas fisheries for straddling and highly migratory fish stocks (articles 24-26).

Impact of the Agreement on the further development of international fisheries law and policy

In the 20 years since its opening for signature, the Agreement has had a considerable impact on the practice of States and RFMO/As, and has provided the impetus for the further development of international law and policy.

Five new RFMO/As were established over this period,¹ and some existing RFMO/As have improved their performance through the revision of their constitutive instruments in line with the Agreement and the adoption of robust conservation and management measures.² Many of them have also completed performance reviews. Several of the Agreement's provisions are also reflected in General Assembly

resolutions on sustainable fisheries, which have provided a benchmark for the development of new instruments by the FAO, such as the 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and the Voluntary Guidelines for Flag State Performance.

In addition, the relevance of the general principles of the Agreement to high seas fish stocks other than straddling and highly migratory fish stocks has been addressed by the Review Conference and the General Assembly, where the importance of such principles to the management of discrete high seas fish stocks has been recognized.³

The Review Conference, convened pursuant to article 36 of the Agreement, has also contributed to sustainable fisheries through the adoption of recommendations for the improved implementation of the Agreement in 2006 and 2010. These recommendations have stimulated concrete actions to improve the sustainability of high seas fisheries. The resumed Review Conference, to be held in 2016, may provide another excellent opportunity for States parties and States non-parties to cooperate in improving the governance of high seas fisheries, by reviewing and assessing the adequacy of the provisions of the Agreement, and, if necessary, proposing means of strengthening the substance and methods of implementation of those provisions.

The role of the General Assembly in promoting sustainable fisheries

The General Assembly is the global institution that has the competence to carry out annual reviews of developments relating to sustainable fisheries and ocean affairs, and the law of the sea more generally. It has played a central role in norm- and policy-setting in the field of oceans and the law of the sea, including sustainable fisheries. In 1991, for example, it established a global moratorium on the use of large-scale pelagic drift-net fishing on the high seas. Resolution 49/116 of 19 December 1994 specifically addressed “unauthorized fishing in zones of national jurisdiction and its impact on the living marine resources of the world's oceans and seas”. More recently, the General Assembly has undertaken a process to consider measures to address the adverse impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep sea fish stocks. The measures adopted by the General Assembly have served as the basis for important actions to address

this issue. For example, in 2008, the FAO adopted International Guidelines for the Management of Deep-Sea Fisheries in the High Seas. At its seventieth session in 2016, the General Assembly will conduct a further review of the actions taken by States and RFMO/As in order to ensure the implementation of the relevant provisions of its resolutions 64/72 and 66/68. Such review will be preceded by a two-day workshop open to all relevant stakeholders.

The General Assembly has also taken numerous steps to strengthen the implementation of the Convention and the Agreement, including resolution 69/109 of 9 December 2014, which addressed the rights and duties of flag States and coastal States with respect to the conservation and management of marine living resources, including measures to address IUU fishing.

With regard to access agreements, the General Assembly requested that distant-water fishing nations, when negotiating with developing coastal States, to do so on an equitable and sustainable basis. They should take into account the legitimate expectations of developing coastal States to fully benefit from the sustainable use of the natural resources in their EEZs, as well as ensure that vessels flying their flag comply with the laws and regulations of the developing coastal States adopted in accordance with international law.

A number of General Assembly processes have also addressed sustainable fisheries, including the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, which focused on IUU fishing in 2001, fisheries and their contribution to sustainable development in 2005, and the role of seafood in global food security in 2014. Another General Assembly process has recently led to the completion of the First Global Integrated Marine Assessment (United Nations Oceans and Laws of the Sea, 2016) also referred to as the first "World Ocean Assessment" as part of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects. This assessment examines, inter alia, the status of the world's fisheries, as well as their socioeconomic aspects, which can serve as a tool for informed decision-making at all levels.

The General Assembly has also adopted resolutions endorsing the outcomes of the major conferences on sustainable development, which have

addressed sustainable fisheries and IUU fishing. On 25 September 2015, all 193 Member States of the United Nations adopted a new Sustainable Development Agenda with 17 global goals, including most particularly Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Key actions for achieving sustainable fisheries through the Convention, the Agreement and the General Assembly

In light of the important role played by the Convention and the Agreement in the conservation and sustainable use of fish stocks, it is essential to continue to promote increased participation in, as well as more effective implementation of these instruments. The General Assembly has repeatedly called on States to become Parties to the Convention and the Agreement. As of 1 May 2016, the total number of Parties to the Agreement stands at 83, including the European Union.

In this regard, it is important to promote a wider awareness and understanding of the provisions of both the Convention and the Agreement. The Division for Ocean Affairs and the Law of the Sea, as secretariat to the Convention and the Agreement, can play an important role in this regard, including in cooperation with FAO, UNCTAD and RFMO/As. This can also contribute to the achievement of the Sustainable Development Goals, most particularly Goal 14.

However, participation must be followed by full and effective implementation of the Convention and the Agreement at national, regional and global levels. One of the principal challenges in this regard is the lack of capacity, particularly in developing States. Increasing capacity-building in ocean affairs and the law of the sea, and fisheries in particular, should remain a priority for the international community. In this regard, it is important to maintain adequate funding for trust funds, such as the Assistance Fund established under Part VII of the Agreement. Trade-related measures should seek to strengthen implementation of the existing international legal regime for international fisheries. UNCTAD, as the United Nations trade and development focal point, is well positioned jointly with the FAO in supporting the understanding on how trade related measures may contribute to such goal.

The General Assembly's ability to examine various issues within ocean-related processes and to set

global policy standards gives it a key role in the promotion of sustainable fisheries, which depend on international cooperation at the global, regional and sub-regional levels. Moreover, it is the only body with the competence to examine ocean issues in an integrated, interdisciplinary and inter-sectoral manner at the global level, through its annual consideration and review of developments relating to ocean affairs and the law of the sea. In view of the inter-relationships between all of the uses of the oceans and their impacts on other uses, the General Assembly's role is vital in this regard.

Conclusion

This is a pivotal time for the future health of the world's fisheries resources. More than ever, there is a need to ensure the effective implementation of the international legal framework for the conservation and sustainable use of living marine resources set out in the Convention and the Agreement. The General Assembly can play an important role in promoting this through its resolutions, as well as by examining specific issues in its processes. Only fisheries that are truly sustainable can continue to contribute to international trade and development for many generations to come.

1.3

FISHERIES AND CLIMATE CHANGE

Paolo Bifani, former professor of the Universidad Autónoma de Madrid, and former senior officer at the United Nations

ABSTRACT

Fishing, the access to which is free, is an activity involving the hunting of wild species. Fisheries have been historically affected by frequent and unexpected regional climate variability. The best known regional climate variability is the El Niño Southern Oscillation (ENSO). While climate change is likely to alter the seasonality, frequency, duration and intensity of climate variability, it does not cause uniform or homogenous global effects. Instead, it impacts different regions with varying intensity and peculiarities that have important geopolitical and economic consequences.

Fishing activity

The fishing industry and the communities that depend on fish for their livelihoods have had to adapt to variability in the supply of fish, which is contingent on environmental and climate variability. The only social, economic, technical or institutional capability to deal with the availability of fish is limited to the control of catches.

Fishing causes changes in the distribution, demography and stock structure of individual species impacting, in turn, directly and indirectly, fish communities, marine ecosystems and ecosystem services (such as nutrient cycling). It impinges on the sustainability, resilience and natural ability of species and ecosystems to adapt to climate variability/change, anthropogenic interventions and extreme events such as storms, hurricanes and tsunamis.

The often predatory and selective nature of fishing (based on targeted species and size) coupled with the free access to marine resources causes changes in the size and age structure of fish populations, which results in greater variability in annual catch of exploited populations. The truncation of the age structure and the loss of geographic substructure within populations makes them more vulnerable to climate fluctuations. Most stocks are currently fished at levels that expose them to a high risk of collapse given the trends in climate change and the uncertainty over other impacts. The percentage of stocks fished within biologically sustainable levels shows a declining trend from 90 per cent in 1974 to 71.2 per cent in 2001. This means that the abundance of stocks is lower than the maximum sustainable yield (MSY) level. Besides, 28.8 per cent of fish stocks are overfished. Only 9.9 per cent of stocks are under-fished, while 61.3 per cent are estimated to

be fully fished. This implies that there is no room for further catch expansion (FAO, 2014a).

Overfishing is among the many anthropogenic pressures that have resulted in a global decline in marine biodiversity. It poses the greatest threat to future fisheries, a risk compounded by IUU fishing, which remains a major threat to marine ecosystems. This raises concern over the role of biodiversity in maintaining ecosystem services and, in particular, the resilience to cope with and adapt to climate change.

Climate change effects on oceans

Climate change generates modifications in the marine environment with regard to temperature, water stratification, ocean currents, winds, the sea and pH levels, precipitation and the rate of changes. The Intergovernmental Panel on Climate Change (IPCC, 2014) has confirmed that global sea-surface temperatures have increased since the late nineteenth century. Upper-ocean temperature now varies over multiple timescales, including seasonal, inter-annual, decadal and centennial periods. Depth-averaged ocean temperature trends from 1971 to 2010 are positive, which means warming over most of the globe.

The IPCC, 2007 predicts a global average temperature increase of 0.2°C per decade over the next two decades, causing an increase in sea-surface temperature which, in turn, leads to polar ice melt. However, ocean temperature increases will not be geographically homogeneous. The melting of continental glaciers and ice sheets is a cause of global sea level rise (Barange M and Perry RI, 2009), which puts several low-lying coastal areas at risk and damages coastal habitats.

Sea levels are also influenced by regional and local natural factors, such as regional variability in winds and ocean currents, vertical movements of land and isostatic adjustments in the levels of land. Therefore, sea levels will rise more than the global mean in some regions although they may actually fall in others.

Climate change affects the patterns of ocean salinity. This is likely to influence ocean current circulation and the role of oceans in capturing carbon dioxide. Oceans absorb around 26 per cent of the increase in emissions of anthropogenic carbon dioxide, which reacts with seawater forming carbonic acid thus increasing ocean acidification. This decreases the levels of calcium carbonate dissolved in seawater, thus lowering the availability of the carbonate ions that are needed for the formation of marine species of shells and skeletons. Some of these calcium-dependent organisms such as crustaceans and corals are important for capture fisheries. Ocean acidification is expected to continue to increase in parallel with the rise of greenhouse gas emissions.

Ocean water stratification – i.e. the layers of water masses with different properties, such as temperature, density, salinity, oxygenation, etc. – is expected to grow with increasing water temperatures and changes in levels of precipitation and salinity. The combined effects of temperature and salinity changes are likely to reduce the density of the surface ocean, increase vertical stratification and change surface mixing (Barange M and Perry RI, 2009).

It has been predicted that climate change will increase the frequency and intensity of climatic variability, including winds, storms and other extreme events. From the perspective of fisheries, important marine phenomena include upwellings caused by winds that push warm surface waters away. This facilitates rises from beneath to the surface of cold waters, which replace the warm water pushed away by winds. The cold water is very rich in nutrients, resulting in high biological productivity and, consequently, high fish production making them optimal fishing grounds.

Despite evidence of recent increases in upwelling intensity, global ocean circulation models do not show a clear pattern of changes in response to warmer ocean temperatures, although it is expected that the upwelling seasonality may be affected by climate change (Barange M and Perry RI, 2009). These changes may have important effects on fisheries because the five upwelling areas that cover only 5 per

cent of the ocean surface contribute to 25 per cent of global marine catches. The five upwelling areas are: the Benguela, off Southern Africa; the Canaries, off Northwest Africa; the California, off California; the Humboldt off Peru and northern Chile; and the Somali, off the Somalia and Oman currents. From the perspective of fisheries, the first four are the most important. Other upwellings occur in southern Brazil, the southern ocean around Antarctica and the southeast of Australia, while intermittent upwelling may occur around islands such as the Galapagos and the Seychelles. Any change in the intensity and seasonal variability of upwellings will affect fisheries performance. For example, the Humboldt upwelling, which is one of the largest fisheries areas, is very susceptible to extreme seasonal variability and ENSO in particular. This susceptibility to seasonal variability has a strong and direct impact on fish production, particularly that of pelagic species.

Climate-induced changes in the marine environment create a range of biological effects, including changes in plankton composition, primary productivity, distribution, life history strategies, behaviour, ecosystem composition, interactive effects, invasive species, substitution effects, habitat availability as well as larval dispersal and viability.

Climate change scenarios predict that up to 60 per cent of the ocean biomass could be affected. This is likely to cause disruptions to many ecosystem services. Studies of species with strong temperature preferences such as skipjack and blue fin tuna foresee major changes in range, as well as decreases in productivity. These effects are found in all regions. In the North-West Atlantic, changes in feeding patterns triggered by overfishing and by changes in climate have altered species composition causing, for instance, a shift from a predomination of cod to a preponderance of crustaceans.

Climate change effects on fisheries

Climate change may affect fisheries directly through influencing fish stocks and the global fish supply, or indirectly by influencing the cost of goods and services required by fisheries, as well as the price of fish. While the precise consequences cannot yet be forecast, climate change is likely to impact both fisheries and the communities that depend on them. The impacts of climate change are threefold: physical, biological and economic in nature.

Climate-related physical effects include, *inter alia*, changes to sea levels, temperature, salinity, stratification, ocean currents, seasonal variability, flooding, storms and coastal upwelling. The biological and ecological responses to physical changes include modifications in the physiology, behaviour, growth, development, reproductive capacity, mortality and distribution of fish. Changes in ocean conditions affect species distribution of marine organisms, communities, structure composition and the stability of ecosystems on which fish depend for food and shelter. This causes changes in productivity and the food web, as well as species abundance, stock locations and pathogen levels. Unexpected and non-linear effects of climate change, exacerbated by overfishing, could result in shifts that favor lower trophic species such as jellyfish at the expense of high-value species such as cod (Kirby et al., 2009).

Temperature changes cause species to follow their thermal preferences, shifting to new areas and thereby redistributing themselves (Roessig JM et al., 2004). Empirical and theoretical studies show that marine fish and invertebrates tend to shift their distribution according to the changing climate, usually in the direction of higher latitudes and deeper waters (Perry et al., 2005; Cheung et al. 2008; Barange M and Perry RI, 2009). Observed and projected rates predict a shift of around 30-130 km/decade towards the poles and 3.5m/decade to deeper waters. However, climate change is likely to affect fish species differently.

Warmer temperatures are likely to result in diminished ecosystem productivity in most tropical and subtropical oceans while productivity may actually increase at higher latitudes. This means that warm-water species will be redistributed towards the poles with consequent changes in the size and productivity of their habitats. Many commercially important species are predicted to redistribute in different ranges as a result of changing conditions. Warmer water is also associated with an increased risk of changes in competitors, predators and species invasions, a greater incidence of disease and parasites and the spread of vector-borne diseases (FAO, 2009) as well as more frequent harmful algal blooms.

Fish production depends on net primary production⁴ at the base of the aquatic food chain (Brander KM, 2007). Increases in water temperature, ocean stratification and upwelling alter primary productivity, which in turn causes changes in community structure (IPPC, 2008; Roessig et al., 2004). The increasing vertical stratification and water column stability in oceanic

areas create barriers between water layers that are likely to reduce nutrient availability in the euphotic (sunlight) zone, leading to a decrease in primary and secondary production, and/or a shift in productivity to smaller species of phytoplankton. The impact of the combined effects of climate change is likely to reduce the productivity of fish stocks. Nevertheless, primary production may increase in high latitudes (Roessig JM et al., 2004).

In both cases the efficiency of the transfer of energy through the trophic web is altered. Global primary production is projected to increase by 0.7 to 8.1 per cent by 2050 with very large regional differences, including decreases in productivity in the North Pacific, the Southern Ocean and around the Antarctic continent, and increases in the North Atlantic regions (Sarmiento et al., 2004). Available studies show considerable changes in the distribution of catch potential by the year 2055, with possible reductions in the Red Sea, as well as the southern coast of the Mediterranean and the Antarctic. The Indo-Pacific region may see a reduction of up to 50 per cent in next 10 years. In contrast, catch potential is likely to increase by more than 50 per cent in higher latitudes, particularly the offshore of the North Atlantic, the North Pacific and the Arctic. While the magnitude of change varies regionally in comparison to the global trend, the potential catch in the tropical Pacific is projected to decrease by up to 42 per cent from 2005 levels, while that of the subarctic region will be doubled in relation to 2005 levels (Cheung et al., 2010).

Higher ocean temperatures and changes in ocean currents may reduce recruitment success through alterations in spawning, migration, food availability and susceptibility to disease. While changing currents may affect larval dispersal and viability (FAO, 2009) in ways unfavourable to stock productivity (Roessig et al., 2004); changes in pH through increased CO₂ and the acidification of ocean waters can reduce the productivity of calciferous species such as mollusks, crustaceans and corals. Sea level rise can lead to a loss of feeding, breeding and nursery habitats (FAO, 2009). The relative abundance of species within assemblages may also change as a consequence of the alteration of habitat quality brought by climate change (Przeslawski R et al., 2008; Wilson SK et al., 2008).

The fish populations and ecosystems most at risk due to climate change are those already near their physiological limits in terms of temperature, salinity and pH. In addition, they are seriously compromised in

terms of their resilience by anthropogenic interventions such as overfishing.

While some of the changes are expected to have positive consequences for fish production, in other cases reproductive capacity has been reduced and stocks have become vulnerable to levels of fishing that had previously been sustainable. Local extinctions are occurring at the edges of current ranges, particularly in diadromous species such as salmon and sturgeon. Capture fisheries depend on net primary production of the aquatic food chain. Larger fish, which are higher on the food chain, tend to carry more value in the market. Because of their high trophic position, they show more variability in catches and, therefore, in value. The variability depends on the degree to which changes in net primary production are translated directly to changes in fish productivity (Brander KM, 2007). The observed decline of 0.05 to 0.10 trophic levels per decade in global fisheries landings is a matter of concern. It represents a gradual removal of large, long-lived fish from the oceans ecosystem. For instance, the biomass of predatory fish in the North Atlantic declined by two-thirds in the second half of the last century (Pauly D et al., 2002), reflecting a simplification of food webs, which show a reduction in the number and length of pathways linking food fish to primary producers.

The predicted increase in the frequency and intensity of climate variability, including winds, storms and other extreme events due to climate change will affect the circulation and food availability for fish (FAO, 2009). In particular, in rich upwelling regions that attract most commercial fishing fleets. In this context, ENSO deserves particular attention due to its effects on the very rich upwelling regions, particularly with regard to pelagic fish.

Uncertainties

The effects of climate change on fisheries are yet to be established with a conclusive degree of certainty. This is due to several factors (Perry R, 2011), including:

- Observation uncertainties: the natural variability of the time/space scale is not yet fully understood, making it difficult to make accurate predictions;
- Model-based uncertainties: imperfect modelling capabilities are exacerbated by the lack of knowledge about parameter values;
- Process uncertainties: lack of understanding of how the marine and socioeconomic systems are structured and how they function; and
- Policy uncertainty: policies are poorly applied or

may be inappropriate due to lack of knowledge.

While some of the direct effects of climate change are predictable, many others are not. This holds true for ecosystem responses to climate change that involve interactive and synergetic effects. Forecasts regarding future changes are characterized by a high level of uncertainty: the longer the time-scale, the greater are the uncertainties. The non-linear effects of climate change are of particular concern as past experience provides little guidance. In addition, the pressures on marine ecosystems are still poorly understood, although it is accepted that they reduce the system's resilience. The effects of some changes, such as ocean acidification, are also largely unknown.

The increasing environmental variability caused by climate change has led to greater uncertainty for fisheries, including economic consequences for fishers, processors and communities. In the short term, probably only a small proportion of fish will be affected by climate change, but in the long run its indirect effects are likely to have serious implications for all marine ecosystems. However, the principal threats to future fisheries production and performance are expected to evolve progressively.

While not all the impacts resulting from climate change will be negative, they are likely to increase the degree of uncertainty (Pauly D et al., 2002) of the temporal and spatial variations of fish populations, habitat viability/stability, ecosystem interactions and feedback (Heal G, Kristrom B, 2002; Grafton QR, 2010; Kirby et al., 2009). As a consequence, the ability to predict change is highly weakened. Simulation models have been used to project the effects of climate change mainly in the areas of agriculture and food production allowing analysis of potential socioeconomic vulnerability, impacts on global food security and the costs/benefits of climate change. While there are some projections of climate change impacts on marine ecosystems with regard to a few species, regional climate variability and regime shifts or qualitative inferences of potential changes (Lehodey P, 2001; Roessig et al., 2004; Drinkwater KF, 2005; Brander KM, 2007); global scale projections of climate change impacts on fisheries are still lacking (Cheung et. al., 2010). However, there is a tentative consensus that in the short run, i.e. 1 to 5 years, the main anthropogenic impacts will be due to overfishing, fishing-induced damage to marine ecosystems, degradation or loss of coastal habitat, pollution, introduction of exotic species and undesirable effects of aquaculture (Brander KM,

2010). It has also been noted that fishing increases the variability of fish populations, which reduces resilience and increases uncertainty (Chih-hao Hsieh et al., 2006; Anderson et al., 2008). In the short run, however, climate change is likely to affect a relatively small proportion of fish (Grafton QR, 2010).

The effects of climate variability/change on fisheries generate economic uncertainty, increasing risk-aversion among decision-makers who could postpone or even impede actions needed for adaptation to climate change.

The effects of rising temperatures on marine ecosystems are already evident, with a rapid poleward shift in the distribution of fish and plankton in regions such as the North East Atlantic where temperature change has been rapid. Further changes in distribution and productivity are expected as a consequence of the warming and freshening of the Arctic.

Fisheries, climate change and vulnerability

The effects of climate change on fisheries are likely to have both economic and geopolitical repercussions. Fish remains among the most traded food commodities worldwide: in 2012, some 200 countries reported exports of fish or/and fishery products. In 2013, the total volume of fishery exports reached 57.9 million metric tons, which represents 36.7 per cent of total fishery production (FAO). Between 1976 and 2006, the value of world seafood trade increased threefold, from US\$28.3 billion to US\$86.4 billion. During the same period, trade volume grew nearly fourfold, from 7.9 million tons to 31.3 million tons (Asche et al., 2010). The unit value of seafood has decreased, increasing the competitiveness of seafood as a food source. Fish trade is especially important for developing nations, in some cases accounting for more than half of the total value of traded commodities. Developing countries represent 56 per cent of total fishery exports by value and more than 60 per cent by quantity (in 2012).

While fluctuations in fish stocks have had major economic consequences for human societies, there are very few studies and assessments of the vulnerability of regions and countries to changes in fisheries (Allison et al., 2009). Vulnerability depends upon three factors: exposure to a hazard, in this case to the effects of climate change; sensitivity to the hazard and the degree to which the community, the region or the country depends on fisheries, and;

the ability to adapt to, absorb or recover from the hazards (Adger et al., 2005; Brooks et al., 2005). Dependence on fisheries can be defined in terms of production (either landings or catch values); contributions to employment (including fishers as well as people employed in processing); export income as a percentage of total export revenues; and nutritional dependence measured by the share of fish protein in people's diet and total food consumption. The major fishing countries (China, Peru, Japan, USA, Indonesia, India, Chile, Thailand, Russia and Norway) should be considered vulnerable on the basis of fishery production, while from the employment perspective the most vulnerable are located mainly in southern Asia and Africa. Fish exports are important to countries such as Peru and Chile as well as the coastal countries of Southeast Asia and Africa. Among developed countries, Norway, Denmark, Iceland and New Zealand show dependence of fishery exports while fish consumption is important in Iceland, Japan and Norway (Allison et al., 2009). Fish protein dependence is very high in many African countries. Thirteen LDCs are among those most dependent on fish protein, particularly Ghana, The Gambia and Sierra Leone, where fish protein represents between 59 to 67 per cent of animal protein intake. Fish provides 27 per cent of dietary protein in LDCs, which also account for 20 per cent of world fish exports (Allison et al., 2009).

Studies on climate change/variability and fisheries are have mainly focused on trends and fluctuations in fish abundance and distribution (Glantz MH (ed.), 1992) in relation to oceanic regime changes and the pelagic fish stocks of upwelling zones that are the target of large-scale industrial fisheries (Klyashtorin LB, 2001; Gutierrez et al., 2007; Yañez et al., 2001). However, there are very few studies on the effects of climate change at the local scale with regard to the livelihoods of the majority of small-scale fishers who make up more than 90 per cent of the world's fishers and fish traders (Badjeck et al., 2010).

Climate change will affect, in the first place and indirectly and disproportionately, people living near climate-sensitive environments. While coastal populations in low-income countries are highly dependent on fisheries and marine resources in general, they have almost no ability to adapt (Allison et al., 2015), being thus the second to be affected by climate change. Although fisheries may play only a small part in the overall national economy, they are often very important at a local or community levels.

Traditional coastal communities, small-scale artisans and fishers with small boats operating within limited fishing areas bear a relatively greater impact than fishers with large and more mobile boats. The latter, as well as those with greater access to capital, will be able to move, if needed, to further fishing areas thus reducing the negative impact.

Fishing communities that depend on just a few species are more vulnerable to fluctuations in stocks than communities that spread their dependency over an extensive range of marine resources. This vulnerability is aggravated in communities that have historically fished intensively or overfished. This applies in particular to the artisanal and semi-industrial fisheries and to the rock lobster and small-scale line fisheries in certain African countries (FAO, 2014). Shifts in species composition (for instance, from a domination of cod to a preponderance of crustaceans) are likely to affect fishing techniques and practices and even nutritional habits of local communities.

In vulnerable areas, exposure to climate change variables and impacts is likely to exacerbate current socio-economic inequalities, penalizing already disadvantaged groups such as migrant fishers or women employed in the processing industry (FAO, 2014). The lowest adaptive capacity is found in most African countries and tropical Asia where the four indicators (production, employment, share of exports, and dietary dependence) are compounded, thus magnifying vulnerability.

Lack of basic facilities – or limited access to them and to information and communication technologies – is a serious hindrance to adapt fishing practices to changes brought by climate. In this regard, largely organized and capital-intensive fishery activities are more adaptable to climate change effects. In this regard, the historical expansion of distant water fleets has reduced the dependence of the fishing industry on a particular area or species, and has allowed them to adapt to variations in species distribution. Nevertheless, fleet expansion remains one of the main factors behind the increase in the rate of exploitation, reduced stock levels and greater stock variability.

One expected effect of climate change concerns the distribution and migration of fish stocks or their displacement. In this case, the value of traditional sources of catch may be threatened. Costs are likely to be affected if the changing distribution of fish stocks means an increase in travel distances to fishing

grounds (OECD/ Hanna S, 2011). These effects are likely to affect countries in different ways. There are no problems if the migrations or displacements occur inside the EEZ of a country. However, if stocks migrate to other EEZs, the country of origin is likely to lose while the receiving country will benefit (OECD/ Hannesson R (2011).

Long-lasting displacement of fish stocks from one country's EEZ to another could put existing fish stock agreements under pressure, thereby undermining or rendering them inappropriate, which could make new negotiations difficult.

A different situation is that of straddling stocks in the high seas, which are open to any country. Tuna stocks provide a typical example due to high value and extensive migrations. As yet, there is no conclusive estimate of the effect of climate change on fish migrations in the high seas. However, if the pattern of migrations changes as consequence of climate change, international agreements that regulate the global governance of the high seas are likely to be affected.

Recommendations

- Since their effects are borderless, both the effects on climate change and variability on fisheries should be seriously considered under a global perspective in the adoption on fisheries policies;
- Allocate resources and promote research on climate change effects on fisheries as well as on fisheries' resilience and adaptation to climate change;
- Undertake research on most suitable policies to promote the adaptation of the fisheries sector and the economic activity of coastal populations to climate change and variability;
- Identify and promote new technological alternatives for sound fishing practices that consider climate change and variability; and
- Rather than just relying on the management of marine biomass, countries and the international community should engage in preserving the age and geographical structure of fish populations in order to sustain their resilience.
- Remove existing subsidies and incentives that promote the expansion of fishing capacity.
- Limit the size of fishing fleets to levels commensurate to the existing marine resources.
- Control fishing practices that favour bycatch.
- Improve marine governance so that it can respond to the unpredictability and variability brought by climate change.

1.4

ENVIRONMENT AND FISHERIES PROVISIONS IN THE THE TRANS-PACIFIC PARTNERSHIP AGREEMENT: SOME IMPLICATIONS

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ABSTRACT

The proposed Trans-Pacific Partnership (TPP) agreement contains the highest level environmental provisions ever agreed so far in a regional trade agreement (RTA). Environmental provisions in the TPP go far beyond that of any precedent trade agreement in terms of scope and enforceability. Innovative provisions include commitments on the conservation of marine resources, the protection of endangered species, and control of ozone depleting substances and pollution by ships.

This note explores the content of environmental provisions in the TPP, links with existing Multilateral Environmental Agreements (MEAs), the treatment of marine resources, including fisheries, and biodiversity and the potential implications for developing countries, including Parties and non-Parties to the TPP accord.

Introduction

The TPP agreement, signed by 12 Pacific Rim countries on 4 February 2016, arguably contains the highest level of environmental provisions ever agreed in a regional trade agreement (RTA). Its scope is ambitious and covers areas that did not exist in previous free trade agreements (FTAs) subscribed to by the United States and many of the other 11 participating nations, particularly in relation to certain marine environment protection measures. The TPP contains environmental-related provisions in a specific environment chapter, but also in other relevant chapters such as those on investment, technical regulations to trade, and intellectual property.

The environmental chapter aims at promoting mutually supportive trade and environmental policies, higher levels of environmental protection, and effective enforcement of environmental law. It also seeks to enhance capacities on trade-related environmental issues through cooperation. The environmental chapter reaffirms Principle 12 in the UN's 1992 seminal Rio Declaration on Environment and Development by indicating that environmental laws and other measures should not be established or used in a manner which would constitute a disguised restriction on trade and investment. The chapter also refers to the sustainable management of resources, as enshrined in the Preamble of the Marrakech Agreement creating the WTO. The TPP environment chapter further contains a variety of legal provisions that range from fully binding

clauses to best endeavour ones. In some cases, there is a simple recognition of the importance of a particular environmental concern, implying that not all issues covered by the chapter are considered "hard law" obligations or enforceable.

The environment chapter establishes a consultation mechanism to address and resolve any matters raised by TPP parties. The mechanism includes the possibility of initiating consultations among parties, then senior representatives, and eventually at ministerial level. If these multi-stage consultations fail, parties have access to the broader TPP trade dispute settlement mechanism, which largely reflects the US' approach in other FTAs. Other significant traders such as the EU – not a party to the TPP – have tended not to the environmental provisions in trade deals to broader dispute settlement arrangement.

The right of governments to legislate and regulate in the public interest, including for public health and environment purposes, is reaffirmed in the TPP's investment chapter. This is considered as positive to avoid "regulatory chilling" effects in the environmental field caused by excessive litigation, especially under investor-state dispute settlement (ISDS) arrangements. In the environment chapter, parties recognise the sovereign right of each participant to establish its own level of environmental protection, and their own environmental priorities. Nevertheless, the investment chapter does include prohibitions on certain "performance requirements" such as local content and technology localisation as a criterion for

recognition of the investor status, which would affect the capacity of TPP parties to require the transfer of environmentally sound and climate technologies.

The chapter on technical barriers to trade includes a series of annexes related to the regulation of specific products and sectors in order to promote common regulatory approaches. This could have an important impact on certain environmental and safety policies, administrative practices, and trade in some goods. These annexes tend to cover regulatory approval, assessment, and conformity procedures, verification, mutual recognition, and packaging of several products for direct human consumption such as certain foods, alcoholic drinks, food additives, cosmetics and organic agricultural products. Separate assessment on these implications may be needed.

Multilateral environmental agreements

The TPP includes a commitment by the parties to fulfil obligations under some multilateral environmental agreement (MEAs) in which they participate, effectively enforce their own environmental laws, and not waive or derogate from these in order to promote trade or attract investment. No party shall fail in enforcing their environmental laws whether by action or inaction, such as through lack of resource allocation, or inexistence of relevant competent authority. However, while there is a need for improving compliance, the above mentioned principle is a quite ambitious and perhaps unrealistic at this stage due to historical low levels of environmental compliance in many TPP parties. Further, these obligations may have a big impact on developing country parties, given that the lack of implementing capacity, effective institutions, or insufficient resources which however according to TPP commitment may not be presented as an excuse for lack of compliance.

The environmental chapter requires parties to comply with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Montreal Protocol on Substances that Deplete the Ozone Layer, and the International Convention for the Prevention of Pollution from Ships (MARPOL). Footnotes and accompanying annexes are included to clarify what constitutes compliance in the TPP context. None of these multilateral conventions is new and their practical application is considered as very positive to promote the protection of endangered species, the ozone layer, and marine ecosystems.

Overall these commitments appear to go beyond ratification and legal development of obligations under national legislation and put an emphasis on practical application, monitoring, and enforcement. Parties shall also take measures to promote awareness of their own national environmental laws including procedures to investigate violations; availability of administrative, quasi-judicial and judicial procedures for enforcement; as well as appropriated sanctions and remedies. Opportunities for allowing consultations and public submissions regarding the implementation of the TPP environment chapter are provided for.

While some references are made to the importance of “low emission, resilient economies” and the conservation of biodiversity, no specific provision have been incorporated to ratify or apply the recent Paris Agreement under the UN Framework Convention on Climate Change (UNFCCC), or the Convention on Biological Diversity (CBD) and its Nagoya Protocol on Access and Benefit sharing. It should be noted that the words “climate change” are not found anywhere in the environmental chapter. While this is consistent with political reservations or non-participation to these by some TPP parties, it suggests an approach around the most relevant or less controversial MEAs. Some critics consider the selection of MEAs in the TPP falls short on civil society expectations if compared to the seven MEAs identified by a 2007 US Congress bipartisan agreement as appropriate for inclusion in trade agreements⁵. Particularly regarding the CBD and the Nagoya Protocol, whose inclusion by developing countries such as Mexico, Peru, Malaysia and Vietnam had pushed for. There is, however, some important recognition of the importance of biodiversity conservation as well as appropriate access and benefit sharing procedures around genetic resources in the chapter. This is discussed in more detail below.

The treatment of marine resources including fisheries

The TPP environmental chapter contains some landmark provisions related to the conservation of living marine resources. It should be noted that these provisions do not apply to aquaculture activities. These obligations are particularly important for international trade of fish products and sea food given that the parties include some of the world's largest consumers, producers, and traders of fish products. Fisheries management systems must be designed to prevent overfishing and overcapacity, reduce by-

catch of non-targeted species, and promote recovery of overfished stocks. Management systems should also be based on best scientific evidence, recognised best practices, and international instruments listed in a footnote. Direct reference to multilateral UN instruments when setting fish management systems can make obligations under the TPP more precise and strengthen common interpretations over grey areas or legal vacuums.

Parties shall also establish measures for the long-term conservation for sharks, turtles, seabirds, and marine mammals such as bycatch mitigation measures, conservation and relevant management measures, catch limits, and finning prohibitions. This obligation complements the protection of marine species covered by CITES and expands protection to non-covered marine species.

The TPP also contains novel provisions on the prohibition of certain type of fish subsidies. This is an area where advances in the WTO remain elusive. In this regard, the implementation of fish management systems must include the control of, reduction, and eventual elimination of all subsidies that contribute to over fishing and overcapacity. Accordingly, no party shall grant or maintain subsidies for fishing that negatively affect fish stocks that are in an overfished condition; and subsidies provided to any vessels listed by the flag state or relevant regional fisheries management organisations (RFMOs) as being involved in illegal, unregulated and unreported (IUU) fishing. According to a footnote, “a fish stock is overfished if the stock is at such a low level that mortality from fishing needs to be restricted to allow the stock to rebuild to a level that produces maximum sustainable yield or alternative reference points based on the best scientific evidence available. Fish stocks that are recognised as overfished by the national jurisdiction where the fishing is taking place or by a relevant regional fisheries management organisation shall also be considered overfished.” The definition of overfishing under the TPP is therefore not linked to assessments made by the FAO but rather to a “best scientific evidence” test, to national determinations by TPP parties, and determinations of relevant RFMOs.

The TPP also includes fisheries subsidy notification obligations and a best effort “stand still” provisions in relation to new or extending existing fisheries subsidies that contribute to overfishing or overcapacity. The political weight of the US, Australia, Canada, and New Zealand seems to have had a significant effect

on Japan – home to one of the ocean’s largest fleets and higher estimated level of subsidisation – to bring about outcomes that had previously seemed unachievable at the multilateral level. These are very important results for promoting global action on tackling fisheries subsidies. If implemented they can make major progress towards achieving SDG 14.6. The TPP does not provide for any cross-cutting special and differential treatment (SDT) for developing economies participants in this area, with the exception of technical cooperation and a two year extension granted to Vietnam for the transition period to remove inconsistent subsidies.

The TPP also recognises the importance of concerted action against IUU fishing and requires parties to improve international cooperation in this regard including through competent international organisations. Parties should cooperate with each other to build capacity to support the implementation of the article on IUU. More specifically, parties must support monitoring, control and surveillance of IUU fishing and adopt measures to deter vessels flying its flag from engaging in IUU; address transshipments at sea; implement port state measures; and strive to act consistently with RFMOs conservation and management measures even if not a member.

All these obligations are based in the 2001 FAO IUU Fishing Plan of Action and other relevant FAO conventions and instruments. It might also prepare the entry into force of the FAO Port State Measures Agreement (2009) which took place on 5 June 2016. Moreover, the commitments can contribute to mainstreaming cooperation on fighting illegal fishing and transfers obligations to a more enforceable level, especially with regard to policies set by RFMOs. The main challenge for developing countries in the TPP will be having the necessary resources and technical capacity to fulfil these obligations. The level of risk when looking at the potential IUU fishing activities, capacity to implement effectively combative policies, and to monitor EEZs greatly varies among nations, some being in better position than others to fulfil international, regional, or unilateral IUU standards. Many stakeholders are also concerned about diversity in national schemes to combat IUU and the trade effects over non-cooperative countries. The TPP includes a provision that may go some way towards helping assuage this issue by requiring parties, to the extent possible, to provide other parties with the opportunity to comment on proposed measures that

are designed to prevent trade in fisheries products that result from IUU fishing.

Possible implications

The TPP's environment chapter will likely have mixed implications for developing country parties and non-parties. On the one hand, it raises the environmental regulatory bar, which may be welcomed in the constituencies of many developing countries and places a stronger focus on effective implementation and enforcement. The inclusion of an independent but also interlinked dispute settlement makes strengthens this emphasis. It will also have implications in terms of institutional, administrative, enforcement and, and legal defence terms and costs.

Advances on prohibiting certain harmful fisheries subsidies and on measures to combat IUU fishing offers a significant precedent to the WTO and for implementing relevant SDG 14 targets. Such progress can contribute to the conservation of fish stocks in the Pacific Ocean with positive effects on TPP parties and non-parties. Obligations on the establishment or improvement of fish management systems are also a welcomed development. Lack of technical and financial capacity nevertheless remains unaddressed, especially for developing economies. The environment chapter has a special article on cooperation but subject to the availability of funds. Stronger links between obligations and technical cooperation and capacity

building by developed parties in the TPP, especially in the form of a special cooperation funds, would have made the implementation task less complex and more effective. Enhancing the conservation of fish and combatting IUU fishing requires major investment by countries. Thus while special and differential treatment for developing economies are not provided as such in the TPP, such treatment would be needed by developing parties for capacity building for fisheries management and form putting in place measures to combat and deter IUU fishing , and to gather data and notify fisheries subsidies .

The new standards set by the TPP will not be easy to achieve. Most competitive sectors may survive and even prosper. Nevertheless, for smaller and weaker firms, fierce competition is expected and the capacity for states to assist these may be lessened. Whether or not this TPP initiative will result in net positive results, remains to be seen.

As a final note, the best approach to addressing subsidies is the multilateral track. It prevents the free-riding factor which is faced in regional and plurilateral contexts and undermines such agreements as the free-riders gaining unfair comparative advantages and continue depleting the common resource base. Multilateral solutions could be advanced in the WTO backed by a strong dispute settlement system are needed. Also, a UN treaty that could become enforceable through cooperative action can be feasible in light of implementing SDG 14.

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Notes

- 1 These are SPRFMO, SEAFO, NPFC, WCPFC, SIOFA.
- 2 For example, NAFO, NEAFC and GFCM,
- 3 See, e.g., General Assembly resolution 69/109, at paragraph 33; A/CONF.210/2006/15, Annex, at paras. 2 and 16.
- 4 Fish production depends on the amount of net primary production (NPP) and how this production passes, from prey to predator, through the aquatic food chain. However, it is difficult to establish a clear relationship between fish production and NPP because the variability of steps in the trophic chain and of the efficiency in the transformation of NPP at each step. Most food fishes have trophic levels ranging from 3.0 to 4.5. Species at higher trophic levels are, on average, larger and more valuable per unit weight.
- 5 CIEL (2015). *The Transpacific Partnership Agreement and the Environment*. See <http://www.ciel.org/wp-content/uploads/2015/11/TPP-Enforcement-Analysis-Nov2015.pdf>.

PART 2

TRADE IN SUSTAINABLE FISHERIES AND AQUACULTURE

2.1

FISH AND WORLD TRADE REGIMES TOWARDS 2035

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ABSTRACT

The conservation of oceans and seas, including fish and marine species, gained significant impetus with the adoption of new Sustainable Development Goals (SDGs) by the United Nations in September 2015. Goal 14 on the conservation and sustainable use of oceans and seas and marine resources provides strong guidance for action by the international community. Interaction between instruments seeking the conservation of wild fish stocks and marine species on the one hand, and the trade regime on the other, will shape the way in which we harvest, process and trade fish. Fish stocks conservation is an urgent concern that cannot continue unaddressed. This note provides a forecast on how the fish and world trade regimes will look like five years after the implementation of SDGs in 2035. Three main trends are likely to affect the supply and demand of fish and fish products. In the trade realm, these trends point to a selective and incremental incorporation of marine live and fish conservation measures in the multilateral trading system, and regional trade agreements in particular. By 2035, wild marine catch will grow only slightly while aquaculture products will fill the gaps in order to address increasing demand. Moreover, tariffs on fish and fish products will be lower, non-tariff measures will continue to proliferate while some unfair practices such as subsidies and IUU fishing activities will be addressed at the multilateral and regional levels.

Introduction

In 2015, multiple milestones at the multilateral and regional levels have shaped the way in which we harvest, process and trade fish. These milestones provide new directions that will define how the interaction between sustainable fish harvesting and trade regimes might look over the next 20 years. These include:

- The adoption of the 2030 Agenda for Sustainable Development and the SDGs which, for the first time, incorporate a stand-alone goal relevant to the conservation and sustainable use of oceans and seas and marine resources (Goal 14) (United Nations General Assembly, 2015a).
- The development of the First Global Integrated Marine Assessment and its presentation to the United Nations General Assembly (United Nations General Assembly, 2015b).
- The celebration and stock-taking of the 20 years of the United Nations Fish Stock Agreement (United Nations Division for Ocean Affairs and Law of the Sea, 2001) and the FAO Code of Conduct for Responsible Fisheries (FAO, 1982).
- The Tenth WTO Nairobi Ministerial Conference, which took a decision to advance negotiations

on the remaining Doha Round issues, including those on rules (WTO, 2015). Efforts deployed by 27 WTO Members (the so-called Friends of Fish) and African, Caribbean and Pacific group of countries was not successful to introduce some minimum transparency and notification standards and to discipline certain forms of subsidies that contribute to overfishing and overcapacity.

- The Trans-Pacific Partnership Agreement (TPP) included, for the first time within an environmental chapter, specific measures seeking to address the conservation of living marine resources (United States Trade Representative, 2015).

It is not easy to predict what international trade regimes and fish governance systems may be like 20 years from now. We do, however, have a number of pointers for the future. It is clear that the world in 2035 will look very different from today. There are three very significant global trends that we cannot ignore. These include: 1) population growth, 2) climate change, and 3) declining level of fish stocks and wild catch. There will also be important changes that could shape how trade regimes enable and regulate fish and fish products trade including: 1) increased demand for fish, 2) a larger share in the production and trade of aquaculture products, and 3) deeper economic integration through trade agreements among participating Members that affect fish trade.

Sustainable Development Goal 14: a road map for the next 15 years

Achieving SDG 14 through the implementation of its fish-related targets will entail a titanic task for the next 15 to 20 years. SGD Goal 14 – to ‘conserve and sustainably use the oceans, seas and marine resources for sustainable development’ – underlines the importance of sustainably managing and using maritime resources and related ecosystems. SDG 14 and its targets build upon many of the provisions for oceans and fisheries conservation and sustainable use provided in *The Future We Want* (the Rio+20 outcome document), the Samoa Pathway for Small Island Development States (SIDS) and the Istanbul Programme of Action (IsPOA) for LDCs and the Addis Ababa.

Goal 14 Action Agenda provides a catalyst for improving and/or implementing existing treaties and soft law instruments more effectively over the next 15 years, including the United Nations Fish Stock

Agreement (1995), the FAO Compliance Agreement (1993), the FAO Code of Conduct for Responsible Fisheries (1995), the FAO International Plan of Action to Prevent, Deter and Eliminate IUU fishing (2001), and the recent Port Measures Agreement (2009 entered into force in June 2016), among others.

Achieving the targets of SDG 14 will be difficult, particularly with regard to thorny issues – such as addressing and removing fisheries subsidies (Target 14.6) – that are stalled in the WTO Doha Round negotiations. Although the 10th WTO Ministerial Conference failed to produce a specific outcome on fisheries subsidies, negotiations on that topic continue within the Negotiating Group on Rules. Progress is slow, however, as illustrated by the difficulties in reaching consensus even in areas such as transparency and notifications.

Taking into account the vital importance of fisheries for many SIDS and LDCs, the SDGs make specific mention of the need to increase economic benefits for these countries (Target 14.7) and to provide market access to small-scale artisanal fishers (Target 14.b). Financial and technical assistance, as well as technology transfer (Target 14.a), will be important to many SIDS and LDCs as they look to create and implement national and regional strategies for sustainability, preservation and protection of their fisheries industries.

Achieving the targets of Goal 14 will also contribute to the realization of other relevant SDGs, such as Goal 2 (end hunger, achieve food security and improve nutrition, and promote sustainable agriculture) and Goal 12 (ensure sustainable and consumption and production patterns). These interlinked goals provide a new framework for advancing sustainable development over the next 15 years.

Global trends on population, climate change and fish stocks

By 2035, world population will have expanded dramatically and the age structure will change significantly. Today, the global population is about 7.3 billion, a figure projected to reach about 8.5 billion by 2035 (UNDESA, 2011). Some 2 billion more people will populate the earth in 20 years from now. It is also expected that, by 2030, the population of the least developed countries will surpass that of the more developed regions (UNDESA, 2011). This represents a huge challenge for the production and supply of food,

natural proteins, fats, vitamins and other nutrients that will be needed by future generations, particularly those whose livelihoods depend on increasingly scarce resources.

The age structure of the global population will also be quite different. Today, most of the world population is less than 29 years old. By 2035, however, the average age is projected to exceed 45 years (UNDESA, 2015) mainly due to a continuous drop in fertility rates in developed countries. This means that there will be a sharp increase in the need for more abundant, high quality, healthier, and perhaps less caloric foods. This trend – already evident in developed markets with changing food consumption patterns of younger generations – is likely to expand to emerging and developing countries within this decade, coinciding with growing income levels.

The second important trend is climate change and its negative effects on fish stocks and marine ecosystems. The health of the oceans is closely linked to the health of the atmosphere. The fifth report of the Intergovernmental Panel on Climate Change reaffirmed its conclusion that global sea-surface temperatures have increased since the late nineteenth century, unleashing phenomena such as “el Niño” and increasing the number of extremely hot days along the world coastline (United Nations General Assembly, 2015b). This situation generates changes in migratory and reproduction patterns.

In addition, higher global temperatures resulting in rising seawater levels, seawater acidification (due to higher levels of carbon in the water) and lower levels of oxygen in seawater are causing worrisome zooplankton mortality, coral bleaching and huge impacts over the marine food chain and ecosystems. Oceans are absorbing more than 26 per cent of global carbon dioxide, generating seawater acidification and affecting the chemistry needed for the formation of many species of shells and skeletons (United Nations General Assembly, 2015b). These factors will adversely affect the future of both fresh-water and marine fisheries (UNFCCC, 2007) since they may impact on fish reproduction patterns and migratory behaviour. Higher temperatures, as well as increased potential for disease spread, may also affect aquaculture operations.

Many of the proposed scenarios on climate change look quite apocalyptic, particularly when we get closer to the end of the century. Indeed, a number of scientists

argue that keeping global temperature rise below 1.5 degrees against pre-industrial levels – the target to be achieved in the new climate agreed at COP21 in Paris – is totally unrealistic¹. For example, according to United States National Oceans Atmospheric Administration, we hit record in high temperatures in both land and sea surface temperature during the first quarter of 2016 (NOAA, 2016).

Progress on cutting emissions reductions through Nationally Determined Contributions, jointly with other mechanisms, will be key to achieving a peak in emissions under the new Paris Agreement (UNFCCC, 2015). It is, however, questionable whether these actions will be sufficient. Oceans have already absorbed enormous quantities of carbon and emissions are not expected to decline before 2035. How much carbon can the oceans absorb before many of its effects become irreversible? Will sensitive marine life forms – the base of the food chain such as plankton or krill – survive additional carbon levels over next 20 years?

In view of these facts, we may just need to adapt to higher temperatures. Many of the foreseen climate change impacts may not be mitigated within the next 20 years due to the already existing accumulations of greenhouse gases (GHGs) in the atmosphere and the lack of strong political action to set effective emissions limits.

The third global trend we cannot ignore is that the level of wild fish catch (including fresh and marine catch) is likely to remain stagnant over the next 20 years. According to the FAO, 87 per cent of the world’s marine fish stocks are fully exploited, overexploited or depleted, a number that has increased steadily until very recently. While the global marine and inland fish catch has remained relatively constant at about 90 million tons since 2007 (of which marine catch accounted for about 80 million tons and inland fish about 10 million) (FAO, 2014), it has been predicted that the current level of catch (90 million tons) may reach 93 million tons by 2030 (World Bank, FAO, IFPRI and AES, 2013). The expected small growth is based on a relatively optimistic scenario. This means that, even with better management, we will not be able to achieve significant stock recovery by 2035. In fact, we may have already reached the oceans’ sustainability boundaries and, unless fish stock replenishment becomes a top priority for States and the global community, ever more fish species will face extinction and entire marine ecosystems may be threatened.

Trade in fish

Model projections indicate that total fish supply will increase from 154 million tons in 2011 to 186 million tons in 2030². Wild catch supply is likely to remain stagnant and aquaculture supply is expected to grow, hence the share of wild catch in the world supply will continue to decline. In contrast, the share of aquaculture in world fish production is likely to expand significantly. Wild catch as a share of total fish supply will decrease from 67.9 per cent in 2009 to 58 per cent by 2030³. This would imply that an estimated 62 per cent of all food fish will come from farm-raised sources by 2030, showing an 18 per cent increase from current consumption patterns⁴. With an increased share of farmed products in the market, the nature of production for seafood purposes will be quite different. The business model of aquaculture differs significantly from that of traditional and industrial fisheries as it is more intensive in capital, land and ecosystem services, as well as technology and knowledge. It also allows more control over the final output. However, the risks are similar to those affecting animal-raising businesses, including strong impacts on surrounding ecosystems coupled with occasional disease outbreaks.

In 2014, global exports of fish, crustaceans and molluscs reached a historical peak in value of US\$146 billion (FAO, 2016). Developing countries already export 56 per cent of all fish and fish products, while developed countries account for 44 per cent and transition economies for about 2 per cent (FAO, 2016). It is probable that the bulk of wild catch and aquaculture activities will take place in developing countries. If this pattern continues, developing countries will largely dominate trade in fish exports by 2035. The increased concentration of fish harvesting activities in developing countries also suggests a higher level of responsibility by these countries over the future of fish stocks and aquaculture production, particularly since it concerns sustainable management of both species and ecosystems. Fish stock sustainability is a global matter, and the international community has an obligation to assist developing countries in meeting this challenge.

The future of trade regimes

Trade agreements that include clauses on fish trade regimes will continue to evolve at the multilateral and regional levels. The Multilateral Trading System (MTS) is presently struggling to overcome difficulties in

finding consensus in a world that involves significant new Southern players calling for action on reducing tariffs on fish and fish products and addressing harmful subsidies. With the impetus given by the Sustainable Development Goals there is some hope that the difficulties faced in the ongoing Doha Round can be resolved and a more fish-friendly MTS will be in place by 2035.

On the other hand, the number of Regional Trade Agreements (RTAs) will continue to increase, particularly among like-minded partners as record numbers of new RTAs are concluded every year. For example, as of July 2016, the WTO had received some 635 notifications of RTAs (WTO, 2016). Of these, 423 were in force. Both multilateral and regional agreements could increasingly reflect the particularities of sustainable use of marine resources and other sectors of the oceans economy, for instance by introducing rules on fisheries subsidies and links to the fight against IUU fishing.

In this regard, it is worth noting that the environment chapter of the recently adopted TPP Agreement includes, for the first time, provisions on living marine resources and incorporates both the CITES⁵ and the MARPOL⁶ Agreements. It also contains obligations, such as the introduction of fisheries management systems and phasing out certain forms of subsidies that negatively affect overfished stocks and contribute to IUU fishing. All these new obligations are subject to the trade dispute settlement mechanism of the TPP. This development puts pressure on the multilateral trading system to deliver on trade-related targets under the SDGs.

With regard to specific trade measures, it is foreseen that average applied tariff measures will go down to close to zero per cent levels. WTO MFN average applied tariffs for fish and fish products are not particularly high and were estimated at 11.6 per cent by 2014⁷. If the Doha Round finally succeeds in the Non-Agricultural Market Access segment – whether through a Swiss formula approach or a sectoral agreement – the most likely outcome will be close to a zero-tariff arrangement among most developed countries with some Special and Differential Treatment for developing countries. It is also probable that RTAs will bring tariffs down among participant countries. For many countries, this would not only reduce trading costs, but also the loss of potential governmental income and consequent preference erosion for others countries.

In contrast, non-tariff measures (NTMs) will continue to increase as market requirements in both importing and exporting countries are becoming so demanding that they present an actual barrier to trade. In principle, even if they are applied, tariffs tend to be more predictable and measurable. NTMs continuously add new requirements and potential unexpected costs and procedural complexities to production and exporting processes. While many of these measures may be built on science and sound environmental, safety and sanitary concerns, there are cases where WTO adjudicating bodies have found several of them to be inconsistent with WTO law. Surprisingly, or maybe not, many of the historical high-profile WTO NTM-related disputes have been on fish products and the production of certain species, whether caught directly or indirectly (e.g. Tuna-Dolphin, Salmon, Shrimp-Turtle, and Hake).

If this trend continues, we might be creating, albeit with good intentions, a trade minefield that could accumulate hundreds to thousands of measures by 2035 unless we find effective mechanisms for harmonization, risk assessment and mutual recognition. For instance, by September 2015, 732 sanitary and phytosanitary measures (SPS) and 524 technical barriers to trade (TBT) applicable to fish and fish products were notified by WTO Members (UNCTAD, 2016). This represents a significant annual growth of 10.2 per cent and of 12.2 per cent in the number of SPS/TBT measures notified since 2010, which indicates that NTMs have become the new and most relevant barrier to trade for fish and fish products. If the same growth rate continues, it could exceed 10'500 SPS and TBT measures by 2035 (Vivas-Eugui, 2016).

While a more regulated trade regime that seeks sustainability and safety objectives is desirable, a system that allows the creation of unilateral and overly burdensome barriers to trade will also defeat the original purpose since it might simply impede trade regardless of the efforts. We might need a more effective multilateral mechanism to ensure that NTMs do not become just an opportunity for disguised protectionism in the trading system. Also, we need to undertake global NTM mapping applicable to trade in fish to better understand the nature and impact of these measures.

Finally, by 2020 – rather than 2035 – we hope that there will be binding and effective disciplines on fisheries subsidies that contribute to overfishing and overcapacity as targeted under the SDGs. These new

goals emphasize the need to prohibit subsidies that contribute to overcapacity and overfishing and refrain from introducing new ones. Today, global fisheries subsidies have been estimated as high as US\$15 to 35 billion⁸ (UNCTAD, 2014b), worldwide, of which US\$20 billion have been categorized as capacity-enhancing (Sumaila, Lam, and Le Manach, 2013). Removing such subsidies could result in global economic gains of US\$50 billion (World Bank and FAO, 2009). If we could find enough goodwill at the WTO, there could be a shift in the type of subsidies granted, transforming them from capacity-enhancing to more sustainable ones. We could, for instance, achieve this by redirecting such subsidies toward the establishment of marine management systems, putting in place fish stock conservation plans and restoring ecosystems, creating larger marine protected areas, and improving IUU monitoring.

The new SDG 14 – which seeks to effectively regulate harvesting and end overfishing, as well as IUU fishing and destructive fishing practices by 2020 – is an ambitious one. It is estimated that around 11 to 26 million tons of fish are harvested illicitly each year. Such catches are thought to be worth between US\$10 to 23.5 billion (Global Oceans Commission, 2013). While understanding on the relationship between trade and the IUU combat is still incipient, the lack of efforts towards fighting IUU fishing is already having consequences for unilaterally signalled/listed countries (i.e. those that have been listed as not deploying efforts to fight IUU fishing). Consequences for these countries may include difficulties in accessing markets, reputational damage and the need for internal regulatory and administrative reforms. While no country denies the importance of curbing IUU fishing, many developing countries would like to see a more harmonized and transparent risk assessment system and efforts in the fight against IUU that are not based on unilateral regulations or evaluations. Perhaps by 2035, we will have a more comprehensive multilateral IUU fishing regulatory and monitoring system that brings together all principles developed under international law and soft law that is fair, transparent, uniform, effective and predictable for all.

It is expected that with the new SDGs, further and more coordinated global action will be directed towards addressing some of the most important causes of fish stocks depletion, including IUU fishing, subsidies and other unsustainable practices. However,

considering the modest level of achievement of the Millennium Development Goals, and Goal 7 (on ensuring environmental sustainability) in particular, we should focus firmly on achievable results. A proposal

for further action is to conduct an annual review of progress in the implementation of SDG 14 on oceans, including realistic targets in terms of fisheries, preferably against previously agreed milestones.

2.2

FISHERIES, AQUACULTURE UTILIZATION AND TRADE:
CHALLENGES AND OPPORTUNITIES

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ABSTRACT

FAO is a leading agency in ensuring sustainable utilization of marine resources for food and nutrition. The organization recently launched its Blue Growth Initiative (BGI) aiming at building resilience of coastal communities and restoring the productive potential of oceans and wetlands by promoting international coordination to strengthen responsible management regimes and practices that can reconcile economic growth and food security with oceans conservation and the ecosystems they sustain. This paper summarizes main basic data, information and recommendations gathered by FAO under the BGI and other initiatives to illustrate emerging issues and approaches. It looks at various prospecting models on what could be future trends and challenges on fisheries and aquaculture over the next 20 years, as well as the role of certain key instruments such as international rule-making, eco-labelling, certification and traceability systems. The paper ends with a set of policy recommendations on how to advance hunger-related global goals.

Introduction

Established in 1945 as an agency of the United Nations, the FAO leads international efforts to eradicate hunger, food insecurity and malnutrition. FAO's vision is: "A world free from hunger and malnutrition where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner."

Three global goals underpin this vision:

- eradication of hunger, food insecurity and malnutrition, progressively ensuring a world in which people at all times have sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life;
- elimination of poverty and the driving forwards of economic and social progress for all, with increased food production, enhanced rural development and sustainable livelihoods;
- sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources, for the benefit of present and future generations.

Fisheries and aquaculture make a significant contribution to food security and livelihoods of millions of people, supplying around 20 kg of fish per capita a year, including essential micronutrients such as

vitamins, minerals (zinc, iron, iodine and selenium), omega 3 fatty acids and about 17 per cent of global animal proteins. Around 58 million people were directly employed in fisheries and aquaculture in 2012, providing some 200 million direct and indirect employment opportunities along the value chain from harvesting to distribution, making the livelihoods of 10 to 12 per cent of the global population dependent on the sector. Finally, fish and seafood are one of the most traded food commodities. Some 36 per cent of the production enters international markets, generating a trade value of US\$144 billion in 2014, up from a mere US\$8 billion in 1976. More than 56 per cent (FAO, 2015b) of this trade originates in developing countries whose net trade income (export minus import), valued at US\$38 billion in 2014, is greater than the net trade income of the main agricultural commodities combined.

This places fisheries and aquaculture at the center of an important economic activity that can contribute significantly to providing both food and livelihoods to a global population set to reach 9.7 billion in 2050 (UNDESA, 2015a). Unfortunately, the sector is already under stress from over-exploitation, pollution, declining biodiversity, expansion of invasive species, climate change and ocean acidification. The share of marine fish stocks that are overfished has increased alarmingly, from 10 per cent in 1970 to nearly one-

third in 2011. While 61 per cent of stocks are currently fully fished, the potential economic gain from reducing fishing overcapacity and restoring fish stocks is likely to reach US\$50 billion per year. IUU fishing is estimated at 15 to 20 million tons a year. Disease outbreaks have cost the aquaculture industry tens of billions of United States dollars over the last 20 years. Natural disasters, such as the 2004 Tsunami or the 2014 Typhoon Haiyan, caused massive loss of life and severe damage to the physical infrastructure of the affected countries.

Hence, realizing the full potential of the sector requires new approaches to economic development. A more environmentally, socially and economically effective fish and seafood chain can contribute to sustainable growth and food security, pave the way for less pressure on aquatic resources and deliver the potential for people employed in the sector to act not only as resource users but also as resource stewards.

The Blue Growth Initiative

In 2013, FAO launched the Blue Growth Initiative (BGI) in support of food security, poverty alleviation and sustainable management of living aquatic resources. The initiative aims to build resilience of coastal communities and restore the productive potential of the oceans and wetlands by promoting international coordination to strengthen responsible management regimes and practices that can reconcile economic growth and food security with oceans conservation and the ecosystems they sustain.

The BGI supports the post-2015 Sustainable Development Goals and targets that fall within FAO's mandate; in particular Goal 2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) and Goal 14 (conserve and sustainably use the oceans, seas, and marine resources for sustainable development). BGI featured prominently at COP21, in particular during the Action Day Lima Paris Action Agenda (LPAA) and other ocean-related events.

The Blue Growth concept has also gained visibility and prominence in the oceanic and freshwater development agendas of international organizations such as UNEP, the World Bank, the OECD, the European Union, and many nations, both developed and developing, in particular the SIDS. The BGI aims to improve the governance and management of aquatic resources, the conservation of their biodiversity and habitats, as

well as help vulnerable communities in their adaptation to climatic changes through improving their resilience to cope with natural disasters and crises.

The BGI is organized around 4 major streams of work:

Capture Fisheries:

The aim is to provide policy, technical and institutional capacity-building support to governments, regional fisheries bodies (RFBs) and industry to ensure that an adequate institutional, scientific and legal framework is in place to support and enforce fisheries management and good practices to combat IUU fishing, reduce overcapacity, restore stocks and minimize the impact of fishing on the environment.

Global Aquaculture Advancement Partnership (GAAP):

The aim here is to support a sustainable increase in global aquaculture production to meet increased demand for fish as the world population grows. GAAP will contribute to this aim by providing technical and capacity-building support to governments and farmers to develop national strategies for aquaculture development, disseminate and adopt better management and governance policies and best practices that increase productivity and reduce environmental and disease risks to stimulate investment.

Livelihoods and food systems:

Under this component, FAO will assist governments and private sector to develop policies for value-addition and trade promotion, integrating economic performance, food security, sustainability and social protection. With the transition to more sustainable fisheries management, it will promote public/private partnerships that support investment in infrastructure, technology and practices to increase the value and quality of fisheries. To this end, FAO will promote decent livelihoods, poverty reduction, job creation, social inclusion and community resilience.

Ecosystem Services:

FAO will contribute expertise for conducting and disseminating national and regional studies on carbon-binding possibilities in sea grass beds, mangroves (which act as a defense against coastal erosion and storm and wave damage) multi-cropping (fish & rice, fish & cassava) and seaweed cultivation among other possibilities. This information will be used to assist coastal communities in creating income and livelihoods,

reducing poverty and improving social conditions.

At the global level, the substantive work of the BGI would support the implementation of the FAO Code of Conduct for Responsible Fisheries and International Plans of Action for managing fishing capacity and combatting IUU fishing. It would also support International Agreements and Guidelines (such as those on Securing Sustainable Small Scale Fisheries, the Voluntary Guidelines on Responsible Governance of Tenure of Land, Fisheries and Forests, and the FAO/ILO/IMO instruments on the Safety of Fishing Vessels and Fishers) as well as bycatch management and the reduction of discards, management of deep-sea fisheries in the high seas, and an ecosystem approach to fisheries and improving practices in fishing and aquaculture.

At the regional level, the BGI supports the implementation of the Blue Growth Regional Initiative in Asia and Pacific, which focuses on sustainable aquaculture intensification. In the Near East and North Africa, the main focus is on capture fisheries along the entire fish supply chain. The initiative also supports the network of regional fisheries bodies (RFBs/RFMOs) which are mandated to work towards achieving relevant components of the BGI.

At the country level, FAO supports several pilot countries in the promotion and implementation of the BGI concepts in their national policies and strategies on fisheries and aquaculture. Consultations with other regions are underway to develop synergies with regional initiatives such as those on water scarcity and rice.

Outlook models for understanding future trends and addressing forthcoming challenges

In order to have supporting policies and political commitments that effectively promote food security and good nutrition, it is essential that up-to-date information and statistics are available and accessible. From the perspective of future population growth and a possible increase in demand for fish and fisheries products, there is a need to develop specific projections to help us understand the outlook for fisheries and aquaculture. Outlook studies can be an important tool for international organizations, such as FAO, the OECD, the World Bank and the international community at large. They can facilitate understanding of the impacts of changes in aquaculture and capture

fisheries, demand shifts and policy reforms, as well as provide relevant information for developing strategic responses to emerging challenges. Outlook projections can also help FAO, other international organizations and donors to highlight work priorities and develop tailored strategies to support countries in addressing the major challenges facing the sector.

In recent years, specific fish models have been developed in partnership with international organizations. It was considered important that this work would not be carried out in isolation, but be integrated into an overall agricultural analysis aimed to achieve a more comprehensive and consistent examination of the medium- or long-term prospects for fish together with those for food and agriculture. The two main outcomes are: (i) the FAO Fish Model, developed by FAO as a satellite to the OECD–FAO AGLINK–COSIMO Projection System,⁹ with medium-term projections (ten years) annually included in the OECD–FAO Agricultural Outlook publication since 2011; and (ii) the *Fish to 2030* publication (World Bank, 2013), which shows the results of the International Model for Policy Analysis of Agricultural Commodities and Trade developed by the International Food Policy Research Institute (IFPRI).

For both models, the main data used are FAO fisheries and aquaculture statistics on production, trade and apparent consumption. Based on key assumptions and uncertainties, the outlook models provide important insights on the likely paths of development, as well as the constraints in supply and demand to determine regional vulnerabilities, changes in comparative advantage, price effects and potential adaptation strategies in the fisheries and aquaculture sector. The results of both outlook models are based on specific assumptions regarding the future macroeconomic environment, international trade rules and tariffs, absence of abnormal fish-related disease outbreaks, fisheries quotas, longer term productivity trends and the absence of market shocks. Should any of these assumptions change, the resulting fish projections would be affected.

The OECD–FAO Agricultural Outlook

The OECD–FAO Agricultural Outlook is an annual publication presenting projections and related market analysis for some 15 agricultural products¹⁰ over a ten-year horizon. The projections are based on the AGLINK–COSIMO modelling system,

which brings together the commodity, policy and country expertise of both organizations and input from collaborating members to provide an annual assessment of prospects for the coming decade for national, regional and global agricultural commodity markets. It shows how these markets are influenced by economic developments and government policies, and highlights some of the risks and uncertainties that may influence market outcomes. The capacity to capture interactions between commodities and countries is a major strength of this model, allowing analysts to assess not only the direction but also the magnitude of market adjustments resulting from economic or policy changes. The agricultural policies of many countries are specifically modelled within AGLINK–COSIMO. This makes the model a powerful tool for forward-looking analysis of domestic and trade policies through the comparison of scenarios of alternative policy settings against the benchmark of the baseline projections.

In collaboration with the OECD, FAO has recently built a dynamic, policy-specific, partial-equilibrium satellite model on fish and fisheries products.¹¹ The main results of the fish model (included in the “Fish and seafood” chapter of the annual OECD–FAO Agricultural Outlook publication) provide insights on the most plausible scenarios for a ten-year horizon in the fisheries and aquaculture sector. The results describe an outlook in terms of future production potential, projected demand for fisheries products, consumption, prices and key factors that might influence future supply and demand. These trends can guide FAO the OECD and their members in developing plans for the sustainable use and conservation of fisheries and aquaculture resources for economic growth, improved social welfare and development.

The baseline projection should be considered as a plausible scenario elaborated on the basis of specific assumptions regarding macroeconomic conditions, policy settings, weather conditions, longer term productivity trends and international market developments. The main outcomes of the latest fish projections were included in the OECD–FAO Agricultural Outlook 2015–2024 published in July 2015.

Key findings include:

- World fisheries and aquaculture production is projected to expand by 19 per cent between the 2012-14 base period and 2024, to reach 191 million tons.
- The main driver of this increase will be aquaculture, which is expected to reach 96 million tons by 2024, 38 per cent higher than the base period (average 2012-14) level.
- In 2023, aquaculture is set to surpass total capture fisheries (including non-food uses), earlier than projected by previous issues of the Outlook Reports and the WB/IFPRI/FAO *Fish to 2030* report.
- The world’s per capita fish food consumption is projected to reach 21.5 kg in live weight equivalent in 2024, up from 19.7 kg in the base period.
- Fish consumption will expand in all continents, with higher increases expected in Asia and Oceania.
- In contrast to previous Outlook Reports, a slight increase is projected for fish consumption in Africa for the first time.
- Since 2014, species raised from aquaculture have become the main source of fish for human consumption. This share is projected to reach 56 per cent in 2024.
- This global picture masks variations between regions. The bulk of the increase in production and consumption will continue to originate from Asian countries. While China will remain the leading producer and exporter at world level, developing countries will be the major drivers in increasing production, trade and consumption of fish and fisheries products.

Fish to 2030

Fish to 2030 is the result of collaborative work between IFPRI, FAO, the University of Arkansas at Pine Bluff, and the World Bank. It builds on *Fish to 2020* (Delgado et al. 2003), which provided a comprehensive global overview of the food fish supply and demand balance. The report uses IFPRI’s IMPACT¹² model to generate projections of global fish supply and demand up to 2030. This is a relatively straightforward partial equilibrium global agriculture sector model, covering the world in 115 model regions for a range of more than 40 agricultural commodities, to which fish and fish products were added for the *Fish to 2030* study.

In the 1990s, IFPRI developed the IMPACT model to address a lack of long-term vision and consensus among policy-makers and researchers about the actions necessary to feed the world in the future, reduce poverty and protect the natural resource base. The model serves as a basis for research on the linkage between the production of key food commodities and food demand and food security at

the national level, including scenarios of future change and cutting-edge research results on rapidly evolving topics such as bioenergy, climate change and diet/food preferences.

For the *Fish to 2030* report, the IMPACT model was calibrated and employed to evaluate different policies and alternative events, and to illustrate the likely evolution of the global seafood economy. The results are structured according to a baseline scenario, considered the most plausible one, and six alternative scenarios that investigate potential impacts of changes in the drivers of global fish markets under various assumptions. The publication centers on three main topics: (i) the health of global capture fisheries; (ii) the role of aquaculture in filling the global fish supply/demand gap and potentially reducing the pressure on capture fisheries; and (iii) implications of changes in the global fish markets on fish consumption.

The key findings of the baseline projections are as follows:

- Total fish production is expected to reach 187 million tons in 2030, with an overall increase of almost 45 million tons as compared to 2008.
- While capture fisheries production remains stable, major growth will come from aquaculture, which will continue to expand albeit more slowly than previously.
- By 2030, capture fisheries and aquaculture will contribute equally to global fish production, with aquaculture probably dominating beyond 2030.
- The fastest supply growth is expected for tilapia, carp and catfish including *Pangasius*.
- Aquaculture is projected to supply more than 60 per cent of fish destined for direct human consumption by 2030.
- China is expected to increasingly influence the global fish sector.
- Aquaculture will grow rapidly in South Asia, Southeast Asia and Latin America. Per capita fish consumption is projected to decline in Japan, Latin America, Europe, Central Asia and sub-Saharan Africa.
- Owing to a population growth of 2.3 per cent per year, sub-Saharan Africa will increase its demand for fish for human consumption by 30 per cent by 2030. As its production is projected to expand only marginally, the region's dependence on fish imports will rise from 14 per cent in 2000 to 34 per cent in 2030.

Eco-labelling and traceability in fisheries and aquaculture

Eco-labels for sustainably sourced seafood evolved primarily as a means to use the market power of the most highly traded food commodity to promote sustainable fisheries management. Market access was to be a reward for fisheries managed sustainably according to the certifier's criteria. These market-based measures initially reflected the goals of civil society and consumer groups in industrialized countries who believed that fisheries were not being adequately managed by governments. The first private seafood certification scheme¹³ was established in 1997 as a joint project between a large seafood buyer and an international non-profit organisation (Sainsbury, 2008). Since then, there has been a proliferation of private voluntary certification schemes operating in the seafood market, each with different goals, principles and criteria (FAO, 2010 and 2011).

Given the uptake of seafood eco-labels in the major importing markets, governments are increasingly concerned that certification schemes are interfering with fisheries management, an activity usually deemed to be the responsibility of governments at the national level within Exclusive Economic Zones and inland waters, or through multinational action by regional fisheries management organizations. In 1997, members of the FAO Committee on Fisheries requested FAO to develop international guidelines for eco-labelling of fish and fishery products from capture fisheries. A similar request for technical guidelines for aquaculture certification was made in 2006. Certification guidelines for marine capture fisheries were finalized 2009, followed by guidelines for inland capture fisheries in 2010, and aquaculture in 2011. These international guidelines are in the public domain and have been used by various stakeholders to assess certification schemes' claims of conformity with FAO guidelines or for self-assessments. Complexity of the guidelines has led to uncertainty about claims of compliance. The lack of comparability and transparency among the many and diverse certification schemes operating in the seafood market today lead to the launching of a project in 2013 by major players in the seafood industry, the Government of Germany and the FAO, namely the Global Sustainable Seafood Initiative (GSSI).

A group of 17 funding private seafood companies and the German government formed a partnership the GSSI, primarily from Europe and North America,

however, to date there are 32 funding private companies including Asia, with growing interest from Africa, South America and Australia-Pacific. GSSI is modelled after the Global Food Safety Initiative, which has operated successfully for 10 years. The initiative aims to increase transparency in international seafood markets and boost consumer confidence in seafood. Uptake of the GSSI benchmarking tool by the seafood industry is expected to reduce duplication costs. The benchmarking tool was officially launched in October 2015 at an FAO Conference, Vigo Spain. The tool is used to assess certification schemes against a set of baseline requirements, primarily FAO instruments. Certification schemes that meet the requirements will be able to use the GSSI logo. With the logo, private companies will have information about minimum comparability between various certification schemes, while additional GSSI indicators can be benchmarked to evaluate claims by more advanced schemes that will drive future improvements. Schemes have already come forward for benchmarking and GSSI insures that the process is transparent through its Public Consultations (www.ourgiss.org).

FAO joined the GSSI initiative as part of its new public-private partnerships¹⁴ strategy, which aims to engage more closely with private sector and civil society actors by providing corporate strategic advice, developing tools and methodologies, and long-term vision. Within the partnership, FAO has advocated for good geographical representation and reasonable access for developing countries in order to ensure that the global benchmarking tool does not become a potential technical barrier to trade.

The FAO support to the State of Sustainability Initiatives (SSI), namely hosting the first stakeholder meeting at FAO headquarters in 2014, has facilitated the SSI review of seafood ecolabels. The SSI Standards and the Blue Economy review was launched at a joint UNCTAD/COMSEC Seminar on Oceans Economy and Trade, Geneva, 10-12 May 2016. This comprehensive and data-rich analysis investigated certification schemes, both marine capture and aquaculture, looking at the contribution of certified products compared to global production, as well as the potential for eco-labels to become market access restrictions for developing country exports. This report adds significantly to knowledge on the volume and flows of certified products to the major importing markets of the USA, European Union and Japan, as well as identifying advantages and challenges facing seafood certification

schemes in promoting sustainable utilization of marine resources, especially for small scale fishers and poorer countries. To assist developing countries in market access, Fisheries Improvement Projects¹⁵ are being piloted for various fisheries, with the aim of raising the level of fisheries management, and thus increasing the availability of sustainably-sourced products for international markets.

FAO and other international organizations, including the WTO, have raised concerns about whether seafood certification schemes act as technical barriers to trade, especially for developing country exporters. This issue has been debated in the SPS Committee on several occasions. Should public certification be interpreted as a technical standard under WTO rules, the number of seafood-related trade disputes is likely to increase in the future.

Faced with a rapid increase in private certification schemes, and their uptake by the global retailers and supermarket chains that control much of the international seafood trade, some governments have developed public certification schemes. While public eco-labels¹⁶ for capture fisheries are based in the three major importing markets, public certification of aquaculture products¹⁷ has branched into some developing countries that produce high-value aquaculture products, such as shrimp and molluscs, for export to industrialized countries.

Although relatively few governments have so far developed public certification schemes for their capture fisheries or aquaculture sectors (Sainsbury, 2008) this trend appears to be on the rise. A number of developing countries have requested capacity-building assistance from FAO to develop their own national eco-labels. The incentive is two-fold: (i) to ensure market access for seafood exports and thus protect the livelihoods of vulnerable small-scale fishers and aquaculture producers, and (ii) lowering the costs of certification. For the small-scale sector, reducing the cost of certification of a fishery can be vital for maintaining access to global and regional markets.

Seafood traceability systems

Despite the adoption of the FAO Code of Conduct for Responsible Fisheries and the progress it has brought, not all fishing activities are conducted in a responsible or legal manner. Some fishers do not respect fishing rules, thus undermining responsible management and trade. IUU fishing can occur in

the high seas, Exclusive Economic Zones and inland fisheries. It has increased significantly over the last two decades. High-value marine species are major targets of IUU fishing. These activities can occur under flags of non-compliance or flags of convenience. Global prevention of IUU is essential for ensuring sustainable fisheries resources for global food security. It is not enough that some countries and regional fisheries management organizations are managing aquatic resources responsibly, if others are not. In addition, criminal activities such as slavery, drugs, and piracy are known to be associated with IUU fishing vessels.

One of the major deterrents to IUU fishing is to deny access to markets for illegal fish products. The FAO Port State Measures Agreement (FAO, 2009) which entered into force in 2006 aims to block entry of IUU fish into the value chains by denying entry into ports of undocumented fish products. Estimates by the World Bank/FAO put the value of illicitly harvested fish at 11 to 26 million tons each year, worth between US\$10 and US\$23.5 billion (William et al., 2009). Means for stopping IUU fishing can include: monitoring, control and surveillance of known IUU vessels; international cooperation such as sharing information on IUU vessels; denying access to ports; national legislation to allow prosecution of IUU vessels; international coordination of catch certificates to facilitate border control of traded fish; and certification of products from verifiably managed fisheries. This requires an over-arching solution for traceability of traded fish from vessel to final consumer.

Traceability is defined by the Codex Alimentarius as *“the ability to follow the movement of a food through specified stage(s) of production, processing and distribution”*. In the case of fish products, the design and implementation of effective seafood traceability systems is both necessitated and complicated by the continuing process of supply chain globalization and expanding global trade networks, which means that fish will often be handled by vessels, farms, wholesalers, processors, distributors and retailers in several different countries before final consumption. These developments have important implications for food safety concerns and sustainability issues, which have led to increasingly stringent traceability regulations in the major import markets, with the European Union as the prime example. In 2014, FAO member countries identified three emerging issues of concern: 66 per cent highlighted traceability requirements; 79 per cent singled out regulations to combat IUU fishing;

and 63 per cent called for attention to eco-labels and certification requirements (FAO, 2014a).

In addition to its role in providing retrievable information related to food safety requirements, traceability for fish products is also essential for the development of effective tools to combat IUU fishing. The European Union Council Regulation No 1005/2008 is an important development in this regard. Under the regulation, each shipment of wild-caught seafood traded in the European Union must have a catch certificate issued by the competent fisheries management authority of the vessel's flag state. Likewise, Japan signed a joint statement of agreement to work with the European Union to fight IUU fishing by blocking imports of seafood caught illegally. Sustainability and traceability are also core components of the Action Plan of the United States President's Task Force on IUU Fishing (United States, 2015).

In 2014, FAO prepared a report analyzing current seafood traceability systems using a traffic light approach, both in terms of food quality and safety, as well as IUU fishing (FAO, 2014b). An expert consultation held in Rome in July 2015 was followed by three regional workshops for FAO member countries in November and December 2015 to draft international guidelines on Catch Documentation Schemes (CDS). The draft CDS guidelines were presented to the FAO Sub Committee on Fish Trade in February 2016. It is anticipated that harmonization of these schemes, particularly electronic CDS, will promote transparency and facilitate customs transactions for perishable and time-sensitive fish products. They will also be instrumental in preventing IUU fish from entering seafood value chain. This will contribute to protecting the livelihoods of fishers using legal methods and sustainable management practices. The next step in this process will involve securing approval and uptake of voluntary CDS guidelines by member states and other stakeholders along the seafood value chain.

Policy recommendations

Food security and nutrition represent a global challenge as hunger and malnutrition remain among the most devastating problems facing the world. In light of expected sustained future population growth, the challenge is even more compelling. The fisheries and aquaculture sectors can continue to play a prominent role in world food security, but it requires that capture and aquaculture production grow

sustainably, through effective fisheries management policies and best aquaculture practices. The majority of future fish consumption is expected to depend heavily on aquaculture. However, the prospects of this sector are predicated on numerous interlinked factors, including access and availability of land and water; availability, sustainability and cost of feed; access to technology and finance; control of disease outbreaks; environmental externalities including climate change, pollution and problems that can originate from unguided aquaculture development; fisheries governance; and food safety and traceability issues among many others.

The efforts of civil society and private sector stakeholders through market-based measures (eco-labels) have improved the traceability of fish from responsibly managed fisheries and aquaculture producers, while at the same time raising auditing costs and further complicating the international market for fish and fishery products, particularly for developing countries. In addition, the steady growth of public

certification schemes may lead to increased trade disputes between countries as eco-labels cross the line between voluntary business-to-business and business-to-consumer transactions into the realm of technical standards that fall under the agreements of the WTO.

Globalization of the seafood value chain has significantly changed international seafood trade, and the changes are expected to accelerate further. The fishery supply chain is already complex as fish products often cross national boundaries several times before final consumption due to the increasing outsourcing of processing. Trade in fish and fishery products is expected to involve a wide range of product types and participants. While the integration of global fish markets can produce positive results, it may also increase the risk of excluding small-scale producers and businesses. Small-scale producers represent the majority and their role is vital to meet increasing demand. Capacity-building in various areas of market access is key to promoting inclusiveness in global seafood markets.

2.3

VOLUNTARY SUSTAINABILITY STANDARDS: THE MARKET OPPORTUNITY FOR CERTIFIED SUSTAINABLE SEAFOOD

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ABSTRACT

Seafood production certified under global sustainability initiatives grew 40-fold from 2003 to 2015 and now represents more than 14 per cent of global production. Notwithstanding this significant accomplishment, certified seafood has developed along very clear and specific boundaries driven and supplied primarily by developed country markets. The ability of voluntary initiatives to deliver on a needs-based approach to sustainable development will require a concerted effort by both supply chain actors and policy-makers toward the facilitation of supply and demand of certified production among developing countries, particularly across Asia.

Introduction

Voluntary seafood standards have come a long way since the tuna-dolphin labels of the 1990s. Following a trend established in other commodity sectors, the seafood sector has witnessed a growing number of voluntary sustainability standards with more than 50 national and international initiatives now being reported as operational (Potts et al., 2016). As these initiatives grow in market importance, policy-makers and other actors in global seafood supply chains are increasingly faced with making decisions on whether such initiatives represent viable policy options for promoting sustainability.

These decisions become all the more important in the context the Sustainable Development Goals. While seafood standards clearly have direct relevance to the realization of targets under SDG 12 (Ensuring Sustainable Consumption and Production Patterns) and SDG 14 (Conserve and Sustainably Use Oceans, Seas and Marine Resources for Sustainable Development), the breadth of the sustainability criteria they contain – combined with their focus on measurement and conformity assessment processes – places them in a privileged position for fulfilling targets across the spectrum of SDGs. However, the ability of seafood standards to fulfill this promise remains largely in question due to a general absence of robust data on market and performance trends.

Voluntary standards: The underlying value proposition

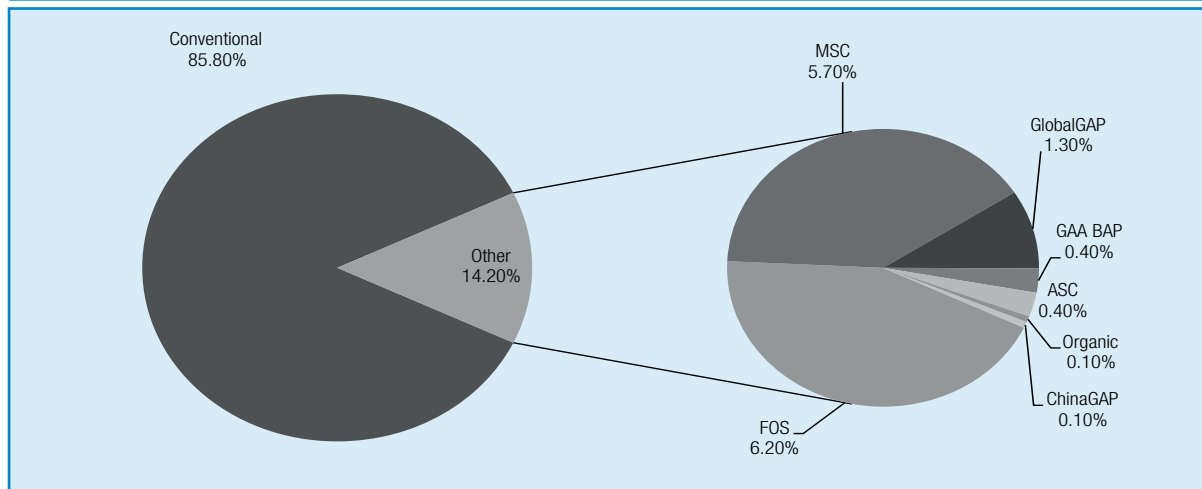
The stated objective of most voluntary seafood standards is to promote or ensure sustainable production and harvesting of seafood.¹⁸ The importance and popularity of voluntary standards is largely founded on their purported ability to leverage market – rather than regulatory – forces in generating sustainable outcomes. Generally speaking, voluntary standards rely on one or more of the following mechanisms for promoting sustainable development:

Defining targets:

Voluntary standards can help generate more robust definitions of sustainable practice through their standard-setting and criteria development processes. The very process of standard development forces a reflection about competing sustainability issues among participating market players. Standards can play a unique role in defining global sustainability within specific sectors.

Market efficiency and cost internalization:

By linking physical products to verified claims regarding (non-product-related) production practices, standards can help buyers, and the market more generally, integrate social and environmental considerations in economic transactions and pricing mechanisms.¹⁹

Figure 1: Certified vs. conventional seafood production, latest year, 2015

Data years: ASC, 2015; BAP, 2013; ChinaG.A.P., 2013; Conventional, 2013; FOS, 2015, GLOBALG.A.P., 2015; MSC, 2015; Organic, 2013²⁴

Source: Potts et al., 2016.

Participatory governance:

Voluntary standards rely on private, and often innovative, governance mechanisms for standards elaboration and implementation. Although standards may be governed by a single stakeholder (e.g. a company) or stakeholder group (e.g. retailers), markets are increasingly demanding some form of multi-stakeholder participation, from both developed and developing countries, to ensure credibility. To the extent that these demands are met, standards can bring new levels of participatory governance to international supply chains.

Sustainable investment and economic growth:

The growing market for standard-compliant products represents an important opportunity for producers. By linking opportunities for growth with investment in sustainable production infrastructure and practices, voluntary standards can stimulate both economic growth and sustainable livelihoods.

Standards will vary in the degree to which they emphasize these potential assets. The ability of any given standard to deliver on a given promise depends largely on the initiative's ability to create supply and demand for its system and/or products. A cursory overview of the latest market trends suggests that while seafood standards have succeeded in generating significant adoption at production, distribution remains patchy and does not seem to be closely linked to actual consumer demand.

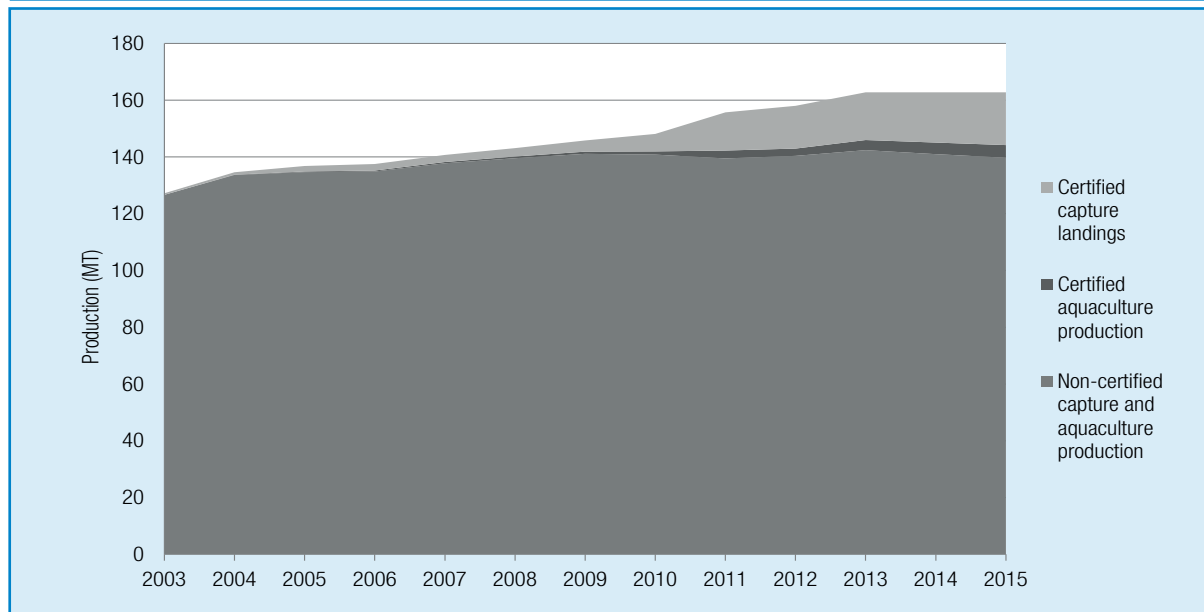
Market trends

The consumption of certified sustainable seafood products has grown rapidly over the past two decades. Driven by increased awareness among consumers and companies, an ever wider range of certified products has become available to consumers, particularly across North America and Europe.²⁰ Unlike some other commodity sectors where certification initially focused on supplying niche markets, seafood certification has relied heavily on mainstream buy-in from the outset.²¹

Responding to this context, standard-compliant seafood production has grown consistently and dramatically as a percentage of global production over the past decade. By 2015, certified production reached 23 million metric tons, accounting for 14 per cent of the global total, up from 0.5 million metric ton (or 0.5 per cent) in 2003²², demonstrating a growth rate over 10 times larger than total seafood production.

80 per cent of certified seafood comes from wild catch production. This reflects not only the longer history of certification in wild catch markets, but also the important sustainability challenges in wild catch production due to issues related to stock management which, to date, has been the primary driver behind seafood certification.²³

Two initiatives, FOS and the MSC, dominate certification for wild catch markets, each accounting for 10 per cent of the total production. As a

Figure 2: Certified and non-certified wild catch landings and aquaculture production, 2003-2015

Source: Potts et al., 2016.

consequence, these two initiatives also lead as a portion of global seafood production (including aquaculture) with FOS accounting for 6.2 per cent and MSC accounting for 5.7 per cent of total seafood production (however, only FOS and Naturland operate in both wild catch and aquaculture). In contrast, GLOBALG.A.P. – the leading aquaculture certification scheme – accounted for 3 per cent of the global aquaculture market and 1.3 per cent of the global seafood market (2015).

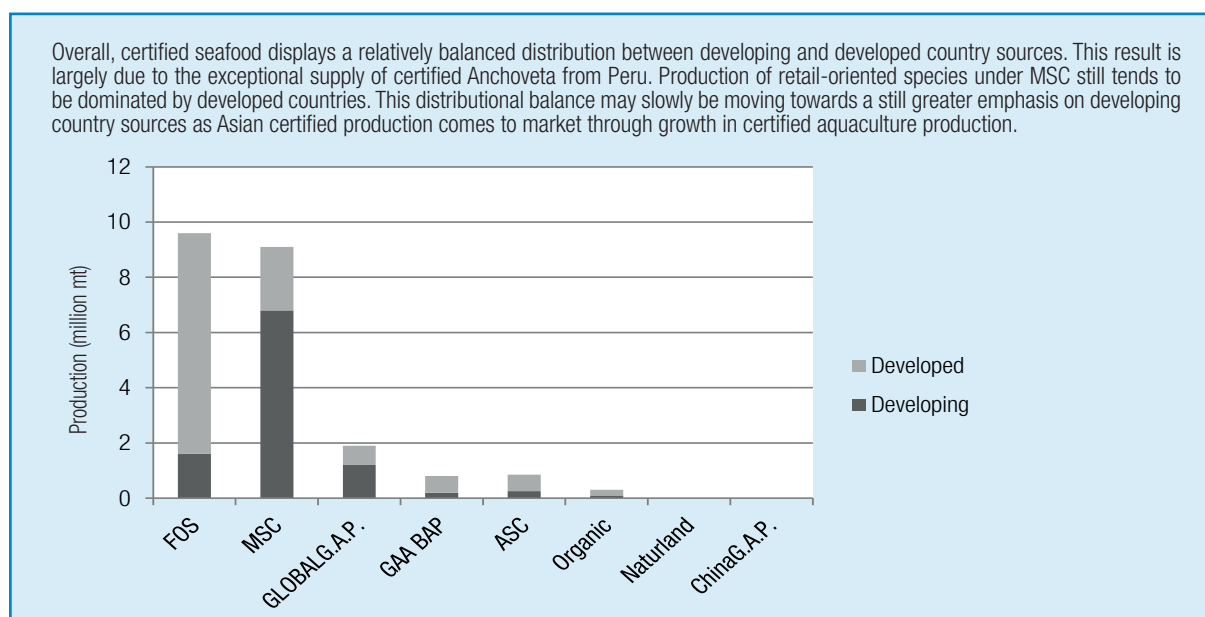
While seafood certification as a portion of global production has shown impressive growth, for the most part it has followed very specific markets limited to species with high visibility in developed country markets. In fact, just three species groups – anchoveta, cod²⁵ and tuna – account for 57 per cent of global certified production. Notably, these species groups account for only 13 per cent of global seafood production.

The concentration of production can be traced to a combination of factors principally related to the distribution of seafood certification across a few larger capture fisheries. Although more than 1,000 fisheries are reported as certified by a major global voluntary standard across the aquaculture and capture sectors, the certification of some of the largest capture fisheries in the world (notably Peruvian Anchoveta Fisheries by

FOS and United States Pollock Fisheries by MSC) has resulted in a high concentration of certified production from these countries. Fishery size is an important factor in determining global market access to certification due to the high fixed costs often associated with the process.²⁶

A related factor in determining the distribution of certified production appears to be the pre-certification management practices and capacities. Most major certification schemes require the implementation of specific management structures and plans as well as significant auditing procedures. Clearly, fisheries that already have such plans in place are more likely to seek and receive certification than those that do not. Among the critical questions facing the seafood certification industry is whether certification is ONLY or PRINCIPALLY available to those with an existing management capacity to demonstrate sustainability, and how certification might be used as a vehicle for facilitating the transition to sustainable management systems.²⁷

Standards can also be designed in a manner that favors specific regions and/or production systems. The vast majority of the more than 50 voluntary seafood standards currently in operation are tailored to specific supply chains and/or regions. Although there is no indication that the few international

Figure 3: Certified production, by initiative and stage of development, latest year, 2015

Source: Potts et al., 2016.

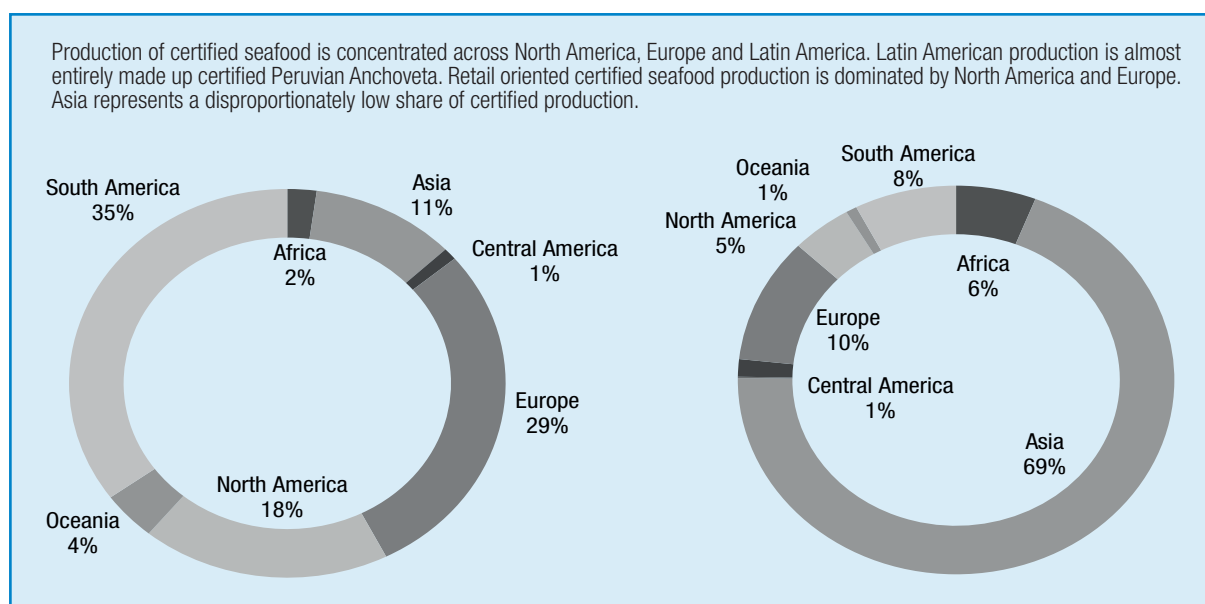
standards in the sector have been designed to favour specific regions or production systems, it is clear that access to international markets for certified seafood does provide special advantage for some countries (see Figure 4). Most notably, Asia, which accounts for 69 per cent of global seafood production, accounts for only 11 per cent of global certified seafood production. By contrast, Europe and North America, which account for approximately 15 per cent of global seafood production, account for 47 per cent of global certified seafood production.

The highly concentrated distribution of certified production across specific economies raises questions about the overall effectiveness of certification in addressing global ecosystem challenges related to seafood capture as well as the potential of certification to operate as a pathway out of poverty for developing country producers.²⁸ Given that both issues are of central importance to any coherent vision of sustainable development within the sector, the overall distribution of certified production remains a serious issue, which merits the dedicated attention of scheme owners as well as policy-makers.

While the growth of seafood certification has been led to date by the certification of wild catch operations, it seems likely that this dynamic will change in the coming years as aquaculture takes an increasingly important share of global production. Salmon and

shrimp/prawns are important sources of certified production in both wild catch and aquaculture. This signals potential for cross-management of supply and demand of sustainable products from these species, including the possibility of transitioning from wild catch to certified aquaculture as a long-term sustainability strategy. Indeed, one of the “solutions” to dwindling wild catch production could be a transition from wild catch to controlled aquaculture production.²⁹ Regardless, it is clear that aquaculture certification will play a much more prominent role in the supply of certified seafood moving forward.

Overall, the concentration of certified production among a limited number of highly visible species consumed in key developed economies points towards potential limitations on the marketability of seafood certification, which may represent a long-term challenge for the industry. The concentration of certification in species that are sold in European and North American markets is to be expected as demand for sustainable products is concentrated in these markets. However, it remains unclear how much room exists for even these markets to drive further growth in light of the already significant volumes of certified production available. As of 2015, 16.6 million metric tons of retail ready³⁰ seafood was certified – a volume equal to 87 per cent of total seafood consumption in North America and Europe.³¹ Actual demand from

Figure 4: Global distribution of certified seafood production, 2015—versus total seafood production, 2013 (by volume)

Source: Potts et al., 2016.

individual consumers for certified seafood in these markets is, of course, far less. Consumer recognition, to say nothing of actual purchasing decisions, has been reported as averaging 35 per cent for MSC, the single most visible standard, across its most important markets (Marine Stewardship Council, 2015).

Historically, market growth for certified seafood has been driven by retail and manufacturer commitments to certification more than recognition and demand by individual consumers. Although retail commitments are significant, many have reportedly run into barriers in meeting their supply needs on schedule – suggesting potential undersupply along specific species lines.³² As these commitments continue to roll out, the size of the certified seafood market is expected to grow in the coming years. It should be noted, however, that the barriers to growing certified supply of wild catch seafood are significant in light of the relatively poor status of global stock assessments, which currently represent a long-term concern for the expansion of certification in sector.

Growth in the sector will have to increasingly rely on more demand from developing country markets and/or a more general expectation/requirement of certification from global markets as a price of market entry.³³ Regardless of who actually drives market growth, it is clear that further efforts to supply growing market demand will need to focus specifically on

enabling developing country certification, particularly across Asian production.

Policy options

Standards represent an additional tool for policy-makers and other stakeholders to assist in the promotion of a sustainable fisheries sector. However, it is also clear that voluntary seafood standards cannot be expected to achieve significant sustainability outcomes alone. On the one hand, any successful use of voluntary standards in the fisheries sector depends fundamentally on infrastructure that can only be provided by local public institutions. On the other hand, the global nature of many of the public goods at risk through seafood production requires a commensurate response from the international community. Moreover, voluntary standards rely heavily on publicly available data with regard to regulations, data collection and fisheries management systems for assessing the potential sustainability of a given fishery. Finally, voluntary standards are subject to the pressures of an imperfect market and may require targeted public policy support to overcome the additional costs associated with certified production. The need for policy intervention is, perhaps, nowhere more evident than in the context of low-income economies with significant smallholder production where the

certification process may represent a significant barrier to accessing international markets.

Based on our analysis across the capture and aquaculture sectors, we have identified the following major areas of opportunity for improving/strengthening the positive sustainability impacts of voluntary systems:³⁴

Policy opportunity 1:

Development and multilateral agencies working with national governments could provide significant and targeted technical assistance to facilitate certification of developing country producers, and smaller producers in particular. Donor countries could consider setting up a global fund for sustainable fisheries. Our data reveals that sustainable production is highly concentrated across a very small number of countries, mostly in the developed world. If seafood certification is to support a needs-based approach to sustainable development, it will need to be complemented by a significant increase in technical assistance for smaller fisheries and fish farmers.

Policy opportunity 2:

Certification schemes could proactively invest in building more equitable representation of developing countries across their governance systems. Although most of the systems reviewed claim to have open democratic governance systems, participation by developing country representatives across such initiatives remains low. More equitable representation will be key to ensuring that criteria and implementation systems are sensitive to the needs of developing country producers.

Policy opportunity 3:

National Governments, in coordination with the World Customs Organization, could establish a Harmonized System of Tariffs and Nomenclature (HST) codes for certified seafood products. One of the challenges facing governments and other stakeholders in assessing the sustainability impact and market opportunities related to voluntary standards relates to the absence of clear trade data on such systems. Promoting fair and equitable access

to international markets through voluntary standards requires a better understanding of trade flows, which can only be done through dedicated HST codes for products produced in compliance with recognized and credible certification initiatives.

Policy opportunity 4:

The international community, following the Guidelines example established by the FAO and ILO Conventions, could clearly identify minimum requirements for social sustainability within the seafood sector. While the field of voluntary standards in other sectors has gradually migrated from single issue to multi-pronged sustainability initiatives over the past decade, many voluntary systems in the fisheries sector have not fully integrated social criteria within their systems, leaving a deep vacuum in their treatment of social sustainability.

Policy opportunity 5:

National Governments could establish minimum transparency, conformity assessment and notification requirements on voluntary systems operating within their borders in accordance with the spirit of the Agreement on Technical Barriers to Trade (TBT) Code of Good Practice and in a manner that promotes equal access to such systems. Although private voluntary standards are not formally under the purview of WTO Agreements, national Governments should nevertheless establish rules that help ensure that such systems operate in accordance with their WTO commitments and do not create unnecessary distortionary effects on trade.

Policy opportunity 6:

Where standards have demonstrated full compliance with the FAO Guidelines, national Governments could consider the implementation of preferential fiscal policies for certified seafood products. Compliance with effective standards inevitably entails additional costs. This can put certified entities at a disadvantage vis-à-vis their conventional counterparts operating in a free market. In order to facilitate sector-wide transition to demonstrably sustainable practices, governments may need to level the playing field through the implementation of preferential taxes and/or tariffs.

2.4

SUSTAINABLE AND ORGANIC AQUACULTURE: BOOSTING LINKAGES BETWEEN SUSTAINABLE DEVELOPMENT AND ECONOMIC OPPORTUNITIES

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ABSTRACT

Aquaculture is one of the fastest growing food producing sectors. Recently, environmental and social questions have been raised regarding the potential negative impacts of aquaculture. To address these concerns several private standards have been established to promote minimum environmental and social requirements that producers need to meet to achieve sustainability standards certification. Beyond sustainability standards, many consumers seek additional guarantees to ensure that the fish products they consume are not only sustainably, but also organically produced. This article explores how the market for sustainable and organic aquaculture is evolving. It also examines developments in the sector in three countries – Oman, Morocco and Ecuador – where fisheries play a major role in the national economy.

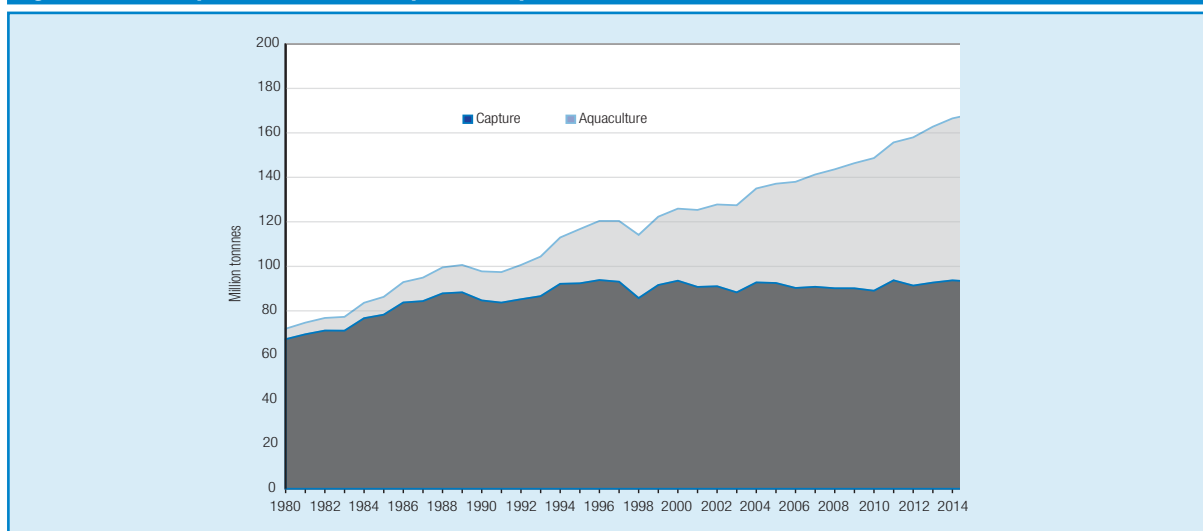
Aquaculture production and sustainability certification

Aquaculture (or fish-farming) can generate lasting benefits for stabilizing and replenishing global fish stocks over time as well as enhancing global food security, economic growth and job creation. Aquaculture comprises the breeding, rearing and harvesting of aquatic organisms under controlled “farm” conditions, primarily to produce seafood for

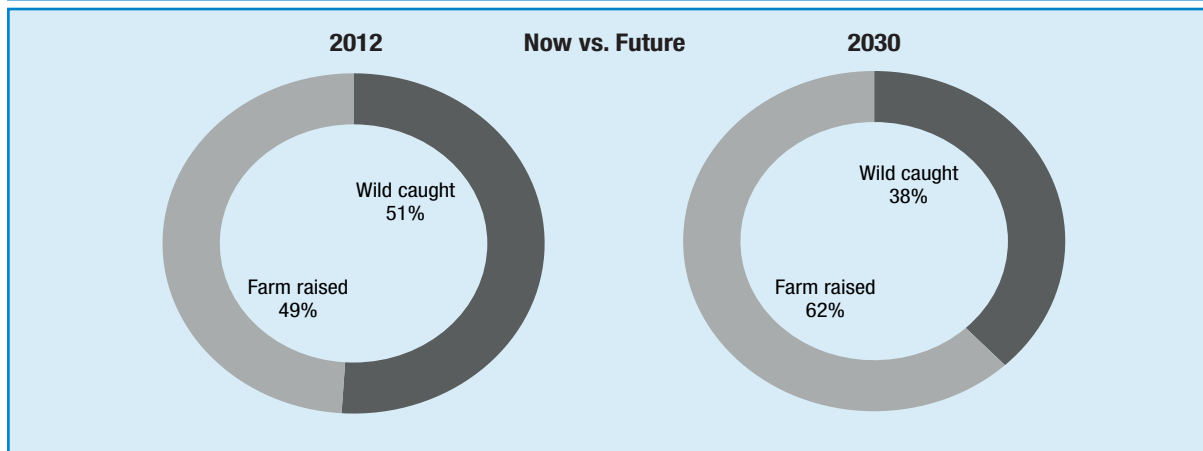
human consumption but also inputs for the personal care, pharmaceutical and pet industries. Key food-related species cultivated in aquaculture are salmon, tilapia and shrimp. Aquaculture is seen today as perhaps the most important alternative to wild harvesting and meeting global fish and crustacean demand in the near future, as fishing levels in the oceans have reached their maximum yield.

With global food production continuing to grow alongside population growth, aquaculture has

Figure 5: World capture fisheries and aquaculture production



Source: FAO, 2014.

Figure 6: Breakdown of global fish consumption by source; current and projected

Source: FAO, 2013.

emerged as one of the fastest growing food producing sectors. It has an annual growth rate of 8 per cent and provides about half of all fish consumed by humans (FAO, 2014A). As fisheries populations decline due to overfishing (Myers et. al, 1995), global environmental change, and the supply of wild catch fish in markets remains steady, the demand for aquaculture fish products will continue to grow, boosting production levels even further. The market for aquaculture was estimated at US\$144.4 billion in 2012; accounting for close to half of the global fish products market (See Figure 5; FAO, 2014). Specifically, aquaculture – which only had an insignificant share of the overall fisheries market in the 1970s – now accounts for more than 42 per cent of the fisheries market worldwide.

As with any rapidly growing economic activity, environmental and social concerns have been raised with regard to the impacts of aquaculture production. Specifically, negative impacts sometimes associated with aquaculture include water pollution, ground water salinization, the enhancement and spread of disease, fish escaping aquaculture farms outcompeting native species, habitat degradation, and poor remuneration and working conditions that have negative social impacts for the surrounding communities. In response to these concerns, the market is making increased use of sustainable production practices that are not only more environmentally sound and socially responsible, but also more efficient and productive.

Several private standards have been established to promote minimum environmental and social requirements that producers need to meet in order to achieve sustainability standards certification.

Increasingly, consumers, retailers and distributors seek the assurance of sustainability standards for food products, particularly in high-end markets. When standards are adopted and compliance is verified, aquaculture producers can confirm to markets that negative environmental and social impacts associated with their harvesting/production methods have been minimized. MSC, which deals with wild-capture fish products, and the ASC are the two main standards used today to certify sustainably harvested/produced fish products. These two bodies are widely recognized by both retailers and consumers.

The Global Aquaculture Alliance provides “best aquaculture practice” or BAP certification³⁵. This procedure is currently available for farms that raise a variety of finfish and crustacean species, mussel farms, feed mills, hatcheries and seafood processing plants. More than 700 BAP-certified facilities are in operation in Asia, Latin America and other parts of the world. BAP standards developed under the Global Aquaculture Alliance’s Standards Oversight Committee go well beyond environmental sustainability to encompass food safety, social responsibility, animal welfare and traceability. FOS is another global certification body. Its sustainable aquaculture criteria require: no impact on critical habitats (e.g. mangroves, wetlands, etc.); compliance with waste-water parameters; reduction of escapes and bycatches to a negligible level; no use of harmful antifoulants or growth hormones; compliance with social accountability requirements; and gradual reduction of carbon footprint³⁶. Approximately 150 aquaculture producers worldwide have requested to be audited according to FOS criteria and some

100 of them have achieved certification. In addition to these global certification bodies there are several regional and national certifiers, as well as a multitude of private standards developed by distributors and retailers.

Players in the sustainable fisheries market are focusing on all aspects of aquaculture production, from the use of quality inputs to the efficient use of land, water and energy resources. Sustainable fisheries are an important sector in the economies of all countries, and the SIDS in particular. The Samoa Pathway, an international declaration adopted in 2014 with a focus on SIDS, specifically identified sustainable aquaculture as one of the building blocks of a sustainable ocean-based economy in SIDS³⁷. More generally, for SIDS and other developing countries, sustainable fisheries are supported by the adoption of the Sustainable Development Goals (SDGs), including SDG 14, which calls for the conservation and sustainable use of oceans, seas and marine resources for sustainable development. To the extent that they are adopted and implemented, the SDG principles adopted by United Nations Member States to guide their development up to 2030 are expected to align growth in aquaculture production with environmentally and socially sustainable trajectories.

Organic aquaculture

Beyond sustainability standards, many consumers seek additional standards to ensure that the fish products they consume are not only sustainably, but also organically produced. Organic aquaculture is a developing sector involving farmers worldwide producing a wide range of aquatic species – including fish, seaweeds and bivalves – in line with organic agriculture principles that sustain the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. It also seeks to combine tradition, innovation and science for the benefit of the shared environment and promotes fair relationships and a good quality of life for all involved. The combination of aquaculture with organic principles creates a market in which fish consumption could be both environmentally sustainable and healthy.

In response to growing consumer demand, the share of organic aquaculture products in the global

market for fish products has increased substantially over the past several years. Consumers seeking healthier lifestyles have a strong interest in certified food products that not only promote environmental and social sustainability, but also reduce potential health risks associated with artificial inputs used in conventional agriculture. This has led to the establishment of a US\$72 billion market for organic agriculture products in 2015 (FIBL, 2015). Naturland is a major international organic standard that has been developed for different species and production systems in aquaculture. Today, aquaculture producers in 18 countries in Europe, Latin America and South East Asia produce fish, shrimp and mussels according to Naturland standards.

As organic aquaculture is a relatively new sector, there are still debates on its definition and scope (Biao, 2008). While fish harvested from “natural” environments (fresh and saltwater areas) could be considered organic by default, debate has emerged with regard to this approach. Notwithstanding problems with overexploitation of fish stocks in natural waters, it can be difficult to determine the feed and environmental conditions in which catch-sourced fish has originated, which could directly impact their organic status (Mansfield, 2004).

The main driver for sustainable organic agriculture is the willingness of consumers to pay a price premium for food that protects the environment, promotes equitable earnings for rural fish producers and uses less potentially harmful inputs, such as antibiotics and chemicals. The rationale for aquaculture growth within fisheries is, however, slightly different. Since the world’s inland, coastal and maritime waters offer good examples of the tragedy of the commons due to the often unregulated access to fish stocks, many commercial fish species have suffered depletion to the point where their extraction from their original environments is no longer economically efficient (Grafton et al, 2007). Growing scarcity, coupled with strong government regulations which restrict catches to protect fish stocks, have created compelling economic support for expanding aquaculture production. There is also substantial business interest in organic aquaculture, which commands premiums between 5 to 20 per cent compared to conventional fish. As such, aquaculture is expected to expand further in the near future. Today, farmed fish account for 49 per cent of global seafood consumption. This demand is expected to increase to 62 per cent by 2030 see Figure 6.

The current trend of aquaculture growth can be seen in a positive light as it may reduce pressure on certain ecosystems due to the controlled farm characteristics of aquaculture. Another advantage is that much smaller areas are required to produce the equivalent amount of protein than vegetable-based protein sourced from farmland (Nijdam et al; 2012).

While experiences with organic aquaculture have taken place in Europe since the early 2000s, it was defined in broader European Union legislation only in 2010 (Defrancesco, 2003; FIS, 2010).

In the United States, according to the United States Department of Agriculture (USDA), the legal status of using the organic for aquatic species as well the future development of USDA certification standards for organic aquaculture products and aquatic species are under review.³⁸ Several international certifying bodies have developed organic aquaculture standards, including KRAV³⁹ (Sweden), Naturland⁴⁰ (Germany), the Soil Association⁴¹ (UK), and IFOAM⁴². Prein et al (2010) have suggested that there are now some 80 standards for organic fish in the world. Those products have been retailed at supermarkets such as Esselunga (Italy), Tesco (UK), Edeka and Aldi (Germany) and Coop (Switzerland), which often use their own organic/bio brands.⁴³

Aquaculture has its drawbacks as well. One of the current discussions concerns the fishmeal given to fish during growth stages, which is often based on animal or seafood sources. This keeps the door open to environmental degradation and further resource exploitation in natural waters (Naylor et al, 2000), especially of small pelagics for fishmeal and oil. There are ongoing efforts – with some degree of success – to produce fishmeal based on vegetable protein or mixes thereof, without sacrificing fish growth and profitability in the process. There is also a growing niche market for organic fishmeal itself, as illustrated by Hayduk in Peru.⁴⁴

Market premiums for sustainably and organically produced fish

The price premium in international consumer markets is small. Many distributors and retailers in developed countries no longer pay a price premium for fish certified as sustainably produced. Instead, they increasingly source sustainably harvested wild-capture fish and sustainably produced aquaculture fish at the beginning of their supply chains. As a

result, sustainably produced aquaculture products are becoming a market entry requirement in mainstream international markets rather than products that command a price premium.

Meanwhile, organic aquaculture products continue to attract higher prices in international markets compared to similar products that are not produced organically. Some studies have estimated the price premiums for organic fish. These range from 30 per cent (Organic Services, 2010), to up to 24 per cent (Prein et al, 2010), 10 to 15 per cent according to the FAO (2014B), 14.2 per cent (Ecolabelled, Roheim et al, 2011)⁴⁵, and to 30 per cent by the estimation of the Hong Kong-based Fish Marketing Organization (Sean, 2015). A compilation of the average premiums in those studies can be seen in Table 1.

Table 1: Price-premiums obtained by certified organic fish/fish products, when compared to conventional fish (percent)

Species	2006	2007	2008
Carp	38	30	40
Cod	N/A	40	40
Grey mullet	10	10	15
Pangasius	8	10	N/A
Red drum	15	15	15
Salmon	32	32	33
Sea bass/bream	30	40	45
Shrimp	N/A	9	25
Tilapia	46	30	30
Trout	37	31	30
Average	27	25	30

Source: Organic Services 2010.

Observation: The levels of premiums vary depending of the species.

While literature suggests the existence of price premiums for a number of fish species sold as organic, some certified producers in South America and the Pacific argue that certificates and eco-labeling do not always offer a sufficient value in practice. They have even indicated that while certification has become a prerequisite for accessing foreign markets and attracting retail and consumer attention, it is losing its economic appeal. According to interviewees in UNCTAD's 2016 report⁴⁶, fisheries certification can be expensive and may not always bring the expected economic returns. Certification of sustainably produced aquaculture products, on the other hand,

remains important as a market entry requirement for these products in major world markets.

Selected countries experience with aquaculture-based exports

Oman

The Sultanate of Oman has identified aquaculture as one of the key pillars for diversifying its national economy. The overall vision of the Ministry of Agriculture and Fisheries (MAF) is to develop a sustainable, competitive and environment-friendly aquaculture sector that meets the need of customers for high-quality fish products. As fish demand increases globally, aquaculture will play a greater role in Oman's agricultural activities. It will also provide an alternative to placing additional pressures on wild fish stocks in Omani waters.

Aquaculture production in Oman is still quite small when compared to its potential. According to the FAO, the total value for the aquaculture production in 2013 was 7.7 million Omani Rial (US\$19.2 million)⁴⁷. Current salt-water production is focused on shrimp. For freshwater aquaculture, tilapia is now increasingly farmed in many areas in Oman. This responds to high demand mainly from expatriates living in the country. The majority of the tilapia production is consumed locally, and valued at about US\$6 per kilo in the local market.

The MAF⁴⁸ has estimated that with the experience gained in the sector over the next decade, the eventual capacity for aquaculture production by 2030-2040 could be as high as 220,000 tons with an estimated market value of US\$900 million. This sector employs 11,000 which would contribute US\$2 billion to Oman's GDP. With such expectations, Oman seems to have already made substantial progress within its development and food security strategy towards the creation of a world class aquaculture sector.

In 2013, the MAF revealed its plan of investing US\$1.3 billion in fisheries development from 2013 to 2020 to help promote sustainable fishing and provide the necessary infrastructure to increase fisheries production in the country. Expanding aquaculture production will be a big part of this plan and will serve as a tool to promote local livelihoods and food security. Additionally, by 2013 the MAF had already issued 19 licenses to investors who had met the technical criteria to set up aquaculture projects. The

total private investment in these projects is valued at US\$330 million (RO 128 million). Species of interest for aquaculture production include bream, shrimp, cobia, abalone, sea cucumber and some fresh water species.

In 2011, Oman adopted a set of "better management of Omani aquaculture practices". These practices are meant to guide current and future producers in economically and environmentally sustainable production while ensuring consumer safety. In addition to these best management practices, it might be important to introduce regulations for organic aquaculture. Many countries have organic biological agriculture laws but not all of them cover the aquaculture sector. For example, Ecuador has recently implemented a state-of-the-art organic regulation that includes guidelines for the development of the organic aquaculture production. Ecuador is one of the biggest aquaculture producers in the world with a dominant focus on shrimp. It might be of interest to Omani authorities to design and implement similar regulations. So far, no Omani farms that fulfil sustainability or organic parameters have been certified by major organic certification bodies.

Morocco

While aquaculture was introduced in Morocco in the 1950s, it only recorded significant advances over the last 20 years with the apparition of large export-oriented companies in the north of the country. Morocco has considerable untapped potential with a 3'500 km coastline open to both the Atlantic and the Mediterranean, the high quality of its waters, a wide range of species, a competitive and experienced workforce and a geographic proximity to the European market.

Mindful of the potential of aquaculture for enhancing the sustainability of the fisheries sector, Moroccan authorities identified aquaculture development as one of the five high priority projects under the Plan Halieutis, the national strategic framework to advance the modernization and growth of the country's fisheries.⁴⁹ Under the Plan Halieutis, exports of Moroccan fishery products are expected to rise from US\$1.2 billion in 2007 to US\$3.1 billion by 2020. The plan also seeks to expand the country's domestic aquaculture production from less than 500 tons in 2007 to more than 200,000 tons by 2020 for a turnover of Dh 5 billion (US\$530 million).

Today, aquaculture accounts for less than one per cent of the of the fisheries production in the country with an

estimated annual output ranging from approximately 300 to 1,189 tons per year according to available estimates⁵⁰. The main fish species include seabass and bream, and shellfish such as mussels and oysters.

The National Agency for the Development of Aquaculture (ANDA) was created in 2011 to promote aquaculture and address the challenges hindering its development such as land availability constraints, expensive startup costs and heavy dependence on export markets. The agency is actively involved in all aspects of aquaculture development from research to investment and regulation. In the short term, ANDA launched a call to tenders for the construction of nine aquaculture farms ranging between 20 hectares and 40 hectares on the Mediterranean coast, which are expected to generate a total investment of more than US\$30 million (Dh 295 million).

With regard to the promotion of sustainable and organic aquaculture, Moroccan authorities engaged in the development of a regulatory framework pertaining to the production, certification and labeling of organic aquaculture products. In this context, the promulgation of the 2013 Law 39-12 on the organic production of agriculture and aquaculture products provided the country with a major enabling instrument for the further development of organic aquaculture.

Morocco's integrated coastal zone management (ICZM) programme, which aims to reduce rural poverty and protect both biodiversity and sensitive environmental areas, provides another example of the efforts of Moroccan authorities to promote sustainable aquaculture. The ICZM program includes two pilot projects on shellfish and seaweed farms with a total expected production of 132 tons, as well as targets for small-scale fishing communities in the country's eastern region.

Finally, in the framework of its bilateral collaboration with the European Union and Japan, Morocco engaged in promoting sustainable aquaculture through technical collaboration projects such as strengthening ANDA's capacities with regard to fish hatchery development, traceability practices, promotion of sanitary safety and the creation of a research center on shellfish breeding technologies. These efforts to advance the development of aquaculture and the Moroccan authorities' focus on sustainable production practices have placed the sector in a position to harness the benefits of the growing demand for sustainable and organic fishery products.

Ecuador

Ecuador is one of the world's leading producers/exporters of fish and aquaculture products. In recent years, its fishery products have consistently represented about six per cent of the country's total exports. Shrimp exports reached US\$2.3 billion in 2014, showing an impressive annual growth of 48.2 per cent compared to the previous year⁵¹. As for the social importance of these sectors, extractive fishing and processing generated about 90,000 jobs, to which aquaculture added a further 180,000 (UNCTAD, 2015).

Ecuador plays a key role in the production and export of aquaculture products, primarily farmed shrimp⁵². The country has farmed shrimp since 1968, and currently accounts for 95 per cent of the total Pacific white shrimp production. Ecuador's strategic location, along with favorable weather, permits shrimp farmers to raise three harvests a year. In 2014, Ecuador was the third largest producer of white shrimp in the world.⁵³

More than 95 per cent of Ecuadorian aquaculture activity centers on marine shrimp. The development of shrimp culture has taken place mainly along the coastal region where favorable natural conditions create a propitious environment for the development of aquaculture. In the inland inter-Andean region, freshwater tilapia is increasingly farmed. Other species, such as freshwater fish and non-shrimp crustaceans are cultivated on a small scale.

With the growth of the aquaculture industry since the 1970s, shrimp densities in aquaculture farms continued to rise. However, due to growing health concerns over high-density farming, most Ecuadorian farmers have shifted to a sustainable practice of low-density aquaculture. As a result, Ecuador has become the lowest density shrimp producer in the world, with sustainability credentials recognized worldwide.⁵⁴ Increased external demand was met by increased shrimp production by Ecuadorian shrimp farmers, with production rising by nearly 30 per cent in 2014. However, more modest growth is planned for the near future.

Today, some 60 per cent of Ecuadorian shrimp farmers use low-density farming systems which facilitate their ability to attain ASC certification for sustainable aquaculture. In 2014, three Ecuadorian shrimp farms operated by the firm OMARSA became the first in the world to achieve ASC certification.⁵⁵ ASC-certified

shrimp farms aim to measurably reduce adverse impacts on the environment and local communities by preserving wetlands and mangroves; addressing the transfer of viruses and reducing disease; bringing cleaner water and ensuring the sustainable use of water; ensuring the responsible use of feed, as well as addressing biodiversity issues.⁵⁶

While OMARSA shrimp are ASC-certified for the firm's use of sustainable production methods, the company also produces organic shrimp at a level of five per cent of its total output.⁵⁷ Among the principles followed by OMARSA's organic farms are: (i) larvae are sourced only from organic certified hatcheries; (ii) low-density cultivation with no water pollution; (iii) use of natural food (such as algae) and organic feed; (iv) all production supplies and fertilizers have organic certifications; (v) no chemicals or synthetic materials are used within the perimeters of the organic farm; (vi) no use of antibiotics and minimized adherence of additives and sulfites, and (vii) reforestation at a rate of 20 per cent of the farm's total area every five years.

Another example of sustainable aquaculture in Ecuador can be found in tilapia production. This sector has grown quickly after the appearance of Taura Syndrome Disease in the early 1990s, which sharply affected shrimp production and thus led to opportunities for the uptake of tilapia in the country (FAO, 2005).

Ecuadorian tilapia producers have been at the forefront of the adoption of sustainable production practices in Latin America. In 2012, Aquamar, one of the largest tilapia farming facilities in Ecuador with an annual production estimated to 13,000 tons, became the first tilapia farm in the Americas to receive ASC certification (ASC, 2012).

Two other tilapia farming operations have obtained BAP certification and three BAP-certified feed mills are currently operating in the country. Moreover, a recent UNCTAD study on Green Exports (UNCTAD, 2014) found that no less than seven different sustainability standards had been used to certify Ecuadorian aquaculture products.

Conclusions

Aquaculture is one of the fastest growing food-producing sectors, providing many developing countries with significant export opportunities.

The development of the aquaculture sector in Oman, Morocco and Ecuador relies largely on government policies and incentives, as well as government provision of infrastructure and seed financing. This suggests that national programmes to support aquaculture are a prerequisite for the continued growth of this sector.

Certified sustainable production methods have become a market access requirement in world fish trade. Producers certified as using sustainable production methods are able to export their products to major developed country markets. However, many producers without such certification face growing difficulties in accessing these markets. This suggests that there is a need to increase awareness of the benefits of sustainability certification among exporting producers in the aquaculture sector. In addition, certification could be made more affordable by pooling producers in order to achieve economies of scale, reduce costs and narrow market access gaps.

Organic certification remains a niche market. A relatively small but growing segment of international consumers seeks additional standards and certification to ensure that the fish products they consume are not only sustainably, but also organically produced. Certified organic producers are able to capture a price premium in the organic market segment although for some producers higher margins appear to be largely offset by higher production costs.

Developing country producers should be encouraged to produce sustainably and acquire certification in order to access major world markets. However, going one step further towards certified organic production may not be worthwhile for most producers due to higher production and certification costs and the need to rely on a significantly smaller organic segment of the market. At the same time, if many developing country producers seek organic certification in large numbers, growth in organic production levels carries the risk of outpacing growth in the global organic consumer market, which could result in substantially reduced price premiums.

2.5

NATURE'S BENEFITS: LATIN AMERICA'S VALUABLE MARINE FISHERIES AND AQUACULTURE

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ABSTRACT

Marine and coastal ecosystems provide valuable resources and investment opportunities throughout Latin America. Mangrove forests, coastal wetlands, estuaries, coral reefs, seagrass beds, macroalgae assemblages and upwelling areas all contribute to fisheries production, providing generous opportunities for social cohesion, leisure and economic activities in the region. In addition, these coastal and marine habitats provide ecosystem services that benefit local and national economies. They contribute to culture and identity, support agriculture, mitigate the effects of climate change, provide educational opportunities and safeguard sacred sites. Their contribution to fisheries production is significant – and cannot be substituted.

Worldwide, fish – one of the most traded commodities in the world – accounted for a record US\$146 billion in 2014. In Latin America and the Caribbean, fisheries exports alone generated nearly US\$15 billion in 2011 – making fisheries one of the economically most important sectors in the region. Fisheries and aquaculture also support, and indeed increase, the profitability of other drivers of economic growth, such as marine-oriented tourism and agriculture. Especially in the Latin American region, fisheries and, to some extent, aquaculture, provide livelihoods, food security and cultural identity for thousands of coastal communities on the islands and coasts of the region. Coastal and marine policies that protect and restore the coastal habitats which underpin this sector could safeguard not only the fisheries industry, but also the very basis for human wellbeing in Latin America.

Oceans, fisheries, livelihoods and food security in Latin American and the Caribbean

Latin America and the Caribbean (LAC) is an ocean-dominated region. The vast majority of its countries and the bulk of their populations are coastal, with economies inextricably tied to the health and productivity of marine ecosystems. This region's seas and coasts are filled with valuable assets that generate substantial revenues for economic development, support livelihoods, improve the wellbeing of local communities and visitors, and have a key role in climate change mitigation. Healthy marine and coastal ecosystems are vital for maintaining the marine fisheries and aquaculture sectors in the LAC region. They are likely to be increasingly important as populations grow, land becomes scarce, the climate changes, and new markets for seafood and marine products emerge. While Latin Americans have already capitalized on the existence of the marine resources that these ecosystems have provided, there are many

new opportunities for investment in the green and oceans economies.

In the LAC region, as in the rest of the world, fisheries are an engine of economic growth. Fish is one of the most highly traded commodities worldwide. In the record-setting year of 2014, global exports reached US\$146 billion (FAO 2016). Although a regional assessment of fisheries has not yet been completed, FAO data shows that in LAC countries (excluding Cuba, for which data is unavailable) export values for fisheries products (including wild capture and aquaculture) reached US\$14.5 billion in 2011 (see Table 2). Fisheries are a significant contributor to the economies of LAC nations (see Table 2 showing LAC GDP at purchasing power parity and fisheries export figures for 2011). Additionally, LAC regional exports accounted for nearly a quarter of all fish traded from developing countries worldwide. The seafood value chain is long and lucrative; with additional earnings generated by value-added industries that process both domestic and imported seafood products.

Table 2: Indicative relationship between 2011 GDP and fisheries exports for trading nations in the LAC Region (\$ thousands)

Country	GDP (PPP)	Fisheries exports	Fisheries: GDP %
Brazil	2 615 234 935	242 543	<1.0
Mexico	1 169 362 160	1 122 897	<1.0
Argentina	557 890 204	1 471 838	<1.0
Colombia	335 415 157	188 791	<1.0
Venezuela	316 482 191	23 566	<1.0
Peru	170 564 249	3 164 417	1.9
Chile	250 832 363	4 630 913	1.8
Ecuador	79 276 664	2 496 615	3.1
Dominican Republic	58 361 929	14 783	<1.0
Guatemala	47 654 787	106 199	<1.0
Panama	33 270 500	126 122	<1.0
Costa Rica	41 237 294	132 369	<1.0
Uruguay	47 962 439	234 559	<1.0
El Salvador	23 139 000	79 151	<1.0
Trinidad and Tobago	24 409 842	14 786	<1.0
Honduras	17 710 315	144 222	1.0
Nicaragua	9 755 620	132 992	1.4
Jamaica	14 396 817	11 991	<1.0
Haiti	7 516 834	10 116	<1.0
Suriname	4 422 277	71 548	1.6
The Bahamas	7 889 750	75 293	1.0
Guyana	2 576 598	53 619	2.1
Barbados	4 358 000	536	<1.0
Belize	1 487 005	25 408	1.7
Antigua and Barbuda	1 129 918	899	<1.0
Grenada	778 649	5767	<1.0
Saint Kitts and Nevis	728 051	719	<1.0
Saint Vincent	676 129	270	<1.0
Dominica	501 481	12	<1.0
Latin America / Caribbean	5 845 021 158	14 582 955	<1.0

Source: World Bank database /FAO Statistical Summary.

The economy of the LAC region is uneven, with five countries (Brazil, Mexico, Argentina, Colombia and Venezuela) accounting for more than two-thirds of the region's economic output. Chile and Peru are the top fisheries exporters in the region, accounting for more than half of the fisheries exports in LAC. The contribution of fisheries exports to the overall GDP also varies significantly. While LAC fish exports represent less than 1 per cent of the regional GDP, their contribution in terms of food security, jobs and livelihoods are far more important for the region as a large share of the harvest and processed products are kept in local and regional markets.

While the total fisheries export values of Caribbean Island States represent just 1 per cent of regional

exports, they have vibrant, ocean-based societies with great cultural diversity. Both fisheries and aquaculture are expanding rapidly in the region, and even in its most developed countries fish consumption is increasing both per capita and in absolute terms, with implications for food security, trade and social stability.

Fisheries play a key role in ensuring food security, which may be even more important than their export value or direct economic output to GDP. Seafood, whether procured through capture fisheries or via aquaculture, is a major component of food security in Latin America as local populations are highly dependent on these resources. Per capita fish consumption is significantly higher in the Caribbean than the global average. In addition, food for subsistence and much-needed

cash provide social benefits in areas where coastal communities are marginalized or in rural locations (FAO, 1996). In the less developed countries of the LAC region, and particularly in remote coastal areas, fish is not only the major source of animal protein, it is also a critical source of micronutrients essential to people with otherwise deficient nutrition (Pauly and Zeller, 2016). For these reasons, it will be increasingly important to bring together governments, companies and local communities to engage in sustainable and innovative fisheries exploration practices, where ecosystems restoration and sustainable fisheries harvesting go hand in hand.

Seafood and fishing are also culturally important to the region, with millions of people engaged in artisanal fishing as part of traditional and alternative urban occupations. From a cultural perspective, seafood has played a central role in the development of traditional gastronomy, which has become a fundamental part of cultural pride and identity. Regional seafood dishes range from “muqueca” in Brazil, “ceviche” in Ecuador and Peru, conch chowder and fritters in the Caribbean, to other local specialties. This supports not only cultural identity, but also the growing marine and cultural tourism trade.

The fisheries and aquaculture sectors provide employment as well as a source of livelihoods in coastal and island nations across the LAC region. As a mainstay of many coastal communities, small-scale fisheries and aquaculture play an important role in the social fabric of society (FAO, 2014). In other parts of the region, especially in the Humboldt Current area (Pacific), large-scale commercial fisheries are targets for business investment and major contributors to GDP. These fisheries are the focus of much scientific study and stock assessments. This research and subsequent quota determinations to maintain catch at a maximum sustainable yield is accomplished by national fisheries ministries and regional fishery organizations and arrangements in LAC, including the Western Central Atlantic Fishery Commission, the Regional Fisheries Advisory Commission for the Southwest Atlantic, the Organization of Eastern Caribbean States, the Caribbean Community and Common Market, the Latin American Organization for Fisheries Development and the Permanent South Pacific Commission. However, most of these organizations deal only with migratory species such as tuna and sword fish.

In some places competition over access to resources

between large-scale commercial fisheries and small-scale artisanal or subsistence fisheries has generated rivalry and conflict. This trend will remain throughout the region as stocks become overexploited and perverse subsidies drive overcapitalization that can result in even more overexploitation. This leads to the degradation of fisheries habitats and the ecosystems associated with them.

Latin American and Caribbean nations are taking steps to mitigate these conflicts through formal regional environmental agreements such as the Cartagena Convention for Caribbean Regional Seas, as well as informal regional discussions on combatting IUU fishing (FAO, 2015). Several countries, including Mexico, Ecuador, Peru and Chile, are also making efforts to address IUU by revising their regulatory and administrative measures. While these measures are positive, much remains to be done, especially when it comes to the fisheries industry’s adoption of benchmarks and best practices from other industries that have emerged from the intensive overexploitation of natural capital.

With the adoption of more ethical and sustainable practices, there are good possibilities that the conflict between local communities and mainstream fisheries will be minimized. Direct fisheries management (controlling catch) goes hand in hand with the protection of habitats that maintain this resource. Fisheries management organizations are utilizing tools such as Marine Protected Areas (MPAs), green financing mechanisms (for instance, payments for ecosystem services) and certification schemes to ensure that management is more committed to eco-efficiency and a holistic ecosystem-based approach (Potts et al. 2016). Good business practices increase benefit sharing along the value chain and revenue flows to operators, investors and governments.

Aquaculture operations are also improving, due in part to the 2009 establishment of the ASC and its standards for the 12 most commonly farmed fish and shellfish species. Many Latin American aquaculture operations have already moved to get ASC or Best Aquaculture Practices (BAP) certification. For instance, in January 2015, Makro Supermayorista SA – a major Latin American wholesaler with operations in Argentina, Brazil, Colombia, Peru and Venezuela – moved to get BAP certification for its farmed seafood as part of a company-wide sustainability initiative. Schemes such as these provide measurable standards and third-party verification in order to ensure that their

aquaculture operations adhere to best practices and are attractive to the industry due to the marketing opportunities that certification can provide. Several Latin American countries, such as Ecuador, have already developed strategies for sustainable seafood and aquaculture (UNCTAD, 2015). Nonetheless, there is scope for improvement, both to increase efficiency and net benefits to society, and to ensure that economic development in the fisheries sector does not constrain other maritime industries and benefits in the long run.

Specific fisheries of value to Latin American and Caribbean countries

Fish products provide essential proteins for human consumption globally, with regional variations (see Figure 7). While the proportion of food protein provided by fish is significantly smaller than that provided by meat and dairy products (see Figure 8), its share is increasing rapidly around the world as global populations grow from 7.4 billion to 9 billion by 2050. The importance of some fisheries products for food security is larger than it appears. For instance, the Peruvian anchovy fishery is a crucial component of both animal feed and crop fertilizers. As technologies for sustainable agriculture improve in both scale and effectiveness, industries should reduce the use of fish

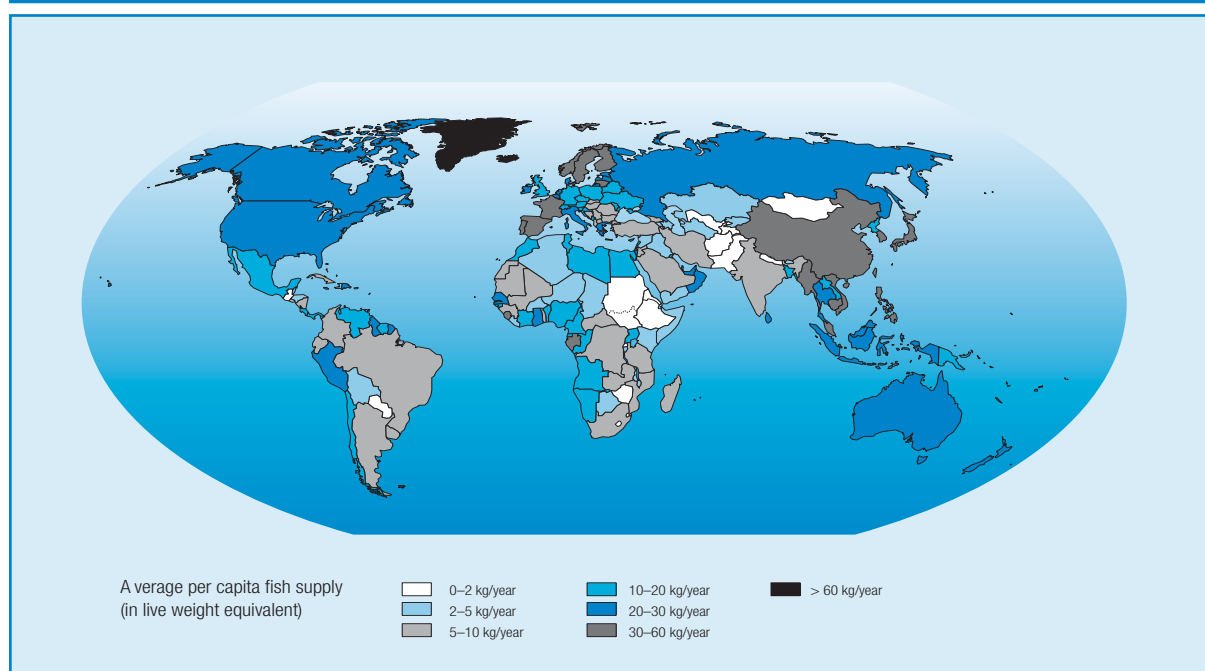
for feedstock (indirect human consumption) and the production of fertilizers, substituting them by more effective and less strategic natural resources. Through development and industrialization, LAC countries may shift progressively from exports of fish commodities to emerging and more attractive fisheries-related markets.

Historically, much of this sector's economic value lies in international trade. The main seafood products driving this trade are high-value commodities such as farmed salmon and shrimp, wild-caught shrimp, snapper, lobster and conch, and high-volume small pelagic fish such as anchovies, sardines, and larger pelagics like mackerel and tuna. Approximately two-thirds of the region's landings are small pelagics, which represent a volume of roughly three-quarters of the global catch of these species. This context brings important inputs for a better understanding of fisheries economics in LAC and the region's potential as a driver for new and more innovative applications for fisheries output.

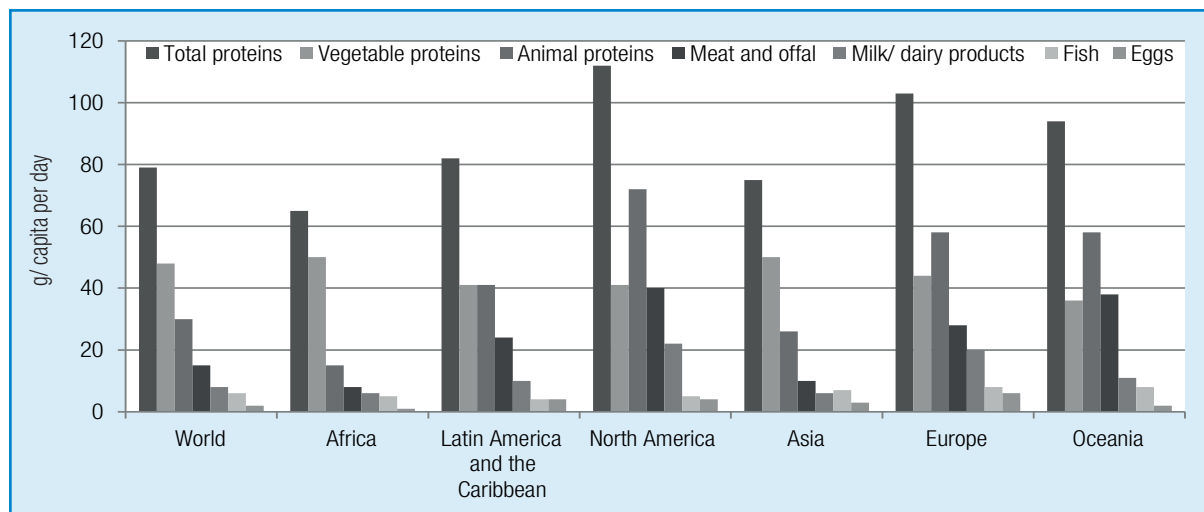
Latin American trade in fisheries products has increased steadily, generating a rising surplus over recent years (see Figure 9; FAO, 2014).

The huge variation in export figures among Latin American and Caribbean countries belies several complexities inherent in assessing the value of marine

Figure 7: Average per capita fish supply (average 2008-2010)



Source: FAO, 2014.

Figure 8: Derivations of global protein supply (averaging 2008-2010 data)

Source: FAO, 2014.

fisheries. Countries where fisheries (and aquaculture) account for a significant proportion of GDP are economically reliant on consistent catches and market demand. Paradoxically, many of the most lucrative fisheries are also the most dynamic, exhibiting boom and bust cycles tied to oceanographic phenomena such as the El Niño Southern Oscillation (Cashin et al., 2015).

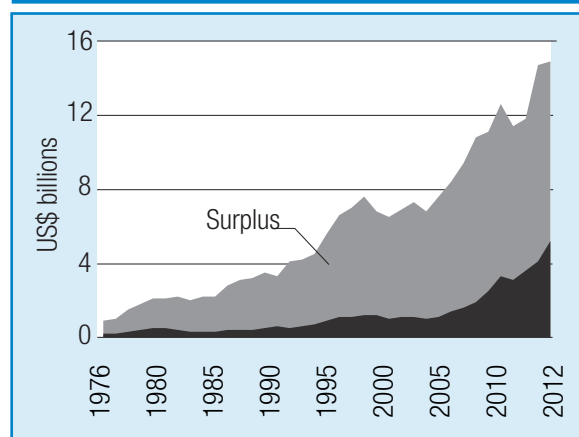
LAC countries are well aware of the value of oceans in providing resources for lucrative fishing operations. For instance, Peru and Chile tap the highly productive upwelling systems like the Humboldt Current. Ecuador and Chile practice large-scale aquaculture of shrimp or salmon, while the Bahamas and Mexico export high-value commodities, including conch and lobster.

While smaller countries such as the Caribbean Island States are largely invisible in terms of international trade statistics, they are nonetheless reliant on fisheries. Taking Dominica as an example, Boyd (2010) shows that local reef fisheries provide employment to no less than 11 per cent of the working population – a significant engine of economic wellbeing for which there is no readily available substitute.

Fisheries are becoming increasingly important to LAC countries. Since 1973, their contribution to GDP has increased steadily due, in part, to growing efforts of small pelagic fisheries (especially Peru and Chile) and the expansion of the sector into other products such as demersal fish, crustaceans, mollusks (primarily squid) and large pelagics, as well as aquaculture (see below). Fisheries contracted slightly between 1984 and 1990,

but have since rebounded in terms of both value and their contribution to employment (FAO, 2014). Since 1991, the value of regional exports has grown faster than world value (FAO, 1996; FAO, 2015).

In recent decades, aquaculture has expanded in response to new market demand and a spate of new investors. Chile, Ecuador, Mexico, Brazil, Colombia and Cuba account for the bulk of production. Shrimp and salmon aquaculture targeting markets in the United States, Japan and Europe account for more than 80 per cent of regional aquaculture production (FAO, 1996; FAO 2014). In Ecuador, shrimp production has topped 300,000 metric tons, with exports generating some US\$2.6 billion in 2014 (The Fish Site, 2015). This growth is largely driven by strong and increasing

Figure 9: Latin America trade in fish products, 1976-2012 (\$ billions)

Source: FAO, 2014.

United States demand for shrimp, combined with a drop in Asian shrimp production due to the early mortality syndrome. In addition to Ecuador, other major shrimp producers in the region include Mexico, Colombia, Honduras and Panama. In contrast, Chile is the sole large-scale developer of salmon farming, accounting for more than 10 per cent of the world salmon supply. As in other parts of the world where industrial aquaculture is practiced, farming operations are vulnerable to disease outbreaks. Many of these operations have been the source of large-scale habitat destruction (especially the destruction of mangrove forests for shrimp ponds, see UNEP, 2014) and degradation tied to the release of fishery waste products, antibodies and other medicines as well as nutrients into local waters. However, the situation has improved considerably through the application of international certification, emerging regulations, and the rising government interest in the protection and management of coastal and marine ecosystem services in more environmentally sound ways (Gunther, 2012).

At the opposite end of the commodities spectrum, fisheries targeting small pelagics for fishmeal represent high volume but low value. These fisheries account for nearly three-quarters of the LAC's production in the sector. While they cause less concern over environmental effects than do shrimp and salmon farming operations, the large-scale harvest of small pelagics does have destabilizing effects on marine food webs, especially in periods of El Niño. In addition, bycatch (i.e. catch of non-targeted fish, shellfish, marine turtles, marine mammals and seabirds) in these and other wild capture fisheries can have profound effects on marine biodiversity although this pressure is abating as LAC countries take measures to reduce bycatch and increase efficiency.

Trade in fisheries and aquaculture products originating in Latin America flows across the globe. According to 2014 FAO statistics, approximately 13 per cent of South American marine fisheries products are exported to North America, 11 per cent to Asia, 8 per cent to Europe, 6 per cent to Africa and 4 per cent to Australia. Intraregional trade in South America accounts for 61 per cent of exports. This represents one of the highest rates of intraregional fish trade in the world, explained in part by canning operations and fish processing occurring in countries other than the country of origin throughout the region.

However, these figures do not tell the whole story.

Export values – the most easily obtained metric for fisheries valuation – do not indicate the true contribution to GDP, since neither the sum of private and government consumption, nor capital formation, employee compensation, insurance or subsidies are included in the calculation (World Bank, 2012). Regrettably, import/export figures shed no light on domestic commercial markets, small and informal markets, or subsistence reliance on marine resources (including fisheries products not only used directly for food, but also as bait as well as fertilizer for household crops and feed for fish ponds). According to the FAO, fisheries contribute nearly 10 per cent of the food supply in Latin America (FAO, 2014, see Figure 8). In addition to this direct value, there are spin-off effects down the value chain. In Peru, for instance, fisheries support 269,000 jobs, of which 35 per cent are found in restaurants (Christensen et al. 2014 and FAO, 2014).

In addition, fisheries can boost the revenues of other industries in Latin America and the Caribbean. Across many localities, tourism drives demand for local fishery products. When seafood is made available it is not only sold at a premium, benefiting fisheries businesses, it can also allow for more high-end, profitable tourism. For instance, fishers often take visitors onboard their boats when they are not fishing. This provides additional employment and diversifies livelihoods thus reducing risk. In this context, fisheries spin-off impacts on jobs at the base of the pyramid are probably as significant, if not more, than those of mainstream fisheries.

There are marked differences between and within countries in terms of the quantity and variety of fisheries products consumed per capita, depending on availability, cost, alternatives, income and cultural factors such as food traditions and tastes (FAO, 2014). Nonetheless, fisheries and aquaculture combine to form an undeniable mainstay in Latin American culture, trade and economy.

Nature's role in providing these resources is obvious: without healthy and productive oceans, marine and coastal fisheries resources would not be available for harvesting. But nature does more than provide living resources for today – coastal and marine habitats also maintain the potential for food, livelihoods and contributions to GDP in the future. Critical habitats for fisheries – without which there would be no fisheries production and thus no fishing industry – include not only the marine areas where fishing takes place, but also nursery areas in mangroves, seagrass, estuaries, spawning grounds and migration

corridors (UNEP, 2014). Coastal habitats provide space to support fisheries infrastructure, habitats that stabilize shorelines and safeguard fisheries capital investments from storms, as well as maintain the ports and shipping routes that allow transport of fisheries products to markets. Coastal habitats also provide waste management for fish processing and space and waste management for fish and invertebrate aquaculture operations. Finally, coastal and marine habitats support other growth industries in Latin America, such as tourism, which in turn creates more demand for fisheries products and, potentially, more profitability.

Fisheries and, by extension, aquaculture are major economic drivers in Latin America and the Caribbean. However, based on minimal industrial value-added and low investment in applied research as well as protection of natural habitats to enhance production, fisheries' contribution to regional wealth is well below its potential.

The challenges

Among the major challenges facing the Latin American fisheries industry are (i) lack of an adequate assessment of the current situation of marine fisheries and aquaculture, (ii) the inability to form an accurate picture of the condition of fish stocks, (iii) how the sector benefits society, and (iv) what additional potential exists for investment in the sector. The last regional appraisal of the sector was conducted using data now half a decade old (Salas et al., 2011). One of the main messages of that assessment was that information on fisheries, and smaller scale fisheries in particular, was sorely lacking for the LAC region.

As in other regions of the world, significant challenges remain for the management of marine fisheries even in areas where a scientific stock assessment has been performed and a framework exists for joint management through RFMOs. Many stocks are overexploited, and IUU fishing remains a challenge even in countries with strong fisheries regulations (Pauly and Zeller, 2016). Developing countries have even greater challenges than developed nations in building capacity for monitoring and enforcing regulations, especially in offshore areas.

Some of the fisheries of greatest commercial value in the region are also those facing significant ecological pressures, particularly with regard to straddling and migratory stocks in the high seas,

including the tuna fishery in the Eastern Pacific, the Peruvian/Chilean anchovy fishery in the Humboldt Current, and the southern ocean tooth-fish and squid fisheries (World Bank and FAO, 2009). The high degree of unpredictability concerning population sizes challenges fisheries managers and governments alike. In addition, the fact that many stocks are transboundary in nature, and that shared threats need to be addressed collectively makes the situation even more challenging (UNCTAD, 2014b). In the Caribbean sub-region, fisheries are characteristically shared between localized small-scale fishers (Hoffman, 2010).

As fisheries expand in the region, the potential for intrasectoral conflicts increases. This includes competition between operators, displacement of fisheries due to conservation-related protections or allocations made for other interests (tourism, energy development, etc.). With the expansion of large-scale commercial fisheries, conflicts between industrial and artisanal fishers can only increase (Jarroud, 2015). For marginalized coastal communities, these conflicts can exacerbate poverty and further disenfranchise societies. All evidence points to the fact that the adoption of ethical and science-based best practices is fundamental to the fisheries industry.

Asymmetry in the capacity to develop or expand businesses by different actors in fisheries value chains leads to further inequities. Well-financed businesses, whether domestic or foreign, can gain access more easily to capital and the knowledge investments needed for efficient processing facilities. They can also invest in marketing/advertising, as well as establish the most efficient modes of delivery to markets. In contrast, many developing countries lack the capacity to comply with environmental, safety and trade regulations and standards, which limits their ability to access markets. The MSC, FoS and other sustainable marine certifications can help in this regard. Many Non-Governmental Organisations (NGOs) also offer assistance in getting community-based fisheries products certified. Yet, even in cases where training and technical assistance increase this capacity, well-financed investors can "corner the market". In the worst case, the economic and social benefits flowing from commons property such as marine fisheries stocks may end up in the hands of only a few.

A final challenge is the uneven treatment of opportunities for improving and investing in the sector. Growth in fish and seafood products certified as sustainable has occurred throughout the world, and there is great

potential to amend operations to conform to best practices, as well as expand and diversify industries as new markets emerge. One important way in which Latin American countries (and the investors they hope to woo) can increase production and profitability is to invest in the marine and coastal ecosystems themselves, thus ensuring continued production of wild stock and food for aquaculture operations, as well as the myriad ecosystem services that nature provides.

The opportunities

Latin America has a great opportunity to take full advantage of nature's potential to deliver fisheries-related benefits and promote more equitable benefit sharing. These opportunities occur in both the supply and the demand side. Throughout the region, there are possibilities to increase production and profitability in five related ways: (i) improvement of management in order to increase fisheries efficiency and profitability, (ii) enhancement of production through protection or restoration of spawning and nursery habitats, (iii) development of fisheries businesses that generate profits through certification, utilization of bycatch and value-added processing of specialty products, (iv) expansion of export and domestic markets, and (v) implementation of policies on land and marine use that maximize fisheries value alongside other benefits provided by nature, including the carbon sequestration needed for climate mitigation (blue carbon), flood control and disaster risk mitigation, and tourism as well as support to regional and global biodiversity.

Donor interest in the region is strong. Conservation funding has been available for fisheries-related work, especially in the Caribbean sub-region (Hoffmann, 2010). Multilateral support for fisheries reform and projects in the form of loans and grants has been provided by development banks and the OECD, as well as bilateral funding from USAID, DIFD (UK overseas development agency), GIZ (German development agency), WWF and others. These grants have supported assessments of local and sub-regional fisheries issues and studies related to the livelihoods of fishers, including their contributions to households and general wellbeing. Other project funding has allowed the identification of Ecologically and Biologically Significant Areas (EBSAs) under the Convention on Biological Diversity, as well as priority areas for Marine Protected Areas (MPAs) and other

spatial management measures specifically aimed at maintaining or enhancing fisheries. These grants have helped communities to better manage their fisheries businesses and the attendant impacts on the environment, including through MSC certification. Private sector and foundation funding has also supported the development of rights-based fishing in the region, including the use of Territorial Use Right Fisheries (TURFs) in Chile and Mexico, and Individual Transferable Quota systems (ITQs) throughout the region. The Development Bank of Latin America (CAF) is currently evaluating opportunities for invention and support for conservation and sustainable use of marine ecosystems and fisheries.

Despite this historical aid, many more opportunities to enhance fisheries and benefit sharing in the LAC region seem to have been overlooked. Outcome-oriented investments could facilitate access to capital, training and technology transfers focused on gear improvements, bycatch reduction devices, closed aquaculture systems, as well as net-cage fish mariculture and seaweed farming, capital for improving processing/packaging efficiencies, fisheries and marine planning and management training, including Marine Protected Area (MPA) design and management. In addition, there are numerous opportunities to improve oceans space/marine spatial planning and integrated management using comprehensive ocean zoning, as well as the marketing of fisheries products to expand existing markets or create new ones (e.g. Shortte, 2013). Trade policies should be evaluated and possibly revamped, with an emphasis on measures that reduce IUU fishing, decrease reliance on fisheries subsidies, and address tariffs that disadvantage small-scale or local fishers (for global recommendations and greater detail, see Sumaila, 2016).

Many Latin American countries are already investing in improving the management and efficiency of increased fishing and aquaculture (World Bank, 2005; Wiefels, 2003). More effective management can generate revenues for individuals and businesses, as well as increase the economic standing of coastal communities and their ability to contribute to GDP. In addition, improved management can enhance the sustainability of revenue generation by allowing foreign fleets to fish within the Exclusive Economic Zones of coastal nations. Finally, improved management can increase regional fisheries' productivity through strengthened regional management organizations as well as bilateral or multilateral agreements that

pool resources for fisheries research and harmonize fisheries legislation.

A shift from low value-added commodity fisheries used for animal feedstock and fertilizers to other applications better able to capture more of the economic output for the benefit of producer countries presents an opportunity to improve food security and climate change mitigation provided that adaptation funds are available. This leap from quantitative to qualitative output in the fisheries value chain could have a significant impact on restoring ecosystems capacity to perform in the long term.

One management tool that has gained traction in recent years is the establishment of marine reserves – a form of MPA – where extractive uses are prohibited. Fisheries managers have utilized marine reserves to protect spawning stock, increase recruitment and catalyze spillover in which fisheries productivity outside the reserve is enhanced by production that “spills” over the border. The FAO has helped countries develop marine reserves and networks by providing guidance in the form of publications and training workshops (see for example FAO, 2011; Sanders et al., 2011). The most effective protected area measures are those embedded in wider-scale marine spatial planning and ocean zoning (Agardy, 2011; Agardy et al., 2012; and UNCTAD, 2014b). These measures are particularly effective when they are placed within multilateral agreements that protect shared marine regions (UNCTAD, 2014b).

Other management measures that can enhance productivity and maintain the sustainability of fisheries include rotating harvest schemes and seasonal closures, regulations requiring bycatch reduction and efficiency enhancement gear, size or slot limits that protect spawning stock, and property rights schemes such as TURFs and ITQs. Interestingly, Latin America lags behind many other regions of the world in adopting measures for improved fisheries management and increased efficiency.

Efficiencies can also be improved post-harvest as exemplified by new initiatives aimed at utilizing currently wasted fisheries byproducts. For instance, the Iceland Ocean Cluster has launched a program that trains fishing businesses to utilize 100 per cent of their catch – not only producing high-quality

fish for human consumption, but also turning fatty tissue byproducts into fish oil for medicinal use, and scales and organs into fish meal. Other fisheries utilize unwanted bycatch (low-value fish species, invertebrates, jellyfish, seaweeds) in addition to targeted fisheries stocks. In 2015, the FAO and the Global Environment Facility (GEF) launched a five-year project to promote the sustainable management of bycatch in LAC trawl fisheries involving Brazil, Colombia, Costa Rica, Mexico, Suriname and Trinidad & Tobago (GEF allocation US\$5.8 million; total budget of nearly US\$23 million). This project will support the implementation of the 2015 International Guidelines on Bycatch Management and Reduction of Discards as well as the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication. Together, they provide another international instrument of high relevance to the trawl fisheries in the LAC region (GEF, 2015).

There are even greater opportunities if one considers the international context and the many policies and initiatives that are catalyzing improvements in fisheries (Deere, 2000). For instance, Goal 14 of the recently adopted Sustainable Development Goals (SDGs) commits United Nations Member States to: “conserve and sustainably use the oceans, seas and marine resources for sustainable development” (UNCTAD and Commonwealth Secretariat, 2015). Under the CBD, EBSAs have been identified for the region. These will receive special attention aimed at ensuring that the fisheries within EBSAs are sustainable. Parties to the CBD have also committed to the Aichi Targets on conserving biodiversity. Target 11 calls specifically for the establishment of MPAs and other effective area-based conservation measures that will enhance fisheries productivity once Target 11 implemented.

Latin America and the Caribbean countries have a great opportunity to unlock their vast potential for blue growth and maximize the profitability of their fisheries while at the same time safeguarding biodiversity and the marine environment that supplies all this potential wealth. Targeted investment and trade policies will help achieve this. Subsequent returns on this investment and increased trade will accrue not only to investors but, most importantly, to the Latin American and Caribbean communities as a whole.

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Notes

- 1 See <http://scientificamerican.com/article/little-chance-to-restrain-global-warming-to-2-degrees-critic-argues/>
 - 2 See World Bank, FAO, IFPRI and AES, 2013.
 - 3 Ibid.
 - 4 Ibid.
 - 5 Convention on the International Trade in Endangered Species of Wild Fauna and Flora, 1973.
 - 6 International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978.
 - 7 Ibid.
 - 8 UNCTAD, 2014.
 - 9 More information on the AGLINK–COSIMO modelling system, and on the OECD–FAO Agricultural Outlook publication is available at www.agri-outlook.org/.
 - 10 Agriculture, including fisheries and aquaculture.
 - 11 At present, the fish model is not fully integrated in the overall AGLINK–COSIMO modelling system.
 - 12 More information on the IMPACT model is available at: www.ifpri.org/sites/default/files/publications/impactwater2012.pdf.
 - 13 The MSC, a joint project between Unilever and WWF, certified its first capture fishery for the MSC label in 1999.
 - 14 FAO Office for Partnerships, Advocacy and Capacity Development (OPC).
 - 15 Information about Fishery Improvement Projects is available at: <http://fisheryimprovementprojects.org/>.
 - 16 For example: Iceland Responsible Fisheries, Marine Eco-Label Japan, Alaska Seafood, U.S. Dolphin Safe label.
 - 17 For example: Vietnamese Good Agriculture Practice (VietGAP) is mandatory for aquaculture producers; ThaiGAP is a voluntary private standard whose development was supported by government.
 - 18 Some seafood standards also address issues related to health and safety of seafood products. Standards including health and safety requirements will typically include requirements applicable to the entire supply chain rather than primarily or only for production.
 - 19 Differential treatment of products based on non-product related production and processed related methods (PPMs) has been a long standing point of contention in international trade circles. Conformity assessment technologies developed by voluntary standards offer an invaluable starting point for identifying non-discriminatory approaches for distinguishing between products based on non-product related PPMs. See Potts, 2008.
 - 20 MSC the leading capture fishery certification initiative reports having more than 26,000 unique fish products in 2014 (Marine Stewardship Council, 2015).
 - 21 MSC, the oldest and largest seafood certification initiative was initially launched as a partnership between WWF and Unilever—with both organizations seeking an approach that could be adopted by mainstream supply chains.
 - 22 See Potts et al., 2016.
 - 23 Seafood certification to date has been almost entirely driven by global recognition of the need to preserve finite stocks of wild species, hence the domination of wild catch production in certified seafood markets.
 - 24 Note: data source years apply to all graphics and calculations in this chapter.
 - 25 Including Alaska Pollock.
 - 26 Although some fees like auditing fees and producer fees can vary depending on size of farm and quantity of production, there are also fixed costs such as licensing fees and membership fees. Beyond these costs there is also the need for administrative and technical expertise that small production units may not necessarily be able to afford.
 - 27 Fishery Improvement Plans represent an important vehicle for building capacity to become certified among fisheries. Several examples exist of public and private institutions working through FIPs to enable certification. See Potts et al., 2016.
 - 28 It is worth noting, however, that South America has managed to secure a favorable portion of the certified market (accounting for only 8% of global seafood production but 36% of global certified seafood production) due primarily to FOS certification of the Peruvian Anchoveta fisheries. This is likely an aberration from the overall trend and due to the massive size of the Peruvian fisheries.
 - 29 As it stands, most seafood certification initiatives focus on certifying aquaculture OR capture fisheries making it somewhat challenging for individual initiatives to manage “cross-sectoral” strategies. In this regard, FOS
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certification, with active aquaculture and capture fishery certification offers a special opportunity in promoting sustainable stock management.

- 30 E.g. certified seafood excluding certified fishmeal products.
 - 31 Certified fishmeal, on the other hand, currently accounts for an estimated almost half of global fishmeal production—based on the certification of Peruvian and Chilean Anchoveta alone. The actual international market for certified fishmeal is predominantly limited to aquaculture and livestock products seeking their own form of certification but in any event can be assumed to be vastly less than actual supply. As such, it seems unlikely that growth in certified fishmeal is likely to be a source of growth of certified production more generally.
 - 32 For example, Walmart which had originally committed to only sourcing from MSC certified sources by 2011 had still not fulfilled this commitment by 2015 allegedly due to a lack of sufficient certified supply. See Walmart (2015).
 - 33 It is possible, for example, that growing restrictions on the trade of IUU seafood products (for example as a consequence of the Trans-Pacific Partnership Agreement's commitments) could result in a greater reliance on certification to prove non-IUU sourced products.
 - 34 See Potts et al., 2016.
 - 35 See Global Aquaculture Alliance: <http://gaalliance.org/>.
 - 36 See Friend of the Sea: <http://www.friendofthesea.org/aquaculture.asp>.
 - 37 See United Nations: <https://sustainabledevelopment.un.org/samoapathway.html>.
 - 38 See: <https://afsic.nal.usda.gov/aquaculture-and-soilless-farming/aquaculture/organic-aquaculture>.
 - 39 See: <http://www.krav.se/krav-standards>.
 - 40 See: <http://www.naturland.de/en/certification.html>.
 - 41 See: <http://www.soilassociation.org/LinkClick.aspx?fileticket=pM14JxQtcs4percent3d&tabid=353>.
 - 42 See: <http://www.ifoam.bio/en/sector-platforms/ifoam-aquaculture>.
 - 43 See: www.organic-services.com/fileadmin/files/05publications/presentations/100506_OMF_VortragUdoCenskowsky_Aquakultur.pdf.
 - 44 See: <https://www.undercurrentnews.com/2014/04/24/hayduk-aims-to-quadruple-premium-organic-fishmeal-production/>
 - 45 Limited to Alaskan pollock.
 - 46 UNCTAD (2016). Sustainable fisheries: International, Trade and Regulatory issues.
 - 47 See FAO, National Aquaculture Sector Overview of Oman, updated annually: http://www.fao.org/fishery/countrysector/naso_oman/en.
 - 48 See MAF, Investment Guidelines for Aquaculture Development in the Sultanate of Oman, 2011: <http://www.raisaquaculture.net/uploads/media/Investment%20Guidelines.pdf>.
 - 49 See Plan Haliétus: <http://www.maroc.ma/en/content/halieutis>.
 - 50 Estimates from the Moroccan Agency for Aquaculture Development and the FAO Global Aquaculture Production Database available at: <http://www.fao.org/figis/servlet/TabSelector>.
 - 51 See El Universo (2015). Camaron supera levemente a banano en exportaciones, 15 of January, 2015.
 - 52 See: http://www.fao.org/fishery/countrysector/naso_ecuador/en.
 - 53 See: <https://www.shrimpnews.com/FreeReportsFolder/ewsReportsFolder/EcuadorUSDARReportOnEcuador2014.html>.
 - 54 See : <http://fishfarminginternational.com/keeping-shrimp-sustainable-in-ecuador/>.
 - 55 See: http://www.blueyou.com/dropbox/First_Shrimp_Farms_ASC_Certified.pdf.
 - 56 See : <http://www.asc-aqua.org/index.cfm?act=update.detail&uid=195>.
 - 57 See : <http://www.omarsa.com.ec/index.php/en/organic-shrimp-2/organic-farming.html>.
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PART 3

HARMFUL INCENTIVES: THE CASE OF FISHERIES SUBSIDIES

3.1

TACKLING HARMFUL INCENTIVES AND UNSUSTAINABLE FISHERIES PRACTICES

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ABSTRACT

Addressing government incentives that drive unsustainable fisheries practices is not just an environmental imperative. Government subsidies in the fisheries sector can also have severe negative social and economic impacts for the most vulnerable countries and communities. The adoption of Sustainable Development Goals (SDGs) by the United Nations General Assembly in September 2015 brings hope of addressing this unfair situation, specifically thanks to Target 14.6, whereby the international community has committed to prohibit fisheries subsidies that contribute to overfishing and to IUU fishing. Considerable resources would be saved if harmful fisheries subsidies were prohibited and spent to secure the implementation of other SDG 14 targets for the conservation and sustainable use of the ocean, for example through a Blue Fund that would be established to that effect. Inaction on fish subsidies at the latest Ministerial Conference of the WTO held in December 2015 – three months after the adoption of the SDGs – is not an encouraging sign, but the upcoming High-Level United Nations Conference on Oceans and Seas in June 2017 may provide a new opportunity.

The emergence of the Global Oceans Commission

The Global Ocean Commission was established in 2013 as an independent initiative to examine the challenges of high seas governance and the conservation and sustainable use of biodiversity in areas beyond national jurisdiction. In its report *From Decline to Recovery – A Rescue Package for the Global Ocean*, the Commission identified the role of government subsidies in the fisheries sector as a key issue requiring urgent action by the international community (Global Ocean Commission, 2014). According to calculations by the Fisheries Centre, University of British Columbia, such subsidies amount to some US\$30 billion worldwide, of which 60 per cent (US\$18 billion) are estimated to contribute to fishing overcapacity and overfishing (Sumaila et al., 2010).

The Commission's report contained eight key proposals. The third of these covered fisheries subsidies and called for a three-step approach: first, full transparency and disclosure of all fisheries subsidies; second, classification of fisheries subsidies in order to identify and distinguish those that are harmful – i.e. they contribute to overcapacity, overfishing and destructive methods; and third, immediate capping and phasing out of high seas fishing fuel subsidies within five years.

Studies show that most high seas fishing operations would be largely unprofitable if it were not for the subsidies that sustain them, and fuel subsidies in particular (Sumaila et al., 2009). Moreover, the happy few who can afford to sponsor their high seas fishing fleets are in fact affecting small-scale fishers whose livelihoods depend on the availability of fish within their

countries' Exclusive Economic Zones (Sumaila et al., 2015). The point is that the tuna, the swordfish and the rest of the fish do not know that we humans have drawn a line at 200 miles from shore beyond which regulation, governance and control over living marine resources is either weak or non-existent.¹

Oceans and the new 2030 Development Agenda

In September 2015, the United Nations General Assembly adopted the 2030 Agenda for sustainable development, which includes a stand-alone Sustainable Development Goal for the Ocean, a proposal long championed by the Pacific Small Island Developing States and supported by the Global Ocean Commission among others. SDG 14 (conserve and sustainably use the oceans, seas and marine resources for sustainable development) contains seven targets. The Commission welcomed in particular Target 14.6 on fisheries subsidies:

By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation. (SDG 14, Target 14.6)

Like many delegations within the World Trade Organization, including the members of the so-called Friends of Fish and the African-Caribbean-Pacific (ACP) Group, the Global Ocean Commission had great hopes that the 10th WTO Ministerial Conference in Nairobi (December 2015) would take steps to accelerate the phasing out of harmful fisheries subsidies by 2020 at the latest, as called for in SDG 14.6 target.

Alas, the complexity of WTO negotiations has led to

the marginalization of the fisheries subsidies issue. Due to other priorities, fisheries subsidies did not make it into the Nairobi Package, raising serious questions about the ability of WTO Members to support SDG target 14.6 by 2020 (Global Ocean Commission, 2015a). In a statement issued in Nairobi, a group of 28 countries² reiterated their view that subsidies contributing to the exploitation of overfished stocks and illegal, unregulated and unreported (IUU) fishing should be phased out. It remains to be seen whether this will be sufficient to enforce the 2020 SDG 14.6 deadline for harmful fisheries subsidies elimination.

The slow progress on fisheries subsidies is regrettable. It also impacts other SDG 14 targets due to be achieved by 2020, in less than five years, such as Target 14.2 on coastal and marine ecosystem management, Target 14.4 on IUU fishing and Target 14.5 on marine protected areas. If governments prioritized the prohibition of harmful fisheries subsidies, could the US\$18 billion freed up annually be dedicated to finance a Blue Fund destined to implement other SDG 14 targets? In other words, could Target 14.6 become a means to implement the Ocean SDG? Taking advantage of resources that would be freed up through the elimination of harmful subsidies, the Blue Fund could help rescue our ocean at no cost to taxpayers, transforming subsidies that are harmful into socially and environmentally beneficial ones.

In this way we might not only stop encouraging activities that contribute to ocean decline – including fleet overcapacity and fuel-hungry destructive fishing practices such as high seas bottom trawling – but also build a solid financial basis for the conservation and sustainable use of ocean resources.

This may be an idea worth considering when the High-Level United Nations Conference on Oceans and Seas, convened by the United Nations General Assembly in support of the implementation of SDG 14, takes place in June 2017 (Global Ocean Commission, 2015b).

3.2

SUBSIDIES WEAKEN THE SUSTAINABILITY OF GLOBAL FISHERIES WHILE INCREASING INEQUALITY AMONG FISHERS

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ABSTRACT

First, this article provides a summary of the importance of fisheries to people and argues that our interactions with fisheries are currently unsustainable. Next, it identifies the provision of capacity-enhancing subsidies as one of the key policy failures that have intensified the degradation of marine fisheries while also increasing inequality among fishers. The article then provides reasons why all fishing nations (developing, developed, small and large) need to discipline their capacity-enhancing subsidies. Finally, the article provides suggestions on how to make progress in disciplining subsidies.

How important are fisheries to people?

Ocean and coastal biomes provide us with food, fuel and biological resources, climate regulation and biogeochemical processes (e.g. CO₂ uptake and carbon storage), as well as cultural services (e.g. recreational, spiritual and aesthetic enjoyment) while supporting other indirect ecosystem services such as nutrient cycling (Gattuso et al., 2015).

In particular, fish support human well-being by contributing to (i) food and nutritional security for the poor and rich alike (Srinivasan et al., 2010); (ii) social security by supporting millions of jobs and serving as an employer of last resort in many fishing communities around the world (Béné et al., 2010; Teh et al., 2013; FAO 2014); and (iii) economic security by generating incomes for both people and fishing enterprises (World Bank, 2009; Sumaila et al., 2012; FAO, 2014).

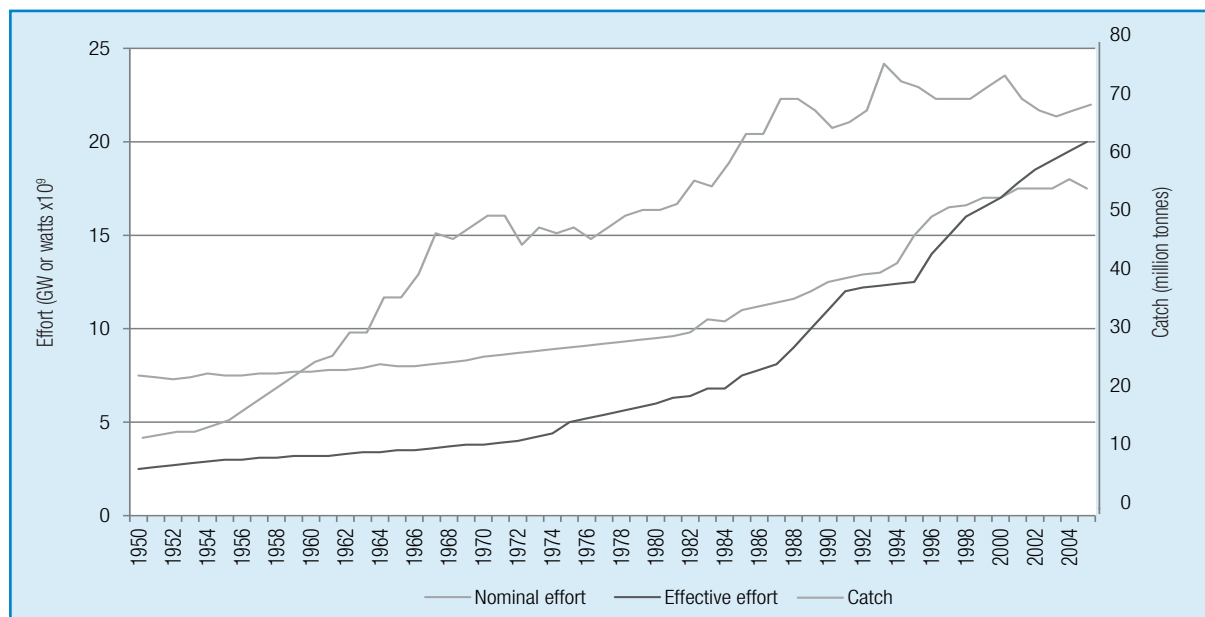
Challenges facing ocean fisheries worldwide

Achieving sustainable fisheries has proved difficult since after the Second World War, as they suffer from the tragedy of the commons resulting in overfishing, pollution, and habitat destruction (Pauly et al., 2002). Global warming, ocean acidification and deoxygenation are new threats (Gattuso et al., 2015). Combined with the long-standing threats, these new issues are creating formidable challenges to this important source of ecosystem services, especially, with respect to the ability of future generations to

enjoy these services too (Sumaila and Walters, 2005; Ekeland et al., 2015).

Fishing effort targeting wild fish stocks increased rapidly following World War II, particularly off the coasts of Europe, North America, and Japan. The spatial coverage of global fishing effort also expanded rapidly to cover most of the world's oceans by 2005 (Swartz et al., 2010), with an increase in overall fish catches continuing until 1996 when they peaked at about 86 million tonnes. The expansion of the geographic extent of fishing has been accompanied by a ten-fold increase in global fishing effort since 1950 (Figure 1); a figure that rises to 25-fold for Asia over the same period. Overall, the decline in global catch per unit effort suggests a decrease in the biomass of many fished populations, likely by over 50 percent (Watson et al., 2013). The reasons for this large increase in fishing effort are many, with ineffective management, technological innovation and the provision of subsidies chief among them. The expansion of capacity has been such that the World Bank and the FAO (2009) estimated that the total global catch could be achieved with only half of the effort actually employed.

The observed increase in fishing effort and catch has impacted wild fish stocks and their habitats negatively (Pauly et al., 2002). These impacts have significantly affected marine ecosystems and the fish stocks they contain (Halpern et al., 2012). This in turn threatens our food and nutritional security as well as social and economic security.

Figure 1: Global trends in fisheries catch and fishing effort (1950-2006)

Source: Watson et al., 2013.

Fisheries subsidies

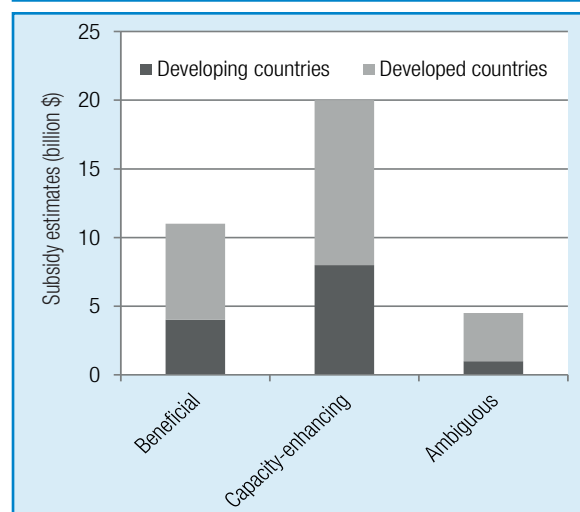
There are various definitions of fisheries subsidies in the literature. A simple and clear definition is provided by the WTO: It specifies that a subsidy exists if “there is a financial contribution by a government or any public body within the territory of a Member” and this contribution fulfils certain specified conditions, or if “there is any form of income or price support in the sense of Article XVI of GATT 1994”. Moreover, benefits have to be conferred (WTO 1994 Agreement on Subsidies and Countervailing Measures, article 1, also described in Milazzo, 1998).

It should be noted that the economic justification for imposing taxes or providing subsidies to an economic sector stems from the existence of externality, which occurs when producing or consuming a good causes an impact on third parties not directly related to the transaction. Positive externalities have a positive impact while negative externalities impact third parties negatively. Hence, to achieve maximum benefits for society, subsidies are provided in the case of positive externalities (e.g. subsidising the education of citizens), and taxes are imposed in the case of negative externalities (e.g. taxes on cigarettes). Since the provision of capacity-enhancing or harmful subsidies results in overfishing of fish stocks, it makes no economic sense.

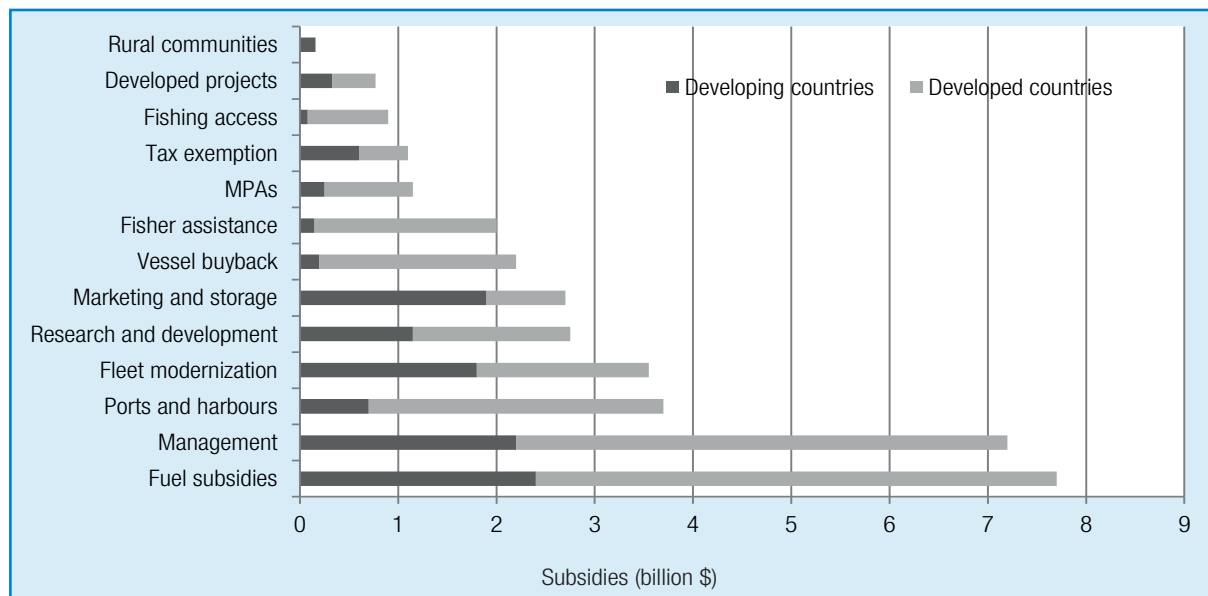
The above paragraph implies that different kinds of

subsidies would have different effects on the fish stocks targeted by the subsidized industry. Milazzo (1998) and Sumaila et al. (2013) identify three different types of subsidies according to the impact they tend to have on fisheries resources: (i) subsidies for management, research, etc., sometimes defined as good subsidies because they are generally assumed to have a positive effect on our ability to sustainably manage

Figure 2: Estimate of global fisheries subsidies. Capacity-enhancing subsidies 83% of total US\$35 billion. Subsidies to developed country fisheries at 65% of total



Source: Watson et al., 2013.

Figure 3: Subsidies by type and by developed and developing country (2009)

Source: Sumaila et al., 2013

fishery resources; (ii) capacity-enhancing (or harmful) subsidies, including those for boat construction and fuel, tend to promote disinvestment in the resource by motivating overcapacity and overfishing; and (iii) ambiguous subsidies, including those to vessel buy-back programmes and rural fisher community development, which can promote or undermine the sustainability of the fish stock depending on the circumstances.

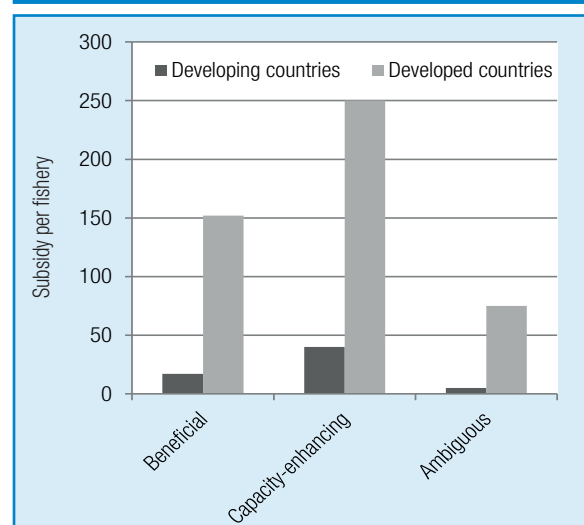
There are at least three interconnected reasons why subsidies should be disciplined. First, total fisheries subsidies were recently estimated at about US\$35 billion a year (Sumaila et al., 2013; 2016), which is significant since it constitutes between 30 to 40% of the landed values generated by wild fisheries worldwide. Of these, capacity-enhancing subsidies make up the highest share, at around US\$20 billion worth of transfers to fishing fleets in 2009 (Figure 2).

Figure 3 shows that fuel subsidies make up the greatest proportion (22% of the total), followed by subsidies for management at 20% and ports and harbours at 10%. Subsidies contributed by developed countries (65% of the total) are far greater than those contributed by developing countries, a group that lands about 80% of the global fish catch.

Second, subsidies have socio-economic, distributional and trade impacts because they can distort the market for fish and disadvantage fishers who receive relatively

less subsidies. For example, as depicted in Figure 4 below, most of the subsidies go to large-scale industrial fishers in developed countries, thereby distorting the market for fish and thus disadvantaging small-scale developing country fishers, who are relatively more resource poor. This is a barrier to development where it is most needed.

Third, it has theoretically been established that some fisheries subsidies (the capacity-enhancing

Figure 4: Subsidy type per fisher in developing versus developed countries

Source: Subsidies: Sumaila et al., 2013. Jobs: Teh and Sumaila, 2013.

ones) are detrimental to the sustainability of fisheries because they stimulate overcapacity and overfishing (Clark et al., 2005), and empirical evidence of these effects is beginning to appear in the literature (e.g. Heymans et al., 2011). It can be argued that the provision of capacity-enhancing subsidies is one of the reasons why we see in Figure 1 that the fishing effort keeps on increasing while the catch remains flat or even decreasing, and global fisheries as a whole are currently running at a loss after their profits are adjusted for fisheries subsidies (Sumaila et al., 2012).

It should be noted that although the direct impact of subsidies on a fish stock depends on the health of the stock and the strength of management in place, fisheries management is very rarely completely effective. There is also evidence that subsidies can undermine efforts to manage stocks sustainably. This implies that even with good fisheries management, subsidies can be harmful (Munro and Sumaila, 2002).

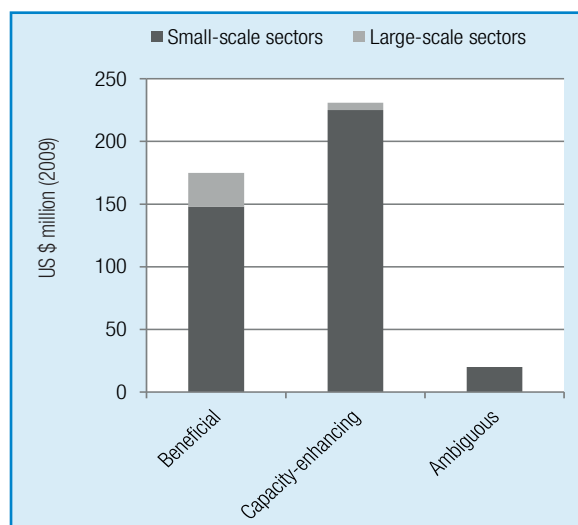
It is therefore important that capacity-enhancing subsidies be eliminated even in fisheries where management is reasonably effective.

Ways to discipline capacity-enhancing subsidies

To make real progress in disciplining capacity-enhancing subsidies, it is important to develop and implement a multi-scale and multi-stakeholder approach. Efforts should be exerted at the national, regional and global levels of governance.

An example of a recent national effort to discipline capacity-enhancing subsidies is Indonesia. This large developing country with globally significant fisheries provides a substantial amount of subsidies (Figure 5). For many countries, the key motivation for providing subsidies to the fishing sector is social, including the desire to help small-scale poor fishers. But as can be seen in Figure 5, over 95% of capacity-enhancing subsidies go to the large-scale sector in Indonesia (Schuhbauer and Sumaila, *in prep.*). For Mexico, only US\$22 million of the more than US\$200 million subsidy is estimated to go to the small-scale sector (Schuhbauer and Sumaila, *in prep.*). Further work by Schuhbauer and Sumaila (*in prep.*) indicates that these results are similar for other countries. In an enlightened endeavour for Indonesia, the current government is working on reducing its capacity-enhancing subsidies. Other key fishing nations could follow this example.

Figure 5: Indonesian fisheries subsidies by small-scale and large-scale sectors



Source: Schuhbauer and Sumaila (*in prep.*).

Presented below are four suggestions based on the work of the E15 Initiative Expert Group on Oceans, Fisheries and the Trade System convened by the International Centre for Trade and Sustainable Development and the World Economic Forum (Sumaila, forthcoming). These suggestions are at the regional and global levels.

Core group of countries adopts fisheries subsidies disciplines

A good example here is the effort of the countries of the TPP Agreement, which – if successful – can make a contribution to reducing the provision of capacity-enhancing subsidies. It should be noted, however, that a key gap remains in the TPP as it will not apply to large subsidiser States that are not party to this treaty. Still, the TPP outcome could serve as a stepping stone towards multilateral disciplines built on the work of a ‘core group’ of large subsidisers. Other groups that could make a move here are the African Caribbean and Pacific (ACP) countries and the countries of Benguela Current Commission – Angola, Namibia and South Africa.

Establish multilateral disciplines built step-wise and ‘bottom up’

A group of countries, perhaps in partnership with intergovernmental organisations such as the WTO, UNCTAD, and the FAO could stimulate collective action with bottom-up voluntary commitments to subsidy

reform. Through a process similar to the approach taken in climate change negotiations, each country would declare the amount of capacity-enhancing subsidies that they would voluntarily eliminate within a given time period. This kind of initiative can in and of itself stimulate other countries to follow the example of this group. To effectively close the “ambition gap” between the voluntary offers and the necessary level of global reductions, this approach would require either multilateral participation, or at least the participation of the world’s largest providers of fisheries subsidies. NGOs and other civil society groups could help speed up the uptake of this example by encouraging and prodding countries.

Establish multilateral disciplines built on areas of agreement in WTO negotiations

As identified in the WTO Rules Negotiating Group Chair’s 2011 report on the negotiations, areas of relatively more agreement, included disciplining subsidies to IUU vessels, transfer of vessels and access agreements. There was arguably a level of agreement, at least in principle, concerning the idea of reforming construction subsidies and those that affect overfished stocks. Proposals for a small package of subsidy disciplines tabled early in 2015 in the context of the WTO negotiations, including by the ACP Group of countries, and a proposal by Argentina, Iceland, New Zealand, Norway, Peru, and Uruguay, suggest that there is still interest in achieving multilateral disciplines. Both proposals include a core list of prohibited subsidies, such as those benefitting IUU fishing and those affecting overfished stocks. The 2015 WTO Ministerial Meeting in Nairobi did not achieve much despite much debate on the subject.

Align incentives by focusing international subsidy negotiations on international fish stocks

A key reason for the lack of progress in protracted subsidies negotiations at the WTO is that the negotiations suffer from what has been described as the “lumpiness” problem (Sumaila, 2013). This refers to

the requirement that WTO negotiators should aim for an all-inclusive deal or no deal at all. This requirement has limited the ability of the fisheries subsidies negotiations to make progress by confounding the subsidies issue with other problems. One way to overcome this difficulty is to align subsidies policies with national interests by splitting the world’s fisheries into domestic fisheries (i.e. those operating within a country’s EEZ targeting fish stocks that spend all their lives within the EEZ) and international fisheries (i.e. fish stocks that are transboundary, highly migratory or discrete high seas stocks). International negotiations could then prioritize agreement to reform subsidies that affect international fish stocks, and governments would work unilaterally to reform subsidies that affect only their domestic fisheries. It should be noted that because vessels move, specially industrial fishing. Also, subsidies may be obtained by firms operating in different parts of the world and even with vessels under different flags, special care will be needed for implementation of plans for this proposal. In addition, the existence of flag of convenience also means that ensuring State flag responsibility and compliance with regulation would be crucial (Miller and Sumaila, 2014)

Concluding remarks

I have discussed the importance of fisheries to people and argued that our interactions with fisheries, in most cases, are currently unsustainable. I also made the case that the provision of capacity-enhancing subsidies is a policy failure and economically counter-productive because they produce negative externalities. A key point stressed in this note is the fact that capacity-enhancing subsidies do not only undermine the marine ecosystems and fish stocks; they also aggravate inequality among fishers. I have also highlighted reasons why *all* fishing nations (developing, developed, small and large) should strive to discipline capacity-enhancing subsidies. Finally, I argue for approaches at national, regional and global levels that involve all stakeholders as a way to galvanize worldwide action to discipline subsidies.

3.3

FISHERIES SUBSIDIES, DEVELOPMENT AND THE GLOBAL TRADE REGIME

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ABSTRACT

It is widely recognized that some categories of fisheries subsidies contribute to excess fishing capacity. Overcapacity is one of the major causes of overfishing and the subsequent outcome that more than 85 per cent of global fish stocks are fully exploited or overexploited (FAO, 2014). In addition, fisheries subsidies distort production and international trade. These patterns are highly significant to developing coastal and island states that rely on fisheries for food security and economic opportunity. As a result, fisheries subsidies were identified as an object ripe for discipline in the context of the Doha Development Round of the WTO. This paper outlines the historical evolution of the fisheries subsidies debates and the shifting negotiating alliances. It shows how a recent dramatic reduction in the ambition of WTO disciplines mirrors fisheries subsidies commitments undertaken in the New 2015 Sustainable Development Goals and the Trans-Pacific Partnership Agreement. The analysis pays particular attention to implications and policy options for developing coastal and island states, offering a case of how proposed fisheries subsidies rules would have intersected with the interests of Pacific Island States overseeing the valuable tuna fishery in the Western and Central Pacific Ocean.

Introduction

The precarious state of global fisheries resources has serious implications for ecosystem health and socio-economic development, particularly in coastal regions that rely heavily on fisheries resources for food security and income generation (Bené et al., 2016). It is widely recognized that some categories of fisheries subsidies contribute to excess fishing capacity, which is one of the major causes of overfishing. As a result, fisheries subsidies were identified as an object ripe for discipline in the context of the Doha Round of the WTO. WTO Members have subsequently discussed the terms and conditions of disciplines on fisheries subsidies – and their development implications – for the past twenty years.

The Doha Round has long been stalled, mainly on the issues of agriculture and industrial goods. However, in the lead up to the Tenth WTO Ministerial Conference – held in Nairobi, Kenya, in December 2015 – Members resurrected the debate on fisheries subsidies disciplines. This paper reviews the historical evolution of these debates with an eye to understanding the role of multilateral agreements in disciplining fisheries subsidies. By identifying their origins, negotiating blocs and institutional intersections, we offer an explanation for the dramatic narrowing of the scope

of the negotiations at the WTO and elsewhere, as well as evidence for the relative decline of the institutional relevance of the WTO in the face of macro-regional trade processes. To illustrate one application of potential rules, we assess the implications of the narrower scope of discussions on the tuna industry in the Western and Central Pacific Ocean (WCPO) and, in particular, the development aspirations of the small island states who are the “owners” of much of the world’s tuna resources.

The institutional evolution of fisheries subsidies debates at the WTO, 1994-2014

Fish and fish products are classified at the WTO as industrial goods, meaning that subsidies to the sector fall under the WTO 1994 Agreement on Subsidies and Countervailing Measures (ASCM). Fisheries subsidies have not yet been challenged under the existing ASCM for four main reasons.³ First, it is difficult to identify and prove a ‘trade distortion’ for fish products since the same species normally fetch widely different prices due to complex quality and market differentials. Second, the WTO’s analytical emphasis on exchange/trade makes the ASCM structurally incapable of capturing fisheries subsidies, which distort production

An aptly named foreign tuna longliner in Fiji.



Credit: Liam Campling

rather than trade.⁴ Third, countries have been reluctant to take a fisheries subsidies case to WTO dispute settlement for fear of turning a lens on their own subsidies. Finally, notifications of fisheries subsidies under the ASCM are notoriously scarce (WTO, 2010).

In this context, the argument for specific disciplines is that fisheries subsidies damage the environment by creating incentives for overfishing and cause injury to developing countries by harming their stocks and creating an uneven playing field for their unsubsidized fishing industries. Should the WTO eliminate subsidies to the fishing industry, it could create a 'triple win' in which trade is liberalized in the interest of the environment and development (WTO, 1999).

A WTO Ministerial mandate for establishing fisheries subsidies disciplines was included in the 2001 Doha Development Agenda (DDA), which formed a dedicated Negotiating Group on Rules to oversee disciplines on fisheries subsidies (as well as anti-dumping and regional trade agreements, among other things). WTO Members agreed to clarify and improve disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries (WTO, 2001). This agreement was reaffirmed at the 2005 Ministerial Conference in Hong Kong, China and further elaborated to include the prohibition of subsidies that contribute to overcapacity and overfishing (WTO, 2005).

Following the Hong Kong Ministerial, a number of WTO Members tabled proposals for new fishing subsidies rules. The negotiating group focused on (i) the scope of the prohibition, (ii) Special and Differential Treatment (SDT) for developing countries and (iii) the use of fisheries management conditionalities (sustainability

criteria) to ensure that non-prohibited subsidies do not further deplete global fish stocks (Von Moltke, 2011).

In November 2007, the Chair of the Rules Negotiating Group released the first draft legal text of the ASCM, which included proposed disciplines on fisheries subsidies (WTO, 2007). The Chair adopted a 'bottom-up' approach to the scope of the rules, including a broad set of harmful prohibited subsidies, together with a list of general exceptions to these prohibitions covering beneficial subsidies (e.g. for crew safety and fisheries management). SDT provisions were also included, subject to meeting certain fisheries management conditions. Deep disagreement among Members and the wider breakdown of DDA negotiations in 2008 saw the Chair produce a 'roadmap' of questions on key issues of non-convergence in lieu of a comprehensive revised text (WTO, 2008). In the following discussions, substantive differences remained.

In 2010, a new Chair established four small 'contact groups' on contentious issues – high seas fisheries, artisanal/small-scale fisheries, income support and fuel subsidies – consisting of representatives of demandeurs, defensive and developing country WTO Members. As consensus remained elusive, the Chair decided against releasing a revised legal text. Instead, he issued a narrative report detailing positions and highlighting points of contention (WTO, 2011). This deadlock was more widely reflected at failed Ministerials in Geneva in 2011 and Bali in 2013. In 2015, Members seemed to breathe new life into fisheries subsidies debates by tabling several proposals in advance of the Nairobi Ministerial (ICTSD, 2015a).

WTO negotiating blocks and topics of debate, 2005-2014

WTO Members generally acknowledge that fisheries subsidies contribute to global fish stock depletion and agree that the WTO should strengthen disciplines. However, between 2005 and 2014, several negotiating blocs were formed, often with widely divergent views on the ambition and structure of future rules. Negotiations in this area focused on three key issues: (i) scope of the prohibition; (ii) SDT; and, (iii) fisheries management conditionalities. We review the negotiating positions around these issues and their relation to national fisheries interests (see Table X). We argue that clashes between these blocs contributed to the low ambition at the current juncture.

Developed demandeurs (Friends of Fish)

New Zealand, Norway and United States (the three leaders), together with Australia, Chile, Colombia, Iceland, Peru, Pakistan and Philippines,⁵ were the first to propose that the WTO establish disciplines for fisheries subsidies. This group can be defined as having an offensive interest in fisheries subsidies disciplines. In general, Members have some combination of domestic fishing interests, relatively high operating costs (making their domestic producers less competitive than lower cost producers), limited or no subsidy provision to their industry and, at times, strong environmental lobby interests. They pushed for a strict ‘top-down’ approach prohibiting all fisheries subsidies, except specific positive ‘green box’ subsidies supporting conservation and enhanced fisheries management. The Friends of Fish supported appropriate special and differential treatment for developing countries, subject to strict fisheries management conditionalities, with the broadest level of flexibility given to LDCs. The Friends of Fish also opposed any subsidies to high seas fishing.

Developing country demandeurs

While Argentina, Brazil and Mexico also support strong disciplines for fisheries subsidies, they moved away from the Friends of Fish position in 2009 and aligned themselves with the ‘bottom up’ – or ambitious prohibited list – outlined in the Chair’s 2007 legal text. This group promoted moderate but effective flexibilities for developing countries under SDT that would not be contingent on scale or geographic location – that is, commercially significant subsidies should be granted for developing countries’ industrial scale fishing vessels, as well as subsistence and artisanal vessels. Subsidies should also be permitted for high seas fishing when targeting highly migratory/straddling stocks, subject to strong fisheries management conditionalities. This group had interests in protecting domestic subsidy programmes including for industrial scale interests.

Developed defensive countries

Japan, South Korea and Taiwan Province of China initially opposed any rules on fisheries subsidies developed by the WTO on the grounds that a direct causal link cannot be established between subsidies and the depletion of global fish stocks. In 2004, their position changed to one of support for fisheries subsidies disciplines, but under a ‘bottom-up’ approach which would only prohibit subsidies directly

linked to overfishing and overcapacity while all other subsidies would be permitted. The European Union shared some of the East Asian countries’ positions, including a bottom-up approach to prohibited subsidies. The developed defensive countries offer their fishing fleets extensive subsidies, including for capacity enhancing activities such as boat building. On SDT, the European Union noted that a one-size-fits-all approach was not practical and Japan informally supported additional SDT flexibilities for small developing countries. The prohibited list of banned fisheries subsidies was reflected in the 2007 Chair’s draft legal text.

Large developing defensive countries

China and India, which have significant fisheries interests – and, in some cases, significant subsidy provisions – emphasised that SDT should be granted equally for all non-LDC developing countries. They opposed proposals for the establishment of distinct SDT sub-categories for small and large developing countries, such as *de minimis* provisions (a position also supported by Brazil and Mexico). They supported the use of some sustainability criteria to ensure that permitted subsidies are not harmful, high ambition in prohibitions applied to developed members, and large SDT ‘carve-outs’ for developing members. India and Indonesia focused on protecting artisanal and small-scale sectors.

Small and vulnerable economies (SVEs)

Barbados, Fiji, Papua New Guinea, Samoa, the Solomon Islands, Tonga and Vanuatu called for enhanced SDT for SVEs. They argued that fisheries are critically important to their economies and that they are neither major subsidisers, nor contributors to overcapacity or overfishing. While SVEs sought to limit subsidized competition from the developed world and large non-LDC Members, they supported SDT for themselves on the grounds that fish is one of the few resources available to them for current and future development efforts. To reconcile this tension, SVEs proposed a *de minimis* approach for additional flexibilities on subsidies over and above SDT offered to larger developing WTO Members. They proposed that any fisheries management conditions should not be overly burdensome for subsistence and artisanal/small-scale fisheries. SVEs’ positions were supported and promoted by the African, Caribbean and Pacific (ACP) Group and LDCs. For further details on Fish Subsidies Groups, see Annex.

Table 1: Key players and negotiating blocks in WTO fisheries subsidies negotiations, 2005-2014

Group (selected country)	% annual average volume of world fish commodity production (1998-2007)	Value of 'capacity- enhancing' and 'ambiguous' subsidies (US\$ million, 2003)	Broad position on subsidy negotiations
Developed demandeurs	11.0	1 951	Supports broad ban or ambitious prohibited list, limited SDT, strong sustainability criteria.
United States	5.2	1 320	
Norway	3.4	214	
New Zealand	0.7	0	
Developing demandeurs	13.1	994	Supports broad ban or ambitious prohibited list, moderate SDT, strong sustainability criteria.
Chile	3.9	46	
Argentina	1.3	236	
Mexico	1.0	243	
Brazil	0.5	236	
Defensive developed	26.8	6 999	Opposes broad ban and ambitious prohibited list, limited SDT, strong sustainability criteria.
Japan	11.4	4 045	
EU-15	10.9	1 808	
Defensive large developing	31.1	6 464	Supports ambitious prohibited list, significant SDT, moderate sustainability criteria.
China	16.9	2 911	
Thailand	5.7	522	
Indonesia	4.0	811	
India	2.5	887	

Note: Subsidy categories are indicative rather than definitive because definitions and data can be problematic. See above for complete lists of countries in each grouping

Source: Campling et al., 2013; FAO, 2014; Sumaila et al., 2010.

WTO fisheries subsidies debates in the lead up to MC10

Following the gridlock described above, WTO Members tabled a series of new proposals in preparation for the 10th Ministerial Conference (MC10) held in Nairobi in December 2015, including on fisheries subsidies. To move beyond the entrenched offensive and defensive interests outlined above, the 2015 proposals dramatically scaled back the ambition of proposed fisheries subsidies rules. In reviewing the content of recent WTO submissions and the key players, this section reveals that the sharply reduced scope of negotiations not only softens entrenched blocs, but also reflects fisheries subsidies provisions agreed upon in other institutional fora such as the SDGs and the TPP.

In the lead up to MC10, even the most ambitious demandeurs called for only a minimum agreement. Discussions centred on four issue areas: (i) disciplines on subsidies to vessels fishing on overfished stocks or engaged in IUU fishing; (ii) transparency requirements; (iii) a standstill on introducing new subsidies, and; (iv) SDT.

All 2015 proposals coalesced around disciplining subsidies to vessels fishing on overfished stocks or engaged in IUU fishing, albeit with slight variations. The ACP Group of States proposed banning subsidies that adversely impact vulnerable marine ecosystems and habitats, as well as subsidies to vessels affecting fish stocks in 'unequivocally' overfished conditions (WTO, 2015a). Some members of the now defunct Friends of Fish, including Argentina, Iceland, New Zealand, Norway, Peru and Uruguay (dubbed the NZ+5) specified that in addition to subsidies to vessels fishing on overfished stocks or engaged in IUU fishing, all other fisheries subsidies should remain actionable under the ASCM to guard against circumvention (WTO, 2015b). The ACP's introduction and definition of 'unequivocally' overfished as a basis for disciplines illustrates the long-standing attention to definitions that have underwritten the technical dimensions of fisheries subsidies negotiations (WTO, 2015c).

On transparency, the NZ+5 proposed amending the ASCM to require notification of any specific subsidies that Members grant or maintain, as well as a dedicated annual review of progress in implementing new disciplines (WTO, 2015b). The European Union took a

leading role on transparency, attempting to improve the robustness of reporting requirements, (WTO, 2015e) but later – in response to developing country concerns on the reporting burden – suggested a threshold that required only leading subsidisers to report (e.g. the first 50 Members in terms of marine capture and/or Members representing 90 per cent of world marine capture would be required to report) (WTO, 2015f). With regard to SDT, the ACP Group followed the European Union's proposal for a notification threshold (WTO, 2015c).

The NZ+5 picked up language on the standstill provision in SDG14, which commits signatories to refrain from introducing new subsidies that contribute to overcapacity, overfishing or IUU fishing. The group proposed the standstill as a stopgap until more complete disciplines could be established (WTO, 2015b).

Special and differential treatment was a point of disagreement across all Doha Round negotiations. The ACP Group called for *de minimis* provisions that would exempt Members with a share of global marine wild capture less than 0.6 per cent from rules and provide these Members with technical assistance and capacity building for fisheries management (WTO, 2015a). The NZ+5 proposed SDT for transparency requirements or transition times (WTO, 2015b). Peru offered general support for flexible treatment for artisanal fishing activities due to their importance to economic development (WTO, 2015g). Outside of the reporting threshold proposal, the ACP proposed a transitional arrangement for notification, and emphasized its broad commitment to appropriate and effective SDT beyond MC10 (WTO, 2015c and WTO, 2015d).

Negotiation standstill at WTO MC10

Despite the radically reduced scope of the negotiations, as well as an agreement on historically gridlocked debates including on agricultural export subsidies, Members failed to agree on fisheries subsidies disciplines at MC10. Resistance emerged around three issues: (ICTSD, 2015b)

- A proposal to complete negotiations on the prohibition of subsidies to IUU fishing and effort on overfished stocks within a specific timeframe.
- A provision that would have had Members commit to a best endeavour standstill provision on new subsidies in prohibited areas, despite the inclusion of the standstill provision in the SDGs and the TPP.

- Specific fisheries subsidy programmes notification commitments under the ASCM, including details on format, and accounting for Members' resources and technical capacity.

Following this failure, 28 Members released a Ministerial Statement pledging to reinvigorate WTO work to achieve ambitious and effective disciplines on fisheries subsidies (WTO, 2015j). However, the relevance of the WTO's multilateral work on fisheries subsidies is questionable given the difficulty in generating consensus around even a narrow scope of rules. Instead, it seems that future rules in this area will be advanced in other fora, such as the United Nations and Free Trade Agreements (FTAs).

United Nations Sustainable Development Goals

In parallel to WTO negotiations, the expiration of the United Nations Millennium Development Goals in 2015 saw the negotiation of a set of Sustainable Development Goals (SDGs). As at the WTO, the SDGs seek a 'triple win', integrating environmental, economic and social dimensions of development. In this process, SDG 14 addresses fisheries subsidies as part of its focus on the conservation and sustainable use of oceanic ecosystems. In SDG (14.6) on fisheries subsidies, United Nations Members agreed to:

By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.

As of December 2015, the Inter-Agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDG) has been developing SDG indicators. One proposal is an indicator to measure progress on fisheries subsidies against a 2015 baseline. However, the group indicated that more discussion and/or methodological development is needed (IAEG-SDG, 2015). A proposal to prohibit subsidies based on a 2015 baseline faces a challenge as reporting on subsidies has been inadequate in the WTO and elsewhere.

Box 1: Low-ambition rules and the Western and Central Pacific Ocean tuna fishery

The level of technical detail in WTO negotiations can abstract the real world ramifications of proposed rules, including environment and development outcomes. As an illustration of the application of fisheries subsidies rules, this box outlines how the low-ambition rules proposed for MC10 could play out in the WCPO tuna fishery, one of the largest and most valuable in the world (Hamilton et al., 2011). It is important to the development aspirations of Pacific Island Countries (PICs) whose stocks are under increasing pressure. Many distant water fleets targeting tuna benefit from subsidies, which means that the WCPO fishery has much at stake in the fisheries subsidy ‘triple win’ (Campling et al., 2007). The narrow rules considered at MC10 would have distinct implications for different segments of the tuna fishery in the region.

Foreign purse seine sector: This is a multispecies fishery in which bigeye tuna is caught in association with the target skipjack species. Bigeye is categorized as being in an overfished state. Eliminating subsidies to vessels that fish for bigeye (even if it is not the target species) could impact all distant water fleets, which in turn could potentially drive down access fee revenue captured by PICs.

PIC-flagged, foreign owned purse seine vessels: Since these vessels fish on bigeye, PICs would have to carefully review the terms and conditions of supports against the definition of a subsidy in the existing ASCM. It is possible that the allocation of discounted licenses used to attract investments could be considered as ‘government revenue that is otherwise due is foregone or not collected’ (ASCM 1994 1.1(ii)). However, action on this category would require another Member to demonstrate a conferral of benefit.

Foreign longline albacore sector: While southern albacore are not in overfished state, the Scientific Committee in the region recommends reducing fish mortality to maintain economic viability. Like the purse seine sector, albacore vessels also catch bigeye as by-catch. If proposed WTO regulations on overfishing extend to major retained by-catch species, instead of just target species, disciplines could help address a pressing problem for PIC domestic fleets: competition from subsidized Chinese longliners.

Tropical longline sector: The tropical longline fishery targets large bigeye (overfished) and yellowfin stocks. The removal of subsidies to this sector would help alleviate overfishing of bigeye and improve stock status. Large-scale tropical longline fishing vessels are typically owned and flagged by distant water fishing nations, not PICs.

Note: This is a summary prepared by the authors. Highlights have also been added by the authors.

The Trans-Pacific Partnership Agreement (TPP)

The TPP is a major macro-regional FTA that encompasses 12 countries bordering the Pacific Rim: Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Viet Nam. While the text was agreed in October 2015 after seven years of negotiations, ratification is still subject to Congressional approval in the United States and elsewhere. The TPP can be seen as a reaction to the failure of the WTO’s Doha Round and the perceived “threat” from China (Bowles, 2015).

The TPP’s coverage of fisheries subsidies can be found in the environment chapter. The text is a considerable roll-back of ambition compared to the 2007 Chair’s draft text. Far more specific than the SDGs, the TPP attributes subsidies to “the Party conferring it”, regardless of vessel flag or rules of origin.⁶ In Article 20.16.5 TPP signatories agree to not “grant or maintain”:

- (a) subsidies for fishing that negatively affect fish stocks in an overfished condition;
- (b) subsidies provided to any vessels while listed by the flag State or relevant Regional Fisheries Management Organization or Arrangement for IUU fishing in accordance with the rules and

procedures of that organisation or arrangement and in conformity with international law (Article 20.16.5).

The TPP triggers disciplines on subsidies when a stock is in an “overfished condition”. Its environment chapter offers a specific definition of overfished stocks and respects national and regional fisheries management bodies’ definitions of such stocks.

Article 20.16.5(a) specifies a three-year transition period, but there is no transition period for subsidies to IUU fishing in 5(b). A weak standstill clause commits parties to “make best efforts” to not provide new, expanded or enhanced fisheries subsidies outside of those prohibited under 20.16.5 (a) and (b). The TPP does not contain SDT provisions on fisheries subsidies disciplines except for a two-year extension to the transition period allocated to Viet Nam (footnote 18). Countries should report any subsidy within one year of the agreement’s entry into force and every two years thereafter. An environment committee established under the TPP will regularly review prohibited subsidies in light of “the objective of eliminating subsidies that contribute to overfishing and overcapacity”.

Perhaps most importantly, commitments in the environment chapter are subject to “hard” law dispute settlement. Several steps, including consultation mechanisms, are required before a Party can make use of the dispute settlement body. If a dispute finds against the Party, compensation and monetary payments can be made, but the ultimate objective is the “elimination of the non-conformity or the nullification or impairment” (Article 28.19.3)). Panel decisions and documentation are accessible to the public unless the disputing Parties agree otherwise. In addition, panels “shall consider requests from non-governmental entities located in the territory of any disputing party” (Article 28.12. 1(b), (d) and (e)). This suggests a potentially high degree of transparency in proceedings as firms, industry associations and NGOs can make representations (i.e. *amicus curiae* – or “friend of the court” – briefs).

United States and Japanese negotiators agreed to this text, indicating a minimal convergence of the demandeur and defensive negotiating blocks in historical fisheries subsidies debates at the WTO. There may also be a sense of political urgency around the state of marine capture fisheries and related willingness to act, signalled by the application of hard dispute settlement. Either way, the TPP text represents

consensus on minimal ambition of disciplines that was mirrored, to no avail, in the lead up to the WTO’s MC10.

Conclusion and policy implications

In 2015, ambitions to discipline fisheries subsidies narrowed radically as reflected in WTO negotiations and the modest agreements on fisheries subsidies in the SDGs and the TPP. While we are unable to trace the policy linkages between the WTO and the SDG and TPP negotiations, we hypothesize that the text developed in the latter two fora directly influenced drafts developed in the WTO.⁷ On the one hand, text agreed at the United Nations and in the TPP ensures that fisheries subsidies remain on the international agenda. On the other, rules in these two bodies, even if of minor ambition, could suggest that work on fisheries subsidies has already been undertaken in multilateral and regional contexts, reducing the urgency of future WTO’s efforts in this area. Developed and developing country demandeurs at MC10 should have made a stronger push for consensus mirroring the lowest common denominator rules in the SDGs and the TPP. Instead, more stalemate ensued.

In terms of development implications, many economically smaller, fiscally squeezed coastal developing countries – such as the ACP States and SVEs – have an *offensive* interest in focusing attention on fisheries subsidies and carrying the proposed rules through to agreement in the multilateral and legally binding WTO context. They want to limit subsidies by developed *and* developing countries to fleets that fish on overfished stocks, which would improve the chances of domestic producers, and potentially benefit long-term sustainability and food security. In practice, however, it is difficult to predict the real world implications of any agreement, not least because of the paucity of data on subsidy programs, debate over how to define overfished stocks and the challenges and costs associated with dispute settlement. From a developing country perspective, the major *defensive interest* of the low-ambition WTO agenda is the disproportionate reporting burden for small subsidy programs. Otherwise, SDT is broadly irrelevant given the narrow scope of the rules, although developing countries can – and should – continue to reiterate that nothing in the ongoing debates will prejudice their use of SDT provisions should more extensive disciplines be proposed in the future.

In order to keep the flagging WTO fisheries subsidies negotiations on the agenda, the ACP and SVE groupings, along with other developing countries could take the moral high ground as leading supporters of efforts to eliminate subsidies that are widely recognized as distorting trade, creating an uneven playing field for small economies, and harming a resource that is central to food security and sovereignty. For example, if the ACP Group were to enter in an ad hoc alliance with the NZ+5, it would create the most important coalition in 20 years of debates on fisheries subsidies at the WTO. While this alliance could provide a platform for using the WTO to reinvigorate and expand the scope of fisheries subsidies rules beyond the level of

ambition in the SDGs and the TPP, lack of agreement on even minimal disciplines at MC10 does not hold promise for this tactic. Finally, several specific textual definitions remain in play and developing country Members should weigh in on these definitions, including by making a strategic decision on the definition of “overfished”.

These issues could be reinvigorated in the aftermath of the MC10 failure. They might be driven by advances in other fora such as the SDGs and the TPP. Either way, coastal and island developing countries should pursue offensive as well as more traditional defensive interests. As ever at the WTO, the devil will be in the detail and the politics surrounding definitions.

Key Messages on Sustainable Trade in Fish

Creating the framework for sustainability

- Create a global monitoring and review process (a High-Level United Nations Conference) on the advancement of trade-related targets under SDG 14;
- Multilateral, regional and bilateral trade agreements should build on multilateral United Nations instruments seeking oceans conservation and sustainable fisheries;
- Transfer guidance provided by United Nations resolutions when related to oceans and fisheries into national and regional policies more effectively;
- Improve the levels of coherence, implementation and enforcement of multiple oceans and fisheries-related treaties and instruments under the framework of the UNCLOS and the FAO;
- Trade-related measures should seek to strengthen the implementation of the existing international legal regime for fisheries;
- Stronger links between obligations and technical cooperation and capacity building by developed parties in multilateral and regional trade agreements, especially in the form of special cooperation funds, could make implementation efforts less complex and more effective;
- There should be a balance between the interests of countries participating in mega-regionals and the coherence of the multilateral trading system;
- The inclusion of an independent but also interlinked dispute settlement would strengthen the effectiveness of implementation and enforcement measures in international agreements with fish related provisions;
- Parties should cooperate with each other to build capacity to support implementation. In this regard, they should promote increased capacity building in oceans affairs, in order to target the lack of capacity to implement the relevant regulations and guidelines, especially in developing states.

Taking climate change into account

- The effects on climate change and variability on fisheries should be considered together and from a global perspective;
- Allocate resources and promote research on climate change effects on fisheries;
- Identify and promote technological alternatives for sound fishing practices;
- Promote research on fisheries' resilience and adaptation to climate change;
- Countries and the international community should engage in preserving the age and geographical structure of fish populations in order to sustain their resilience and the management of marine biomass.

Trade in sustainable fisheries

- Direct reference to multilateral United Nations instruments when setting fish management systems can make obligations more precise and strengthen common interpretations over grey areas or legal vacuums;
- International organizations and countries should collaborate for the mapping, convergence and harmonization of NTMs;
- Rules of origin should be more flexible for developing countries to facilitate value addition and stimulate the emergence of new production networks;
- It is increasingly important to bring together governments, companies and local communities to engage in sustainable, sound and innovative fisheries exploration practices, where ecosystems restoration and sustainable fisheries harvesting will need to go hand in hand.
- Fish management systems should be designed to prevent overfishing and overcapacity reduce by-catch and non-targeted species, and promote recovery of overfished stocks;
- The international community could clearly identify minimum requirements for social sustainability within the seafood sector;
- Facilitate information and access to technology of local and small fishing communities could promote a

wider use of sustainable fishing practices and certification;

- Development and multilateral agencies, working with national governments could provide significant and targeted technical assistance to facilitate certification of developing country producers, especially of smaller producers;
- The World Customs Organization (WCO) HS codes could differentiate between wild capture fish and aquaculture produce as well as on sustainable harvested or produced.
- National governments, in coordination with the WCO, could establish Harmonized System of Tariff and Nomenclature codes for certified seafood products;
- Where standards have demonstrated full compliance with the FAO Guidelines, national governments could consider the implementation of preferential fiscal policies for certified seafood products.

Boosting the sustainability of aquaculture

- National programmes to support aquaculture are a prerequisite for the continued growth of the sector;
- In addition to best management practices for aquaculture, it might also be important for governments to introduce regulations for sustainable and/or organic aquaculture. Such regulations could include guidelines for the development of the organic aquaculture production;
- To avoid the overly burdensome difficulties that many producers in developing countries face to access major developed country markets, exporting producers should be made more aware of the benefits of sustainability certification;
- Certification could be made more affordable by pooling producers in order to achieve economies of scale, reduce costs and narrow market access gaps.

Reducing harmful incentives

- There should be full transparency and disclosure of all fisheries subsidies;
- Fisheries subsidies should be classified in order to identify and distinguish those that are harmful or not;
- Efforts to discipline capacity-enhancing subsidies should be exerted at the national, regional and global levels of governance;
- A group of countries in partnership with organizations such as the WTO, UNCTAD and the FAO could stimulate collective actions with bottom-up voluntary commitments to subsidy reform. Each country could declare the amount of capacity-enhancing subsidies that they would voluntarily eliminate within a given time period;
- To avoid lack of consensus at the international negotiations of fisheries subsidies, negotiations could be limited to subsidies that affect international fish stocks. This would then leave governments to work unilaterally to reform subsidies that affect only their domestic fisheries;
- The implementation of fish management systems should include the control of, reduction and eventual elimination of all subsidies that contribute to overfishing and overcapacity;
- There should be an immediate capping and phasing out of high seas fishing fuel subsidies within 5 years;
- Means for stopping IUU fishing could include:
 - » Monitoring, control and surveillance of known IUU vessels
 - » International cooperation such as sharing information on IUU vessels
 - » International coordination of catch certificates to facilitate border control of traded fish
 - » Certification of product from verifiably managed fisheries
- These potential means for stopping IUU would require an over-arching solution of traceability of traded fish from vessel to final consumer.
- The implementation of the FAO's Port State Measures Agreement must be accompanied with technical cooperation and capacity building that allows its effective implementation by developing countries, LDCs and SIDS.

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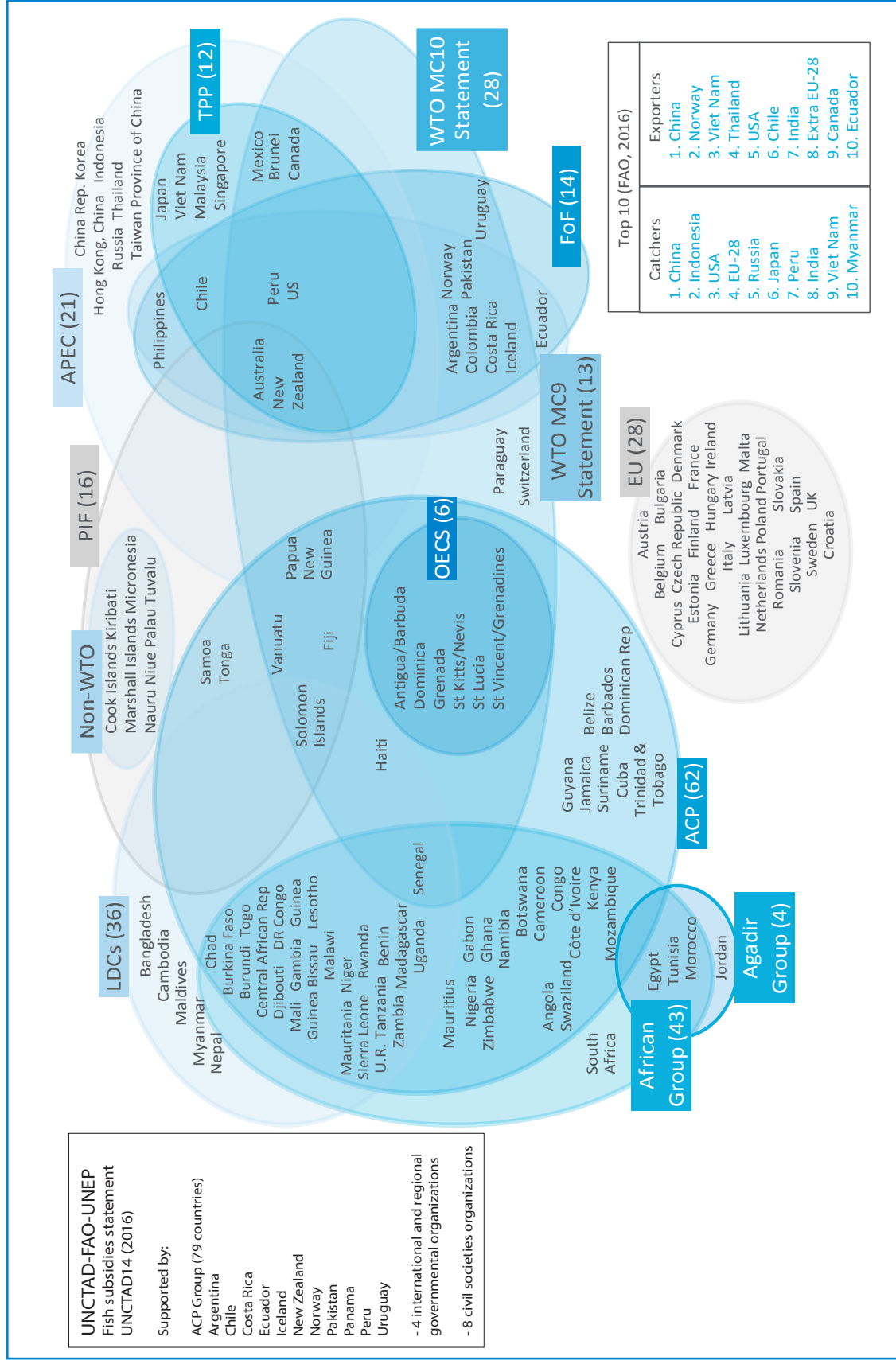
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Notes

- 1 On the weak and fragmented character of high seas governance, see Section 2 of the Global Ocean Commission 2014 report.
- 2 Australia, Argentina, Brunei Darussalam, Canada, Colombia, Costa Rica, Fiji, Iceland, Mexico, New Zealand, Norway, Pakistan, Paraguay, Papua New Guinea, Peru, Senegal, Solomon Islands, Switzerland, United States, Uruguay, Vanuatu and OECS Economic Union WTO Members (Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadine).
- 3 For a detailed analysis of ASCM rules and their relation to fisheries subsidies, see Schorr (2004).
- 4 Ibid.
- 5 In 2009, Brazil, Mexico and Ecuador left the Friends of Fish group, while Colombia and Pakistan joined.
- 6 This might allow third countries (non-Parties) to subsidise activities on boats flagged by Parties.
- 7 Especially TN/RL/W/258. See WTO, 2015b.

Annex: Fisheries subsidies groups



Source: New Zealand Mission to the WTO (2016)