

TRADE IN FISHING SERVICES

Emerging Perspectives on Foreign Fishing Arrangements



DECEMBER 2014

WORLD BANK REPORT NUMBER 92622-GLB

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Addendum to

Trade in Fishing Services, 2014

THIS NOTE CONCERNS CHAPTER THREE: LEGAL ISSUES

Legal Issues — Alternative Interpretation of Article 62 UNCLOS

In the World Bank discussion paper *Trade in Fishing Services—Emerging Perspectives on Foreign Fishing Arrangements*, published in December 2014, the World Bank undertook an analysis of the legal issues pertaining to coastal states' rights and responsibilities toward distant-water states and the international community in general. This analysis relies on the writings of Gordon Munro (based on the work of Prof. William T. Burke).

The Munro-Burke interpretation is based on sound academic and legal reasoning. While this interpretation was the main interpretation used in the discussion paper, it is not the definitive or sole interpretation on the rights and responsibilities of coastal states. In this addendum, an alternative interpretation to that put forward by Munro-Burke is discussed.

According to the Munro-Burke interpretation, coastal states a) are under no obligation to determine a total allowable catch (**TAC**) and in turn share any surplus; and b) are not obliged to maintain or observe a particular level of utilization or even a maximum sustainable yield (**MSY**).

The alternative interpretation of coastal states' rights and responsibilities proposes that:

- a) coastal states are **obliged** to —
 - i) determine a total allowable catch of living resources within their EEZ and then grant other states access to any surplus that may exist.

Article 61(1) “*The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone.*” Markowski¹ argues that while Burke suggests that this provision is to enable the coastal state, to the exclusion of other states, to determine the allowable catch in its EEZ, the language is clearly mandatory. Therefore the provisions of this clause are in fact mandatory and therefore cannot be said to be empty as suggested by the Munro-Burke interpretation.

1. Marion Markowski, *The International legal standard for sustainable EEZ fisheries management, Towards Sustainable Fisheries Law: A Comparative Analysis*, 2009.

In addition to the mandatory wording used in Article 61(1), provisions of the Preamble² to the UNCLOS and Article 56(2)³ make it clear that a coastal state's sovereign rights within its EEZ are to be exercised with due regard to the spirit of mutual understanding and cooperation as well as the rights and duties of other states. In this regard, a reading of the provisions of Article 61(1), which finds that a coastal state is under no obligation to determine its TAC and share any surplus, could not stand in light of the rest of the provisions of the UNCLOS.

ii) observe or maintain a maximum sustainable yield within its EEZ

According to Article 61(2) and (3) of the UNCLOS provide that—“(2) ... [*t*]he coastal state... shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation...”

(3)... *measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield...*”

According to the Munro-Burke interpretation there is no requirement for coastal states to maintain or observe a particular MSY. The alternative interpretation holds that the only plausible way coastal state may fulfill its duty to conserve and manage the living resources within its EEZ as contained in Article 61 is by maintaining and restoring living resources at a level which can produce a MSY, as prescribed by Article 61(3). According to Markowski Article 61(2) is concretized by paragraph 3.⁴

In addition to the above, the alternative interpretation is also based on UNCLOS Commentary Volume 2⁵ (**the Commentary**), which deals with amongst other issues—EEZ and living resources therein, as well as the rights and duties of coastal States and non-coastal States with respect to the former. The Commentary on Article 62 specifically reflects on the various submissions by States, in the development of the UNCLOS, on the issue of the utilization of living resources both by coastal States and non-coastal States. These submissions we believe demonstrate States' intentions and possible later understanding of the utilization of living recourses within EEZ and how to determine and allocate harvest capacities.

In addition to the Commentary, various multi and bilateral agreements between the European Union and other States—in terms of which EU vessels are allowed to fish for surplus stocks in those other State's EEZ—indicate an understanding and interpretation of Article 62 that differs to that put forward by Munro and Burke.

2. The Preamble to the UNCLOS—which provides for “... *the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea and aware of the historic significance of this Convention as an important contribution to the maintenance of peace, justice and progress for all peoples of the world...*” (Own emphasis).

3. Article 56(2) UNCLOS—“*In exercising its rights and performing its duties under this Convention in the exclusive economic zone, the coastal State shall have due regard to the rights and duties of other States and shall act in a manner compatible with the provisions of this Convention.*”

4. *Supra* note 1 at 5.

5. Myron H. Nordquist, *United Nations Convention on the Law of the Sea, 1982: A Commentary, Volume 2*, Martinus Nijhoff Publishers, Aug 30, 1993.

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4. Trawler, Alaska Pollock. Courtesy of Gunnar Knapp.

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FOREWORD



Mr. James T. Movick

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This report provides a refreshingly new analysis of foreign fishing arrangements, which are prevalent in approximately half of the national exclusive economic zones of the world's oceans. Fisheries access arrangements have often been demonized as a license for the fleets of developed nations to "rip off" fisheries resources of the world's poorer countries. This report illustrates how they—together with charters and joint ventures—can actually be regarded as a trade in services. As with other trade, the principles of comparative advantage apply and can, under the right circumstances, benefit all parties.

As the Pacific Island countries of our region provide material for two of the eight case studies (and New Zealand, a member of our organization, provides material for a third), I would like to reiterate briefly the lessons that we have learned. As a group of newly independent nations, including the smallest in the world, our members were quick to recognize the need to work together—at first simply to assert their rights over the large areas of ocean that became their EEZs, and then to put in place systems for uniform and cooperative monitoring, control, and surveillance. The Pacific Islands Forum Fisheries Agency was established by those governments in 1979 to strengthen their national efforts and to coordinate their collective and cooperative efforts. Over time we have been able to develop systems that have increased the value of access to the resource, providing greater revenue for those who wish to grant access and greater leverage for those that use it to induce foreign investment in domestic industry and processing. This has been achieved in a complex shared fishery for highly migratory species extending over a huge area.

It has not been easy. As contributor Les Clark notes, "it's a long haul" and we have much more to do; but as he also says, "cooperation works." I realize that every region is different and not all of what we have learned will be applicable elsewhere, but the Forum Fisheries Agency stands ready to share our experience through South-South cooperation.

FOREWORD

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The fisheries sector has become one of the most globalized of all food commodity sectors with about one third of production entering international markets. The increasing internationalization of its supply and value-chains has given policymakers the task of rising to new challenges concerning harvesters, aquaculture producers, processors, traders, distributors, and retailers. Consumers are also exposed to and subject to the impacts of global trends as supply chains get longer and growing urbanization and improved distribution increase the range of products available.

In the international debate on fisheries issues, the impact of globalization has therefore firmly come to the forefront. This includes a focus on how globalization manifests itself throughout the value-chain and the effect on various stakeholder groups as well as how policy decisions at the national, regional, and international level are influenced by global factors. In the debate, however, there is one issue that clearly has not received the attention it deserves from an analytical perspective, and that is the issue of fishing services the services offered in bunkering and other activities in ports, as well as in monitoring, control, and surveillance (MCS), research, harvesting, and processing.

Fishing services are already part of many bilateral and multilateral fishing agreements, but the topic figures only sporadically in policy discussions and even more rarely in economic analysis, despite the potential for these services to generate value and economic benefits. This report is therefore all the more valuable as it provides in-depth knowledge and experience to policymakers as much through its discussion of the conceptual framework of fishing services as through the various case studies undertaken. Moreover, the case studies have provided critical practical caveats and important governance lessons, not the least of which is that the development of secure user rights systems is essential for fish resources to deliver their full contribution to economic growth.

The FAO Code of Conduct for Responsible Fisheries, which celebrates its 20th anniversary in 2015, clearly recognizes that each country will seek solutions that best fit its own circumstances. In doing so, policymakers will build on the principles of the Code, binding international commitments, voluntary instruments, the best scientific advice, and the experience of others. In this sense, the report *Trade in Fishing Services—Emerging Perspectives on Foreign Fishing Arrangements*, is a timely addition to our knowledge and efforts to ensure that our fisheries resources will deliver secure optimal, equitable, and sustainable returns for economic growth, improved social welfare, and development.

ACKNOWLEDGMENTS



In memory of Professor William T. Burke, 1926–2014, whose legal research and writings had a profound influence on the report.

This report is the culmination of a global analytic and empirical study commissioned by the World Bank, which set out to improve understanding of the arrangements for, and outcomes of, allowing foreign access to the fish resources of coastal states, particularly developing countries. The report argues that the various forms of access arrangements are, in fact, mechanisms for international trade in fishing services. Within this 'TIFS' context, the authors present detailed economic, legal, and empirical analyses which provide powerful new insights on how such arrangements can increase the economic, social, and environmental benefits derived by developing-country (and other) coastal states from their valuable fish resources. In particular, the study highlights concern over the current interpretation of the so-called 'surplus' principle within UNCLOS, and emphasizes comparative advantage as a key determinant of increased performance.

The overall review was coordinated by Stephen Cunningham (IDDRA Ltd.), a specialist in fisheries economics with wide-ranging international-development experience in fisheries.

Gordon Munro (University of British Columbia) was responsible for the economics and legal analyses presented under appendix A and contributed substantially to the final synthesis report.

Tim Bostock (Fisheries and Oceans Specialist, World Bank) is the study's overall task team leader. He provided overall guidance both to the study team and to the World Bank on the evolution of the study and helped compile and edit the final synthesis report.

The study leaders particularly wish to thank and acknowledge the invaluable contribution of the following eight case study authors:

Les Clark (consultant), who reviewed the process through which Pacific Island Countries—members of the Forum Fisheries Agency—are gradually increasing the economic returns that they receive from their tuna resources. Les contributed appendix B of the report.

Tom McClurg (Toroa Consulting), who discusses the particular problems associated with fishing in areas beyond national jurisdiction (ABNJ) using the Western and Central Pacific Ocean (WCPO) case as an example upon which to base the discussion. Tom contributed appendix C of the report.

Mohamed Rouchdi (consultant), who discusses Morocco's experience with foreign fishing services over approximately 30 years. Mohamed contributed appendix D of the report.

Robert Arthur (Marine Resources Assessment Group), who considers the important generic issue of how foreign fishing services may affect coastal-state small-scale fishers. Rob contributed appendix E of the report.

Suzannah Walmsley (consultant), who explores and compares the European Union's bilateral fisheries agreements in the northern hemisphere, including agreements with Norway, Iceland, Faeroe Islands, and Greenland. Suzannah contributed appendix F of the report.

Tabitha Mallory (Princeton University), who presents a comprehensive review of China's significant distant-water fishing arrangements. Tabitha contributed appendix G of the report.

Phil Major (consultant), who discusses the way New Zealand has used different forms of foreign fishing services over the past few decades. Phil contributed appendix H of the report.

James E. Wilen (Department of Agriculture and Resource Economics, University of California, Davis, CA) discusses the Alaskan Bering Sea pollock fishery, showing the evolution and transition from an essentially foreign fishery to a U.S. domestic fishery. James contributed appendix I of the report.

A special acknowledgement goes to James Movick (director general of Pacific Islands Forum Fisheries Agency) and his team of policy advisers and fisheries specialists for their overall guidance, support, and further insights into the fisheries of the Western Central Pacific. We are particularly grateful to Food and Agriculture Organization's (FAO's) Lahsen Ababouch, Audun Lem, and Árni M. Mathiesen for their encouragement and suggestions for future partnerships to help take forward the report's recommendations. Moreover, both James Movick and Árni M. Mathiesen contributed forewords to the report.

The team acknowledges all peer reviewers for their comments and suggestions, with particular thanks to Mike Batty, Mimako Kobayashi, James Anderson and Jingjie Chu.

The team further acknowledges additional contributions from Sloans Chimatiro, Fisheries Adviser at New Partnership for Africa's Development (NEPAD) and Dr. Arthur Neiland (IDDRA Ltd).

Finally, the team is grateful to Valerie Hickey (World Bank) for her encouragement and technical insights during the final stages of reporting during a time of considerable change at the World Bank, and to Piet van Hieswijk and his team at the Governance Partnership Facility for their patience and support in pulling this complex study together over what was a protracted and eventful period.

LIST OF ACRONYMS

ABNJ	Areas beyond national jurisdiction	MPM	Ministry of Agriculture, Rural Development, and Maritime Fisheries
AFA	American Fisheries Act	MSY	Maximum sustainable yield
CPUE	Catch per unit effort	PICs	Pacific Island Countries
DWF	Distant water fisher (or fleet)	PNA	Parties to the Nauru Agreement
DWFN	Distant water fishing nation	RFMO	Regional fishery management organization
EC	European Commission	RSW	Refrigerated sea water
EEZ	Exclusive economic zone	TAC	Total allowable catch
EITI	Extractive Industries Transparency Initiative	TAE	Total allowable effort
EU	European Union	TALFF	Total allowable level of foreign fishing
FAO	Food and Agriculture Organization	TIFS	Trade in fishing services
FFA¹	Foreign fishing arrangement	UNCLOS	United Nations Convention on the Law of the Sea
FPA	Fisheries partnership agreement	UNFSA	UN Fish Stocks Agreement
FSM	Federated States of Micronesia	VDS	Vessel day scheme
GDP	Gross domestic product	VMS	Vessel Monitoring System
HDI	Human Development Index	WCPFC	Western and Central Pacific Fisheries Commission
JV	Joint venture	WCPO	Western and Central Pacific Ocean
MCS	Monitoring, control, and surveillance		
MEP	Member of the European Parliament		

All dollar amounts are U.S. dollars unless otherwise indicated.

¹ Note that the Pacific Islands Forum Fisheries Agency is referred to as such in this report.

EXECUTIVE SUMMARY



Approximately half of the world's economic exclusion zones (EEZs) are subject to some form of foreign fishing arrangement (FFA). Although the discourse on such arrangements has been heavily influenced by government-to-government "foreign fisheries access agreements," it is important to set the discussion within a wider context, which includes joint ventures between coastal-state and distant-water interests and chartering of foreign fishing vessels by coastal state interests.

Such arrangements represent mechanisms to allow international trade in fishing services (TIFS), offering the possibility for coastal states, especially developing countries, to increase the benefits from the exploitation of their fish resources.

This report presents an analytic review of economic and legal principles supported by empirical casework to elucidate actual and potential cost and benefit flows associated with FFAs.

The proposition that social welfare depends on sustained economic growth is well established both theoretically and empirically. Increasing gross domestic product (GDP) per capita is of interest not just for its own sake but because it is very strongly associated with increases in the Human Development Index (HDI), particularly for low levels of GDP.

Marine fish resources represent valuable natural capital that, if managed carefully and sustainably, have the potential to make a perennial contribution to economic growth through the resource rents that they can generate.

The general proposition that trade is an important driver of economic growth is also well established. However, in the case of fisheries, it is the importance of trade in fish and fish products that has dominated the policy agenda. Yet there is no a priori reason to believe that trade in services will be less important than trade in goods in the case of fishing. In fact, as the trend away from free and open access to fish resources toward access regimes based around use and property rights of different kinds takes hold, there is every reason to believe that there will be increasing interest in generating

further benefits from fish resources through international trade in fishing services of all kinds, in particular harvesting and processing services.

The United Nations Convention on the Law of the Sea (UNCLOS), also called the Law of the Sea Convention or the Law of the Sea treaty, is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place between 1973 and 1982. The UNCLOS raises a number of issues relating to trade in fishing services. A key question concerns the so-called surplus principle: If the coastal state has surplus fish resources, is it obliged to grant access to other states, including distant water fishing states, albeit subject to conditions? This report concludes that there is no such requirement. The power of the coastal state to set the allowable catch is “sovereign and non-reviewable,” and the coastal state is authorized to determine its own harvesting capacity in relation to the living resources of its EEZ. Consequently, a rational coastal state will only declare a surplus if it is in its interest to do so. It is not clear, however, whether this crucial conclusion is widely understood. Indeed, it could be conjectured that some developing-country states may have established foreign-fishing access agreements under the misapprehension that this was a requirement of UNCLOS.

The study draws on the fact that EEZ fish resources are the property of the coastal state. As such, the objective of managing these resources is to optimize sustainable net economics returns—broadly defined to include both market and nonmarket—to benefit the coastal state as a whole rather than just those who participate in the domestic fishing industry.

Given the potential importance of trade in fishing services and the likelihood that such trade may increase in the future as use rights become more firmly established and as efforts to deal with illegal fishing bear fruit, it is important to clarify the legal framework within which such trade occurs even so many years after UNCLOS. The report recommends that an in-depth legal review should be undertaken, followed if appropriate by a technical workshop and mini-conference to produce a definitive reading of UNCLOS on this point.

In the absence of any legal requirement to enter into such arrangements, coastal states will do so only if they perceive it to be in their economic interests. If foreign fishers have a comparative advantage, it can benefit coastal states to import their services. Such a comparative advantage could arise for many reasons throughout the fish value chain. For instance, foreigners may have comparative advantage in the following operations:

- » Fishing, due to skill or access to capital enabling them to operate more efficiently in capital-intensive fisheries;
- » Processing, due to the scale of operations; and
- » Marketing, due to market access, proximity to customers, and product branding.

Comparative advantage does not depend only on the relative efficiency of the fishing industry of the coastal state compared with distant water fishers. Comparative advantage may also arise because the coastal state has other profitable sectors that can make better use of its capital and labor resources than can the fishing industry, or the distant water nation may have few other opportunities and may be prepared to fish at very low cost. There is a need to promote understanding of comparative advantage with respect to fishery policy development.

Comparative advantage will determine the gains that are available from trade. These gains will be shared between stakeholders according to the terms of trade. The report analyzes how these terms of trade may be expected to evolve using a combination of principal-agent and game theory. The difficulty for the coastal state as principal is to devise a set of institutional arrangements that will give it an increasing share of the gains from trade.

The report identifies several important lessons emerging from a set of case studies.

In the Pacific Island countries, a first important factor explaining the improved returns from the exploitation of their tuna resources is regional cooperation between coastal states. They have also developed, over a very long period, their fishery management institutional and human capacity at national, regional, and subregional levels. Finally, the widespread application of effective, competitive arrangements for distant water nations to supply

fishing services has significantly increased fees and downstream domestic development benefits.

The other case studies, notably those concerning Morocco, the EU northern agreements, and Chinese distant water fishing, suggest how foreign fisheries access agreements might be improved.

As with the exploitation of other natural resources, a key element is transparency. An arrangement for fishing along the lines of the Extractive Industries Transparency Initiative (EITI) would be worth investigating.

It is also important that foreign vessels' activity be managed as part of the coastal state's fisheries management framework rather than being managed by a separate legal instrument. Ideally, distant water fishing opportunities should be specified in terms of catch.

The coastal state must have sufficient capacity for monitoring, control, and surveillance (MCS) to ensure compliance with the rules and regulations in force so that catch limits are observed and conservation measures implemented. This must be complemented with flag state control through vessel monitoring systems, verification of catches, and timely exchange of data.

A complex area of analysis concerns subsidies to distant water fleets. The ideal solution for the coastal state would be to obtain the subsidy as a lump sum that is unrelated to the level of fishing exerted by the distant water fleet. Some foreign fishing agreements seem to come close to this ideal.

Capacity-building efforts should not only target coastal states. The Chinese case study in particular points to a number of areas where building capacity and raising awareness among both fishers and flag state authorities could contribute significantly to improving sustainable fisheries management.

As coastal state fisheries management becomes more effective, fishing effort might be transferred toward areas beyond national jurisdiction (ABNJ). This is one threat facing the vessel day scheme in the Western Pacific. The most effective way of addressing this may be to strengthen

coalitions of coastal states and their linkages to regional fisheries management organizations (RFMOs), making it more expensive for distant water fishers to fish the high seas. High-seas performance could be taken into account in the allocation to foreign fishers of fishing opportunities in adjacent coastal states' EEZs.

Foreign fishing frequently raises concerns over adverse impacts on the domestic fishing sector, especially small-scale fishers. Rights-based systems that include all sections of the domestic sector, including small-scale fishers, can have an important mitigating effect in this regard. Although devising appropriate rights systems for small-scale fishers is a difficult challenge, experience with community-based and communally held rights offers insights on which to build in situations where allocating individual rights is not feasible. Whether or not small-scale fishers have such rights, their concerns should be fully represented during negotiations concerning foreign fishing.

The negotiation of access agreements and other forms of foreign fishing are likely to be very unpopular with domestic fishers in situations where domestic fisheries management arrangements are inadequate and especially where fishing rights do not exist. In this case, foreign fishers simply become a powerful competitor for domestic fishers, who understandably react adversely.

Where fishing rights exist, however, very different outcomes may occur because foreign fishers may now offer significant advantages to domestic fishers, or, more accurately, to domestic rights holders.

The development of secure rights systems is essential for fish resources to deliver their full contribution to economic growth. At the same time, such systems are likely to generate much greater fishing-service trade than is currently the case.

A basic requirement is for the international community to identify and fund an appropriate organization to develop and maintain statistical databases on trade in fishing services. At the same time, there is a need to develop awareness and understanding that the international economic arguments, notably comparative advantage, underpinning the case for free trade apply just as much

to services as they do to products. Otherwise there is a risk that coastal states will apply protectionist policies in the case of fish resource exploitation to their ultimate disadvantage.

The New Zealand case study shows how trade in services might be expected to develop as rights-based systems become more common. New Zealand rights holders have made great use of foreign fishing services through chartering arrangements. The biggest advantage has been that rights holders have been able to use the most cost-effective combinations of capital and labor for their harvesting and processing operations, thereby increasing the returns obtained from their rights. In addition, the ability to use foreign-chartered vessels reduces the need for rights holders to raise capital. This has been an advantage especially for those with only a small quantity of rights, who have been able to combine their rights with other holders in undertaking chartering operations. Finally, linking with foreign operators has generated tariff- and quota-free access for fishing products in the partner's home market.

The main problem that New Zealand has encountered with this system has been controlling the activities of foreign-registered fishing vessels operating under charter in its EEZ. A few foreign charter operators have operated in ways that have undermined the reputation of the whole sector and of New Zealand itself. As a result, all foreign charter vessels will have to become New Zealand-registered from 2016.

The Alaskan case study shows a rather different experience with trade in fishing services. In essence, joint ventures were used as a way of transferring fishing skills from foreign to U.S. fishers. Together with various legislative changes, this transfer of skills changed comparative advantage in the fishery, which went from being almost entirely foreign to completely domestic within 10 to 12 years. However, this change in exploitation nationality, although having economic impact, did not produce significant economic benefits. It was only when institutional changes were made leading to a rights-based exploitation system that substantial economic benefits, in the form of resource rents, began to appear.

The interesting question concerning Alaska is the extent to which it matters that things were done in this order. If rights-based systems had been implemented first, would there still have been the same interest in switching from foreign to domestic fishers? It is difficult to know, although it does seem that it is definitely domestic fishers who now have the comparative advantage. It will be interesting to observe over the coming years whether existing national rights holders will choose to use foreign fishing services in the further development of this important fishery.

In the case of rights-based fisheries, the key service trade-related policy decisions are as follows:

1. Can rights holders use foreign fishing services
 - a. At the individual level (for example, employ foreign skippers)?
 - b. At the company level (for example, charter foreign vessels)?
2. If so, under what conditions?
3. Can foreigners hold rights?
4. If so, under what conditions can they exploit them? And, in particular, how does the coastal state ensure that it continues to receive a return on its resources?

Overall, although trade in fishing services may raise some issues, it is likely to be a significant part of a strategy to maximize the economic benefits from the exploitation of fish resources. The case studies in this report show how a variety of countries have made, and are making use of, these services.

Finally, several recommendations are suggested:

- » Give urgent legal and other consideration to the downstream implications of the study's key conclusion in regard to the emptiness of the UNCLOS surplus principle.
- » Foster greater awareness and understanding of the central role that trade in fishing services plays in foreign fisheries arrangements.
- » Reemphasize the centrality of effective coastal state EEZ fisheries governance and management, particularly the role of secure tenure, to capitalize on and optimize potential benefits from TIFS.
- » Develop awareness-raising knowledge products on the macroeconomic function and the means

whereby fisheries and the FFAs can enhance sectoral contributions to GDP.

- » Continue discussion concerning the benefits and beneficiaries of fish resource exploitation, including from the FFAs.
- » Identify an organization capable of developing and maintaining databases on TIFS and using the information gathered to help position TIFS more centrally in fisheries policy planning.

» Facilitate South-South cooperation and the exchange of knowledge and experience in best practice, particularly the importance of effective cooperation and negotiating experience.

» Use incremental information to build human capacity and awareness to raise the profile of TIFS, ideally within future donor and recipient frameworks for sustainable fisheries.

CHAPTER ONE

INTRODUCTION

Approximately half of the world's exclusive economic zones (EEZs) are subject to some form of foreign fishing arrangement (FFA). Such arrangements are primarily established for export² but can also be important for local and regional markets. While the discourse on such arrangements has been dominated by government-to-government foreign fisheries access agreements, it is important to set the discussion within a wider context that includes joint ventures and chartering of foreign fishing vessels by coastal state interests. FFAs also concern a variety of resources and resource management situations, including

- » National fish resources located entirely within one country's EEZ;
- » Fish resources that straddle the EEZ of two or more countries;
- » Fish resources that straddle EEZ and areas beyond national jurisdiction (ABNJ); and
- » In some cases, resources that are caught in ABNJ.

FFAs often provide access to the fish resources of developing countries for so-called distant water fleets (DWFs) from developed and middle-income countries. Some types of FFAs, particularly access agreements, can account for 50 percent of public revenues in some African and small-island countries. However, although FFAs offer the possibility for coastal states, especially developing countries, to increase the benefits they obtain from the exploitation of their fish resources, the context within which they are negotiated and the institutional arrangements under which they are executed may be prejudicial to long-term resource sustainability and optimal utilization. Thus, key questions might include the following: Under what conditions is it best for coastal states to use foreign fishing services? How can coastal states ensure that they optimize the benefits on a sustainable basis?

Despite the substantial benefits potentially available both to coastal states and distant water fishing fleets, FFAs have tended to suffer from a negative reputation associated with factors such as poor transparency, inequitable benefit sharing, conflict with

² For example, European Union (EU) agreements are implemented under the Common Fisheries Policy, which aims to utilize existing EU harvesting and processing capacity to secure fish supplies for EU markets.

small-scale fishers, and contributing to resource depletion. They are further criticized where cost-reducing subsidies are allocated to the DWF.

ABOUT THIS REPORT

This report is an output of a World Bank study whose aim is to provide guidance to developing coastal countries in identifying the means to secure optimal, equitable, and sustainable returns from FFAs, particularly ensuring that they are underpinned by effective national management systems. It also seeks to encourage DWF or flag states to adopt responsible policies and practices with regard to the behavior and activities of their fleets.

The primary aims of the report are as follows:

- » To identify how coastal states might benefit from international trade in fishing services;
- » To consider the conditions necessary for such benefits to be sustained and to increase further in the future; and
- » To discuss the implications for different stakeholders, especially in the coastal state.

The report centers on an analytical review of economic and legal principles supported by empirical casework to elucidate actual and potential cost and benefit flows associated with FFAs. It attempts to identify a set of relevant principles, particularly learning from case examples of best practice, which could inform the development of guidelines for future FFAs in developing country fisheries.

To explore these issues, the report adopts a trade in fishing services (TIFS) framework. Particular emphasis is placed on harvesting services, although the post-harvest value chain and processing aspects are also recognized as crucial.

As noted, TIFS may be undertaken through several forms of FFAs, including foreign fisheries access agreements, joint ventures, chartering, and foreign vessel licensing by the coastal state.

Before moving on to a further discussion of this trade-related perspective, it is prudent to set this work within the overall context of the World Bank's objectives related to sustainable fisheries. The report contributes directly to

the Bank's overarching mission to galvanize international and national efforts to end poverty and to promote shared prosperity. It does this through focusing on what must be regarded as the most fundamental of requirements for sustainability and increasing productivity in any fishery—improvements in fisheries management institutions that contribute sustainably to the well-being of poorer segments of society in developing countries. In this regard, the project addresses the recommendations of the Blue Ribbon Panel (2013)³ to align ocean health and human well-being.

FISHERIES, GROWTH, AND WELFARE

The proposition that social welfare depends on sustained economic growth is well established both theoretically and empirically (see for instance *The Growth Report*⁴). Figures 1.1 and 1.2, taken from Gapminder,⁵ show the very strong relationship between the Human Development Index (HDI) and gross domestic product (GDP) per capita using worldwide data for 2011. The same relationship also holds through time for individual countries.

Figure 1.1 uses a log scale for GDP per capita to make the relationship between HDI and GDP as clear as possible. Figure 1.2 shows the relationship using a natural scale for both variables. These figures clearly show a very rapid initial increase in HDI relative to per-capita GDP, demonstrating in particular the crucial importance of economic growth to social welfare in developing countries. As countries become wealthier, progressively larger increases in GDP are required to achieve a given percentage increase in HDI.

Marine fish resources represent valuable natural capital that, if exploited wisely, can provide a range of benefits in perpetuity to coastal states (resource owners), fishers, and consumers of seafood. Because of their renewable nature, fish resources have the potential to make a perennial

³ *Indispensable Ocean: Aligning Ocean Health and Human Well-Being*. Guidance from the Blue Ribbon Panel to the Global Partnership for Oceans, 2013.

⁴ Commission on Growth and Development. 2008. *The Growth Report: Strategies for Sustained Growth and Inclusive Development*. World Bank.

⁵ www.gapminder.org

FIGURE 1.1. RELATIONSHIP BETWEEN HDI AND GDP/CAPITA (LOGGED)

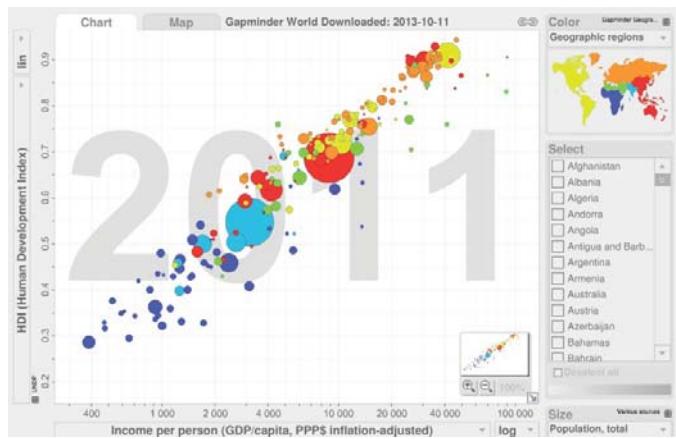
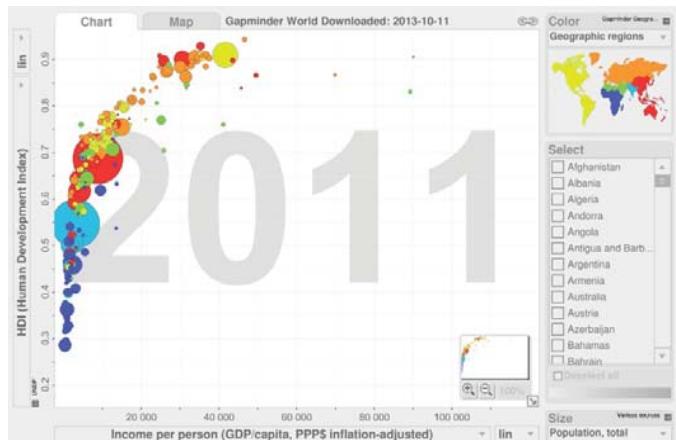


FIGURE 1.2. RELATIONSHIP BETWEEN HDI AND GDP/CAPITA (NATURAL SCALES)



contribution to economic growth through the resource rents that they can generate. This report concentrates on the role and potential of trade in fishing services in realizing this contribution. However, as will become apparent later in the report, it is difficult to discuss the role of trade without some mention of other critical dimensions of this problem.

TRADE IN FISHING SERVICES

The general proposition that trade is an important driver of economic growth is also well established. However, in the case of fisheries, it is the importance of trade in fish and fish products that has dominated the policy agenda.

For instance, in “Responsible Fish Trade,”⁶ the FAO notes that such guidelines are of importance for two reasons:

- » Fish and fish products are among the most traded agricultural and food commodities, with more than one-third of production entering international trade; and
- » Trade in fish and fish products is also very important for developing countries. Fifty percent of international trade in fish and fish products originates from developing countries. This is an important source of revenue, employment, and foreign exchange for these countries.

According to the FAO *Yearbook of Fishery Statistics*, international trade in fish commodities was around \$130 billion in 2011. Yet it is difficult to find any similar succinct statement concerning international trade in fishing services. Indeed, the value of international trade in fishing services currently remains unpublished. FAO has no remit to collect such data (Audun Lem, personal communication, 2014), nor it seems does anyone else. As with the FAO’s Code of Conduct for Responsible Fisheries, guidelines on trade focus almost exclusively on trade in fish and fish products; the only mention of fishing services is in the context that “States should not condition access to markets on access to resources.”

Numerous fishing services are, or have the potential to be, traded internationally. Such services include, for instance, bunkering and other port services offered to foreign vessels; monitoring, control, and surveillance (MCS); and research services. Although the absence of reliable data remains a hindrance, probably the most valuable category is the provision of harvesting and processing services.

Worldwide there is an apparently inexorable and irreversible move away from free and open access to fish resources and toward access regimes based around use and property rights of different kinds. As these rights become more firmly established, there is likely to be increasing interest in generating further benefits from fish resource exploitation through international trade in fishing services of all kinds, in particular harvesting and processing services.

⁶ FAO. 2009. “Responsible Fish Trade.” *FAO Technical Guidelines for Responsible Fisheries*, No. 11. Rome: FAO.

Using the standard terminology, trade in fishing services will involve the coastal state importing harvesting services from distant-water fishing nations. However, it seems important to note from the outset that a country may enter into both categories at the same time. Countries such as Senegal and Ghana, for instance, may import harvesting

services involving industrial fishers while simultaneously exporting such services through the activities of their artisanal fishers in the West Africa region. These cases also demonstrate the point that the term “distant-water” may be misleading; the distant-water fishing fleet is not necessarily located very far away.

CHAPTER TWO

APPROACH AND STRUCTURE OF THE REPORT



The approach adopted by the study was to develop an analytical review of the legal and economic principles underpinning trade in fish harvesting and processing services. This review was supported by empirical casework to elucidate actual and potential benefits and costs associated with such services. The study focused on marine fish stocks, but many of the issues are likely to be relevant to fish stocks from large inland water bodies, such as the Great Lakes of Africa.

The report is presented in two parts. The first (chapters 1 to 9) discusses and synthesizes the study findings and presents a set of recommendations for further action, whereas the second part comprises a set of nine contributing appendices.

Appendix A (Gordon Munro) comprises a detailed legal and economic review and analysis of the background to FFAs. Legal aspects focus on the UN Convention on the Law of the Sea (UNCLOS) framework concerning access to coastal-state fish resources by distant-water fishing fleets. The economic principles important to a coastal state's decision to use, or not use, foreign harvesting services are then discussed in detail. The following specific issues are considered in some detail:

- » The key area of comparative advantage;
- » The crucial role of coastal state governance arrangements; that is, the need for a rational set of exploitation arrangements within which FFAs can fit;
- » The basis on which FFAs are negotiated and agreed to;
- » Dealing with asymmetric bargaining power;
- » Dealing with principal-agent problems;
- » The need for MCS capability in order to assert genuine sovereignty over EEZs; and
- » The transition process away from FFAs with changing comparative advantage.

Appendices B through I comprise a set of case studies commissioned from a range of authors with detailed knowledge of the subject (see table 2.1) to investigate different aspects of trade in fishing services around the world. The case studies were chosen

TABLE 2.1. THE CASE STUDIES

Title	Author	Focus	Appendix
Case Study on Foreign Fishing Agreements in the Western Pacific	Les Clark	Reviews the process through which the Pacific Island countries (that is, the members of the Forum Fisheries Agency) are gradually, but surely, increasing the economic returns that they receive from their tuna resources.	B
Areas Beyond National Jurisdiction (ABNJ) Fisheries	Tom McClurg	Discusses the problems presented by fishing in the ABNJ. It complements appendix B because it uses the Western and Central Pacific Ocean (WCPO) case as an example on which to base the discussion.	C
Report on Foreign Fishing: Morocco Case Study of the Various Arrangements in Fishing Cooperation Relations	Mohammed Rouchdi	Discusses Morocco's use of foreign fishing services over the past 30 or so years, both for the immediate benefit of the Moroccan nation and as a means to develop the national fisheries sector. It also highlights some difficulties that have arisen.	D
Interaction Between Foreign Fishing Agreements and Small-Scale Fishers	Robert Arthur	Does not relate to any particular country but considers the important generic issue of how foreign fishing services may affect coastal-state small-scale fishers.	E
European Union Northern Agreements	Suzannah Walmsley	Explores the European Union's bilateral fisheries agreements in the northern hemisphere. Agreements with Norway, Iceland, and the Faeroe Islands are based on reciprocal exchange of quotas, whereas Greenland has a fisheries partnership agreement (FPA).	F
Chinese Distant Water Fishing Activities	Tabitha Mallory	Reviews the extent of China's significant DWF fishing arrangements. These have not been immune to criticism. Some issues are reviewed and suggestions are made for improvement.	G
The New Zealand Experience of Joint Venture Fishing Operations: 1977 to 2013	Philip Major	Discusses the way New Zealand has used different forms of foreign fishing services over the past few decades.	H
The Bering Sea Pollock Fishery	James Wilen	Slightly different from the other cases in that it discusses a fishery that is no longer exploited by foreign fishers. The interest in this case is to show the process involved in its transition from an essentially foreign fishery to a U.S. domestic fishery.	I

to highlight a range of issues surrounding each kind of harvesting (and, where appropriate, processing) service arrangement.

The following part of this paper provides a summary and further discussion of the legal (chapter 3) and economic (chapter 4) underpinnings of FFAs and draws on the case studies to discuss the various forms that fishing services might take (chapter 5). Several key emerging lessons are

presented in chapter 6. Although the focus of these lessons is kept on trade in fishing services, this issue is so intertwined with the general fish resource exploitation system that it is not always possible to avoid discussing more general issues at the same time.

Chapters 7 and 8, respectively, present the conclusions and recommendations of the study. This is followed by a summary of each case study (chapter 9, Report Supplement).

CHAPTER THREE

LEGAL ISSUES

In the immediate aftermath of the UNCLOS negotiations, legal analysts discussed extensively the issue of coastal state rights and responsibilities toward distant-water states and the international community in general. Two questions caused particular concern.

First, where the total allowable catch in the coastal state exceeds its harvesting capacity, that is, where a surplus exists, is the coastal state obliged to grant access to other states, including distant water fishing states, albeit subject to conditions (the so-called surplus principle)? In this regard, Munro (appendix A), following Burke (1983, 1994),⁷ argues forcefully that the relevant articles of UNCLOS (62 in particular) are in fact empty because the coastal state alone determines the total allowable catch (TAC) or equivalent and determines its own harvesting capacity.⁸ Therefore, the coastal state alone determines whether there is a surplus. There is no requirement for the coastal state to prove to the international community that a surplus does or does not exist.

Second, does the coastal state have a responsibility to manage the resource in an optimum manner, in the sense of maximum sustainable yield (MSY)? UNCLOS may also appear open to an interpretation here. In practice there is no such requirement because the relevant article (Article 61.3) states that the implementation of MSY may be “qualified by relevant environmental and economic factors.” As a result, the coastal state is under no obligation to observe or maintain a particular level of utilization above zero from a particular fishery.

In summary, the power of the coastal state to set the allowable catch is “sovereign and non-reviewable” and the coastal state is authorized to determine its own harvesting capacity in relation to the living resources of its EEZ. As Munro stresses in appendix A “it cannot be overemphasized that the coastal state is called upon to give away nothing for free.”

⁷ Burke, W. T. 1983. *1982 Convention on the Law of the Sea Provisions on Conditions of Access to Fisheries Subject to National Jurisdiction*. Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones. April 11–15, 1983, Rome. FAO Fisheries Report 293. Rome: Food and Agriculture Organization of the UN. 23–42; 1994. *The New International Law of Fisheries: UNCLOS 1982 and Beyond*. Oxford: Oxford University Press.

⁸ Professor Burke has confirmed this reading.

Putting these various points together, it is clear that a rational coastal state will only declare a surplus if it is in its interest to do so.

It is not clear, however, that this crucial conclusion is widely understood. In particular, it may be that certain coastal developing states have developed foreign fishing agreements under the misapprehension that this was a requirement of UNCLOS.

Likewise, distant-water states may interpret their role as going beyond the legal framework set out above. For instance, Rouchdi (appendix D) points out that the provisional agreement of February 28, 2011 between Morocco and the European Union had to be terminated abruptly following a negative vote by the European Parliament on the grounds of the poor benefit-cost ratio for the EU and the excessive exploitation of Moroccan demersal stocks. Although the former reason is certainly the EU's

responsibility, the latter seems to go beyond its remit as established by UNCLOS. In any event, the EU Parliament may define sustainability requirements that it wishes to see respected, but it should be clear that these do not derive from UNCLOS. Distant-water states do not have responsibility for the TAC or the equivalent of coastal states.

Given the potential importance of trade in fish harvesting services and the likelihood that such trade may increase in the future as use rights become more firmly established and as efforts to deal with illegal fishing bear fruit, it seems essential to clarify, even so many years after UNCLOS came into force, the legal framework within which such trade occurs.

It would be useful, therefore, to undertake an in-depth legal review, followed if appropriate by a technical workshop and mini-conference, with the aim of producing a definitive reading of UNCLOS using Burke's analysis as a starting point.

CHAPTER FOUR

ECONOMIC PRINCIPLES



Taking the position that there is no requirement for a coastal state to use foreign fishing services (harvesting or processing), Munro (appendix A) sets out the economic arguments that may justify their use.

Notwithstanding the discussion above, UNCLOS (Article 62[1]) does provide a useful starting point for the discussion because it requires coastal states to “promote the objective of optimum utilization of the living resources within the EEZ.” Unfortunately, analytical progress can only be made if the term *optimum* is defined, and this term can be and is interpreted differently by different people, depending in large part on how they perceive the benefits of fish resource exploitation. The issue of “benefits” and their interpretation is discussed fully in section 6 below.

For the purpose of economic analysis, it is assumed that fish resources are the property in some sense of all citizens of the coastal state and that optimum utilization involves ensuring that this natural capital makes the maximum contribution to the state as a whole through time. Many national fisheries laws include an article establishing precisely such ownership and identifying the state as having a stewardship or custodian role on behalf of its citizens.

Under these conditions, it would seem that the decision of whether to use foreign fish harvesting services is relatively straightforward: do so if they increase the economic return from fish resource exploitation.

However, the net economic returns obtained from foreign fishing, and especially the sustainability of these returns, will depend crucially on the way in which the coastal state exercises its stewardship role. If the coastal state leaves its fish resources under free and open access, or common pool, arrangements, then these resources will not produce their main economic return, which is the resource rent.

Somewhat paradoxically, the Moroccan case study (appendix D) and the experience of other developing coastal states tends to show that under free and open access conditions, the use of foreign fishing services may be the only way to generate substantial

financial benefits from fish resource exploitation for the citizens of the country as a whole through the payments made to the national treasury. The problem is that such financial returns are insecure because they do not depend on effective fisheries management. Moreover, if foreign fishers have lower fishing costs or greater fishing revenues than domestic fishers, then the overall level of fishing effort will tend to increase, given the ineffective fisheries management arrangements.

For the moment assume that, as is increasingly the case around the world, the coastal state has in place a set of institutional arrangements that encourage the economically rational exploitation of the fish resources. Under these conditions, why use foreign fishing services?

The answer is that if foreign fishers have a comparative advantage, it will pay the coastal state to import their services. Such a comparative advantage could arise for many reasons throughout the fish value chain. For instance, foreigners may have a comparative advantage

- » In fish harvesting due to skill or access to capital enabling them to operate more efficiently in capital-intensive fisheries;
- » In processing, for example, due to the scale of operations; or
- » In marketing, for example, due to market access, proximity to customers, or branding.

An interesting question is the extent to which rents will be extracted at the level where they originate in the value chain. It seems likely that a substantial proportion of rents will emerge at the harvesting level because rents at other levels will increase the demand for fish and hence the demand for fishing opportunities. Assuming that coastal states have rational fisheries management systems in place, the increased demand for fishing opportunities will push up the price of rights and hence rents at that level. However, as part of their corporate strategies, fishing companies will attempt to move rents up the value chain toward elements over which they may have more control, for instance branding of products.

There is a dearth of studies of comparative advantage in fisheries, especially at the practical level, which would inform fisheries policy. However, the likelihood, borne

out by the case studies (for example, Western Pacific and Morocco), is that the coastal state will be in a position to gradually capture an increasing proportion of the potential rents throughout the value chain through its fish-harvesting arrangements. However, the proportion of rents that the coastal state should seek to obtain is not simple to determine. The difficulty is that rents are not some fixed amount awaiting collection but a dynamic amount that can be grown over time in various ways on both the revenue and cost side of the activity. If the coastal state seeks to take too high a share of the rents, it runs the risk of stifling innovation in its fisheries and thereby missing out on future rent growth. This is of course a general problem that does not only affect foreign fishers.

Many coastal states include objectives in their fisheries policy to develop, for instance, product value addition locally because of the supposed multiplier benefits, but without ever considering whether they have or can generate a comparative advantage in the activity and whether the gains made will be greater than the rents that are or could be extracted.

In essence, the case for using foreign services depends fundamentally on a *free trade* vision. Various arguments can be and are raised against this vision, but on close examination their aim is generally to protect the domestic fishing industry, or specific parts of it, against foreign competition.

If foreign fishers have a comparative advantage, then the potential exists for gains from trade to be made. The extent of the gains will depend on the extent of the comparative advantage.

Comparative advantage lies at the heart of international economics, which itself has been one of the key driving forces in the development of economic theory over the past few centuries (dating back to the writings of Adam Smith in 1776 and even well before). One important point about comparative advantage in, say, fishing is that it depends not only on the relative performance of country A compared to country B but also on the relative performance of fishing in country A compared to other industries in country A (and likewise for country B). One practical problem is that fishing tends to be managed by sectoral line ministries

whose main preoccupation, understandably, is to develop the sector under their charge. For this reason, arguments such as “we must reserve our national resources for our national fishers” and “the development of national fisheries will produce far more value-added locally than will foreign fishers” are commonly found. Such arguments miss, however, the key insight of comparative advantage, which is that even if country A has a fishing industry that is more efficient than country B, it may nonetheless still be profitable for A to import fishing services from B if A is even more efficient in other sectors relatively or comparatively (hence the term *comparative advantage*).

Leaving sectoral development to line ministries is a dangerous strategy for a country, and not just for fishing. There is a key need to consider how different sectors fit into the overall macroeconomic strategy of the country given its comparative advantage. In most sectors of the economy, the decisions about who should produce what are left to the “market.” One of the problems in fishing has been the absence of a market in fishing rights, which has made it difficult to tell exactly who should be producing what.

Comparative advantage then will determine the extent to which potential gains from trade in services (and also in products) are available. The realization of these gains and their distribution between parties will depend on the precise nature of the foreign services and the institutional context in which they are used. Different economic frameworks may be required to analyze the distribution of gains depending on the institutional arrangements.

In line with the overall aims of this study, the analysis focuses on the situation concerning developing-country coastal states. In that case, a useful way to explore the issues determining the terms of trade between partners is to use principal-agent analysis. This kind of analysis is outlined in box 4.1 and discussed more fully by Munro in appendix A.

The analysis assumes that the coastal state is the principal using distant-water fishers as its agents precisely because it has a comparative advantage in some aspect of fishing (harvesting, processing, or branding). The principal sets the institutional and economic framework within

BOX 4.1. PRINCIPAL-AGENT ANALYSIS

The principal (a person, a firm, an institution, or a state) wishing to see undertaken certain tasks that it is unwilling, or unable, to undertake itself obtains the services of agents. The owner of farmland, for instance, may use tenant farmers. Similarly, coastal states are principals using foreign fishers as their agents.

Principal-agent analysis is widely used in economics. A strict hierarchical relationship is assumed to exist in which the principal chooses an incentive scheme (the terms and conditions of access to the coastal state EEZ) that will apply to the agents. This scheme, along with actions taken by the agents, determines the economic returns to both the principal and the agents. The principal faces the basic constraint that the agents must receive some minimum return if they are to provide their services.

The “first-best” situation for the principal would occur if it could strictly minimize economic returns to the agents by suppressing, contractually and enforceably, any actions of the agents that are contrary to its best interests. The agents, of course, have the opposite interests. The first best situation provides a benchmark.

In the real world, the principal will lack the power or find it too costly to achieve this first-best situation, and a second-best situation will emerge wherein the agents have some freedom of choice. The principal must rely on influencing the agents’ choices of actions indirectly through the incentive scheme. The difference between the first- and second-best outcomes is called the agency cost. It reflects the fact that the principal’s incentive scheme cannot compensate fully for the principal’s inability to monitor perfectly the actions of the agents. Principal-agent analysis is directed toward the problem of minimizing the principal’s agency cost, which in the real world can never be eliminated fully.

which the agents operate. The aim of both parties will be to maximize their returns. In the case of the principal, this might be to maximize its share of the resource rents. However, the precise interpretation of this objective is complicated.

First, as a practical matter, the principal is extremely unlikely to be able to extract all of the resource rent. But even it could, should it attempt to do so? As mentioned above, resource rent is dynamic; there is not some fixed amount of rent in the oceans waiting to be harvested. Instead, the rent can be increased over time as a result of

improvements on either the revenue or the cost side of the equation. These improvements will generally originate with the private sector, including foreign fishers, and they clearly need to be given some incentive in order to make the investments necessary to seek out extra gains. If all gains are simply taxed away, there will be no incentive.⁹

In addressing this problem, it might be useful to draw on the managerial economics literature, especially concerning so-called “satisficing” approaches, through which companies gradually improve their profit performance over time through a process of objective setting and revision. A similar approach might be useful for managing the exploitation of fish resources.

Another difficulty for the coastal state as principal is that it will face the classic principal-agent problem of uncertainty and asymmetric information. For instance, its distant-water fisher agents will have far better knowledge of their harvesting, processing, and marketing costs than the coastal state can ever hope to have.

A related problem is that many coastal states, especially developing countries, do not have well-developed monitoring, control, and surveillance systems. As a result, they have to attempt to implement systems that will generate voluntary compliance behavior on the part of the agents. Under such circumstances, agency costs can be expected to be high.

The aim for the principal, therefore, is to find ways to reduce the agency costs. The ways in which this might be done depend on the particular circumstances.

The Moroccan case study shows that a coastal state can do this by gradually improving its negotiating strategy through experience. The Western Pacific case study shows the benefits that developing coastal states can achieve by cooperating with one another rather than, or perhaps in addition to, improving individual coastal state performance. The key feature of Pacific success over recent years has been the ability to devise and sustain effective cooperative arrangements.

Some insights into the conditions for successful cooperation are offered by game theory (of which principal-agent analysis may be considered to be a sub-set). Appendix A presents a detailed analysis of the Western Pacific case in terms of cooperative game theory. A number of key lessons emerge concerning the economics.

The difficulty of ensuring sustainable cooperation increases with the number of participants. Where more than a few participants are involved, subcoalitions become an important part of finding a solution. According to the compensation principle, it is the player with the most at stake who should dominate and then be prepared to compensate the other players. This is in effect what happened in the Pacific Islands region through the formation of the Parties to the Nauru Agreement (PNA) subcoalition.

Under PNA leadership, the Pacific Island countries (PICs) agreed to Harmonized Minimum Terms and Conditions for Foreign Fishing Vessel Access, established a foreign vessel register on which distant water vessels must be in good standing and otherwise risk being banned from all member coastal state EEZs, implemented compliance provisions that required distant water governments or boat owners associations to police their vessels while in the PIC EEZs; and have now established a vessel day scheme. In this way, they have managed gradually to reduce agency costs and turn the terms of trade in their favor. It is anticipated that this process will continue.

Although the leadership role played by the PNA was important, success came through the support given by all member countries of the Pacific Islands Forum Fisheries Agency. The secretariat of that agency has played, and continues to play, a vital role in the implementation of the initiatives.

In summary, economic analysis is based on an objective of maximizing the economic returns (broadly defined) from the fisheries natural capital for the coastal state through time. Foreign fishing activities may enable the coastal state to enhance such returns. However, a key condition is that the state has the capacity for the economic management of its fish resources. If it does, the coastal state as principal

⁹ The question raised is a classic principal-agent one.

may seek to import the services of distant-water fishers as its agents, provided that these fishers have a comparative advantage.

Principal-agent analysis offers some insights for foreign fishing arrangements, in particular that the principal can seldom, if ever, monitor its agents perfectly. Some “slippage” is all but inevitable.

The degree of success that the coastal state can achieve in terms of the benefits it obtains from foreign fishing

will depend in part on its relative bargaining power. This may appear to place developing coastal states at a serious disadvantage. However, the case studies and in particular the example of the PICs demonstrate forcefully that such states can, in fact, develop substantial bargaining power, provided that their resource management capacity is adequate. The example also demonstrates that, where a group of coastal states share fish resources, effective resource management cooperation among them is the fundamental prerequisite to achieving significant bargaining power.

CHAPTER FIVE

COMMON FORMS OF TIFS

Having set out in general terms the economic arguments in favor of importing fish-harvesting services, this section discusses the form that these services might take.

A first case that must be mentioned, although it is not developed further in this report, is trade at the level of an individual. Fishing companies in developing countries can find it profitable to engage in international trade in fishing services by employing, for instance, a foreign skipper or engineer who may have skills unavailable in the domestic market. Similarly, they may find it attractive to utilize foreign crew members, either because of unavailability or cost on the national market.

Other than such individual-based service trade, such trade occurs mainly in one of three frameworks:

- » Foreign fisheries access agreements (government to government);
- » Joint ventures; or
- » Chartering of foreign fishing vessels.

FOREIGN FISHERIES ACCESS AGREEMENTS

Much of the international debate about foreign fishing has revolved around these agreements, which have not always received a good press. Orellana (2008)¹⁰ summarizes some of the main issues. He points out that although these arrangements may be a significant source of income for some developing countries, nonetheless “it is clear that developing countries do not always get the best end of the access arrangement bargains.”¹¹ He argues that the coastal state may receive only a fraction of the actual resource value and “more than a few access arrangements have led to the depletion of host country stocks.” Foreign fleets may contribute to overfishing, especially by discarding catches that are not part of the access agreement. Developing countries may have weak monitoring control and surveillance. Agreements may include strategic stocks, for instance due to their importance for domestic fishers or for domestic food security.

¹⁰ Orellana, M. 2008. “Towards Sustainable Fisheries Access Agreements.” Geneva: United Nations Environment Programme.

¹¹ Ibid, p. 1.

TABLE 5.1. EXAMPLE OF HYPOTHETICAL ACCESS AGREEMENT AND ACCESS FEE STRUCTURE

	For Coastal State			For Distant Water State	
	Cost/Benefit	Net Return	Implicit Payment	Cost/Benefit	Net Return
Fished by CS domestic fleet	-3	1	n.a.	n.a.	n.a.
Fished by DWS under access agreement	n.a.	n.a.	-1	3	n.a.
Fee Scenario A	1	0	0	-1	2
Fee Scenario B	2	1	1	-2	1
Fee Scenario C	3	2	2	-3	0

Note: Arbitrary values; assumes revenue from fish sale = €4/kg. n.a. = not applicable.

Before going further, it is important to clarify what kind of trade foreign fisheries access agreements represent. It is easy to think that such agreements represent an export of fishing opportunities. Orellana gives what is probably the standard definition when he says that “Fisheries access agreements can be described as a form of trade, where a country with fisheries resources in its Exclusive Economic Zone sells fishing rights to another country.”¹² At first sight, there is much to be said for this description because of the apparent direction of the cash flows: cash is flowing into the coastal state, which must therefore be exporting something.

In fact, however, appearances are very deceptive in this case because, as Munro argues conclusively in appendix A, the coastal state is actually importing fish-harvesting services from the distant-water country. The payment for the import, however, is implicit and disguised because it is part of the gains from trade that the coastal state leaves with the distant-water fishers. The failure to appreciate that foreign access agreements are a form of import (coupled with the failure to collect data on trade in fishing services) could mislead policymakers about how best to utilize the coastal state’s scarce fish resources.

In brief, Munro’s argument is as follows. Although it may appear that the (foreign or distant water state) exporter of services is paying the (coastal state) importer, it is crucial to distinguish between the explicit and implicit payments for imported services. Consider the simplest case of a single

fishery within a coastal state EEZ, the output of which is entirely exported at a world price of €4 per kilogram (see table 5.1). Suppose the coastal state faces harvesting costs of €3 per kilogram, whereas a distant water state can harvest the same resource at a cost of only €1 per kilogram.

If the coastal state insists on using its own harvesting services, then the net gain—the resource rent—from its fish resources is limited to €1 per kilogram. If, however, the coastal state decides to use (import) foreign fishing services, the resource rent would be €3 per kilogram because of the distant water state’s lower harvesting costs.

However, the coastal state will not receive all of the €3 per kilogram because it must pay for the harvesting services that it chooses to import. This payment is made implicitly or indirectly through the negotiated access terms. Suppose for example that the access fee is set at €2 per kilogram. In this case, the gains from trade will be split equally between the two parties.

The harvester has a gain of €1 per kilogram (€4 revenue minus €1 fishing cost minus €2 access fee), and the coastal state also gains €1 per kilogram (it now receives €2 per kilogram access fee but must deduct the €1 per kilogram net return that could have been made by domestic fishers).

In other words, the coastal state is implicitly paying the distant water operator €1 per kilogram for its harvesting services. This is the effective cost of importing foreign fishing: it is the share of rents left with the foreign fishers as a result of the bargaining process to set access fees.

¹² Ibid, p. ix.

The range of possible access fees is from €1 to €3 per kilogram (table 5.1). At values below €1 per kilogram, the deal is no longer of interest to the coastal state, and at values above €3 per kilogram, it is no longer of interest to the distant water fisher.

The access fee charged thus will determine the terms of trade, which in turn determine how the gains from trade are divided. As outlined above, the terms of trade will depend on the negotiating strength of the two parties in a principal-agent relationship.

If access agreements are just a form of import, two questions immediately follow: Is it worth importing at all, and if so, what is the best form? In answering these questions, coastal states need to consider fisheries access agreements against the alternatives. The case studies provide some insights for policymakers in different situations.

New Zealand made some use of this type of agreement during the period immediately following the declaration of its EEZ, but it quickly moved toward joint-venture and charter arrangements rather than government-to-government agreements.

Morocco and the Western Pacific case studies give some insight into the coastal state issues surrounding bilateral agreements, whereas the China and EU northern agreements discuss things from a distant-water perspective.

The China case study notes that, like other bilateral agreements, China's agreements have been criticized for their alleged lack of transparency and association with corruption, inequitable benefit sharing, poor flag-state control, and conflict with small-scale and artisanal fisheries. Nonetheless, it is clear that these agreements do provide benefits to the coastal states involved. The main issue seems to be, therefore, how to improve their performance, and the case study reviews some suggestions as to how this might be achieved.

Most of the criticisms of bilateral agreements are manifestations of the principal-agent problem (discussed above and in more detail in appendix A). In line with the theory, the case studies here tend to show that, although there are genuine difficulties, nonetheless the developing countries can learn through time (and from one another) how to

address these issues so as to gradually improve the performance of agreements from their perspectives—that is, to turn the terms of trade in their favor. There seems little doubt that the coastal states, especially when they cooperate, are in a strong position to achieve such improved terms of trade, as is demonstrated by the Western Pacific case, although the process may be long.

The Morocco case study is particularly instructive. It is clear (appendix D) that bilateral fishing agreements, particularly but not only with the EU, have tended to be interpreted in the way described by Orellana above; that is, Morocco perceived that it was granting fishing opportunities to foreign fishers. Perhaps as a result, there is a tension in the interpretation of the benefits. Rather than being clear that foreign fishing services were just one among a number of ways to exploit Moroccan fish resources and that importing them increased returns to the resource owner, there is a feeling always that national fishers are being disadvantaged. Fishing opportunities are being given to foreigners instead of nationals.

This tension comes through clearly in the case study appendix and doubtless represents the concerns faced by policymakers. Morocco obtained substantial benefits from its bilateral access agreements with the European Union over the period from 1988 to 1999, benefits that it was able to increase gradually. During the first agreement, Morocco received an annual return of some €70 million, which represented approximately 15 percent of the value of the catch made under the agreement. By the time of the third agreement, which ran until 1999, Morocco had managed to increase the annual return to €125 million, which represented more than 34 percent of the lower value of catch included in this agreement.

Notwithstanding this success, Morocco decided to end the agreement in 1999 because it was believed that foreign fishing was a major cause of overexploitation and that it was reducing the profitability of domestic fishing companies. Subsequent experience in Morocco, and the experience of other countries (such as Alaska), suggests that this may have been at best a partial explanation.

The clear benefits available from foreign fishing were tempered by the perception that these benefits came at a cost to the national fleet (and to resource sustainability). In the

end, benefits in terms of the structure of fish exploitation systems were prioritized (implicitly at least) over those relating purely to the exploitation of fish resources. Had foreign fishing been perceived as an import of fishing services within the framework of an overall fishery management system, the conclusions might have been different, because there is no doubt that extracting 34 percent of catch value as a pure rent is a good performance on any measure. At the very least, one might have expected substantial debate about which set of exploitation arrangements best suited Moroccan national (rather than national fishing) interests, but there seems to have been almost no such debate at the time of the ending of the agreement.

In the Western Pacific, as the Pacific Island countries declared EEZs, most adopted bilateral access agreements with governments or fishing associations as their key instrument for managing foreign fishing. In addition to the economic gains, the PICs chose these agreements as a way of securing the recognition of coastal state jurisdiction and rights and as a way of achieving improved compliance. Bilateral agreements still continue, but their advantages appear to be declining. Many PICs are moving, through the vessel day scheme, toward management systems within which domestic and foreign vessels come under the same arrangements, although fees and other factors may be different for foreign vessels.

The EU northern agreements are a particular set of bilateral arrangements based on the reciprocal exchange of fishing opportunities. They may be appropriate, given the shared stocks in which fishers of both parties to the agreement have an interest. The reciprocal nature means that the parties have the same responsibilities and the costs are equally shared between the parties. However, the benefits go directly to the fishing industry involved in catching the quotas provided, rather than there being a financial contribution that may or may not be used to benefit the fishing sector and coastal communities or indeed make a wider contribution to the resource owner.

JOINT VENTURES

One option that has been widely used is to import fish-harvesting services by requiring foreign harvesters to team up with domestic partners. As with foreign access agreements, joint ventures have not always been viewed positively.

As noted by Wilen (appendix I), “A joint venture (JV) is an agreement between two or more parties to combine equity and other resources to achieve some task. To be successful, a JV must be able to accomplish what the parties could not accomplish independently. . . JVs are generally temporary and often face difficulties determining how to organize joint resource use and share the profits.”

One influential experience relates to the failure of a joint-venture approach used in the so-called second-generation fisheries agreement between the EU and Argentina in the 1990s. This experience is discussed in appendix A. Although in retrospect it is clear that Argentina would have been better off had it not entered into this agreement, the reasons for the failure seem to lie not in the joint ventures themselves but in the inadequacy of the fishery management system within which these ventures operated. Total allowable catches were effectively uncontrolled, leading to the mining of the fisheries natural capital, which for a while gave the impression of an excellent economic performance until the severe overexploitation of both hake and blue whiting stocks revealed the truth.

Despite this kind of negative experience, the case studies show how coastal states can benefit from joint-venture arrangements.

JVs were a key instrument in Alaska, facilitating the transition from foreign-dominated to domestic fisheries from 1976–89. The early JVs were simple contractual arrangements whereby foreign floating processors purchased roundfish from U.S. catcher vessels at some negotiated prices. But as total allowable catch systems were implemented, JVs became important as a way to receive an allocation of quota.

An important benefit of JVs came from Russian fishermen teaching the U.S. fishermen how to tow in the midwater for hake, how to offload cod ends, how to time harvest so fish condition was optimal for processing, and how to match harvesting throughput with processing capacity. This knowledge then spread to the Alaskan pollock fisheries because a number of the JVs were involved in both hake and pollock fisheries.

In New Zealand, domestic fishing capacity at the time of EEZ declaration was inadequate to take full advantage of

the new opportunities and joint ventures were used as a way of providing the necessary capacity.

In the Western Pacific, the first joint ventures involved PIC governments as a partner in processing operations or vessels. The experience was systematically negative, with some governments being involved in operations that incurred substantial losses. However, the development of the vessel day scheme has encouraged some States to return to joint ventures for purse seine vessel operation, attracted by the apparent high returns offered by some boat owners in an effort to secure stable access in the face of the increasing control of the purse seine fishery. Although the results seem to have been good in some cases, there is not universal support for such arrangements and the Forum Fisheries Agency has been requested to undertake a review of their benefits and costs.

Morocco used joint ventures as a way for its fishers to learn about fishing techniques and markets in new fisheries, especially cephalopods. There are still 64 joint ventures, mostly involving Spanish and Chinese partners. However, the overall assessment is that joint ventures have been less successful in the Moroccan case than charters because the JVs have not had the expected impact in terms of knowledge transfer or local value added. Products are still mostly exported frozen whole, and most of the gains seem to go to the distant water fishers.

CHARTERING

Chartering may cover a number of different arrangements but generally refers to either a demise (or bareboat) charter or a time charter. The difference is that a demise charter involves only the vessel (including plant and fishing gear), whereas a time charter involves the vessel and its crew as a package. The type of charter may have important legal implications (see appendix H for a discussion in the New Zealand case).

Chartering is used in the Western Pacific and includes a number of arrangements, from demise charters to reflagging to simple contract arrangements with local processors, brokers, or agents.

Some states, such as Fiji and Tonga, see charters (and joint ventures) as being more effective for domestic development

than access agreements. And even those using access agreements to obtain long-term revenue streams, such as the Federated States of Micronesia (FSM), Kiribati, and Tuvalu, have aimed at developing charters as one means to enable domestic tuna development.

Morocco made widespread use of chartering and believed that it was a more successful arrangement than joint ventures. It allowed national fishers to master fishing techniques and technologies and also enabled them to position their products on world markets. In the early days of the development of the national fleet, Soviet motherships were also chartered to provide markets for national fishers of small pelagics. Later charters of fishing vessels were authorized in order to stabilize supplies to processing factories onshore. These operations also enabled national fishers to familiarize themselves with the different fishing vessels used in these fisheries by foreign fishers.

In New Zealand, also, under the individual transferable quota system, rights holders have made extensive use of chartering of foreign vessels almost entirely on a time charter basis, where the vessel and its crew are chartered as a package.

Some New Zealand companies currently benefit from preferential access to the Korean and Japanese markets by virtue of their use of foreign charter vessels flagged to those states. Catches can be exported to those countries as domestic product, thereby avoiding duty and quota restrictions. This is particularly beneficial for New Zealand companies when it comes to low-value species like jack mackerel and squid.

The evidence suggests that operating costs between charter vessels and domestic vessels are very similar except in the cost of labor and the benefits associated with privileged market access. Hence, this is the source of comparative advantage.

Having access to foreign vessels, either through a charter arrangement or by selling their annual catch entitlement to a New Zealand company chartering a foreign vessel, gives quota owners a range of options for maximizing profits from the use of their quota. Some smaller businesses decide to use foreign charters because they do not

have the funds to make the capital investment needed to purchase a vessel.

Foreign chartering also gives companies operational flexibility, including the ability to increase or reduce catching capacity without significant capital investment or incurring the costs associated with decommissioning excess capacity. Along the same lines, some EEZ fisheries require specialist equipment and have only a relatively short season when it is profitable to catch a particular species of fish. In these situations, chartering allows companies access to these fisheries without requiring them to purchase a vessel that cannot be used for the remainder of the year or in other fisheries.

Some of the foreign companies that charter vessels to New Zealand companies have large global distribution

networks. The use of charters may provide access to these networks for New Zealand companies for catch taken not only by the chartered vessels but also by domestic ones. And business arrangements associated with the use of chartering have facilitated investment by New Zealand seafood companies in offshore processing ventures in Asia.

Despite its advantages, chartering has also raised some issues in New Zealand. The most important of these concern accusations of working conditions for crew and vessel safety. As a result, New Zealand is in the process of passing legislation that will require all chartered vessels to reflag to New Zealand from May 2016. This will ensure that chartered vessels comply with New Zealand labor, safety, and fisheries rules and standards.

CHAPTER SIX

LESSONS LEARNED



This section draws out the key lessons that emerge from the legal and economic analysis and from the case studies. Although the focus of these lessons is on trade in fishing services, this issue is so intertwined with the general fish resource exploitation system that it is difficult to avoid discussing more general issues at the same time.

IMPORTANCE OF THE BENEFIT FOCUS

Economic analysis proceeds from an assumption that the policy aim is to maximize the sustainable returns from fish resource exploitation to coastal state citizens in general. The key element of these returns is the generation of sustainable resource rents, broadly defined.¹³ Achieving such an aim requires the design and implementation of a set of institutional arrangements (the “management system”) that will provide the necessary incentives. There is no unique system, in either time or space, that will do this; each coastal state must find the solution that best suits its fisheries at different times. The case studies offer some insights into the kinds of systems that work.

What is clear is that success requires that fish resource wealth, in the sense of rents throughout the value chain, be placed at the heart of fisheries policy. Such wealth is a recipe for heaven or hell in fisheries exploitation depending on the management system. Where institutional arrangements are ineffective, it is the implicit wealth of the resource that drives overexploitation, which is why it is the most valuable resources that are overfished first. On the other hand, with appropriate institutional arrangements, fish resource exploitation is capable of generating substantial amounts of wealth in perpetuity.¹⁴

¹³ The definition of *resource rents* throughout this report includes both nonmarket and market benefits

¹⁴ The discussion here focuses on fish resource wealth because this is central to understanding first why fish resources are overexploited and second what is the potential contribution that fish resources might make to economic growth. Evidently fish resource exploitation generates other benefits such as health. A key policy question is to evaluate the extent to which one set of benefits may need to be traded off against another or, indeed, whether benefits can be achieved simultaneously. Health and wealth benefits do not seem to be in competition—both depend on sustainable stocks, although tension may exist between exporting and direct food security. However, unless the potential wealth benefits are recognized and estimated, it is impossible to know what trade-offs are actually being made, a problem that seems to have afflicted the development of fisheries policy in many countries around the world.

It must be stressed that observing the crucial role played by fish resource wealth in the exploitation of fish resources says nothing about who should receive the wealth. The point is simply that if this wealth is ignored, the natural capital that the fish resources represent will tend to be mined rather than producing a sustainable contribution to economic growth.

Observation of fisheries policy (and related policy documents, such as poverty-reduction strategy papers) around the world suggests that the aim of wealth generation underpinning economic analysis is not unreasonable. The intention of fisheries policy often is to maximize the wealth benefits of fish resource exploitation; it is achieving the result that is the difficulty. For instance, fisheries policy almost everywhere aims to improve product quality as a way of increasing product value addition. The aim is to increase either fish prices or the return from fish landings, for instance by reducing post-harvest losses. If countries are not interested in the wealth potential of their fish resources, why would they bother with such objectives?

Such policy objectives are generally uncontroversial but, unfortunately, although they make sense taken on their own terms, their ultimate impact depends crucially on the nature of the fisheries management system in place. In particular, if the access regime remains free and open (or if it corresponds to “regulated open access”), then we enter the realm of second best. In this case, these measures will likely worsen outcomes in the fishery because greater profits will attract more effort, worsening the condition of fish stocks.

There is a need, therefore, for education concerning the full range of benefits potentially available under different institutional scenarios and especially the “investable surplus” that fish resources are capable of generating that can be used to fund economic growth elsewhere in the economy.

The case studies demonstrate that where rights exist, there is likely to be interest in trading fishing services to increase the benefits generated from fish resource exploitation. In that case, trade will occur at the level of the rights holder, as is the case in New Zealand, for example, with chartering.

However, although rights-based systems are developing around the world, many fisheries remain under ineffective management regimes. As mentioned above, some trade may occur at individual level, but otherwise trade is likely to depend on some kind of government arrangement.

In this case, the decision of whether to make use of foreign fishing, and if so to what extent, will depend crucially on the way in which the coastal state policymakers perceive the benefits of fish resource exploitation.

Some governments may still focus on economic benefits in financial terms, and in this case they may negotiate access agreements with foreign governments to provide a framework for the importation of fishing services from foreign fishing companies. There is a big difference, however, between this arrangement and financial returns resulting from effective fisheries management. In the latter case, the returns represent the resource rents, whereas in the former case, they may have nothing to do with improved fisheries management.

More frequently, it seems that governments focus on the economic impacts of the fishing activity itself, with the focus on developing domestic employment, local product value addition, incomes and livelihoods, and so on. In this case, policy will focus on those directly involved in the activity (especially fishers, but also processors and related groups) as the primary beneficiaries rather than the coastal state populace at large as the resource owner.

In this case, importing fish-harvesting services may be perceived negatively because such services will be seen as competing with domestic alternatives. Taking an example from outside of the case studies, within the EU fisheries policy, at least until recently, benefits have been interpreted by EU member states in terms of their fleets’ activity. The United Kingdom, for instance, tried unsuccessfully and expensively to keep Spanish fishers out of U.K. waters because it perceived the benefits obtained from exploitation of its share of EU fish resources purely in terms of the activities of its fishers. The arrival of Spanish fishers was seen to undermine these benefits rather than representing an opportunity to generate greater returns to the United Kingdom from its fish resources, one reason being

the lack of any mechanism by which these greater returns could materialize.

Perhaps for similar reasons, the EU has negotiated access agreements with northern states (see appendix F) using essentially bartering of access to different fish stocks because the main requirement is to maintain the activity of fishing fleets, this being perceived as the main, if not only, benefit of fish resource exploitation.

And, as discussed in appendix D, Morocco ended its fisheries agreement with the EU in 1999 despite the very large financial benefits going to the country at large through the financial compensation paid to the Moroccan treasury because foreign fishing reduced the opportunities for domestic fishers.

If there is to be a meaningful debate about fish resource exploitation types, including foreign fishing, a first requirement is to be absolutely clear about the benefits upon which attention is focused, distinguishing in particular economic benefits from economic impacts.

While economic analysis considers the impact of fish resource exploitation on an economy-wide level, other analyses may focus purely on the fisheries sector itself, and yet others may look only at one subelement of the fish resource exploitation system, focusing on one subgroup of fishers (and their communities). For instance, there is much interest at present in small-scale fishers or small-scale fishing.¹⁵

If the intention is to favor particular groups, the New Zealand and Alaska case studies show how, if a use-rights system is in place, some use rights can be allocated to disadvantaged groups (Maori and native Alaskans in these cases), allowing them to benefit from fish resources without having necessarily to be fishers or part of a fisher household—that is, the benefits can be shared more widely. In the case of New Zealand, the realization of

their benefits may involve chartering foreign fishers. In Alaska, following a long period of domesticating the activity, it seems less probable that foreign services will be used in the immediate future. These are both developed-country examples, and developing countries may not have the necessary institutions to achieve similar goals in the same kind of way.

One possible approach to address this difficulty that has been suggested is to leave access to fish resources free and open.¹⁶ Such an approach may perhaps be preferred in certain places at certain times but does not provide a general recipe with which to build fisheries policy. One problem is that leaving fish resources open will of course attract the poor, this being the aim of the policy. As pointed out by MacKenzie¹⁷ some time ago, under these arrangements fishers are not poor because they are fishers, they are fishers because they are poor. An element of circular reasoning may then be injected because calls may then be made to favor small-scale fishers in policy development because they are among the poorest of the poor and something must be done to alleviate their poverty. Yet this is an intended consequence of another dimension of policy. Care must also be taken not to underestimate the power of small-scale fishers to overexploit fish stocks, as shown by the Moroccan case study. Finally, using free and open access to fish resources as a solution to poverty clearly limits that solution to those who are involved in fishing. The decision not to maximize the value of the fish resource means that there is no way for other, nonfishing poor people to benefit from fish resources (other than as consumers). This opportunity cost needs to be taken into account in fisheries policy.

If a coastal state decides that it wishes small-scale fishers and their communities to be among the primary beneficiaries of fish resource exploitation, it is better to seek to develop the institutions that would enable this to be achieved on a sustainable basis rather than to rely on free and open access to the fish resource.

¹⁵ Analysis of this subgroup often refers to “small-scale fisheries.” This is a very misleading term, however, with potentially adverse implications for fisheries policy, for instance because it gives the impression that there is a set of fish resources exploited on a small-scale level that can be managed independently, whereas in most cases small-scale fishers exploit only the fringes of fish stocks, at least in the marine context.

¹⁶ Béné C., B. Hersoug, and E. H. Allison. 2010. “Not by Rent Alone: Analyzing the Pro-Poor Functions of Small-Scale Fisheries in Developing Countries.” *Development Policy Review* 28 (3): 325–58.

¹⁷ MacKenzie, W. C. 1979. “Rational Fishery Management in a Depressed Region: The Atlantic Groundfishery.” *Journal of the Fisheries Research Board of Canada* 36 (7): 811–26.

CAPACITY BUILDING

The issue of human and institutional capacity development is critical for coastal states.

In the Western Pacific (appendix B), when the PICs first began negotiating with foreign fishers, in effect the only policy open to them was to legitimize fishing that was happening in their waters anyway and secure some benefit from it. Since then, very substantial improvements have been made in national, regional, and subregional capacities, both human and institutional. As a result, most PICs now have substantial latitude in the way they manage fishing in their waters, their relations with foreign vessels, and the way in which they use the various arrangements. But even with such progress, especially for smaller PIC administrations, human resource and institutional constraints remain the key factors limiting their benefits from foreign fishing and the exploitation of their tuna resources more generally.

The Alaska case also demonstrates the importance of institutional development at two levels: first, in terms of the legal framework in order to achieve the goal of domesticating the fishery, and second, in terms of exploitation arrangements in order for the newly domesticated industry to deliver the anticipated benefits.

In seeking to improve returns from foreign fishing to all parties, it is important that capacity-building efforts to improve the skills should focus not only on host countries but also on DWF nations. For instance, Chinese fishers may have different skill sets compared with fishers from other DWF nations. They may face language barriers and other capacity challenges related to logbooks and observer knowledge. Improving awareness would contribute to improving sustainable fisheries management.

But perhaps the most crucial element of capacity building relates to the need to develop effective coastal state fishery management systems (in the sense of the institutional arrangements for fish resource exploitation). The discussion of the Argentina case mentioned above and in appendix A shows the difficulties that can arise if foreign fishing is introduced into an inadequate system. Somewhat counterintuitively, perhaps, difficulties can also arise if foreign fishing is removed from an inadequate system.

The Alaska case study is one example. In the appendix, it is shown clearly that the mere fact of domesticating the fishing activity did not produce much in the way of economic benefits. It was only when an economically effective management system was implemented that fishers were able to generate substantial wealth from the fish resources.

The Moroccan case study also illustrates the kinds of difficulty that may arise. In 1999, Morocco decided to end its access agreement with the EU. As a result, a large lump of fishing capacity was removed at a stroke from the octopus fishery. Two unfortunate things then happened: (1) the domestic trawling sector demonstrated conclusively that it was capable of generating more effective fishing effort from its capacity once the EU capacity was gone, and (2) the small-scale sector exploded “below the radar” because vessels less than 2 gross registered tonnes (GRT) did not require licenses. Put together, these developments meant that the octopus fishery, which had for many years produced around 50,000 tonnes per annum, suddenly produced more than 107,000 tonnes in 2000, 45,000 tonnes of which came from small-scale fishers. The stock crashed as a result, and by 2003, total catch had fallen to approximately 20,000 tonnes. Faced with this crisis, the Moroccan ministry then instituted a system of individual transferable quotas.

The outcome confirms two important lessons: (1) the need to design and implement appropriate institutions before making large-scale changes to fishing capacity and (2) the need to adopt a holistic approach to fisheries management because any part of the exploitation system that is left outside can be guaranteed to expand (as also happened with small-scale fishers in Iceland, for example).

A final important point is that it cannot be overemphasized how long it takes to achieve effective fisheries reform. The experience of all countries that have successfully reformed their fisheries shows that the process takes decades, beginning with some key fish resources and gradually moving to encompass others. The experience in the case studies here bears out this general observation.

Returning again to the Western Pacific as a specific example, the PICs have been working to improve the management of their tuna fisheries, including their arrangements with foreign vessels, for approximately 35 years, and the process is very far from complete.

In the early years immediately following the introduction of EEZs, some easy gains were made simply by sharing and applying information and ideas. But the more substantial gains that have gradually followed have required lengthy consultations at regional and national levels, cautious implementation, and the building of national and regional capacities. Although the international nature of tuna fisheries certainly adds to the difficulty, capacity building in purely domestic fisheries management is also a long-term process.

In addition to being a long process, it is also not a simple process. Despite the clear results available from the experience with the purse seine vessel day scheme, work continues to extend a similar cooperative framework into the longline fisheries, so replicability is clearly not straightforward. One important reason is that whereas the foreign purse seine fleets were reliant on access to the PNA member EEZs, the tropical longline fishers have extensive opportunities on the high seas, greatly reducing the leverage of the coastal states.

In the development of internationally funded projects, it is important to recognize both the need to develop such capacity and the very long time that it takes. All of the case studies show that change is at a generational level and not related to the typical project cycle of 3 to 5 years.

COASTAL STATE REGIONAL COLLABORATION

The issue of negotiating strategies by coastal states also comes through clearly in the case studies. Morocco's negotiators, for instance, gradually improved their negotiating strategies so that the principal (Morocco) made increasing gains. The Western Pacific case shows, however, that notwithstanding improved performance that can be expected at the individual state level, coastal states can probably advance further and faster if they cooperate with each other.

The Chinese case study is interesting from the distant-water perspective because the Chinese have used the strategy (as has the EU) of negotiating with individual nation states along the West African coast.

These coastal states may then fail to implement their fisheries management measures for fear that the distant-water

fleets will move elsewhere. Liberia, for instance, sought in the past to ban pair trawling but did not enforce the rule, in part, at least, because of worries about the Chinese moving out.

A regional negotiating strategy as pursued by the Western Pacific coastal states seems the obvious way forward. Linking these states with their West African counterparts would be a useful exercise in South-South cooperation. Such cooperation would need to identify not just the strategy but also all of the capacity building that occurred in the Western Pacific that has made the strategy feasible.

AREAS BEYOND NATIONAL JURISDICTION

As coastal states improve the management arrangements within their EEZs, there may be an increasing incentive for distant-water states to switch their fishing activity, insofar as this is technically and economically feasible, to areas beyond national jurisdiction.

Because host countries have restricted fishing in their waters, China (see appendix G for more discussion) is increasing its high-seas operations. Current regional fishery management organization arrangements are not globally comprehensive, so fishing capacity that is reduced in one region may easily move to another. After the jack mackerel stock showed signs of decline for several years, China simply moved its fishing vessels elsewhere, to Africa and off the coast of Russia.

In the Western Pacific,¹⁸ one threat to the vessel day scheme is increasing fishing in the high seas as vessel day prices increase (appendix C).

¹⁸ The Western Pacific case and case study offers a number of valuable lessons that are drawn upon throughout this report. However, there is no guarantee that the RFMO experience in the Western Pacific is necessarily directly transferable to other regions. In the future, it would be of interest to extend the analysis in this report to other RFMOs. In the meanwhile, the interested reader might wish to consult a couple of policy briefs, both of which can be downloaded from the internet, that address the question of tuna management in a more generic fashion: "Bellagio Framework for Sustainable Tuna Fisheries: Capacity Controls, Rights-Based Management, and Effective MCS" and "Report of ISSF Capacity Transfer Workshop: Exploring Options for Transferring Fishing Capacity to Developing Coastal States in the Context of Managing Capacity of the Tropical Tuna Purse Seine Fishery."

Wherever fish resources straddle coastal state EEZ and ABNJ, fishing of the ABNJ part of the stock represents a threat to intra-EEZ management of those stocks. This ABNJ issue requires additional discussion of both legal and economic matters (see appendix A for a fuller discussion).

In regard to legal aspects, there is a need to consider not only the 1982 UN Convention on the Law of the Sea but also the 1995 UN Fish Stocks Agreement.

UNCLOS requires coastal and distant water states to cooperate in the management and conservation of highly migratory or straddling fish stocks¹⁹ but offers little guidance on how. Freedom of the Seas pertaining to fisheries is retained,²⁰ but it is heavily circumscribed by Articles 116 through 120. Article 116 requires that distant water fishing nations (DWFNs) exploiting such stocks in the high seas take into account the rights, duties, and interests of relevant coastal states. Articles 117 and 118 require DWFNs to cooperate with other states in the conservation of these stocks in the high seas and requires that they shall, as appropriate, do so through subregional or regional organizations. Legal experts maintain that Articles 116 through 120 are now a part of customary international law.

However, UNCLOS left unclear the rights and duties of states concerning the high-seas portion of highly migratory or straddling fish stocks. As a result, it was difficult to establish effective cooperative management regimes for these stocks, with one important reason being the near inability of cooperating states to prevent free riding by non-cooperating states.

The ineffectiveness of the management regimes in governing highly migratory or straddling fish stocks led to the 1995 UN Fish Stocks Agreement (UNFSA), which has RFMOs as its centerpiece. Although the RFMO regime appears to apply only to ABNJ fisheries (Article 3), Article 7 states that the management regime for a relevant stock in the adjacent high seas and the regime for the management of that stock within the EEZ must be compatible so that the stock is to be managed as whole.

Article 8(4) of UNFSA stipulates that only those states that are members of a RFMO, or which agree to apply the conservation and management measures prescribed by the RFMO, are to have access to the fishery resources under the governance of the RFMO. If this article could be enforced universally, it would, of course, deal with the problem of rampant “free riding” that plagued the pre-UNFSA management of highly migratory or straddling stocks.

A fundamental rule in international law is that a treaty binds only those states that are parties to the treaty, unless the treaty has achieved the status of customary international law. Although UNFSA has to date been ratified by 81 states,²¹ it is not clear that UNFSA has so far achieved customary international law status. Fishing, therefore, by vessels from nonratifying states in a high-seas area under RFMO jurisdiction, and ignoring the conservation and management measures prescribed by the RFMO, may be deemed to be unregulated, but this is a much more nebulous concept than illegal fishing.

The key legal question is whether states that have yet to ratify UNFSA and that allow their vessels to fish in RFMO waters in a manner contrary to the RFMO fisheries management regime are in violation of their obligations under UNCLOS Articles 116 through 120. If so, given that these articles have achieved customary international law status, then RFMO members would have a clear legal case for action against unregulated fishing.

Having outlined the legal issues, we now consider whether economics can be of some assistance in addressing the issue of ABNJ fishing threatening the intra-EEZ management of straddling stocks. As before, this issue is discussed in detail in appendix A.

As mentioned in section 4, the key insights derive from game theory (or perhaps more accurately have been formalized in that framework). The RFMO is viewed as a dynamic cooperative fishery game. The central condition for such games to be stable is that each and every player or agent must be convinced that its return from the game, referred to as payoff, is at least as great as it would be by

¹⁹ UN, 1982, Articles 63[2] and 64.

²⁰ UN, 1982, Article 87.

²¹ UN, 2014, Office of Legal Affairs.

not cooperating. Free riding, either through unregulated fishing or noncompliance by RFMO members, can easily undermine this condition because even a responsible and cooperative RFMO member may calculate that if free riding is not checked, its payoff from cooperation will be less than it would be under competition. Rationality would demand that it not cooperate.

RFMOs face a difficult situation because they typically have many members and game theory concludes that if free riding is widespread, situations with more than five players cannot expect to achieve stability. The key to success clearly lies in deterring free riding. There are signs that RFMO members are recognizing this and taking steps against unregulated fishing, for instance by blacklisting vessels and introducing certification programs to guard against fish laundering.

Unfortunately, free riding is not the only difficulty faced by RFMOs. Its members may also be asymmetric—that is, they may have different management goals. To address this problem, the RFMO must find some way to implement the compensation principle, discussed in section 4, whereby the dominant players or subcoalition compensate the other subcoalition(s).

In game theory, such compensations are called side payments, which may or may not be monetary in form. With respect to management of fishery resources in the ABNJ, this would mean that a player's payoff from the cooperative resource management agreement would not be determined solely by that player's harvests in the ABNJ. Rather than side payments, the FAO²² uses the term negotiation facilitators.

One interesting possibility is for coastal states to use the legal power that they have to implement or to refuse to implement foreign fishing arrangements as a negotiation facilitator. McClurg (appendix C) emphasizes the asymmetry between Western and Central Pacific Fisheries Commission (WCPFC) members, with the PICs seen as placing a substantially greater value on the tuna resources than the other members. The compensation principle suggests that they, therefore, should dominate the management of

these resources throughout their range, making use of the negotiation facilitators that they may have. In WCPFC negotiations, DWFSs might be offered (or denied) access to PIC EEZs as an inducement to agree to PIC resource management proposals. In fact, the Third Implementing Arrangement of the PNA did use access agreements to impose management measures. Nonetheless, coastal states are concerned that WCPFC measures may affect their ability to collect access fee revenue.

FFAs can thus be seen to have a role, in some cases a very important role, in helping to ensure the long-term stability of the cooperative fishery game that is the RFMO. The game may be best understood as a multistage game, with the PICs first bargaining among themselves, with the PNA subcoalition having the dominant role, and then bargaining with the DWFS members of the WCPFC, using their power to establish (or not establish) FFAs.

Strengthening coastal state coalitions and their linkages to RFMOs will make it more expensive for distant-water fishers to fish the high seas in an opportunity cost sense, in that high-seas performance could be taken into account in the allocation of fishing rights to foreign fishers. Altering the economics of high-seas fishing in this kind of way may offer the best hope of success.

However, a useful supplementary approach that may help with this problem, and with distant-water fishing performance generally, is to ensure that unacceptable (however that may be defined) behavior affects the international reputation of the states concerned. For instance, Chinese-language sources (appendix G) increasingly call for attention to responsible DWF, and the Chinese state is concerned about its image and reputation abroad. New Zealand also is concerned that the performance of distant-water vessels chartered by national interests may tarnish its international reputation and is legislating accordingly.

A final interesting idea that may perhaps emerge in the future is raised in the Bellagio policy brief referred to in footnote 18. This is to transform the RFMOs into some kind of “tuna corporation” whose role is to manage the exploitation of the tuna stocks for which it has responsibility on behalf of its shareholders. Presumably such shareholders would have to include but not necessarily be limited to the relevant coastal states.

²² FAO. 2002. *Report of the Norway-FAO Expert Consultation on the Management of Shared Fish Stocks*. Bergen, Norway, October 7–10. FAO Fisheries Report 695, Rome.

SMALL-SCALE FISHERS

A key issue in considering the use of foreign fishing services is the impact on national fishers, in particular small-scale fishers.

In many cases, coastal states may not be sufficiently aware of the role that small-scale fishers play or could play under different institutional arrangements. As a result, there may be a tendency to ignore the impact that allowing foreign access may have on such fishers. This may be addressed as one aspect of the general transparency issue by keeping small-scale fisher representatives aware of negotiations and involving them as feasible. The FAO Code of Conduct for Responsible Fisheries and the new Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication address this and related issues.

In addition to conflict over who is to catch the fish, conflicts may also arise over where it is to be caught and with which gear. Many states have attempted to address physical interactions by reserving particular areas for certain types of fishing; for instance, it is common to find inshore waters reserved for small-scale activities (however defined in each case). One issue is to ensure that the coastal state has the capacity to enforce such restrictions. Another difficulty is that although larger-scale vessels may be banned from entering the reserved inshore waters, frequently there may be nothing stopping the small-scale fishers from fishing outside of them, with the result that physical interactions between gear types may continue.

Reserving areas for small-scale fishers does not directly resolve the problem of which resources and what quantity they may catch. There remains, therefore, a need to develop an overarching management system that begins from the fish resource (or resources) in question and includes all fishers, including small-scale fishers. Otherwise, as shown here by the Moroccan octopus case, the small-scale sector is capable of very fast expansion and of making a significant contribution to resource overexploitation.

A particular problem concerns migrant and transboundary fishing activity. A number of countries are now attempting to decentralize fisheries management, and there is often no clear understanding of how these fishers can be accommodated within comanagement and community-based

management initiatives. The risk is that they become marginalized, increasing negative interactions and conflict. At the very least, this requires clearer consideration of the role and rights of migrant and transboundary fishers in national policy and regulations and at the local level.

HUMAN RIGHTS

Foreign vessels operating under charter arrangements may derive their comparative advantage from a number of sources. However, the experience in New Zealand suggests that there may be two main factors: lower labor costs and the benefits of better access to markets for the catch.

Where comparative advantage rests on lower labor costs, some tricky issues may be raised. In New Zealand, allegations have been made of exploitative labor practices and substandard working conditions that are making it impossible for New Zealand—flagged vessels to compete.

As mentioned above, to address this problem, the New Zealand government is in the process of developing legislation that will make it a requirement for chartered vessels to reflag to New Zealand. Once this legislation is passed, it will no longer be possible to charter foreign-flagged vessels.

Although the response by the New Zealand government is understandable, the difficulty with situations of this kind always is deciding whether the regulation will in fact become a kind of nontariff barrier to trade. It is difficult to determine whether in effect this is a variant of the pauper labor argument for protection (or its very close relative, the exploitation for foreign labor argument).

Under these arguments, it is contended that foreign producers with lower labor costs have an unfair advantage over domestic producers. The importation of goods or services from low-wage foreign producers contributes to the exploitation of the foreign labor.

The problem is that a domestic sector faced with a foreign sector that has the comparative advantage can always put forward arguments of this type, whether the foreign comparative advantages comes from higher productivity or from lower wages (or from some combination of the two).

The difficult question of the exploitation of foreign labor can only be addressed by considering the alternatives open to that labor. By refusing to import, there is every

chance that the situation facing the “exploited” foreign labor will be made worse, not better.

The situation facing exploited foreign labor may degenerate into illegality. Becky Palmstrom’s article in the *BBC News Magazine* on January 23, 2014, “Forced to Fish: Slavery on Thailand’s Trawlers,” begins, “Thailand is the third largest exporter of seafood in the world, supplying supermarkets in Europe and America, but it’s accused of crewing fishing boats with Burmese and Cambodian men who’ve been sold and forced to work as slaves.”²³ Unfortunately, the situation is likely to be worse on vessels making long trips outside of Thai waters—that is, those that are supplying international fish-harvesting services.

Although it is not easy to determine whether the fishers really are slaves as that term is generally understood or whether they are being paid “slave wages,” it seems clear that many are illegal migrants who, as a result, may find themselves in very difficult circumstances. Roberston alleges that “Fishermen who do not perform according to the expectations of the boat captain may face severe beatings or other forms of physical maltreatment, denial of medical care and, in the worst cases, maiming or killing.”²⁴

There are no simple solutions to this problem. Palmstrom hopes that consumer pressure²⁵ and improving economic conditions in Burma and Cambodia will help to address it. Perhaps increased recognition of trade in fish-harvesting services, in terms, for instance, of data on the scale of the activity, and increased formalization would also help.

²³ <http://www.bbc.co.uk/news/magazine-25814718>.

²⁴ Robertson, P. 2011. *Trafficking of Fishermen in Thailand*. International Organisation for Migration. p. 7.

²⁵ Since this was written, the issue was given extensive coverage by the *Guardian*. On June 20, 2014, it was reported by the ATUNA network that Thailand has been pushed down to tier 3 in the U.S. State Department 2014 Trafficking of Persons (TIP) report, which is likely to significantly impact the country’s tuna trade. The president of the Thai Frozen Foods Association (TFFA) assured the press that slave labor is not encouraged among their fisheries, contrary to reports published by the *Guardian*. For the last four years, Thailand had been in the tier 2 group of countries that do not comply with the Trafficking Victims Protection Act. One consequence of the change to tier 3 is that the U.S. government can advise and discourage, but not permanently stop, multinational companies from trading with Thailand. Consequently, this could limit its tuna trade and financially impair the Thai tuna industry by making it harder to get access to credit. The United States is the top importer from Thailand, so the downgrade could have harsh consequences for Thai tuna exporters.

DIFFICULTY OF ESTIMATING POTENTIAL GAINS FROM REFORM

A more general point that is confirmed in particular by the experience in the Western Pacific is the difficulty of using bioeconomic models to predict the economic outcomes of fishery reform in general, including issues related to trade in services. It seems that the standard models tend to systematically underestimate the benefits achieved in practice.

The problem is that analysts cannot be expected to anticipate all of the changes that will occur. Wilen²⁶ pointed out that the standard analysis focuses on changes in the effort and cost side of the rents equation but that in practice changes on the revenue side turn out to be as important, if not more, and these are the most difficult of all to predict.

In the Western Pacific, much technical advice to the coastal states concluded that an increase in benefits or access fees required a reduction in effort, especially purse seine effort, and that increases in effort would reduce rents. But in fact substantially greater earnings have been made from a purse seine fishery with effort levels at or beyond the levels at which rents were projected to fall to zero. This does not invalidate the point that bioeconomic principles will apply at some point, and sustainable rents and PICs’ benefits will indeed fall if purse seine effort expands too far. But identifying this point is very hard.

SEQUENTIAL NATURE OF FOREIGN FISHING ARRANGEMENTS

The case studies provide limited evidence at least to suggest a hypothesis that there may be something sequential in arrangements to import foreign fish-harvesting services.

The Western Pacific and New Zealand case studies supported to some extent by Morocco and China suggest that government-to-government foreign fishing agreements may be a stepping stone toward a future that will probably be dominated by chartering as use rights-based systems become more common in coastal states.

²⁶ Wilen, J. 2005. “Property Rights and the Texture of Rents in Fisheries.” In *Evolving Property Rights in Marine Fisheries*, edited by D. Leal. Lanham, MD: Rowman and Littlefield.

CHAPTER SEVEN

CONCLUSIONS

SUMMARY OF BACKGROUND AND AIMS

Approximately half of the world's economic exclusion zones are subject to some form of foreign fishing arrangement. FFAs often provide access to the fish resources of developing countries for so-called distant-water fleets from developed or middle-income countries. This study was commissioned to improve understanding of the actual and potential cost and benefit flows associated with these arrangements and to provide general guidance on the means to secure optimal, equitable, and sustainable returns from them. The approach adopted by the study comprises an analytical review of economic and legal principles that relate to FFAs, with supporting empirical information drawn from eight detailed case studies from around the world.

FFAs AS TRADE IN FISHING SERVICES

Although the discourse on FFA has tended to focus on government-to-government foreign access agreements, this report argues that such agreements are simply one particular form of a broader set of provisions for international trade in fishing services. Furthermore, whereas it is widely recognized that trade in fish and seafood products has a crucial role to play in increasing the benefits from fish resource exploitation, the importance of TIFS has largely been overlooked until now.

TOWARD BETTER FFAs: DELIVERING THE BENEFITS THROUGH TIFS

The study shows how TIFS can be an important mechanism for coastal states, especially developing countries, to increase the benefits from the exploitation of their fish resources and enhance the sector's contributions to economic growth and hence to social welfare. Although fish resources already contribute to growth, as renewable natural capital, they have the potential to make a far greater and perennial contribution than is currently the case. Under effective management, exploitation can generate an investable surplus that can be used to fund economic growth and development.

Although trade is an important factor in delivering this contribution, the nature of international trade in fishing services and the benefits that accrue are inextricably linked to the institutional framework regulating the exploitation of coastal state fish resources. This framework is gradually evolving worldwide, although much remains to be done. The key issues and policy questions are to clarify who owns the resource, who may exploit it, and under what conditions it may be exploited.

Experience from around the world suggests that these issues and questions are being addressed through policies that are gradually bringing fish resources into rights-based frameworks. A great many—perhaps most—countries have now adopted such systems to some extent using a variety of approaches: some have opted for property rights, others for use rights; some have opted for perpetual rights, others for time-delimited rights; some for individually held rights, others for communally held rights; and so on. The development of secure use rights and tenure systems is essential to enable fish resources to deliver their full contribution to economic growth. At the same time, trade and rights go hand in hand and rights-based systems are likely to generate much greater trade in fishing services than is currently the case.

The New Zealand case study shows how trade in fishing services might be expected to evolve as rights-based systems become more common. New Zealand rights holders have made great use of foreign fishing services through chartering arrangements. The biggest advantage has been that rights holders have been able to use the most cost-effective combinations of capital and labor for their harvesting and processing operations, thereby increasing the returns obtained from their rights. In addition, the ability to use foreign-chartered vessels reduces the need for rights holders to raise capital. This has been an advantage, especially for those with only a small quantity of rights who have been able to combine their rights with other holders in undertaking chartering operations. Finally, linking with foreign operators has generated tariff- and quota-free access for fishing products into the partner's home market.

The main problem that New Zealand has encountered with this system has been controlling the activities of foreign-registered vessels operating under charter in its

EEZ. A few of these have operated in ways that have undermined the reputation of the whole sector and of New Zealand itself. As a result, all foreign charter vessels are to become New Zealand registered from 2016.

The Alaskan case study presents a rather different experience with TIFS. In essence, joint ventures were used as a way of transferring fishing skills from foreign to U.S. fishers. Together with various legislative changes, this transfer of skills changed comparative advantage in the fishery, which went from being almost entirely foreign to completely domestic within a relatively short period of 10 to 12 years. Although this change in exploitation nationality had economic impact, it produced few economic benefits. It was only when institutional changes were made, leading to a rights-based exploitation system, that substantial economic benefits began to appear in the form of resource rents.

The interesting question concerning Alaska is the extent to which sequencing mattered. If rights-based systems had been implemented first, would there still have been the same interest in switching from foreign to domestic fishers? It is difficult to know, although it does seem that it is definitely domestic fishers who now have the comparative advantage. It will be interesting to observe over the coming years whether pressure emerges from rights holders to deploy foreign fishing services again.

Overall, some specific policy questions related to both rights-based fisheries and TIFS are

- » Can rights-holders use foreign fishing services
 - » At the individual level (for example, employ foreign skippers)?
 - » At the company level (for example, charter foreign vessels)?
 - » If so, under what conditions?
 - » Can foreign fishers hold rights?
 - » If so, under what conditions can they exploit them? And, in particular, how does the coastal state ensure that it continues to receive a return on its resources?

In developing answers to these questions, policymakers need to be clear about the nature of the benefits they expect from the exploitation of their fish resources and the importance of comparative advantage in determining the

generation of these benefits. A key requirement is to be clear about the benefits upon which attention is focused, distinguishing in particular economic benefits from economic impacts (see the Alaska case above). Although the world appears to be headed toward a system of extensive, secure fishing rights, there is still a long way to go.

Many fish resources continue to operate under conditions where fishing rights either do not exist or are too insecure to enable economic benefits to be generated sustainably. What may be concluded about FFAs and trade in fishing services in these cases? First, it should be mentioned that even where formal fishing rights do not exist, companies may—subject to local rules—invoke a right to import labor if this cannot be supplied locally at competitive prices. In Mauritania, for example, a substantial number of crew on Mauritanian artisanal vessels are Senegalese.

Where trade in fishing services cannot happen at the level of individual rights holders, it has tended to occur within the framework of government-to-government fisheries access agreements, a name that is somewhat unfortunate because it tends to disguise the fact that these are frameworks through which coastal states import the services of distant-water fishing companies. The UN Convention of Law of the Sea is sometimes interpreted to mean that coastal states must enter into such access agreements with distant-water fishing nations if the coastal state has surplus fish resources. The legal analysis presented in this report asserts that there is in fact no such requirement. Instead, it is concluded that the power of the coastal state to set the allowable catch is “sovereign and non-reviewable” and the coastal state is authorized to determine its own harvesting capacity in relation to the living resources of its EEZ. Consequently, a rational coastal state will only declare a surplus if it is in its interest to do so.

It is not clear, however, that this crucial conclusion is widely understood, and some developing countries may have developed foreign fishing agreements under the misapprehension that this was a requirement of UNCLOS. Given the potential importance of trade in fishing services and the likelihood that such trade may increase in the future as use rights become more firmly established and as efforts to deal with illegal fishing bear fruit, even

so many years after UNCLOS, it is essential that the legal framework within which such trade occurs is clarified.

As noted, in the absence of any legal requirement, a rational coastal state need only enter into FFAs if they perceive this to be in their economic interest. If foreign fishers have a comparative advantage, it benefits coastal states to import their services. Such a comparative advantage could arise for many reasons throughout the fish value chain. For instance, foreigners may have comparative advantage in the following operations:

- » Fishing, due to skill or access to capital enabling them to operate more efficiently in capital-intensive fisheries;
- » Processing, due to the scale of operations; and
- » Marketing, due to market access, proximity to customers, and product branding.

It is important to understand that comparative advantage is not always a function of the relative efficiency of the fishing industry of the coastal state compared with distant water fishers. Comparative advantage may also arise because the coastal state has other profitable sectors that can make better use of its capital and labor resources than can the fishing industry. Furthermore, distant water nations may have few alternative labor opportunities and so may be prepared to fish at very low cost. As mentioned above, there is a need to promote understanding of comparative advantage with respect to fishery policy development.

This report has mentioned changes in comparative advantage in passing on a number of occasions. Comparative advantage is neither fixed nor static. On the contrary, comparative advantage will change through time, perhaps quite quickly in certain cases, as key economic parameters change. Indeed, many elements of coastal state fisheries policy may best be interpreted as attempts to move the comparative advantage in their favor, for instance by providing training programs for domestic fishers to increase their fishing skill levels. An important challenge for fisheries policy in the future will be to design fishery management instruments that provide the flexibility to deal smoothly with dynamic changes in comparative advantage.

Comparative advantage will determine the gains that are available from trade. These gains will be shared between

stakeholders according to the terms of trade. This report adopts a principal-agent framework to address this. In essence, the coastal state is the principal seeking to maximize returns from its fish resources and using foreign fishers as its agents. The difficulty is for the principal to devise a set of institutional arrangements that will move the effective terms of trade in its favor—that is, that will provide an increasing share of the gains from trade.

The various case studies throw some light on this issue. First, in the case of the Pacific Island countries in particular, regional cooperation between coastal states has been the key factor, explaining the improved returns that they have achieved from the exploitation of their tuna resources. The lynchpin has been to devise harmonization arrangements that have created a framework of agreed measures, greatly reducing the extent to which one country can be played off against another, while leaving countries free to apply widely different approaches in their arrangements with foreign vessels and in the development of their tuna fisheries more generally.

A second important factor in the PICs success that has relevance to all coastal states has been the long-term investment in fishery management institutional and human capacity at national, regional, and subregional levels. This capacity development has greatly increased the choices that most PICs now have in the way they manage fishing in their waters and in their relations with foreign vessels. Capacity-building efforts should not only target coastal states. The Chinese case study points to a number of areas where improving education and awareness among Chinese fishers (or the Chinese flag-state authorities) would contribute to improving sustainable fisheries management. For instance, Chinese fishers may not be as skilled as the fishers from other distant water nations, and they may face language-barrier issues and other capacity problems, such as poor logbook and observer knowledge. As the New Zealand case study shows, they are not the only ones who would benefit from capacity building.

The third factor has been the widespread adoption of effective, market-based arrangements for distant-water nations to supply fishing services to the PICs, resulting in increasing fees and domestic development benefits.

The way in which the PICs have gone about turning the terms of trade in their favor by cooperating with one another, building capacity, and using the market offers great lessons for other developing countries, especially those in regional or subregional groupings. It also offers a wonderful topic for South-South cooperation, and the funding for such cooperation should be sought as a matter of urgency (see Recommendations).

The case studies offer a wide range of suggestions as to how foreign fisheries access agreements, and indeed FFAs more generally, might be improved. Most notable are those concerning Morocco, the EU northern agreements, and Chinese distant water fishing. Some of these are outlined below.

As with the exploitation of other natural resources, key elements are openness and transparency. An arrangement for fishing along the lines of the Extractive Industries Transparency Initiative (EITI) would be worth investigating.

Arguably the most crucial element revolves around building states' capacity to develop effective coastal state fishery management systems—the institutional arrangements under which all fish resource exploitation takes place, either domestic or foreign. While the Argentina case study shows that difficulties may arise when FFAs are introduced under ineffective arrangements, the Alaska and Morocco cases both demonstrate that difficulties can also arise when foreign fishing is removed from an inadequate management system.

In developing internationally funded projects, it is important not only to recognize the need to develop such capacity but also to appreciate the considerable time period required for reform to become established. The experience of all countries that have successfully reformed their fisheries shows that the process can take decades, beginning with some key fish resources and gradually moving to encompass others. The experience in the case studies here bears out this general observation. While undoubtedly lessons have been learned from past transition, the case studies nevertheless show that the typical project cycle of three to five years is simply not long enough.

Extending from the above, it is also important that foreign vessel activity be managed as an integral part of the

coastal state fisheries management framework rather than by a separate legal instrument. Ideally, distant water fishing opportunities should be specified in terms of catch (output) rather than effort (input). In any coastal state management system, there must be sufficient MCS capacity to ensure compliance with the rules and regulations to ensure catch limits are observed and conservation measures implemented. This must be complemented with flag state control through VMS, verification of catches, and timely exchange of data.

In addition to focusing on coastal states, capacity-building efforts should also target flag states. The Chinese case study points to a number of areas where improving education and awareness among Chinese fishers (or the Chinese flag state authorities) would contribute to improving sustainable fisheries management. For instance, Chinese fishers may not be as skilled as the fishers from other distant water nations, and they may face language-barrier issues and other capacity problems, such as poor logbook and observer knowledge. As the New Zealand case study shows, they are not the only ones who would benefit from capacity building.

A further problem that may affect some fishing agreements, and that is more related to controlling illegal fishing, concerns information about vessel ownership and reflagging. One option would be to require commercial fishing vessels to have permanent, nontransferable International Maritime Organization numbers.

One complex area to analyze concerns subsidies to distant-water fleets. There is a tendency to see subsidies as bad because they tend to increase fishing effort and are generally considered to be economically inefficient. However, if a coastal state has an effective management regime in place (in the sense of avoiding overfishing at least), then subsidies to distant-water fleets may offer an opportunity for it to increase the returns obtained from its fish resources. But such subsidies may have a negative impact on the structure of the domestic fishing sector that is unwarranted by the fundamental economics and that will be difficult or expensive to reverse if the subsidies are subsequently terminated. If operated in this way, subsidies might equate to something similar to predatory pricing. The ideal solution for the coastal state would be to obtain the subsidy as a lump

sum that is unrelated to the level of fishing exerted by the distant water fleet, and some foreign fishing agreements do seem to come close to this ideal.

As coastal state fisheries management becomes more effective, there are increasing concerns over fishing effort being transferred toward areas beyond national jurisdiction. This is one threat facing the vessel day scheme in the Western Central Pacific. The most effective way of addressing this may be to reinforce coalitions of coastal states and their linkages to RFMOs to make it more expensive for distant-water fishers to fish the high seas in an opportunity-cost sense, in that high-seas performance could be taken into account in the allocation of fishing rights to foreign fishers.

Although not explicitly addressed by this study, it is easy to underestimate the influence that markets can have on supply-side governance arrangements. Given the key role of FFAs in international seafood trade, demand-side arrangements such as corporate responsible procurement policies and labeling schemes (covering social, economic, and ecological dimensions) are increasingly likely to impact the arrangements under which fish are caught and traded.

The study has revealed the significant implications that international trade in fishing services has and could have in future for sustainable fisheries. In spite of this revelation, the current dearth of information, combined with the lack of awareness and capacity to collect relevant statistics, is a major constraint to the further consideration of trade in fishing services as a key facet of effective fisheries policy and development.

Furthermore, there appears to be little awareness and understanding of the fact that the economic arguments underpinning free trade, particularly those relating to comparative advantage, apply equally to trade in fishing services as they do to trade in, say, seafood products. Absent such awareness, there is a risk (which is borne out by some of the case studies) that countries will adopt mercantilist and protectionist policies in regard to fish resource exploitation, to their ultimate disadvantage.

Last but not least, there are often concerns that foreign fishing will adversely impact the domestic fishing sector,

especially small-scale fishers. The most effective way to address these concerns would be to develop secure tenure systems and include all sections of the domestic sector, including small-scale fishers, within these. Devising appropriate rights systems for small-scale fishers is a complex challenge, but experience with community-based and communally held rights offers some insights on which to build in situations where allocating individual rights is not feasible. Where small-scale fishers do not have such rights, they should at least be represented during negotiations concerning foreign fishing so that their concerns

can be aired. The frequently proposed notion of reserving or protecting areas for small-scale fishers (such as inshore exclusion zones that are set aside for artisanal fishing) does not directly resolve the problem of which resources and what quantities may be caught. As shown by the Moroccan octopus case, the small-scale sector is capable of rapid expansion and resource overexploitation. What is needed is a holistic and overarching management system that begins with the fish resource(s) in question (on an ecosystem basis) and that includes all fishers exploiting the resource(s), including, and perhaps especially, small-scale fishers.

CHAPTER EIGHT

RECOMMENDATIONS



The study reveals foreign fishing arrangements as key facets of international trade in fishing services that play a significant and increasing role in strategies to optimize the economic benefits from fish resource exploitation. The casework shows how several countries have made and are making use of trade in fishing services in a variety of ways.

Given the breadth of issues presented and discussed in this report, it is difficult to distill a succinct set of recommendations. While the authors offer the following recommendations for immediate consideration, they recognize that readers may wish to develop them further.

1. **UNCLOS and “surplus” principle.** A workshop should be convened to consider the ramifications of the study’s key finding regarding the emptiness of the UNCLOS “surplus” principle. This might involve the preparation of a preliminary legal review and downstream documentation to generate a better global understanding, particularly by coastal-state policymakers.
2. **Appreciation of TIFS as central to FFAs.** This report, together with the output from the legal workshop, should be used to foster a great understanding of the central role that TIFS plays in foreign fisheries arrangements. Moreover, formal recognition should be given to the proposition that TIFS is as important as trade in fishing products by including the former in discussions at the FAO Sub-Committee on Fish Trade and at the FAO Committee of Fisheries.
3. **Effective fisheries management.** The centrality of effective fisheries governance and management frameworks in coastal states’ EEZ should be emphasized. Any potential benefits from FFAs should then be analyzed and considered within such legal frameworks. Given that effective management is increasingly likely to be underpinned by secure tenure arrangements, discussions should take place concerning the influence that such arrangements will have on improving the performance of international trade.
4. **Small scale fishers.** Following directly from the previous recommendation, immediate attention should focus on the requirement to include all participants of the domestic sector—but particularly small-scale fishers—in processes to define more effective management arrangements based on secure tenure

and use rights. Although devising appropriate tenure and use rights systems for small-scale operators may be especially challenging, experience with community-based and communally-held rights offers insights on which to build. Moreover, whether or not small-scale fishers have such rights, their concerns should be fully represented during negotiations concerning foreign fishing.

5. **Function and contribution of fisheries.** Effort is needed to enhance awareness and understanding in regard to the macroeconomic function of fisheries. This should focus on the means whereby fish resources, as renewable natural capital, can increase true sectoral contributions to GDP and represent a perennial source of wealth to support national objectives for economic growth and welfare. Particular emphasis should be placed on building an international economic case related to comparative advantage and how this should underpin the case for TIFS and effective FFAs. Awareness raising should focus on coastal states' policymakers (but also flag states and donor agencies) to avoid the uninformed development of protectionist or mercantilist policies in the case of fish resource exploitation.
6. **Benefits and beneficiaries of effective fisheries.** As a corollary to the previous recommendation, discussions should continue concerning the benefits and beneficiaries of TIFS and fish resource exploitation more broadly. Much current policy debate is dominated by a vision that sees resource harvesters (fishers) as the key stakeholders. However, if ownership of the resource is considered to be vested in all citizens, a case can be made for a beneficiary base that extends well beyond those exploiting the resource.
7. **Data and awareness raising on TIFS.** The international community should identify an organization capable of developing and maintaining

statistical databases on fish service trade and to ensure this service is maintained over time. The logical intention of this would be to move trade in fishing services into a more central position in the fisheries policy debate by building understanding of their underpinning legal and economic principles. Finally, it will be important to begin raising the profile of trade in fishing services to highlight their significance in the context of fisheries policy and international development.

8. **South-South cooperation.** South-South co-operation and the exchange of knowledge and experience in best practice should be facilitated and encouraged. This should assist coastal states in learning from one another how they have addressed the principal-agent problems that they face in order to turn the terms of trade in their favor. The case studies bring out the importance of effective cooperation and of negotiating experience. In both of these areas and doubtless others, the processes by which several nations of the Western Pacific have turned the terms of trade in their favor through close cooperation, capacity building, and effective market-based management offer great lessons for other developing countries, especially those offering potential for regional or subregional groupings.
9. **Invest in human capital.** The development of human and institutional capacity is crucial and closely linked to all of these recommendations. More efforts should be made to identify and fund appropriate capacity strengthening. Such efforts are not necessarily expensive but could fall foul of the typical three- to five-year project time scales given the protracted time period required to achieve positive outcomes. Space must be found within both donor and recipient frameworks for such long-term capacity-building investments.

CHAPTER NINE

REPORT SUPPLEMENT

CASE STUDY SUMMARIES

This report supplement presents short summaries of all eight case studies. While these are intended to provide a flavor of the main findings respective to each, the authors urge the reader to delve into the full appendices in order to provide the complete picture.

FOREIGN FISHING AGREEMENTS IN THE WESTERN PACIFIC

This case study (appendix B) was prepared by Les Clark and presents the case of foreign fishing arrangements in the Western Pacific, detailing the process through which the Pacific Island countries (which here means the members of the Forum Fisheries Agency) are gradually, but surely, increasing the economic returns that they receive from their tuna resources.²⁷

Approximately 30 to 35 years after the establishment of their EEZs, most Pacific Island countries have a mix of arrangements in place for foreign fishing, including access agreements, charters and joint ventures, serving a mix of financial and economic objectives. Some PICs are heavily dependent on economic returns from these arrangements, which provide 40 to 50 percent of national government revenues, as well as providing jobs and private incomes.

The data available indicate that access revenues grew from 3.5 to 4 percent of landed value in the early 1980s, earning \$13.5 million in 1981, to 6 to 8 percent of landed value, earning \$60 to \$80 million in the 2000s. While much of this increase was due to the increase in the landed value of the catch, especially with the development of the purse seine fishery, there was also substantial additional growth from the early 1980s to the later 1990s, resulting from factors such as increased coordination among PICs and enhanced fishery management capacities.

²⁷ Indeed, as the Appendix makes clear, the process is far from finished. This is perhaps a good place to issue a general warning that each of the Appendix is as up to date as possible but fisheries policy can change very quickly.

By the mid-2000s, there was a growing feeling that returns from foreign fishing arrangements had reached a ceiling and that further economic gains would be more likely from domestic and shore-based development rather than access revenues. However, institutional innovation by the coastal states through the introduction of a purse-seine Vessel day scheme (VDS) has been a game changer for the eight PICs that are Parties to the Nauru Agreement, with access revenues for some parties reported as doubling and more. The expectation is that this increase in revenues will increase further in the future.

AREAS BEYOND NATIONAL JURISDICTION (ABNJ) FISHERIES

This case study (appendix C), written by Tom McClurg, discusses the problems presented by fishing in the ABNJ. It complements the previous case study because it uses the Western and Central Pacific Ocean case as an example on which to base the discussion.

This paper discusses the ABNJ implications of the shared tuna fisheries of the WCPO. It highlights the critical role that the design and implementation of effective frameworks for cooperation has in addressing shared fisheries management and, most importantly, the quality of governance exercised by participants in those frameworks.

The challenge is to benefit coastal states through the better management of fisheries that extend well beyond their jurisdiction in situations where each individual state may have only a minor stake in those fisheries, which it shares both with other coastal states and the high seas.

The paper identifies the key steps that are required for the successful management of any fishery. The first step is to define the fishery management unit in terms of species to be fished, in which area, using which method. It has so far proven elusive to define such units at the RFMO level, but the coastal states have made some progress through the introduction of the vessel day scheme referred to above (section 2).

However, despite the great advances made, the VDS remains, as is also recognized in appendix B, a work in

progress and faces a number of threats, an important one of which is the freedom to fish ABNJ at no cost. Fishing these areas has traditionally not been very profitable, but as day prices increase, their relative attractiveness will increase and effort can be expected to migrate there where it would not face any effective constraint given the RFMO conservation and management measures currently in place.

This external threat to the VDS and its adverse economic consequences for developing states must be a primary focus for efforts to sustain and increase coastal state benefits. Ultimately, it may require a review of the current Fish Stocks Agreement and the RFMO framework. Before going that far, however, coastal states may be able to profit by ensuring that ABNJ fishing is not costless for distant-water vessels. One option would be for the coastal states to refuse licenses to such vessels to fish within their respective EEZs (as happens to some extent already). Second, in the longer term, the RFMO may be required to restrict ABNJ fishing if it can be shown that such fishing undermines measures taken within areas of national jurisdiction (the VDS) or that it is contrary to the interests and aspirations of coastal states.

REPORT ON FOREIGN FISHING: MOROCCO CASE STUDY OF THE VARIOUS ARRANGEMENTS IN FISHING COOPERATION RELATIONS

This case (appendix D), prepared by Mohamed Rouchdi, discusses the way in which Morocco has used foreign fishing services over the past 30 or so years both for the immediate benefit of the Moroccan nation and as a means to develop the national fisheries sector. It also highlights some difficulties that have arisen.

Taking its cue from the relevant articles of UNCLOS and with a policy that sought to maximize benefits from its fish resources, Morocco implemented plans to develop and sustain its fisheries and developed various cooperation approaches with foreign countries.

Arrangements used included chartering foreign vessels, developing joint-venture companies, and signing fishing

agreements with the EU, the Russian Federation, and Japan. Each of these contributed to the development of Moroccan fisheries and generated economic and social benefits through both their direct financial contribution and their support to the development of the sector.

The agreements with Russia and Japan did not generate very large direct contributions, due to their limited extent and their nature (limited exclusively to the exploitation of small pelagics for the former and to a seasonal tuna activity for the latter). The same was not the case, however, with the successive agreements with the EU. The direct financial contribution from these agreements culminated in a payment of some €125 million per annum from 1995 to 1999.

Despite these advantages, the assessment in Morocco was that the presence of the foreign fleets and their very high levels of exploitation were important factors in the decline of national fish stocks and in the fall in the profitability and development of the national fishing fleet. Following this, Morocco decided to reserve fishing for its national fleet, and there was no agreement for a number of years.

The partnership agreement of 2005 was intended to herald a new era in international relations that took into account the requirements for sustainable fishing and the development needs of the national fisheries sector. Fishing opportunities are more limited, and high-value species (octopus and shrimp in particular) are excluded from the agreement. As a result, the financial return to Morocco is now around €40 million per annum. So far the elements of partnership and economic, technical, and scientific integration that underpin these so-called “new generation” agreements have not made any real progress

INTERACTION BETWEEN FOREIGN FISHING AGREEMENTS AND SMALL-SCALE FISHERS

One aspect of foreign fishing that raises particular concern is how it may impact domestic fishers and, in particular, small-scale fishers. This study (appendix E), written by Robert Arthur, does not relate to any particular coun-

try but considers the important generic issue of how foreign fishing services may affect coastal-state small-scale fishers.

The impacts may be positive or negative, but there is a tendency for commentators to focus on the negative aspects and seek to protect small-scale fisher interests. Negative interactions tend to be found in the direct targeting of the same species, the use of the same space, or competition in fish product markets. Many of these interactions are similar to those that occur between small-scale fishers and domestic industrial fishers, but the weakness or absence of institutional frameworks governing foreign fishing may worsen the problems in this case.

Key policy initiatives to reduce interactions and strengthen institutions include the development of international guidelines to highlight the importance of transparency and of considering small-scale fishers needs and aspirations when negotiating agreements, the segregation of fishing activities, investment in MCS, and decentralization of fisheries management. However, each of these approaches can be flawed and even counterproductive in practice, leading to the exclusion or marginalization of small-scale fishers from political processes or the risk of excluding and cornering the existing rights of small-scale fishers.

It is also important to recognize that foreign fishers are not necessarily distant-water large-scale commercial operators. They may also include both large-scale and small-scale foreign fishers from within the region, who may be migrant fishers or engaged in transboundary fishing. These fishers often gain access under regional economic arrangements rather than through fisheries-specific agreements. As a result, while they may make important contributions to landings, local economies and food supply, and technology transfer, they are not well represented in national policies and regulatory frameworks.

EUROPEAN UNION NORTHERN AGREEMENTS

This case study (appendix F), written by Suzannah Walmsley, explores the European Union’s bilateral fisheries agreements in the northern hemisphere. Agreements

with Norway, Iceland, and the Faeroe Islands are based on reciprocal exchange of quotas, whereas Greenland has a fisheries partnership agreement (FPA) similar to the southern agreements, with EU vessels fishing within the Greenlandic exclusive economic zone in exchange for a financial contribution for access and for the support and implementation of Greenlandic sectoral fisheries policy.

One reason for including these agreements was to provide some insight into differences in agreements with countries in the southern hemisphere. In the end, only one southern agreement case study was completed, so comparison is difficult, but the northern agreements case remains of interest in its own right.

These agreements aim to coordinate fishing activity between the EU and neighboring countries, given that many of the stocks targeted by EU vessels in the Northeast Atlantic and North Sea are shared stocks that are jointly managed between the coastal states (the EU, Norway, Iceland, and the Faeroe Islands) or managed through the intergovernmental North-East Atlantic Fisheries Convention.

The EU-Norway agreement is the EU's most important fishing agreement, providing for shared access to nearly 750,000 tonnes of fish worth in excess of €2 billion. Establishing the precise value of the agreement itself is difficult if not impossible since quotas are exchanged using a system of cod-equivalent weights. The value is somewhere between €55 million and €125 million per annum, depending on prices used.

The reciprocal nature of the agreements means that the benefits go directly to the fishers involved in catching the quotas. Quota division and swaps are based on historical fishing patterns and adjusted with respect to current interest, with the fishing industry involved in identifying appropriate fishing opportunities under the agreements. The negotiation of fishing opportunities through this centralized system may limit the overall profitability of the agreements but ensures the benefits are evenly distributed between the parties. The benefits to each party are affected by market prices, the cost of fishing, and associated value-added activities and may also include the possibility to access larger, better-quality fish that may fetch higher prices.

CHINESE DISTANT-WATER FISHING ACTIVITIES

This case study (appendix G), written by Tabitha Mallory, discusses China's distant-water fishing activities. China is a significant DWF nation. Official sources reported a total of 2,429 vessels operating in ABNJ in 2012, and it is expected that this fleet will continue to grow. Although official sources report that China's DWF industry produced 1.223 million tons of catch valued at \$2.17 billion in 2012, some fisheries experts have estimated that the real amount and value of DWF catch may be as high as 4.604 million tons valued at €8.93 billion per year. The high-seas share of this catch has been increasing and stood at 52.8 percent of overall catch in 2012.

China has 120 licensed DWF Chinese companies, which employ 43,000 people, with more than 100 representative offices, joint ventures, and logistical bases around the world. Although official sources report that China had DWF operations in 38 countries in 2012, evidence suggests that Chinese DWF vessels are active in 93 countries. China's access fees are estimated to be between \$21.1 million and \$63.1 million total.

The DWF industry has strategic importance to China for employment and business opportunities, food security, reducing pressure on China's resources, technological development, and safeguarding China's rights and interests globally.

Chinese sources emphasize the importance of managing domestic fish stocks for long-term ecological and food-security reasons. However, so far, DWF policies do not reflect this concern to the extent that domestic policies do. Perhaps for this reason, Chinese distant-water fishing arrangements have been criticized for their lack of transparency and association with corruption, inequitable benefit sharing, poor flag-state control, and conflict with small-scale and artisanal fisheries. Yet almost all foreign arrangements have attracted similar criticism. Concerned with its image, status, and reputation in the world, the Chinese government has, however, begun to acknowledge the need to ensure the sustainability of fish stocks in ABNJ. There remains a need to ensure policy coherence, however, because the measures that do exist in this regard

tend to be in conflict with other policies that support the expansion of the industry, for example fisheries subsidies, which may have been as high as \$5.168 billion in 2011.

This case study identified several lessons learned. One way to improve the terms for host countries is through regionally coordinated bargaining, as opposed to bilateral negotiations where the Chinese side is advantaged because of its size vis-à-vis the coastal state. Ownership information about Chinese vessels and Chinese reflagging are challenges to enforcing rules against illegal fishing. State-owned enterprises command resources from the government that give them an unfair advantage by skewing their profits in a more favorable direction. Capacity-building efforts to improve the skills not only of host countries but also those of DWF nations like China would improve fisheries management.

THE NEW ZEALAND EXPERIENCE OF JOINT VENTURE FISHING OPERATIONS: 1977 TO 2013

This case study (appendix H), written by Phil Major, discusses the way New Zealand has used different forms of foreign fishing services over the past few decades. Following the declaration of the New Zealand EEZ in 1977, the New Zealand government authorized a number of foreign joint venture arrangements. These were reviewed in 1982, and the government allocated quota to a number of companies based on their involvement in the fishing industry. These companies were able to choose foreign partners if they wished or to use domestic fishing capacity. Areas in which these companies were permitted to operate were restricted to avoid conflict with domestic inshore vessels.

A number of lessons emerge from the New Zealand experience. First, using foreign-chartered vessels liberated New Zealand holders of quota and annual catch entitlements from having to raise capital to invest in the vessels and processing facilities needed to operate in the EEZ.

Second, given a free market in fishing services, industry operators will choose the services that are the most economical, using the cheapest combinations of capital and labor for harvesting and transferring processing offshore.

There can be some market advantages for NZ companies that involve themselves in charter operations. The domestic partner gains tariff and quota-free access for their product under the name of their joint venture partner.

Third, there are advantages to community quota holders or small parcel holders in being able to combine charter catching capacity without having to raise capital for vessels of their own, particularly when their individual holdings would not support a vessel. A corollary is that an increased demand is created for annual catch entitlement or leased quota to the advantage of those who have small quota holdings. This increases the value of their quota.

Fourth, foreign charter operations do not lead automatically to the development of domestic processing and marketing arrangements. Nor do such operations on their own result in technology transfer. In fact, a high proportion of the New Zealand offshore catch continues with foreign charter vessels in 2013.

Fifth, it is difficult for the coastal state to exercise control over the activity of foreign-registered fishing vessels in their zone without sovereignty. Some foreign charter operators place profit ahead of reputation, which, apart from its own problems, has tended to undermine the operations of those running legitimate operations both in the foreign charter sector and in the domestic sector. As a consequence of the damage to the New Zealand reputation, the government will require all foreign charter vessels to become New Zealand registered from 2016.

THE BERING SEA POLLOCK FISHERY

This final case (appendix I), prepared by Jim Wilen, is slightly different from the others in that it discusses a fishery that is no longer exploited by foreign fishers. The interest in this case is to show the process involved in its transition from an essentially foreign fishery into a U.S. domestic fishery.

The Bering Sea pollock fishery is the world's second-largest fishery in volume. The fishery was developed during the 1960s by Soviet and Japanese distant-water flotillas that caught pollock with catcher vessels and delivered to floating processors.

With the extension of jurisdiction to 200 miles in the late 1970s, the United States assumed control over the Bering Sea fisheries and immediately initiated a process to gradually replace foreign fleets. New laws established deadlines to remove foreign fleets and granted priority access to countries willing to transfer know how and allow market access.

The most common transition arrangements were simple joint ventures whereby domestic catcher vessels delivered to foreign floating processors under arms-length market transactions. The transition was relatively rapid (approximately 10 years), aided by excess catcher vessel capacity, domestic vessel construction subsidies, cheap Norwegian shipbuilding capacity, knowledge transfer from early whiting joint ventures on the Pacific Coast, and entrepreneurship.

But whereas the fishery became Americanized by 1990, foreign capital was essentially replaced by similarly large amounts of domestic capacity. This excess capital fueled a

race to fish among domestic participants, causing escalating conflict and waste throughout the 1990s. In 1998, the all-important American Fisheries Act (AFA) gave offshore and inshore sectors secure access to allocations and established the framework for harvester cooperatives in each sector.

Under the AFA, excess effort has been removed, seasons have lengthened, and high-valued and market-responsive products have been developed. The cooperative framework has been instrumental in increasing operational efficiency and resolving residual externalities such as bycatch and habitat destruction.

The main lesson from the pollock experience is that domestication alone does not guarantee that a host country can capture a fishery's wealth. Without secure access privileges, rents will be wasted regardless of which country is prosecuting the fishery. Real wealth generation that can be captured by domestic interests only emerges if incentives are properly aligned with secure access privileges.

APPENDIX A

THE LEGAL AND ECONOMIC PRINCIPLES UNDERLYING FOREIGN FISHING ARRANGEMENTS

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ABSTRACT

The key legal question pertaining to foreign fishing arrangements (FFAs) is whether the coastal state is obliged by the 1982 UN Convention of the Law of the Sea to grant access to distant water fishing states (DWFSs) to the coastal state exclusive economic zone (EEZ). Article 62 of the Convention, which contains the “surplus principle,” appears to state that the coastal state is so obliged, if the coastal state’s harvesting capacity falls short of the allowable catch in a given fishery within the EEZ. That said, the “surplus principle” is empty. A rational coastal state will, therefore, grant DWFSs access to its EEZ if, and only if, it is in the economic interest of the coastal state to do so. DWFSs that are granted access to the coastal state EEZ should thus be viewed as agents of the coastal state, providing the coastal state with harvesting, processing, or marketing services. Since the DWFSs are, by definition, foreign to the coastal state, the coastal state is then to be seen as importing such services. The economic argument for importing, or not importing, these services rests upon the doctrine of comparative advantage, and as such becomes a variant of the argument for free trade from international economics. If the DWFSs are to be seen as agents of the coastal state, then Principal-Agent analysis, employed widely by economists in many areas, becomes of utmost relevance. A central aspect of such analysis is that the principle can never expect to exert perfect control over the agents. A weak principle can find itself being manipulated and abused by its agents. This in turn means, in the context of FFAs, that the resource management capacity of the coastal state is of fundamental importance. It can easily be demonstrated that a FFA, which could be of great economic benefit to the coastal state if the coastal state had adequate resource management capacity, could actually be damaging to the coastal state, if that state’s resource management capacity proved to be seriously lacking. If the coastal state fishery resources extend beyond the coastal state EEZ into the adjacent high seas, and are there subject to RFMO governance, additional complexities arise. Having said this, it is further argued that well designed FFAs may, in fact, serve to strengthen the RFMO, and thus strengthen the management of the resources.

INTRODUCTION

The purpose of this appendix is to explore the legal and economic principles underlying foreign fishing arrangements. By necessity, we commence with a discussion of the legal principles. As will

become evident, without a clear understanding of the legal principles, it is not possible to comprehend the economic principles underlying FFAs.

LEGAL PRINCIPLES

The discussion of the legal principles underlying FFAs will be based upon the writings of Professor William T. Burke, Professor Emeritus of Law and Marine Affairs, University of Washington. Professor Burke is a leading world authority on international law applied to fisheries, and is author of the book: *The New International Law of Fisheries: UNCLOS 1982 and Beyond*, published in 1994 by the Oxford University Press (Burke 1994).

In 1983, the Food and Agricultural Organization of the United Nations (FAO) mounted the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones (FAO 1983). Burke was invited to participate and was called upon to prepare for the Consultation a paper entitled “1982 Convention on the Law of the Sea Provisions on Conditions of Access to Fisheries Subject to National Jurisdiction” (Burke 1983). The heart this paper is incorporated in *The New International Law of Fisheries* (Burke 1994). In the book, Burke updates and expands upon what he had written in his paper, but alters none its basic conclusions. Hence, we can continue with confidence to draw upon Burke’s 1983 FAO paper, which has the virtues of both thoroughness and succinctness.

In the discussion to follow, we shall, for the time being, ignore complications arising from the fact that some of the fishery resources within the EEZ may be shared with other states.¹ With this in mind, it can be stated that the key question to be addressed is the legal obligations of coastal states to grant DWFSs access to their intra-EEZ fisheries. The answer to this question can be found within the 1982 UN Convention on the Law of the Sea (UN 1982), arising from the Third UN Conference on the Law of the Sea, 1973–82. Hereafter, we shall refer to the Convention as UNCLOS.

The primary article in UNCLOS relating to this question to FFAs is Article 62, followed by Articles 56, 61, and 297. Of secondary importance are Articles 69, 70, and 300 (UN 1982).

Article 62(2), which reads as follows, contains within it what is popularly referred to as the “surplus principle”:

The coastal State shall determine its capacity to harvest the living resources of the exclusive economic zone. Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall, through agreements or other arrangements and

¹ At a later point, complications arising from the international sharing of such resources will come up for discussion.

pursuant to the terms, conditions, laws, and regulations referred to in paragraph 4 [Article 62(4)], give other States access to the surplus catch, having particular regard to the provisions of articles 69 and 70, especially in relation to the developing States mentioned therein (UN 1982, Article 62(2)).

So there we have it. Where the total allowable catch exceeds the coastal state's harvesting capacity, that is where a surplus exists, the coastal state is obliged to grant access to other states, certainly including DWFSs, albeit subject to conditions laid down in Article 62(4), to be discussed.

The obligation of coastal states seems certainly seems straightforward enough. Nonetheless, it will be the conclusion of this section that the "surplus principle," set forth so clearly in Article 62(2), is essentially empty.

There are two fundamental questions arising from Article 62(2). The first is how the allowable catch is to be determined in light of Article 56(1), which states that "in the exclusive economic zone, the coastal State has sovereign rights for the purposes of exploring, exploiting, conserving and managing the natural resource, whether living or non-living" (UN 1982, Article 56(1)). The second key question, of course, is how the coastal state capacity to harvest the allowable catch is to be determined.

With regards to the first question, the determination of the allowable catch, we commence with Article 62(1), which states that the coastal state shall promote the objective of optimal utilization of the living resources within the EEZ, and shall do so without prejudice to Article 61, which, in turn, calls upon the coastal state to determine the allowable catch of living resources within the EEZ (UN 1982, Article 62(1)). As Burke points out, it is the coastal state, and the coastal state alone, that can implement this goal of optimum utilization (Burke 1983, p. 29). The question is then whether Article 61 imposes constraints upon the coastal state in setting the allowable catch and in determining management measures in general. In particular, must the coastal state, in setting the allowable catch, apply the maximum sustainable yield (MSY) management criterion? Basically, the answer to the question is no.

Article 61, after stating that the coastal state is to determine the allowable catch of living resources within the EEZ, does indeed state that the coastal state management measures should be such as to maintain or restore populations of harvested species at levels that produce the maximum sustainable yield. However, the article goes on to state that the coastal state is to implement the MSY criterion "as qualified by relevant environmental and economic factors" (UN 1982, Article 61(3)). The consequence of this qualification, argues Burke, is that, in seeking to promote optimal utilization of the living resources within the EEZ, the coastal state is under no obligation to observe or maintain a particular level of utilization above zero from a particular fishery (Burke 1983, p. 29). He continues, "in light of Article 62(1) [promoting the objective of optimal utilization], Article 61 authority could be exercised to set an allowable catch or permissible yield at whatever level the coastal State determines to be in the best interests of its harvesting effort or whatever lawful interest it seeks to enhance" (Ibid.).

The one apparent constraint imposed upon the coastal state is that Article 61 requires the coastal state "to ensure that the maintenance of the living resources in the [EEZ] is not endangered

by over-exploitation" (UN 1982, Article 61(2)). Even this seemingly reasonable constraint is not really binding. Another state (for example, a DWFS), believing that a particular coastal state is endangering a given fishery resource within the coastal state EZZ, could object. Under UNCLOS, this could lead, it would seem, to the objection being dealt with under the Disputes Settlement mechanism (UN 1982, Part XV). Yet, Article 297(3(a)) would exempt the coastal state from having to see the dispute subject to settlement, unless the perceived endangerment of the resource was seen to be extreme (UN 1982 Article 297(3(b))). Then, the matter would be brought before a conciliation commission. If the commission found against the coastal state, the coastal state would be under no obligation to accept the commission's findings and recommendations (UN 1982 Article 297(3(c))). In conclusion, Burke sees the power of the coastal state to set the allowable catch to be "sovereign and non-reviewable" (Burke 1983, p. 29). In essence, the coastal state can do what it wants in terms of setting the allowable catch.

The answer to the second question, the determination of the coastal state's capacity to harvest the allowable catch, is much easier. The coastal state is authorized by Article 62(2) of UNCLOS to determine its own harvesting capacity in relation to the living resources within its EEZ (Ibid.).

If the setting of the allowable catch is wholly within the discretion of the coastal state, and if the determination of the coastal state's harvesting capacity is also wholly within the discretion of the coastal state, then it follows that a rational coastal state will not declare there to be a surplus, unless it is in the interest of the coastal state to do so. To quote Burke once more, "it is apparent that giving access [to DWFSs] is not meaningfully an obligation of the coastal State. If the coastal State decides that declaration of a surplus meets its interest, only then is it required to give access under terms and conditions it prescribes" (Burke 1983, p. 30).

It is true that, if a coastal state flagrantly refuses to declare both an allowable catch and its harvesting capacity, the matter can be brought before a conciliation commission (UN 1982, Article 297(3(b))). Once again, if the commission finds against the coastal state, the coastal state is not obliged to accept the commission's findings (UN 1982, Article 297(3(c))).

In summing up, regarding UNCLOS Burke states that "the short of the matter is that the treaty contains virtually no restriction on coastal State authority to forbid access to foreign fishing. For practical legal purposes the treaty provides no remedy even for some arbitrary actions to deny foreign access" (Burke 1983, p. 30).

If a coastal state declares a surplus, and grants access to DWFS fleets, it is to do so with reference to terms, conditions, laws, and regulations, referred to in Article 62(2), which are to be found in Article 62(4). The article lists 11 such terms, conditions, and so on, which, *inter alia*, certainly allow the coastal state to demand remuneration from DWFS fleets being granted access. The coastal state is expected to give away nothing for free. Indeed the list, although being broad, is not meant to be exhaustive. The terms, conditions, and so on are illustrative only (Burke 1983, p. 31).

They are, however, to be consistent with UNCLOS, and must not be in violation of Article 300, the good faith and abuse of rights article (UN 1982, Article 300). Thus, for example, the coastal state must not declare a surplus and then impose terms and

conditions that effectively bar all DWFSs seeking access. Yet even this requirement is weak. Burke maintains that, if it is alleged that a coastal state's terms and conditions pertaining to access for DWFS fleets violate Article 300 of UNCLOS, or are allegedly inconsistent with other provisions of UNCLOS, the coastal state cannot be challenged in compulsory dispute proceedings under Part XV of UNCLOS (disputes settlement), unless the coastal state consents to being challenged (Burke 1983, p. 31, n. 1).

There remains the question of which states, if any, are to be granted preferential access, if the coastal state declares a surplus. Articles 62(3), 69, and 70 call upon the coastal state to give preferential access to landlocked and geographically disadvantaged states and to developing states in the region or sub-region (UN 1982). Burke argues persuasively that these requirements carry little weight (Burke 1983, pp. 32–34). Article 62(3) also calls upon the coastal state “to minimize economic dislocation in States whose nationals have habitually fished in the zone or which have made substantial efforts in research and identification of stocks” (UN 1982, Article 62(3)).

The coastal state, which wishes to rid itself of DWFS presence in its zone, might agree, although legally not required to do so, to establish phase out arrangements for those DWFSs with a history of fishing in the zone. What Article 62(3) emphatically does not mean, argues Burke, is that a DWFS can claim historical fishing rights to an intra-EEZ fishery in which the coastal state declares there to be a surplus (Burke 1983, pp. 34–35).

Burke gives the following example. Suppose that a coastal state declares a surplus in a given intra-EEZ fishery, and decides further to auction off access to the surplus. The only interested DWFSs are DWFSs A, B, C, D, and E, all of which had a long history of participating in the fishery prior to the establishment of the coastal state EEZ. DWFS D wins the auction. Legally, the coastal state would be justified in denying access to DWFSs A, B, C, and E (Burke 1983, p. 35).

To conclude, it is the coastal state, and the coastal state alone, that determines whether or not there is a surplus with regards to a fishery within the coastal state EEZ (recall that we are not considering the complications arising from shared stocks). If the coastal state declares a surplus to exist, then the coastal state is given wide powers in laying down terms and conditions of access. It cannot be overemphasized that the coastal state is called upon to give away nothing for free.

Why then would a coastal state declare there to be a surplus, or surpluses, on more than a temporary DWFS phase out basis? Several coastal states have, in fact, responded by saying, “why indeed.”

The answer to the question can be seen in terms of the admonition of Article 62(1) that the coastal state “shall promote the objective of optimum utilization of the living resources within the exclusive economic zone” (UN 1982, Article 62(1)). This takes us into the realm of economics.

ECONOMIC PRINCIPLES

We commence by stating that, when we consider coastal state “optimum utilization of the living resources within the EEZ,” we view optimum utilization in terms of the economic benefits accruing from the resources, loosely referred to as resource rent, to the coastal state as a whole. We are not focusing on the economic ben-

efits to the coastal state fishing industry, nor on such benefits to selected regions of the coastal state. Further, we make it clear from the outset that, when talking about economic benefits from fishery resources, we use a broad definition of economic benefits that explicitly includes non-market, as well as market, benefits.²

The World Bank, in its 2005 report *Where is the Wealth of Nations?* (World Bank 2005), takes the position that both the current national income and prospects for future development of any nation rest upon that nation’s portfolio of real capital assets. Within this portfolio are to be found real capital assets in the form of natural resources (World Bank 2005, pp. 1–5). Among a coastal state’s sub-portfolio of natural capital assets are capture fishery resources within the coastal state EEZ(s). The economic objective of managing these fishery resources (optimum utilization) is to be seen as that of ensuring that these natural capital assets make the maximum economic contribution to the coastal state as a whole *through time*. Since these natural resources are renewable, they are capable of yielding economic returns to the coastal state for an indefinite period of time.

In light of our discussion of the legal principles underlying FFAs, the rational coastal state will enter into FFAs if, and only if, they further the objective of ensuring that the aforementioned fishery resource assets make that maximum economic contribution to the coastal state through time. Thus, the establishment of FFAs is to be viewed as a component of the coastal state economic management of the intra-EEZ fishery resources. A few comments on the economic management of capture fishery resources are in order.

It has often been remarked that the management of capture fishery resources has been, and always will be, difficult. With few exceptions, capture fishery resources are mobile and are not observable prior to capture. The relevant species interact with one another, and are in addition subject to environmental shocks, all of which are not readily observable, let alone measurable or predictable (Bjørndal and Munro 2012, Ch. 1).

The fact that such resources are mobile and difficult to observe prior to capture has meant in the past that it has been difficult, or more to the point costly, to establish effective property rights to these resources, be these property rights private or public in nature (Sutinen and Andersen 1985). As a consequence, these resources came to be seen as the quintessential “common pool” (that is, open to all) resources.

It has, for sixty years, been clearly recognized by economists that the common pool nature of these resources can readily lead to over-exploitation of the resources and economic waste (Gordon 1954). If we regard such resources as natural capital, it is easy to demonstrate, for example, that no rational exploiter of the resources will have any incentive to invest in them, by reducing harvesting, under “common pool” conditions. On the contrary, the rational exploiter will be given the incentive to regard the resources as if they were non-renewable, to be depleted at all possible speed.

The World Bank and the FAO, in their 2009 report, *The Sunken Billions*, estimate that world capture fishery resources would have to be at least doubled in size, if they were to come close to making the maximum possible contribution to the world economy (World Bank 2009). The required doubling reflects the excess disinvestment in this form of natural capital that has occurred in the past, due to their common pool nature.

Common pool conditions can lead to a whole set of perverse outcomes. For example, in any normal industry, a reduction in production costs is to be welcomed as a benefit to the industry and to society as a whole. In a common pool capture fishery, a reduction of harvesting costs due, for example, to technological advances in fishing, will make a bad situation worse, by intensifying the resource overexploitation (Bjørndal and Munro 2012).

Prior to the Third UN Conference on the Law of the Sea, referred to in the previous section, coastal state jurisdiction over marine capture fishery resources did not extend beyond 12 nautical miles from shore. The remainder of the oceans constituted the high seas, where the capture fishery resources were true common pool resources. The 1982 UN Convention on the Law of the Sea, arising from the Conference, led to establishment of the 200 nautical mile coastal state EEZ regime, which drastically reduced the amount of capture fishery resources to be found in the high seas.

For all intents and purposes, the coastal state has property rights to the capture fishery resources within the EEZ (McRae and Munro 1989). The common pool problem was thereby mitigated, but it was not eliminated. As history has demonstrated painfully, it is one thing for a coastal state to be granted legal property rights to its intra-EEZ capture fishery resources, but it is quite another for the coastal state to exercise these rights effectively, or to devolve these rights upon individuals or groups within the state (Bjørndal and Munro 2012).

If the coastal state is ineffective in exercising these property rights, in its management of the intra-EEZ fishery resources, then the capture fisheries will become de facto common pool in nature, with all that it implies. Such an outcome has a direct bearing on the desirability of establishing FFAs. An FFA, which could have a beneficial economic effect for a coastal state with well managed fisheries, could, if the fisheries were mismanaged, make a bad situation worse.

Let us commence by assuming for the time being that the coastal state intra-EEZ fisheries are effectively managed. We then ask, why, given the coastal state's objective of maximizing the economic returns from these resources through time, and given the fact that the coastal state is under no legal obligation to grant DWFSs access to its EEZ(s), the coastal state would even consider establishing one or more FFAs. An approach that has been found useful by several authors in addressing this question is to turn from standard fisheries economics to Principal-Agent analysis, accompanied by international economics (for example, Clarke and Munro 1987, 1991; Munro 1985, 1992; Quirola and Johnston 1989). Those wishing a more formal approach to what follows are encouraged to turn to the annex to this appendix.

Principal-Agent analysis has, over the past several decades has come to be used very widely by economists (see, for example, Sappington 1991). We look to this analysis to provide an overarching framework.

The Principal, which could be a person, a firm, or a state, wishes to see certain tasks undertaken. It is unable, or unwilling, to undertake these tasks itself, and so acquires the services of one or more Agents. In the case at hand, the coastal state is the Principal and the DWFSs are the Agents. We can think of the relevant "tasks" as the harvesting of the fishery resource, processing of the catch and the marketing and distribution of the finished fish products.

The Principal (coastal state) may acquire the services of Agents (DWFSs) to undertake one, two, or all three of these tasks.

If the Principal acquires the services of one or more Agents to undertake one or more of these tasks, the Principal faces a fundamental constraint. The Agents will not perform these tasks, unless each receives a minimum net economic return through time. In the case of DWFS Agents, these minimum net economic returns can be thought of in opportunity cost terms, namely the net economic return that each DWFS fleet could be expected to obtain in its next best form of employment (Clarke and Munro 1987).

Over and above this, a strict hierarchical relationship exists in which the Principal chooses an incentive scheme (for example, set of regulations or terms and conditions of access) to be applied to the Agents. The Principal's incentive scheme, along with the actions taken by the Agents, determines both the economic returns to the Agents and to the Principal. As seen from the perspective of the Principal, a first best situation exists when two conditions are met. First the economic returns to the Agent(s) are held to the minimum. Secondly, the Principal is able, at minimal cost, to specify, contractually and enforceably, the actions of the Agents. Wishes, urges, and desires of the Agents, contrary to the best interests of the Principal, are entirely suppressed. The Agents are essentially robots.

In the normal second-best situation, the Principal lacks the power, or more to the point finds it too costly, to force a set of actions upon the Agents. The Agents thus have some freedom of choice. The Principal can hope to influence the Agents' choices, only indirectly through the incentive scheme. This gives rise to the concept of an *agency cost*, which is the difference between the actual return to the Principal, and what it would receive under a first best situation. It reflects the insufficiency of the Principal's incentive scheme in compensating for its inability to monitor perfectly the Agents' actions. At the heart of the Principal-Agent problem is monitoring imperfection (Clarke and Munro 1987).

What then are the reasons that the Principal (coastal state) might seek the services of the Agents (DWFSs)? We note that the DWFSs, from the perspective of the coastal state, are, by definition, foreign. Thus, a coastal state, in obtaining DWFS services can be thought of as importing such services.

To take but one example, suppose that the coastal state agrees to the establishment of a joint venture between a domestic fishing company and a DWFS fleet, in which the DWFS vessels harvest the intra-EEZ resource for delivery to domestic fishing company's onshore processing plants. One could, in this instance, think of the coastal state as importing DWFS harvesting services (Munro 1992).

If the reverse were the case, with domestic vessels delivering harvests to DWFS vessels with onboard processing capacity, one could think of the coastal state "importing" processing services, and marketing services. Fee fishing, in which the DWFS vessels both harvest, process the fish, and market the finished fish product for a fee, or fees, could be seen as the coastal state importing the "complete package" of DWFS services (Munro 1985; Clarke and Munro 1987).

In the fee fishing case, the rational coastal state does not ignore the post harvesting activities arising from the fishing operations. On the contrary, the rational coastal state will have a powerful interest in its fish all the way up the value chain. The DWFS are, after

all, the agents of the coastal state. In the annex, it is shown that, in a world of perfect information and one in which the rates of discount of the coastal state and DWFSs are equal, the net economic returns from the fishery (resource rent) would be maximized through time, from the coastal state's perspectives. Furthermore, *all* of these net economic returns would accrue to the coastal state, except for the aforementioned DWFS minimums.

Viewed in this fashion, the argument for the coastal state (Principal) acquiring the services of DWFS fleets (Agents) is to be seen as a variant of the argument for free trade, resting upon the doctrine of comparative advantage. The doctrine does, in essence, maintain that states should specialize in the production of goods and services in which they have a comparative advantage, and through trade acquire the goods and services in which they have a comparative disadvantage. While the origin of the doctrine goes back to the early 19th century (David Ricardo), present day international economists, such as Noble Laureate Paul Krugman, insist that the doctrine has lost none of its validity over the past two centuries (Krugman, Obstfeld, and Melitz 2012). Thus, with respect to a particular intra-EEZ fishery, the DWFS fleets may have a comparative advantage in harvesting, processing, or marketing the finished fish products, or in all three.

Return to the example in which the DWFS vessels harvest the resource for delivery to onshore domestic processors. This would make sense, if the DWFS fleet has a comparative advantage in harvesting, but not processing or marketing. The argument would then be that, if a domestic fleet were put in place to harvest the resource, this would represent a commitment of produced capital and labor that could be used elsewhere in the economy (opportunity cost). If the coastal state has a comparative disadvantage in harvesting the resource, the state would be better off in seeing such capital and labor being used, not in the fishery, but rather elsewhere in the economy. On the other hand, if the DWFS fleets possess a comparative advantage in neither harvesting, nor in processing, nor in marketing then there is no obvious economic case for granting the DWFS fleet(s) access.

It is perhaps useful at this point to draw upon an analogy. The coastal state Canada is a nation heavily dependent upon international trade, particularly in goods. Much of Canada's trade is seaborne. Canada is quite capable of building and manning deep sea merchant ships. Indeed, at the end of the World War II, Canada had a significant deep sea merchant fleet. That fleet has long since disappeared. Virtually all of Canada's seaborne exports and imports of goods are carried in foreign vessels. Canada is in effect importing foreign deep sea shipping services. The economic rationale for such importation is quite simply that Canada has a clearly revealed comparative disadvantage in deep sea shipping. Coastal state importation of DWFS harvesting, processing, and marketing services is analogous to Canada's importation of deep sea shipping services (Munro 1992).

Before proceeding further, let it be acknowledged that the importation of fishing services plus comparative advantage argument is least obvious in the case of fee fishing arrangements. After all, it would appear that the exporter of services is paying the importer, which seems completely backward. The response is that one has to distinguish between explicit and implicit payments for imported services. Let us illustrate with the aid of a highly simplified example.

Let us consider a single fishery within a coastal state EEZ, in which the harvested fish go into the fresh market, and the fresh market only, with the consequence that we can abstract from processing and marketing costs. All of the fish, however harvested, go into the market of fishing state A, which has distant water fishing capabilities. We suppose further that there is an established world price for the fish of €4.00 per kg. The coastal state is capable of harvesting the fish at a cost of €3.00 per kg. If it did so (abstracting from all other costs), it would enjoy a net economic return of €1.00 per kg. State A, if granted access, could harvest the resource at a cost of €1.00 per kg—a comparative advantage once again. If A were allowed to do so, obviously the global net economic returns from the fishery would be increased.

If the coastal state grants state A access to the fishery, it will in effect be importing the harvesting services of state A. The coastal state must compensate (pay) A for its harvesting services. The compensation will, however, be implicit, rather than explicit. The access fee paid by A must be sufficiently below €4.00 per kg to cover A's harvesting costs.

In fact, in this simple stylized example, one can specify the range of negotiated access fees. They must lie between €1.00 and €3.00 per kg. At €1.00, all of the gains from trade in services go to A, while at €3.00 all such gains would go to the coastal state. Suppose the access fees were set at €2.00 per kg. The gains from trade in services would then be evenly divided.²

Now let us return to the question of comparative advantage in fisheries. There are numerous reasons why a DWFS might possess a comparative advantage in harvesting, processing, or marketing and distribution (see Munro 1985 for a full discussion). For example, so-called factor proportions—such as relative abundance of labor and produced capital—can influence comparative advantage or disadvantage. Thus, suppose that a coastal state, which has a relatively low abundance of produced capital, has offshore intra-EEZ fisheries that are capital intensive in nature. It then might well be determined that the coastal state has a comparative disadvantage in both harvesting and processing the relevant resources in comparison with a DWFS, which has a relatively high abundance of produced capital.

There is in addition a special form of comparative advantage, pertaining to the FFA issue, not found in the standard literature on

² The implicit payment to A is: $\text{€}4.00 - \text{€}2.00 = \text{€}2.00$ per kg. This implicit payment covers A's harvesting costs of €1.00 per kg, and gives A a share of the resource rent equal to €1.00 per kg. The coastal state gains as well. If the coastal state had done the harvesting of the resource, its resource rent would have been: $\text{€}4.00 - \text{€}3.00 = \text{€}1.00$ per kg. By importing harvesting services from A, the coastal state enjoys resource rent equal to €2.00 per kg.

In the annex, we go into this issue in greater depth. As is implied by the above, we think of the coastal state in a fee fishing arrangement as making two implicit payments to the DWFS(s), which we denote simply as $\alpha(t)$ and $\beta(t)$. The $\alpha(t)$ payment is the payment to cover the harvesting, processing, and marketing plus distribution costs of the DWFS(s), while the $\beta(t)$ payment represents the DWFS(s) share of the gains from trade in fishing services. The annex demonstrates, to no one's surprise, that there are upper and lower bounds to $\beta(t)$. Where the $\beta(t)$ will lie within these bounds will, of course, be determined by relative bargaining. The rational coastal state will strive to push the $\beta(t)$ as close to the lower bound as possible; the rational DWFS(s) will strive to do precisely the opposite.

international economics. This arises from the inherent uncertainty in fisheries management, the importance of which is evidenced by the increasing emphasis given to the Precautionary Approach to fisheries management (Bjørndal and Munro 2012).

If a fishery is subject to unpredictable negative environmental shocks, or management errors due to uncertainty, the required adjustment is made more difficult—for obvious reasons—and the produced and human capital engaged in the fishery is less malleable. DWFS fleets, because of their mobility, tend to be malleable with respect to specific fisheries. Such malleability may be absent in coastal state produced and human capital engaged in the fishery.

The Northern Cod resource off Atlantic Canada provides a case in point. Prior to Canada's implementation of EEZs, the offshore Northern Cod fishery was dominated by DWFS fleets. Following the implementation of the Canadian EEZs, 95 percent of the resource was encompassed by the Canadian Atlantic EEZ. Within that EEZ, the malleable DWFS fleets were phased out to be replaced by an expanded Canadian fleet. The Canadian-produced capital and human capital committed to the fishery proved to be highly non-malleable. This non-malleability of capital made it very difficult for the Canadian resource managers to respond quickly when it was discovered in the mid-1980s that the resource had been much more heavily exploited than had been realized. It is argued that these difficulties contributed significantly to the crash of the resource, which forced the Canadian resource managers in 1992 to declare a temporary Northern Cod harvest moratorium, a temporary moratorium that continues to this day (Bjørndal and Munro 2012).

We now point to two examples of the relevance of comparative advantage to FFAs. The first consists of the Pacific islands region of the western and central Pacific. The Pacific Island Countries (PICs),³ as a consequence of the implementation of the EEZ regime, gained sovereign rights to immense tropical tuna resources. The stated aim of PIC governments in the early days of the EEZ regime was to develop both national tuna fishing fleets and national tuna processing industries (Clark 1985). Initial attempts to achieve this goal did not meet with success. To quote Clark:

As it turned out, having an enlarged fisheries zone did not make tuna any easier to catch or to market, and did not make it any easier for small island governments to obtain capital for investing in the risky business of tuna fishing (Clark 1985, p. 22).

While not losing sight of their long term goal, the PIC governments turned to FFAs with DWFSs, the most prominent of which in the early days were Japan and later the United States. In this case, the DWFSs had what was close to an absolute advantage in the harvesting, processing, and marketing of tuna. In turning to FFAs, the PICs have recognized that they should think in terms of extracting resource rent, not just at the harvesting stage, but right up the value chain (Clark 2014, p. 18).

³ The term PIC generally refers to the 15 Pacific island states and territories that are members of the Pacific Islands Forum Fisheries Agency, namely: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Tokelau (a New Zealand territory) (Clark 2014).

While there has been some progress toward the aforementioned goal, it continues some 30 years later to be long term (Clark 2014). Nonetheless, this example brings up one important aspect of the comparative advantage argument. Comparative advantage is not timeless. A nation's comparative advantage or disadvantage in various industries will shift over time, as any respectable textbook on international economics will point out. In the context of fisheries, the fact that DWFSs today have a comparative advantage in the harvesting, processing, or marketing of a coastal state's intra-EEZ fishery resources does not mean that they will have that comparative advantage tomorrow. If over time the FFAs cease to be of economic benefit to the coastal state, then the rational coastal state will plan to phase the FFAs out.

The PICs did, and continue to, recognize the possibility of shifting comparative advantage. The access arrangements that they have established have been stable, but in no sense are they to be seen as being in perpetuity (Clark 1985, 2014). We shall discuss the PICs in further detail when we examine Principal-Agent relations and the issue of *agency cost*.

The second example also comes from the South Pacific, except that it involves a developed, rather than developing, coastal state—namely New Zealand. We draw heavily upon Major (2014).

When New Zealand established what was to be the fourth largest EEZ in the world, it found under its jurisdiction valuable offshore groundfish resources in which the New Zealand fishing industry had hitherto shown little interest. There seems little doubt that, if New Zealand had wished it, it could have ensured in time that its offshore fishery resources were harvested exclusively by New Zealand-owned and operated vessels and the catches processed in New Zealand vessels and New Zealand onshore plants. It did not face the constraints confronting the Pacific Island Nations and their offshore fishery resources.

In the late 1970s, after New Zealand had established its EEZ, FFAs were permitted, which were fee fishing in nature. These were, in fact, seen at the time as temporary arrangements, to be in place only until domestic fishing industry was built up sufficiently to undertake the entire harvesting of the resources and processing of the catches (Major 2014, p. 1).

In 1983, the New Zealand government introduced the Deepwater Allocation System (DAS) for New Zealand companies with an interest in deepwater species, within the New Zealand EEZ. This in turn was followed by the Quota Management System (QMS)⁴ in 1986, which underwent modifications in 1990 and 1992, described in detail in the accompanying appendix (Major 2014). The 1992 modification is of particular significance as it led to quota being allocated to the Maori community, on a community basis, to be managed by a community body: Te Ohu Kaimoana (TOK).

In any event, under the DAS and QMS, the relevant companies, and later TOK, were given the right, if they so wished, to charter foreign-owned vessels for harvesting purposes. So-called foreign charter vessels (FCVs) led to New Zealand importing of fisheries harvesting and processing services through New Zealand companies (and TOK).⁵ Indeed, appendix H refers to the “free

⁴ The QMS was a system of Individual Transferable Quotas.

⁵ But not marketing services.

trade in fisheries services” brought about by the FCV arrangement (Major 2014, p. 2).

The supposedly temporary importation of foreign fishing services has proven to be not so temporary, after all. Appendix H reports that, in the fishing year 2010/11, there were 56 vessels operating in the deepwater and pelagic fisheries within the New Zealand EEZ. Of these, almost half (27) were FCVs (Major 2014, p. 6).

It has been remarked that the New Zealand scheme has the great advantage of blunting criticism from the domestic fishing industry, since it is the industry, which makes the decision to “import,” or not to “import,” the foreign fisheries services. The question of comparative advantage in the New Zealand case, let it be at once noted, ceases to be one of academic interest alone. Those New Zealand fishing companies (entity), which did chose, or do chose, to ignore the dictates of comparative advantage were, and are, subject to swift and certain financial punishment (Munro 1992, p. 304).

If the argument for FFAs is basically an argument for free trade in fisheries services, we must immediately note that free traders, regardless of the goods or services involved, are continually doing battle with protectionists, those who wish to impose barriers on imports of goods and services to protect domestic industries. Protectionism is of direct relevance to the issue of granting access to DWFS fleets by the coastal state. Many of the arguments against granting DWFS access, regardless of comparative advantage, are immediately recognizable by international trade economists as arguments for protection (Munro 1985, 1992).

Protectionism can range widely. It can range from mild interference with international trade to autarky, in which the state, for political or other reasons, attempts to be self-sufficient, to smother all trade with the rest of the world, regardless of economic cost.

Examples of the latter, in terms of fisheries, are provided by the two neighbouring North American coastal states of Canada and the United States. With respect to Canada, in the mid-1970s the then Canadian federal minister responsible for fisheries stated, with the Canadian EEZ regime in the offing, that: “the long term is for Canadians. Canada is not only going to reach out and encompass all of the living resources off its continental shelf and slope [Canada still had hope at the time that the outward boundary of EEZs would be the greater of 200 nautical miles and the edge of the continental shelf], we are going to make sure that they are harvested by Canadians, in Canadian owned vessels and processed in Canada as well” (Munro 1992, p. 300). The implication was that the importation of foreign harvesting and processing services was to be reduced to the minimum, with the hoped for minimum being zero. Canada was, if possible, to become self-sufficient within its EEZ fisheries (marine autarky).

Canada was as good as the minister’s word. Canada did attempt to minimize DWFS activity in its EEZs, and attempted to do so with all possible speed. Reference has already been made to the removal of DWFS vessels prosecuting the Northern Cod fishery within the Canadian EEZ, their replacement by Canadian vessels and the ultimate consequences of this policy for the state of the resource.

With regards to the United States, the great American prize under the emerging EEZ regime was the Bering Sea pollock fishery. The walleye pollock fishery, to give its proper name, is distributed

across the North Pacific and ranks number two in world capture fisheries, in volume terms (Wilen 2014).

The United States implemented its EEZ regime in 1977. Up to that time, the American fishing industry had shown little or no interest in the immense pollock fishery off Alaska. That fishery had been the preserve of DWFSs—Japan and the Soviet Union in particular. The United States in the 1970s, while not being quite as blunt as the Canadian minister, did, through legislation, make explicit its “plans to ultimately replace, with domestic fleets, the foreign fleets that had previously plied the rich waters off Alaska,” come what may (Wilen 2014, p. 4). It took the Americans a bit longer than the Canadians to achieve their autarkic goals, but achieved they ultimately were.

As well as providing examples of free trade in fisheries services, the accompanying appendix on New Zealand fisheries provides examples of emerging protectionism. Complaints that FCVs are creating unfair competition for domestic interests—because the foreign vessel owners pay below New Zealand wages to their crews, and because the crews have inferior working conditions—are immediately recognizable by international trade economists as variations of the closely related “pauper labor” and “exploitation” arguments against free trade (Major 2014). In particular, it claimed that by importing goods and services from low wage countries, the importing countries are contributing to the exploitation of labor in these countries.

The response is to ask what alternatives exist for the “exploited” labor. Refusing to import from these low wage countries will work toward further lowering the wages and exacerbating the poor working conditions of the exploited labor (Krugman, Obstfeld, and Melitz 2012, Ch. 3).

While there are many spurious arguments for protectionism, in that they are really arguments for supporting certain industries at the expense of the rest of the economy, free-trade economists do have to make a major concession. The argument for free trade in goods and services is essentially an argument maximizing efficiency in a world economy. Individual states may, under certain circumstances, benefit from protection, albeit at the expense of the rest of the world economy. Our perspective is that of the individual coastal state, not that of the entire world. This concession causes free-trade economists to agree that, from the perspective of the individual state, there may be some “legitimate” arguments for protection.

Perhaps the most famous of the “legitimate” arguments for protection is the “infant industry” argument, which is dynamic in nature. The argument is basically that a state may have a latent comparative advantage in a particular economic activity. A domestic industry based on the economic activity cannot become successfully established on its own in the face of entrenched foreign rivals. Therefore, the “infant” should be protected, until it has gone through the necessary learning process. The state’s comparative advantage in the activity will then be revealed and the protection can be safely removed.

In the case of EEZ fisheries, domestic fishing industries are attempting to become established in fisheries, which had hitherto been dominated by DWFSs. If FFAs are permitted unhindered, the latent comparative advantage of the domestic industry will remain hidden. FFAs should be discouraged or at least be discriminated against, until the domestic industry has gone through its learning

process. After the learning process has been completed, the discrimination will be unnecessary, because by then it will be clear to all that the coastal state has nothing to gain economically from FFAs, or so it is argued.

While not denying the legitimacy of the argument, the great risk in applying it is that it is very difficult to determine beforehand whether or not the infant does have genuine prospects for achieving maturity. If the infant never matures, then the industry will go on being a permanent burden to the economy. In fisheries terms, this would mean a permanent loss of potential resource rent.

The Bering Sea pollock fishery, discussed earlier, provides one of the clearest examples of the relevance of the infant industry argument. In 1977 with the advent of the American EEZ regime, the American Bering Sea pollock fishing industry was, it will be recalled, best described as a newborn. Foreign fishing was permitted for a time, but on a transition basis. During the transition phase, the infant was protected by discriminatory measures applied against the foreign presence in the fishery. Foreign fee fishing was more heavily discriminated against than were joint venture arrangements. The latter were seen as having value in maturing the infant by providing technology transfers (Wilen 2014).

We return now to our overarching Principal-Agent analysis framework. The discussion of the comparative advantage argument for FFAs has not given recognition to the heart of the Principal-Agent problem, namely that the Principal can never expect to monitor the Agent perfectly. We are normally confronted with second best situations, in which the Principal's ability to monitor and control the Agent is imperfect, and the Principal is subject to an *agency cost*. If the agency cost is great enough, it could overwhelm the gains promised by comparative advantage.

The most striking examples are provided by the cases in which the coastal state's (Principal's) resource management powers are weak, so that the coastal state is ineffective in controlling either foreign or domestic vessels within its EEZ. With ineffective management powers, de facto common pool conditions can easily arise. We warned earlier that, under such conditions, FFAs can end up making a bad situation worse, even if there is an apparent strong comparative advantage argument in favor of them. Such are the perversities arising under common pool conditions.⁶ An example is provided to us by a study carried out by the UNEP on Argentinean fisheries (UNEP 2002).

Prior to the late 1980s, the Argentinean fishing sector was deemed to have been underdeveloped. In the late 1980s, Argentina entered into FFAs with the European Union (EU), with the objective of once again developing the fisheries, thereby importing fishing services. The sector did begin expanding as hoped, with the focus being on hake stocks and, to a lesser degree, on blue whiting stocks (UNEP 2002).

In the late 1980s and 1990s, the fisheries sector became one of the most dynamic sectors of the Argentinean economy (Ibid.). The management of the fisheries was, however, distinctly inadequate. What the UNEP refers to as the "happy years" was one of

uncontrolled growth in the fisheries, in which massive total allowable catch "overages" were commonplace. By the end of the 1990s, there was clear evidence of severe overexploitation of both hake and blue whiting stocks (Ibid.). The high economic fishery returns, and rapid growth, had been a "fool's paradise" type of prosperity based, to a marked degree, on the running down, or mining, of the fisheries natural capital.

The UNEP study estimates that the loss to future Argentinean generations of the resource overexploitation (expressed in present value terms and assuming no stock restoration) is equal to ten times the net economic benefits enjoyed during the "fool's paradise" prosperity of the late 1980s and 1990s (UNEP 2002, pp. 90–91). Indeed, assuming no stock recovery, the net present value of future returns from the resources (using a reasonable discount rate) is negative (Ibid.). In retrospect, Argentina would have been better off, if it had forgone the opportunity to enter into FFAs with the EU in the late 1980s.

The running down of the Argentinean fish stocks is not necessarily irreversible. It is quite possible that many, maybe all, can be rebuilt, which would be properly seen as a program of investment in fishery natural capital. No investment program, however, comes without a current cost. Moreover, the investment program might have to extend over a period of many years with the return, as with any long-term investment, being uncertain. The point remains that Argentina would have been better off postponing the aforementioned FFAs, until it built up greater fishery resource management capacity.

Even if the coastal state's management capacity is adequate, the coastal state as Principal will face the classic Principal-Agent problem of uncertainty and asymmetric information. There will likely be an asymmetry in the relevant information between Principal and Agent in the Agent's favor. In the case of a fee fishing type of FFA, the DWFS(s) will obviously have far better knowledge of its (their) harvesting, processing, and marketing costs than will the coastal state. The DWFS(s) may also have better information about prices of finished fish products than will the coastal state.

The issues of monitoring and asymmetric information leads directly to the related questions of monitoring, surveillance, and control (MSC), and relative bargaining power. A particularly thorough treatment of the MSC issue can be found in a paper arising from the FAO 1983 Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones, from which we drew the Burke paper employed so extensively in the previous section (FAO 1983). The MSC paper is "Access Conditions and Compliance Control," by Dean Robb, a legal expert working at the time in the Pacific islands region (Robb 1983).

A key point made by Robb is that most coastal states, certainly developing coastal states, cannot tolerate the cost of relying solely upon what he refers to as "hard enforcement" (for example, extensive use of patrol vessels and aircraft). Reliance to some degree has to be on self-regulation by the DWFS(s) granted access. This, in turn, requires negotiation between the coastal state and the DWFS(s). Robb refers to the agreement between the government of the coastal state and that (those) of the DWFS(s), and the conditions of access laid down by the coastal state. He continues, "except in the agreement, access conditions are in form, though not always in fact, unilaterally prescribed by the coastal state and are not *per se* the subject of negotiation. In fact, however, many of the unilater-

⁶ In our discussion of the comparative advantage argument for FFAs, we gave considerable attention to the New Zealand example. New Zealand's record of domestic fisheries management is exemplary. We have also given emphasis to the example of the Pacific Island Countries. While very much developing in nature, they have demonstrated, as will be seen, a capacity for effective resource management.

ally imposed conditions are often the product of consultation, if not outright negotiation and agreement” (Robb 1983, p. 157). This is, of course, a pure Principal-Agent type of situation, where the Principal, lacking perfect monitoring control over the Agent, must seek out the optimal incentive scheme to be applied to the Agent. The Principal’s ability in setting such an optimal incentive scheme (from its point of view) will be influenced by its bargaining power relative to that of the Agent.

Robb continues that, in these circumstances, the coastal state is forced to recognize the interests of the DWFS (fully in keeping with Principal-Agent analysis). He also points out that there is some degree of convergence of interests of Principal and Agent. It is in the interests of both to have sustainable fisheries yielding maximum economic returns through time (Robb 1983).

He lays down some basic conditions for successful compliance schemes that are reasonably obvious upon being stated. The schemes must be cost effective and they must be credible, meaning that the schemes must be enforceable. He cites the famous dictum that “enforcement is the crucible of law, the test of its reality.” Unenforceable law is paper law (Robb 1983). In any event, weak bargaining power and accompanying ineffective MSC assure the coastal state Principals of very high *agency costs*.

We return once again to the Pacific islands region. The PICs provide a striking example of the enhancement through time of coastal state bargaining power, the complementary strengthening of coastal state MSC schemes, and the sharp reduction of *agency costs*.

Some background is in order. At the dawn of the EEZ regime, the PICs were seen as being collectively one of the great beneficiaries of the new regime. They had gained sovereign rights over immense tropical tuna resources that were in turn of immense economic importance to them (Kearney 1983). There were, however, great doubts at the time whether the economic benefits to the PICs from these resources would prove to be anything other than ephemeral. There were 14 independent PICs, many at low levels of development, having land mass of not more than 500,000 km² and combined EEZs with an area equal to that of the continent of Africa. The PICs were incapable of harvesting more than a small percentage of the potential harvests, and were faced at the time with effectively one DWFS, which was a major world power (Munro 1991).

The first step toward realizing significant economic gains from the tuna resources was the recognition among the PICs that they would gain the requisite bargaining power only by cooperating. If they did not cooperate, relevant DWFSs would do the obvious and play one PIC off against the others. This recognition led to the establishment of the South Pacific Forum Fisheries Agency in 1979 (*Ibid.*).

We must at this point bring to bear a body of economic analysis, referred to as the theory of strategic interaction, and more commonly known as the theory of games. There are two broad classes of games: competitive and cooperative.⁷ It is the latter class that

is of interest. Cooperative games are primarily concerned with the conditions that must prevail for cooperative arrangements to achieve stability through time. Cooperative games that do satisfy these conditions degenerate into competitive games, which are characterized by destructive consequences for all “players” (Bjørndal and Munro 2012).⁸

As a general rule, the difficulty in achieving a stable solution to the cooperative game through time increases exponentially with the number of “players.” The original Forum Fisheries Agency game had 14 players that were (and are) geographically dispersed. The outlook for effective cooperation among the 14 looked dismal (Munro 1991).

Cooperative games with more than two players carry with them the possibility of sub-coalitions forming among them.⁹ It was the emergence of sub-coalitions within the Forum Fisheries Agency game that saved the day.

The “players” in the game were (and are) not identical¹⁰ by virtue of the fact that the tuna resources are not spread out evenly in the region. They tend to be concentrated around the equator, and to become thinner the farther one is away from the equator. Thus, in crude general terms, there were (and are) “haves” and “have-nots” among the players. A group of the haves, becoming alarmed at the drift and lack of effective cooperation, met in early 1982 on the island of Nauru and signed an agreement, the Nauru Agreement,¹¹ which came into the force in late 1982. The signatories to the Agreement, now referred to as Parties to the Nauru Agreement (PNA),¹² invited the have-nots to join them, but made it clear that the PNA sub-coalition would go its own way, if the have-nots did not do so. The have-nots did agree to join (Munro 1991). In any event, the intractable 14-player game had been transformed into a tractable two sub-coalition game. A stable solution to the Forum Fisheries Agency cooperative game was achieved, with the consequence of greatly enhancing the bargaining power of the PICs.

Almost by definition, the PNA sub-coalition had a greater long-term interest in the tuna resources than did the other sub-coalition. The theory of cooperative games, as applied to fisheries, has what amounts to a common sense solution to the problem of achieving optimality, where the players have differences in perceived appropriate resource management policies, arising from the differences in the perceived long-term value of the resources. The solution, which goes under the name of the *Compensation Principle*,

⁸ If cooperation among the PICs had collapsed, there would have been destructive consequences. As we shall come to see, game theory has been used extensively in the analysis of the economic management of international fisheries. This is particularly true of the theory of cooperative games, more commonly referred to as coalition game theory.

⁹ When the number of players exceeds two, the players all cooperating together are seen to constitute the Grand Coalition.

¹⁰ To use a bit of game theory jargon, the players in the game were (and are) not symmetrical.

¹¹ Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest.

¹² The current Parties to the Agreement are: Federated States of Micronesia, Kiribati, The Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands, and Tuvalu.

⁷ What, if any, is the relationship between the theory of games and Principal-Agent analysis, which we used so extensively at an earlier point? After all, there is a strategic interaction between coastal states and DWFSs seeking access to the EEZs. The answer is that there is a relationship, which is close indeed. Principal-Agent analysis can be seen as being very close to, if not identical to, to a sub-class of games known as leader-follower games (Mesterton-Gibbons 1993).

states that the resources management should be dominated by the player, which places the greatest value on the resource, and that the dominant player should then be prepared to compensate the other player(s) (Bjørndal and Munro 2012, Ch. 7).

This is in effect what happened in the Pacific islands region. The PNA sub-coalition became the cutting edge in fishery resource management, certainly including the establishment and management of FFAs (Munro 2014). This continues to be the case today (Clark 2014).

Clark, in appendix B, refers to a paper that he wrote in 1983 on the rates of net economic return from the tuna fisheries to the PICs. The rates of return were disappointingly low. The 1983 paper cites several reasons, important among them being ineffective resource management and ineffective surveillance and enforcement, both reflecting limited coastal state resource management capacity (Clark 2014, p. 9). In Principal-Agent parlance, the *agency costs* to the PIC Principals were very high indeed.

Recall that the Nauru Agreement did not come into force until late 1982. The PNA leadership did in time begin to make itself felt and the aforementioned returns improved greatly. The PICs, under PNA leadership, established the Harmonized Minimum Terms and Conditions for Foreign Fishing Vessel Access (MTC), to prevent any DWFS from playing one PIC against the others. Accompanying the MTC, has been the establishment of a Foreign Vessel Register. All DWFS vessels must be in good standing on the Register to be granted access. A DWFS vessel in violation of its terms and conditions of access in the EEZ of a particular PIC, which does not settle, will find itself stricken from the Register, leading to its banishment from the EEZs of all member of the Forum Fisheries Agency (Clark 2014).

Furthermore, access agreements with DWFS governments or boat owners associations, had compliance provisions, which required the flag state or boat owners association to police its vessels while in the PIC EEZs (Clark 2014).¹³ In summary, enhanced bargaining power carried with it greatly improved surveillance and enforcement.

The latest development, discussed in detail by Clark (2014), is the Vessel Day Scheme (VDS), in operation with tuna seiners, and in a trial stage with tuna longliners. Once again, this is a PNA initiative. It can be seen as a fishing effort equivalent of an Individual Transferable Quota (ITQ) scheme. The PNA members agree to a Total Allowable Fishing Effort (TAE), which is then divided among the parties on a vessel day basis. The parties can then make their allotted VDS available to domestic or foreign vessels. While DWFS vessels are not directly part of the VDS, the hope is that the scheme will lead to competition among DWFS vessels, with resultant higher returns to PNA members.¹⁴

The PNA, which now have their own office, are quoted by Clark as boasting that, if “the VDS were to become fully . . . effective, the result should be the stripping out of rents, in terms of above market returns, throughout the value chain” (Clark 2014, p. 14). Recall that the first best situation for the Principal is to keep the return to the Agent to the minimum, and to have the Agent abide fully by the wishes and desires of the Principal.

While much of the previous discussion has focused on the leadership of the PNA, it must be stressed that the leadership would have been successful if, and only if, it had succeeded in attracting the support of all member countries of the South Pacific Forum Fisheries Agency. All members of the Forum Fisheries Agency have, in fact, actively supported the initiatives. Furthermore, the Secretariat of the Forum Fisheries Agency has played, and continues to play, a vital role in the implementation of the initiatives (Clark 2014).

In summary, the PICs as Principals are not yet in a first best situation. It can be argued, however, that the last 30 years have seen a sharp fall in the *agency costs* of the PIC Principals.

AREAS BEYOND NATIONAL JURISDICTION (ABNJ) AND FFAs

In the case of numerous coastal states establishing FFAs, some of the fishery resources within the coastal state EEZ will be found to cross the EEZ boundary into the adjacent high seas. The most striking example is that of the PICs, a case that is explored in detail in appendix C (McClurg 2014). The issue introduces significant complications.

It will be argued that the existence of ABNJ fisheries relevant to the coastal state does stand as a threat to FFAs, and indeed as a threat to the overall intra-EEZ management of the relevant stocks, if the ABNJ fisheries are mismanaged. It will also be argued, however, that, barring gross management of the ABNJ fisheries, the existence of these fisheries can add new dimensions to the rationale for establishing FFAs.

The ABNJ issue requires that we add to our discussion of both legal and economic matters. First, with regards to legal matters, as the McClurg appendix (2014) points out, there are two international instruments that are of prime relevance, namely the 1982 UN Convention on the Law of the Sea (UN 1982) and the 1995 UN Fish Stocks Agreement (UN 1995).

The drafters of the 1982 UN Convention realized that the mobility of many marine capture fishery resources was going to lead to an internationally “shared” fish stock problem in the proposed EEZ regime. There are three major classes of such stocks: (i) transboundary stocks—EEZ to EEZ; (ii) highly migratory and straddling fish stocks—those crossing the EEZ boundary into the adjacent high seas; and (iii) discrete high seas stocks—those to be found exclusively in the high seas beyond the EEZs (Munro, Van Houtte, and Willmann 2004). It must be acknowledged that (i) and (ii) are not mutually exclusive, as the western and central Pacific makes abundantly clear.

UNCLOS deals effectively enough with transboundary fish stocks (UN 1982, Article 63(1)). It deals much less effectively with highly migratory and straddling fish stocks (UN 1982, Article 63(2); Article 64; Article 87; Articles 116–120), with part of the reason being that the drafters of UNCLOS faced a difficult balancing act. On the one hand, there remained the carryover of the Freedom of the (high) Seas doctrine, as it pertained to fisheries. This led to coastal states with highly migratory and straddling fish stocks fearing that their attempts to manage these stocks within their EEZs would be completely undermined by unrestrained exploitation of these stocks by DWFSs, exercising their Freedom of the Seas

¹³ Recall the discussion of Robb (1983) on MSC.

¹⁴ See as well: McClurg (2014).

rights in the adjacent high seas. On the other hand, DWFSs saw coastal states, not content with the immense gains that they had made through the establishment of the EEZ regime, wanting to extend their jurisdiction further, which the DWFSs referred to as “creeping jurisdictionalism” (Munro et al. 2004).

The result of the balancing act is that coastal states and DWFSs are admonished by UNCLOS to cooperate in the management and conservation of highly migratory and straddling fish stocks (UN 1982, Article 63(2); Article 64), but without any guidance as to how this cooperation is to be achieved. Freedom of the Seas pertaining to fisheries is retained (UN 1982, Article 87), but it is heavily circumscribed by Articles 116–120 (UN 1982, Articles 116–120). Article 116 requires that DWFSs exploiting such stocks in the high seas take into account the rights, duties, and interests of relevant coastal states. Articles 117–118 require DWFSs to cooperate with other states in the conservation of these stocks in the high seas and require that they shall, as appropriate, do so through sub-regional or regional organizations (UN 1982). Legal experts maintain that Articles 116–120 are now a part of customary international law (Lodge, Anderson, Løbach, Munro, Sainsbury, and Willock 2007, pp. 5–6).

This balancing act proved to have weaknesses. In particular, the balancing act left unclear the rights and duties of both coastal states and DWFSs with respect to the high seas portion of highly migratory and straddling fish stocks (UN 1992; Munro et al. 2004). The lack of clarity made it very difficult to establish effective cooperative management regimes for these stocks, with one important reason being the near inability of cooperating states to prevent “free riding” by non-cooperating states (Munro et al. 2004).

The ineffectiveness of the management regimes in governing highly migratory and straddling fish stocks was manifested in the decade following the conclusion of the UN Third Conference on the Law of the Sea in 1982. One of the most dramatic examples was provided by the Bering Sea pollock resource, referred to earlier in another context (see: Wilen 2014). The resource is a straddling stock by virtue of a high seas enclave between the American and Russian EEZs—the Doughnut Hole. In the words of the FAO, the pollock resources in the Doughnut Hole were not just overexploited in that decade; they were plundered (FAO 1994).

It was this manifest inadequacy that led the UN to mount a further conference in 1993 to address head on the issue of the management of highly migratory and straddling fish stocks. The conference, popularly referred to as the UN Fish Stocks Conference, concluded its deliberations in 1995. The express purpose of the 1993–95 Conference was not to replace UNCLOS. It was rather to buttress UNCLOS (Munro et al. 2004).

The Conference gave rise to the 1995 UN Fish Stocks Agreement (UNFSA) (UN 1995). Central to UNFSA is the Regional Fisheries Management Organization (RFMO) regime, pertaining to the management of these stocks. To quote Lodge et al. 2007:

UNFSA accords a key role to RFMOs as the appropriate medium through which States are to cooperate so as to achieve and enforce conservation objectives. . . . Its main contribution in this regards is to define the desirable characteristics of an effective RFMO by listing in legally binding form, the matters upon which States are expected to agree to bring about the sustainable management of fisheries (Lodge et al. 2007, p. 4).

Ostensibly, the RFMO regime appears to apply only to ABNJ fisheries (Article 3). Article 7, however, states that the management regime for a relevant stock in the adjacent high seas and the regime for the management of that stock within the EEZ must be compatible. Sensibly, the stock is to be managed as whole. UNFSA does not prevent the geographical competency of a RFMO from extending to the EEZ (Örebeck, Sigurjonsson, and McDorman 1988; UN 1995, Article 3, Article 7).

A key article in UNFSA is Article 8(4). The article maintains that only those states, which are members of a RFMO, or which agree to apply the conservation and management measures prescribed by the RFMO, are to have access to the fishery resources under the governance of the RFMO (UN 1995, Article 8(4)). If this article could be enforced universally, it would, of course, deal with the problem of rampant free riding that plagued the pre-UNFSA management of highly migratory and straddling stocks.

This gives rise to the question of unregulated fishing. A fundamental rule in international law is that a treaty binds only those states, which are parties to the treaty, unless the treaty has achieved the status of customary international law. While UNFSA has to date been ratified by 81 states (UN Office of Legal Affairs, 2014), it is not clear that UNFSA has yet to achieve the status of customary international law. What then about non-ratifying states? It is agreed that vessels of such states, fishing in a high seas area under RFMO jurisdiction, and ignoring the conservation and management measures prescribed by the RFMO, are deemed to be engaging in unregulated fishing. Unregulated fishing may be seen as morally reprehensible, but it is a much more nebulous concept than illegal fishing (Munro et al. 2004). As Munro et al. insist, unregulated fishing, nebulous or not, is free riding pure and simple (*Ibid.*).

While unregulated fishing is unquestionably a serious problem, Lodge, et al. argue that one can question whether states, which have yet to ratify UNFSA, are in fact exempt from Article 8(4). It can be maintained that, if such states allow their vessels to fish in RFMO waters in a manner contrary to the RFMO fisheries management regime, the states can be seen in violations of their obligations under UNCLOS Articles 116–120. These articles have achieved the status of customary international law (Lodge et al. 2007, p. 6; UN 1982; UN 1995). If this is indeed the case, then RFMO members have a clear legal case for attempting to suppress unregulated fishing.

In turning now to the economics of management of highly migratory and straddling stocks, under the RFMO regime, let us note that we have already commented on the economics of the management of the first class of internationally “shared” fish stocks, namely transboundary fish stocks. This was in the context of the importance of the PICs cooperating in the management of their tuna resources. These tuna resources are at once both category (i) and category (ii) internationally shared fish stocks.

The economics of the management of transboundary fish stocks rests upon the theory of strategic interaction, more commonly known as the theory of games. What is true of the economics of the management of transboundary fish stocks, is true of the economics of the management of all classes of internationally shared fishery resources (Bjørndal and Munro 2012, Ch. 7).

In our earlier discussion, we stated that an unstable cooperative fishery game will degenerate into a competitive one with potentially

destructive consequences. It will also be recalled that the theory of cooperative games (coalition games in a more advanced form) is directed toward the question of the conditions necessary to achieve the desired stability (Bjørndal and Munro 2012). We now need to enquire more closely into one of the key conditions.

A central condition that must be met for a cooperative fishery game to be stable through time is that now, and at each point of time in the future, each and every player, or agent, must be convinced that its return from the cooperative game, referred to as payoff, is at least as great as it would be under a competitive game.¹⁵ This condition, once stated, appears to be obvious, but is often ignored in practice (FAO 2002; Munro et al. 2004).

This obvious condition is of direct relevance to the question of RFMOs and unregulated fishing. The RFMO is to be viewed as a dynamic cooperative fishery game. If free riding, either through unregulated fishing or non-compliance by RFMO members, is extensive, the aforementioned condition can easily go unsatisfied. A would-be responsible and cooperative RFMO member could calculate that, with free riding unchecked, its payoff from cooperation would be less than it would be under competition. Rationality would demand that it not cooperate.

The difficulty in achieving a stable cooperative fishery game rises exponentially with the number of players. RFMOs typically have large numbers, for example, Western and Central Pacific Fisheries Commission (WCPFC). An extensive study on the stability of RFMOs, using advanced game theory, concludes that, if free riding is widespread, a RFMO with more than five players cannot expect to achieve stability (Pintassilgo, Finus, Lindroos, and Munro 2010). A RFMO with no more than five members is an exceptionally small RFMO.

This fact of life has now been accepted by policy makers. The Organisation for Economic Co-operation and Development (OECD) High Seas Task Force recommended the establishment of an independent panel to develop a model for improved governance by RFMOs, to be based at Chatham House, London. The panel was duly established,¹⁶ and brought down its report in 2007. The report states that “a core conclusion is that the success of international cooperation depends largely on the ability to deter free-riding” (Lodge et al. 2007, p. x).

If free riding, unregulated fishing in particular, is allowed to go on unchecked, then the grave risk exists that the RFMO cooperative fishery game will degenerate into a competitive fishery game with resultant destructive consequences. The destructive consequences will obviously not be confined to the high seas, but will feed into the EEZ, undermining the intra-EEZ management of the resources(s). We have now made the point many times that effective intra-EEZ management of the fishery resources is a fundamental pre-requisite for the establishment of stable and beneficial FFAs.

Fortunately, there are signs that RFMO members responding and taking vigorous action against unregulated fishing (for example, blacklisting vessels or certification programs to guard against fish laundering) (Munro and Sumaila 2011). There is also increasing recognition that such action must be strengthened through

cooperation between and among RFMOs (Lodge et al. 2007; Munro and Sumaila 2011).

If free riding can be successfully suppressed, RFMOs may still face difficulties because players may have different views on management goals. To return to game theory jargon, in such a situation the players would be said to be asymmetric. We have, in fact, encountered this issue already in our discussion of the fisheries management cooperation among the PICs, when we referred to the PNA and the rest, and talked in terms of two sub-coalitions (with the two sub-coalitions together constituting the Grand Coalition). The sub-coalitions were seen to be asymmetric, with the PNA sub-coalition placing a higher value on the resources than the rest. We then made reference to the so-called *Compensation Principle*, which would call for the sub-coalition placing the greatest value on the fishery resource dominating the management of the resource. This would not be possible unless the dominant sub-coalition was prepared to compensate the other sub-coalition(s). What we did not discuss at that point is the question of how such compensation might be effected.

We can avoid this question no longer. Some more game theory jargon is now introduced, namely “side payments.” Side payments are transfers, which may or may not be monetary in form. With respect to management of fishery resources in the ABNJ, the existence of side payments would mean that a player’s payoff from the cooperative resource management agreement would not be determined solely by that player’s harvests in the ABNJ. The FAO has recognized side payments and their usefulness, but prefers to use the less provocative term “negotiation facilitators” (FAO 2002).¹⁷

This leads directly to the question of FFAs and fisheries in the ABNJ. To begin, everything that we have said to this point about the legal power of the coastal state to implement FFAs, or to refuse to implement them, remains unchanged. With ABNJ fisheries now under consideration, FFAs can be seen as having a potential new role as negotiation facilitators. Take as an example the PICs and the WCPFC.

The McClurg appendix (2014) gives great emphasis to the asymmetry between DWFS members of the WCPFC and the coastal state members, the PICs in particular.¹⁸ The PICs are seen as placing a substantially greater value on the tuna resources than the PICs (*Ibid.*). Turn to the *Compensation Principle* once again. The Principle would dictate that the PICs should dominate the management of the tuna resources, throughout their range. In order to do so, the PICs would have to be prepared to employ any and all negotiation facilitators that they have at hand. FFAs can be seen to constitute such facilitators. In WCPFC negotiations DWFSs can be offered (or denied) access to PIC EEZs as an inducement to agree to PIC resource management proposals.

FFAs can thus be seen to have a role, in some cases a very important role, in helping to ensure the long term stability of the cooperative fishery game that is the RFMO. A breakdown of this cooperative game brings with it the promise of resource management disaster.

¹⁷ With respect to cooperation among the PICs, there is evidence that the PNA sub-coalition make what amounted to side payments to the other PIC sub-coalition (Munro et al. 2004).

¹⁸ We have to acknowledge that in the WCPFC there is a sub-coalition of other coastal states, namely Indonesia and The Philippines.

¹⁵ This condition is referred to as the Individual Rationality Condition.

¹⁶ Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations.

There is, in fact, evidence that such possibilities have not escaped the notice of policy makers. Consider the following from a 2006 publication on fishery harvest allocations within the WCPFC, authored by Anna Willock and Ian Cartwright. Willock was a member of the Chatham House-based independent panel to develop a model for improved governance by RFMOs. Cartwright is a former Deputy-Director of the Pacific Islands Forum Fisheries Agency.

A number of economists and other parties have indicated that game theory offers prospects for examining the nature of cooperative and non-cooperative approaches to allocation. In particular, it has been suggested that the best way forward is likely to go beyond simply allocating rights (for example, shares of a total allowable catch of a particular species or species group or the equivalent) to national fleets. A more sophisticated approach, involving “side payments” or “negotiation facilitators” may be required (Willock and Cartwright 2006, p. 5).

In any event, to continue with the game theory framework, one can think in terms of a multi-stage game. In the first stage, the PICs bargain amongst themselves, with the PNA sub-coalition having the dominant role. In the following stage, the PICs bargain with the DWFS members of the WCPFC, bringing to bear their power to establish (or not establish) FFAs.

SOME CONCLUSIONS

Article 62(2) of UNCLOS notwithstanding, the coastal state is under no legal obligation to grant access to DWFSs to the coastal state’s intra-EEZ fisheries. The “surplus principle” contained within Article 62(2) is inherently empty. Further, if the coastal state does declare one or more surpluses, and grants DWFSs access to its intra-EEZ fisheries, it is given broad legal powers in laying down terms and conditions of access. In no sense, is it required to give away anything for free. A rational coastal state will implement FFAs if, and only if, it is in the interests of the coastal state to do so. Such possible interests lie within the realm of economics.

We view the economics of the management of coastal state fisheries in terms of the coastal state as a whole. The objective is seen as that of maximizing the economic returns (broadly defined) from the fisheries’ natural capital for the coastal state through time. To the coastal state, FFAs are of value, if they enhance these economic returns. If the coastal state’s capacity for the economic management of the fishery resources is seriously lacking, FFAs may be of no value to the coastal state, and indeed could be damaging.

Given that the coastal state does have adequate management capacity, the basic argument for considering FFAs comes from Principal-Agent analysis and international economics. The DWFSs are to be seen as agents of the coastal state, as principal. If a coastal state avails itself of the fisheries services of one, or more, of these agents, the coastal state can be thought of as calling upon these agents to provide harvesting, processing, or marketing services. Since by definition, these DWFS agents are foreign, a coastal state implementing a FFA is, in effect, importing the aforementioned fisheries services.

It is at this point that international economics becomes relevant. It will make sense for the coastal state to import the aforementioned

fisheries’ services, if the DWFS(s) has a comparative advantage in providing such services. Thus, the case for FFAs is a variant of the case for free trade. If DWFSs do not have a comparative advantage in any of the these fisheries’ services, then it will be contrary to the interest of the coastal state to implement FFAs.

If DWFSs are to be seen as agents of the coastal state, Principal-Agent analysis warns us that the Principal will seldom, if ever, be able to monitor the Agents perfectly. Some slippage is inevitable. As such, the analysis, when applied to the issue of FFAs, encompasses the question of MSC. The coastal state will, perforce, have to take into account the economic interests of the DWFSs.

From this it follows that success of the coastal state in gaining benefits from FFAs will depend in part upon the coastal state’s bargaining power in relation to that of the DWFSs. This may appear to place developing coastal states at a serious disadvantage. The example of the PICs, however, demonstrates forcefully that such states can, in fact, develop substantial bargaining power, given that their resource management capacity is adequate. The example demonstrates as well that, if a group of such coastal states share fishery resources among themselves, effective resource management cooperation among them is the fundamental prerequisite to achieving significant bargaining power.

If some, or all, of the relevant coastal state fishery resources are highly migratory or straddling stocks, extending beyond the EEZ into the adjacent high seas, where they become subject to RFMO governance, then additional complications arise. If the management of these stocks within the high seas is seriously inadequate, this inadequacy will undermine the intra-EEZ management of the stocks and the viability of existing FFAs relevant to the stocks. That being said, well-designed FFAs can, in fact, play a role as negotiation facilitators, serving to strengthen RFMO resource management programs.

ANNEX

In this annex, we explore further the relevance of the concept of Principal-Agent analysis and the doctrine of comparative advantage to FFAs, doing so with the aid of a formal, but simple, model. To begin, it will be recalled that we think of the fishing operation being divided into three stages, with the first consisting of harvesting the resource, the second of processing the catch, and the final stage of marketing and distributing the finished fish product.

We shall focus on the case of fee fishing, where the coastal state grants access to one or more DWFNs , which harvest the resource, process the catch, and market the finished fish product, in exchange for paying fees to the coastal state. The experience of the PICs of the western and central Pacific comes immediately to mind. In any event, as noted, the relevance of the doctrine of comparative advantage is least obvious in this case.

Our formal model is drawn primarily from Clarke and Munro 1987 and 1991, with additional support coming from Clark and Munro 1980, and Bjørndal and Munro 2012. To simplify matters, we assume from the outset that we have one coastal state entering into an access agreement with one DWFS. Let us begin by noting the obvious fact that the coastal state’s willingness to entering into a fee fishing arrangement with the DWFS implies that the DWFS has a comparative advantage in all three stages.

The model rests upon the now standard issue dynamic economic model of the fishery, which has the biological model of a single species fishery of M.B. Schaefer as its foundation (see, for example, Bjørndal and Munro 2012, Ch. 3).

We have:

$$dx/dt = F(x) - h(t), \quad x(0) = x_0 \quad (1)$$

$$h = qE^{\alpha}x^{\beta} \quad (2)$$

where

$x(t)$ = fish biomass at time t

x_0 = fish biomass at time $t = 0$

$F(x)$ = net natural growth rate

$h(t)$ = the harvest rate at time t

$E(t)$ = the rate of fishing effort at time t

q = the catchability coefficient, which we shall assume to be equal to 1.

α and β are constants. It is assumed (in the Schaefer model) that $\alpha = \beta = 1$.

As usual, it will be assumed that $F(x) > 0$ for all $0 < x < \bar{x}$, $F(0) = F(\bar{x}) = 0$, and $F''(x) < 0$, for all $x > 0$, where \bar{x} denotes the carrying capacity of the resource. To be complete, it will as well be assumed that:

$$0 \leq E(t) \leq E_{\max}$$

where E_{\max} is a prescribed upper bound on $E(t)$ (Clarke and Munro 1991).

We next introduce costs and prices, along with some highly simplifying assumptions. We denote the DWFS's unit cost of fishing effort as b_1 . We further denote the DWFS's unit processing costs and unit marketing plus distribution costs as b_2 and b_3 respectively. Finally, we denote the price of a unit of finished fish product as p_m . We then introduce the heroic assumption that b_1 , b_2 , b_3 , and p_m are all constant through time, and that the three corresponding coastal state unit costs are also constant over time. This heroic assumption, as it pertains to costs, implies that the DWFS comparative advantage in all three stages is unchanging over time.

Finally, we assume that the net economic returns—resource rent—shared by the coastal state and DFWS involve no non-market costs and benefits.

Now note that the net value of a unit of harvested fish to the DWFS, exclusive of harvesting costs and any taxes (fees), which the coastal state may impose, can be expressed simply as (Clark and Munro 1980):¹⁹

$$p^* = p_m - b_2 - b_3 \quad (3)$$

The fee fishing arrangement introduced by the coastal state is designed both to extract resource rent and to serve as a device to manage the fishery, that is to serve as an incentive scheme to be applied to the DWFS. This is not as farfetched as it may seem. David Doulman, when Deputy Director of the South Pacific Forum Fisheries Agency, wrote that the fee fishing arrangements,

¹⁹ We could allow for the fact that probably only a fraction of each harvested fish will be recoverable as finished product, and allow for b_2 and p_m to be a functions of x . Clark and Munro (1980) do this, but we regard these as unnecessary complications in the discussion at hand.

which the PICs had developed as a part of their access agreements for DWFSs, had the purpose of “fostering operational efficiency in the use of the resource; and providing an instrument for [coastal state] governments to regulate, develop, conserve, and generally manage the fishery” (Doulman 1987, p. 19).

As noted, we do of necessity assume that the DWFS must receive some minimum net economic return from the fishery, if it is to enter into the access agreement, a return that will almost certainly exceed the sum of its harvesting, processing, and marketing costs. To repeat, we say this by virtue of the fact that the DWFS may be able to deploy its fleet and processing capacity elsewhere. In other words, there is likely to be a DWFS opportunity cost to be taken into consideration.

In our case, the coastal state is the Principal, while the DWFS is the Agent, providing the complete package of services. In a first best situation, as seen from the Principle's perspective, the coastal state would be able to keep the DWFS's aforementioned net economic return to the minimum and would be able to ensure that the DWFS's harvest program through time is identical to that desired by the coastal state.

We next suppose that the coastal state's fee arrangement consists of a per unit tax on harvest and a per unit tax on fishing effort. As an aside, Clarke and Munro demonstrate, that, if the tax-based fee fishing arrangement is to serve as an effective incentive scheme to be applied to the DWFS, a single tax will not be adequate (Clarke and Munro 1987). In any event, denote the two per unit taxes as: τ_h and τ_E respectively.

Realistically, we do not assume that the coastal state can tax the finished fish products directly. The coastal state must content itself with the two aforementioned taxes. Clarke and Munro demonstrate that the coastal state can, nonetheless, go so far as to achieve a first best outcome, under the right conditions.²⁰

At any given point in time, t , we can express the net economic return (resource rent) from the fishery for the coastal state as:

$$\pi_{CS} = \{\tau_h x + \tau_E\}E \quad (4)$$

(recall our assumption that the catchability coefficient, q , is equal to 1)

and the net economic return from the fishery for the DWFS (over and above harvesting and other costs) as:

$$\pi_{DW} = \{(p^* - \tau_h)x - (b_1 + \tau_E)\}E \quad (5)$$

We shall refer to equation (5) as the DWFS premium, which we shall see can be regarded as the DWFS's share of the gains from trade in fishing services at time t . The premium cannot be negative; the DWFS must receive an amount at least sufficient to cover the sum of its fishing effort, processing and marketing plus distribution costs.

Now observe that we can re-express equation (4) as follows:

$$\pi_{CS} = \{p^* x - b_1\}E - \{(p^* - \tau_h)x - (b_1 + \tau_E)\}E \quad (6)$$

The first term of the RHS of equation (6) is the global net economic return from the fishery at time, t , given that the harvesting of

²⁰ These conditions being perfect information and that the rate of discount employed by the coastal state be identical to that of the DWFS (Clarke and Munro 1987, pp. 96–99).

the resource, the processing of the catch and the marketing of the finished fish products are all carried out by the DWFS, while the second term is the net economic return to the DWFS, the DWFS premium.

We can now go a bit further by recognizing that the first term on the RHS of equation (6) can be re-expressed as: $p_m x E - \{[b_2 + b_3]x + b_1\}E$, where $p_m x E$ denotes the gross value of the processed and marketed catch, and where $\{[b_2 + b_3]x + b_1\}E$ denotes the sum total of the DWFS fishing effort, processing and marketing plus distribution costs. We can thus re-write equation (6) as:

$$\pi_{CS} = p_m x E - (\alpha_D + \beta) \quad (7)$$

where $\alpha_D = \{[b_2 + b_3]x + b_1\}E$, and where $\beta = \{(p^* - \tau_h)x - (b_1 + \tau_E)\}E$

As expressed in equation (7), the net economic return to the coastal state is to be seen as follows. It consists of the gross value of the processed and marketed catch, minus what might be thought of as two payments to the DWFS. The first is a payment to cover the sum of the DWFS fishing effort, processing, and marketing plus distribution costs. The second takes the form of the DWFS premium. The two payments combined to the DWFS are implicit in form, but they are payments nonetheless. Let us note that the minimum two payments combined to the DWFS can be expressed as: $\alpha_D + \beta_{min}$, where $\beta_{min} \geq 0$.

Let us comment further on β . This is to be seen as a measure of the DWFS's share of the gains from trade at time t , which can be seen as follows, recalling that the DWFS has a comparative advantage at all three stages of the fishing operation. Denote the sum total of the coastal state fishing effort, processing, and marketing plus distribution costs as α_C . At time t , the gains from trade can be expressed as: $[p_m x E - \alpha_D] - [p_m x E - \alpha_C]$. If $\alpha_C < p_m x E$, then we say that the gains from trade at time t are simply equal to $\alpha_C - \alpha_D$, while if $\alpha_C \geq p_m x E$, then the gains from trade at time t are: $p_m x E - \alpha_D$. This gives us an upper bound on β , which cannot exceed the gains from trade, given that the coastal state is rational.

Two points are immediately forthcoming, with the first pertaining to our earlier claim that the rational coastal state will be keenly interested in its harvested fish all the way up the value chain. It is now made absolutely transparent that only the uninformed or irrational coastal state will lack this keen interest.

The second is the obvious potential problem of asymmetric information, given that the real world is not one of perfect information. As discussed earlier, the DWFS will certainly have more knowledge about its own costs and probably about the prices obtainable for the finished fish products than will the coastal state, thus resulting in the high probability of an *agency cost*.²¹

A further point to note is that, even in a world of perfect information, *agency costs* can arise. Clarke and Munro (1991) illustrate this as follows. Go back to our original example and now suppose that the access arrangement is permanent. Recall the assumption that costs and prices, and hence taxes, are constant through time. We now consider the net economic return to the coastal state in net present value terms. We have:

$$NPV_{CS} = \int_0^\infty e^{-\delta_{CS}t} p_m x(t) E(t) dt - \int_0^\infty e^{-\delta_{CS}t} \{\alpha_D(t) + \beta(t)\} E(t) dt \quad (8)$$

²¹ In other words, a high probability that $\beta_{actual} >> \beta_{min}$.

where δ_{CS} is the coastal state's rate of discount. Let us denote the DWFS rate of discount as δ_{DW} .

If the two rates of discount are equal in this world of perfect information, then all will be well. If this highly unlikely outcome does not occur, then problems arise. Suppose, as is very possible, that we have: $\delta_{DW} > \delta_{CS}$. Then, the coastal state will place a greater value on the future stream of payments to the DWFS than will the DWFS itself, resulting in an *agency cost*, that is the Principal (coastal state) will not be able to achieve a first best outcome, even though the coastal state is able to limit the payment to the DWFS through time to the minimum.²² The consequence will be that the coastal state will be compelled to invest less heavily in the resource, to be less conservationist, than it would, if a first best outcome were achievable (for details see: Clarke and Munro 1991, or Bjørndal and Munro 2012).²³

REFERENCES

- Bjørndal, T., and G. R. Munro. 2012. *The Economics and Management of World Fisheries*. Oxford: Oxford University Press.
- Burke, W. T. 1983. "1982 Convention on the Law of the Sea Provisions on Conditions of Access to Fisheries Subject to National Jurisdiction." *Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones Rome, 11–15 April 1983*. FAO Fisheries Report No. 293. Rome: Food and Agriculture Organization of the UN, 23–42.
- _____. 1994. *The New International Law of Fisheries: UNCLOS 1982 and Beyond*. Oxford: Clarendon Press.
- Clark, L. 1985. "Fisheries Issues in the Pacific Islands, in International Institute of Fisheries Economics and Trade." *Proceedings of the Second Conference of the International Institute of Fisheries Economics and Trade*. 1: 19–26.
- _____. 2014. Case Study on Foreign Fishing Agreements in the Western Pacific, Annex 2, Trade in Fishing Services Report.
- Clarke, F. H., and G. R. Munro. 1987. "Coastal States, Distant Water Fishing Nations and Extended Jurisdiction: A Principal-Agent Analysis." *Natural Resource Modeling* 2: 81–107.
- _____. 1991. "Coastal States and Distant Water Fishing Nations: Conflicting Views of the Future." *Natural Resource Modeling* 5: 345–69.
- Doulman, D. J. 1987. "Licensing Distant-Water Tuna Fleets in Papua New Guinea." *Marine Policy* 11: 16–28.
- Food and Agriculture Organization of the UN. 1983. *Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones Rome, 11–15 April 1983*. FAO Fisheries Report No. 293. Rome.
- _____. 1994. *World Review of Highly Migratory Species and Straddling Stocks*. FAO Fisheries Technical Paper 337, Rome.
- _____. 2002. *Report of the Norway-FAO Expert Consultation on the Management of Shared Fish Stocks Bergen, Norway, 7–10 October 2002*. FAO Fisheries Report No. 695, Rome.
- Gordon, H. S. 1954. "The Economic Theory of a Common Property Resource: The Fishery." *Journal of Political Economy* 62: 124–42.

²² Clarke and Munro (1991) do in fact demonstrate that in the situation described—perfect information, but unequal rates of discount—the Principal (coastal state) will be able to keep the economic return to the Agent (DWFS) to the minimum.

²³ All of this suggests that an agency cost can arise in at least two ways. First, the coastal state may be forced to deviate from its optimal harvest program through time. Secondly, we may have $\beta_{actual} > \beta_{min}$.

- Kearney, R. E. 1983. "The Development of Tuna Fisheries and the Future for Their Management in the Tropical, Central and Western Pacific, in E.L Miles and S. Allen (eds.)" *The Law of the Sea and Ocean Development Issues in the Pacific Basin*. Honolulu, Law of the Sea Institute: 158–75.
- Krugman, P. R., M. Obstfeld, and M. J. Melitz. 2012. *International Economics: Theory and Policy*, ninth edition, Boston, Addison-Wesley.
- Lodge, M., D. Anderson, T. Löbach, G. Munro, K. Sainsbury, and A. Willock. 2007. *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations*. London: Chatham House.
- McClurg, T. 2014. Areas Beyond National Jurisdiction (ABNJ) Fisheries: The Western and Central Pacific Ocean Case, Appendix C, Trade in Fishing Services Report.
- McRae, D., and G. Munro. 1989. Coastal State "Rights" Within the 200 Mile Exclusive Economic Zone, in P. A. Neher, R. Arnason and N. Mollet (eds.), *Rights Based Fishing*. Dordrecht: Kluwer Academic Publishers, 97–112.
- Major, P. 2014. The New Zealand Experience of Joint Venture Fishing Operations 1977 to 2013, Appendix H, Trade in Fishing Services Report.
- Mesterton-Gibbons, M. 1993. "Game-Theoretic Resource Modeling." *Natural Resource Modeling* 7: 93–147.
- Munro, G. R. 1985. "Coastal States, Distant Water Fleets and EFJ: Some Long-Run Considerations." *Marine Policy* 9: 2–15.
- _____. 1991. "The Management of Migratory Fishery Resources in the Pacific: Tropical Tuna and Pacific Salmon, in R. Arnason and T. Bjørndal (eds.)." *Essays on the Economics of Migratory Fish Stocks*. Berlin: Springer-Verlag, 85–105.
- _____. 1992. "Evolution of Canadian Fisheries Management Policy Under the New Law of the Sea: International Dimensions, in A.C. Cutler and M.W Zacher (eds.)." *Canadian Foreign Policy and International Economic Regimes*. Vancouver: University of British Columbia Press, 289–310.
- Munro, G. R., and U. R. Sumaila. 2011. "On the Curbing of Illegal, Unreported and Unregulated (IUU) Fishing, in L. Tubiana, P. Jacquet, and R. Pachauri (eds.)." *A Planet for Life 2011–Oceans*. Paris: IDDRI.
- Munro, G. R., A. Van Houtte, and R. Willmann. 2004. *The Conservation and Management of Shared Fish Stocks: Legal and Economic Aspects*. FAO Fisheries Technical Paper 465. Rome: FAO.
- Örebech, P., K. Sigurjonsson, and T. L. McDorman. 1998. "The 1995 United Nations Straddling and Highly Migratory Fish Stocks Agreement: Management, Enforcement and Dispute Settlement." *The International Journal of Marine and Coastal Law* 15: 361–78.
- Pintassilgo, P., M. Finus, M. Lindroos, and G. Munro. 2010. "Stability and Success of Regional Fisheries Management Organizations." *Environmental and Resource Economics*. 46: 377–402.
- Queirolo, L. E., and R. S. Johnston. 1989. "Distant Water Fishing Nations and Extended Fisheries Jurisdiction." *Marine Policy* 13: 16–21.
- Robb, D. 1983. "Access Conditions and Compliance Control." *Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones Rome, 11–15 April 1983*. FAO Fisheries Report No. 293. Rome: Food and Agriculture Organization of the UN, 157–73.
- Sappington, D. E. M. 1991. "Incentives in Principal-Agent Relationships." *Journal of Economics Perspectives* 5: 45–66.
- Sutinen, J., and P. Andersen. 1985. "The Economics of Fisheries Law Enforcement." *Land Economics* 61: 387–97.
- United Nations. 1982. United Nations Convention on the Law of the Sea, UN Doc. A/Conf. 62/122.
- _____. 1992. *The Law of the Sea: The Regime for High Seas Fisheries: Status and Prospects*. New York: Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs.
- _____. 1995. United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, 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, UN Doc. A/Conf. 164/27.
- _____. 2014. Office of Legal Affairs, Division for Ocean Affairs and Law of the Sea.
- United Nations Environment Programme. 2002. *Integrated Assessment of Trade Liberalization and Trade-Related Policies: A Country Study on the Fisheries Sector in Argentina*. New York and Geneva: UN.
- Wilen, J. 2014. The Bering Sea Pollock Fishery: A Case Study for the World Bank Assessment of Foreign Fishing Arrangements, Appendix I, Trade in Fishing Services Report.
- Willock, A., and I. Cartwright. 2006. *Conservation Implications of Allocation under the Western and Central Pacific Fisheries Commission*. Sydney: WWF Australia and TRAFFIC Oceania.
- World Bank. 2005. *Where is the Wealth of Nations? Measuring Capital for the 21st Century*. Washington: World Bank.
- World Bank, and the Food and Agriculture Organization of the UN. 2009. *The Sunken Billions: The Economic Justification for Fisheries Reform*. Washington: World Bank.

APPENDIX B

CASE STUDY ON FOREIGN FISHING AGREEMENTS IN THE WESTERN PACIFIC

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INTRODUCTION

Typically, there are two circumstances allowing for an enduring role for foreign fishing agreements (FFAs¹):

- a) where there are shared resources, and cooperation is needed to ensure sustainable use of those shared resources; and
- b) where developing countries lack the capacity to fully utilize the resources of their waters and seek to secure benefits from participation in fisheries for those resources by vessels of other states, including through arrangements such as charters, joint ventures, and so on, as well as formal access agreements.

The tuna fisheries of the Pacific Islands region provide one of the clearest examples of these circumstances since the resources are shared among many coastal states, as well as occurring in Areas Beyond National Jurisdiction (ABNJ), and the scale of opportunities in those fisheries exceeds the capacity of the Pacific Island Countries (PICs)² domestic fleets to fully utilize them.

BACKGROUND

The use of FFAs by the PICs traces from decisions made in 1977 by regional Leaders at the South Pacific Islands Forum. Noting the developments in the Law of the Sea, the Leaders took a number of decisions including:

- a) the countries in the region would move quickly to establish fishing or exclusive economic zones (EEZs);
- b) Forum member countries would enter immediately into consultations that would include:
 - » agreeing on principles and measures to be applied in the establishment of their extended fisheries jurisdictions,
 - » agreeing at least provisionally, on a common basis for negotiations with distant water fishing interests

¹ For the purpose of this analysis FFAs are taken as including access agreements, joint ventures, and chartering of foreign fishing vessels.

² The term PIC here generally refers to the 15 Pacific island States and territories that are members of the Forum Fisheries Agency: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Tokelau (a New Zealand territory).

- » ensuring that agreements concluded in the near future with distant water fishing interests are compatible with these principles and measures; and

- c) the establishment of the Pacific Islands Forum Fisheries Agency, with functions to include facilitation of a regional approach to management and to licensing including agreement on generally applicable policies and measures, pooling of information, and standardization of procedures and forms.

At this point, the PICs were relative latecomers to the process of establishing EEZs and FFAs. Carroz and Savini analyzed around 100 bilateral fisheries agreement entered into by other states between 1975 and 1978, most of them a response to the development of extended fisheries jurisdiction—these were government-to-government agreements and didn't include the large number of agreements entered into between governments and foreign businesses (Carroz and Savini 1979).

Over the next few years, PICs were to systematically put in place EEZs, and most adopted bilateral access agreements with governments or fishing associations as their key instrument for managing fishing by the foreign fleets that had previously fished the waters now enclosed in their EEZs.

RATIONALE FOR ACCESS AGREEMENTS

The major objective is broadly to assist developing countries in identifying the means to secure equitable and sustainable returns from FFAs. A useful starting point in analyzing returns to PICs is to consider the PICs' rationale for FFAs, and particularly the rationale for their use of bilateral access agreements.

The use of bilateral access agreements was a deliberate choice made by most PICs in a process that also included consideration of direct licensing, charters, and joint ventures. The main reasons for choosing bilateral access agreements included securing recognition of coastal state jurisdiction and rights, compliance, and economic gains is discussed more fully below.³ This approach was shared in particular with Caribbean and Indian Ocean island states and territories, where the development of bilateral access agreements was supported by activities funded under the FAO/Norway EEZ Programme, particularly through a series of regional workshops on the harmonization and coordination of fisheries regimes and access agreements aimed at assisting developing countries to maximize

³ See Clark (2006) for a more thorough discussion of the rationale for access agreements.

benefits from foreign fishing. The factors of securing recognition of coastal state jurisdiction and rights, compliance and economic gains were also important objectives for the use of bilateral access agreements for developed coastal states such as Canada and New Zealand. The major difference was that for most PICs, especially those with relatively large tuna resources, access arrangements with foreign fleets were seen as longer term arrangements, while for developed countries the agreements were generally seen as shorter term transitional arrangements while national fleets developed. Among PICs too, there were substantial differences, with some such as Fiji and Tonga emphasizing charters and joint ventures as being more effective for domestic development rather than access agreements. Equally, those PICs, such as FSM, Kiribati, and Tuvalu, that aspired to valuable long term revenue streams from access agreements also aimed at developing charters, joint ventures, and foreign direct investment as vehicles for domestic tuna development.

SECURING RECOGNITION OF JURISDICTION AND RIGHTS

UNCLOS was signed on December 10, 1982, and entered into force on November 16, 1994. However, most coastal states had extended their jurisdiction out to 200 miles while the negotiations on the Convention were still not completed, and as they entered into the initial access agreements were keen to establish through state practice the concept of the exclusive economic zone. Securing fishing state agreement to key elements of coastal state authority through government-to-government agreements was seen as an important opportunity to advance the EEZ concept. This was regarded as particularly important where highly migratory species were involved because of the differences between coastal states and some fishing states over the application of the relevant provisions of UNCLOS with respect to highly migratory species. Access agreements offered the coastal states, developed and developing, an opportunity to secure the agreement of major fishing states to the key elements of UNCLOS related to EEZs, particularly the sovereign rights of coastal states in relation to resources in their EEZs.

As a result many states included a requirement in legislation that foreign vessels could not be licensed unless there was in place an access agreement with the flag state in which the flag state recognized the sovereign rights and exclusive authority of the coastal state. Opening sections of access agreements therefore typically included wording under which the flag state recognized the sovereign rights and exclusive authority of the coastal state within its 200-mile zone.

The goal of advancing international acceptance of the concept of the EEZ and of the extent of coastal state sovereign rights was an important issue in the late 1970s and early 1980s when access agreements in their current form were initiated. It was a particularly important goal for developing coastal states whose area of extended jurisdiction covered rich offshore grounds, and it was especially important for PICs whose sustainable development opportunities depended substantially on the integrity of their sovereign rights over the tuna stocks in their waters.

Now, the goal of securing recognition of coastal state sovereign rights is far less important, both globally and for PICs. There is almost complete international acceptance of the provisions of

UNCLOS related to EEZs, including the amplification of the provisions relating to highly migratory and straddling stocks under the UN Fish Stocks Agreement. In the Western and Central Pacific Ocean, the sovereign rights of coastal states over highly migratory stocks are clearly expressed in the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean which establishes the Western and Central Pacific Fisheries Commission (WCPFC). In this circumstance, there is no longer any real need for PICs to assert those rights explicitly through instruments such as access agreements.

THE COMPLIANCE UMBRELLA

The second major reason for adoption of access agreements by PICs and other coastal states as a key instrument in managing foreign fishing after the extension of jurisdiction was the compliance “umbrella.” Broadly, the importance of this concept was based on recognition that access to fishery waters could be used to leverage compliance across fleets through access agreements in a way that could not be achieved if foreign vessels were simply licensed on a boat-by-boat basis. More precisely, an agreement for access with a flag state government or with an association representing a fleet of boat owners could be structured to include a requirement that the flag state or association should take measures to ensure compliance with coastal state laws that would cover all vessels in the fleet and not just those that were licensed. The agreement could also include mechanisms for the flag state and the coastal state to cooperate to ensure compliance by both licensed and unlicensed vessels covered by the agreement. Beyond this, compliance could be enhanced by the application of penalties for non-compliance such as forfeiture of bonds or cancellation of licenses across the fleet even if non-complying vessels could not be apprehended or made to submit to coastal state jurisdiction. In some cases also, the access agreement served to provide the legal basis for the flag state to take action against non-complying vessels. The compliance umbrella was generally regarded as the key reason for requiring access agreements.⁴ For example, Pacific Island participants in a workshop on access agreements noted in their workshop report that “The reasons for requiring Government to Government or Government to Association umbrella access agreements include . . . —most importantly—facilitation of compliance control, through placing more responsibility for compliance control on the flag state or fishing association” (Forum Fisheries Agency 1982).

In this respect, the compliance umbrella offered by access agreements with foreign fleet representatives was a central part of a broader strategy to induce compliance in a cost-effective manner that included also the Forum Fisheries Agency Regional Register as the first international vessel listing process. Now, flag state responsibility is firmly entrenched in a number of relevant legal instruments, including the FAO Compliance Agreement, the UN Fish Stocks agreement and the WCPFC Convention. IUU listing is a standard procedure for RFMOs, and one that has proven effective in the WCPO for strengthening compliance within EEZs; electronic reporting and information systems, particularly satellite-based

⁴ See Moore (1987) for discussion of the role of flag state and fishing association responsibility within the broader strategy of cost-effective enforcement.

vessel monitoring systems (VMS) have provided cost-effective measures to improve compliance, and PICs national monitoring, control, and surveillance programs are substantially stronger. As a result, the importance of the compliance umbrella provided by access agreements has greatly diminished.⁵

ECONOMIC RETURNS

For PICs, issues related to economic gains have been central to analyzing FFAs as a form of managing foreign fishing. Both the attraction of bilateral access agreements as a way of promoting the concept of EEZs and the compliance umbrella had important economic rationales underpinning them. Broadening and accelerating acceptance of coastal state sovereign rights in EEZs would make more secure for PICs the economic gains that the new EEZ regime potentially offered. The compliance umbrella aspect of access agreements was designed to create economic gains by making it more difficult for boat owners to avoid paying access fees and strengthening the bargaining position of PICs. Beyond the value of access agreements in these ways, there were a number of other ways in which access agreements were seen as having advantages in securing economic gains compared to other approaches such as direct licensing. They included:

- a) **Flexibility:** The argument that access agreements should generate higher levels of access fees through offering greater flexibility is based on the greater freedom offered by access agreements to negotiate higher fees for vessels whose owners could afford to pay more than would be the case if fees were determined legislatively for broad classes of vessels. This flexibility includes the ability to differentiate fees with boat owners depending on both their capacity to pay and the value of their catches. In practice, there are cases where agreements with a Pacific Island country do have different fee levels for fleets with essentially the same value of catches but different capacities to pay, where essentially a fleet with older vessels and lower catches pays less because it cannot afford to match the fees paid by others. In such cases, there may be a benefit from working with access agreements in that a uniform fee schedule would likely either deter the less efficient fleet from licensing or allow the more efficient fleet to fish for less than it would have been prepared to agree to if fees were differentiated. In the same way, it is likely easier to provide in access agreements for differing processes for adjustments of fees with catch values than it would be in a system of direct licensing based on published fees. There are however some major disadvantages in setting fees in access agreements rather than in published schedules. The first is that the bottom line in negotiations with a whole fleet is often set by the boat owners in the fleet with the least capacity to pay. An alternative strategy that involves licensing individual vessels means that those boat owners who can't afford to pay don't take out licenses, but have no influence over the decisions of boat owners who can afford to pay.

A second disadvantage is that access agreements reduce the scope to generate competition between fleets. Setting fees unilaterally provides coastal states with opportunities to use more market-oriented approaches, raising fees if demand for access is strong, and reducing them if demand for access is weak. These advantages of establishing fees unilaterally are likely to be stronger in a setting where there are established limits to overall foreign access in terms of vessels, licenses catch, or effort as is increasingly the case.

- b) **Flag state government grants:** Cash grants from flag state governments, such as those in the European Union (EU) and U.S. agreements, are likely to be regarded these days by coastal states as the major advantage of a government-to-government access agreement, to the extent that they are in addition to, rather than instead of a commercial level of access fees. Cash grants are particularly valuable in the context of public expenditure because they are usually committed in advance at least to some minimum level and therefore can be built into government recurrent expenditure budgets. By comparison, payments from boat owners can fluctuate greatly, reducing their value for budgeting purposes. The discussion about whether such payments should be brought under World Trade Organization discipline might affect the scope for these payments in the future, perhaps ensuring that these grants do not contribute to over-exploitation or enable boat owners to make a fair contribution for access. Such grants remain, however, a key feature and attraction of government-to-government agreements.
- c) **Aid:** Most government-to-government access agreements include provision for grant aid as a component of the financial contribution made by the fishing state. In some cases, such as in agreements with Japan, the aid tied to the access agreement may be the major benefit from the access relationship.

ROLE OF ACCESS AGREEMENTS FOR FISHING STATES

There were several reasons why fishing states initially agreed to enter into access agreements that included licensing conditions rather than leaving coastal states to license vessels directly under regulations and license conditions. They included the opportunity to remind coastal states of their obligation, as they saw it, to give access to any surplus in the available yields that could not be taken by domestic fleets and of the requirement to take into account the need to minimize economic dislocation associated with historical fishing in waters now under national jurisdiction. Government-to-government agreements also gave some flag states a legal basis for controlling their fleets outside their waters.

Over time, these goals have been largely overtaken to a point where it seems likely that most of the fishing in PIC waters now covered by access agreements is not in fact an extension of fishing that was taking place before the extension of fisheries jurisdiction. Instead, from a fishing state point of view, bilateral access agreements now serve more to facilitate profitable fishing opportunities for flag fleets, secure fish supplies for processing, and serve strategic, sometimes geo-political, goals associated with deployment of vessels in PIC waters.

⁵ An exception is the Pacific Island States Treaty with the United States where the more detailed flag state provision, including provisions relating to imposition of fines, and the effectiveness of the U.S. Government's flag state control programs continues to maintain the usefulness of the compliance provisions in the Treaty.

FFAs AND PACIFIC ISLAND COUNTRIES

FFAs have been important to all 15 PICs at some point. However, there has been a marked change in the importance and pattern of access agreements over time, with particularly important recent developments flowing from the adoption of the PNA Vessel Day Scheme in the purse seine fishery as discussed more fully below.

The typical pattern of use of FFAs today is that most PICs have in place a mix of arrangements for licensing foreign vessels including:

- a) bilateral access agreements for licensing foreign vessels to fish in their EEZs, including vessels from other PICs. Most of these agreements operate actively at the government-fishery association or government-enterprise levels, even where there are government-to-government level agreements in place as with Japan and Korea. The exception is the agreements with the EU. The EU has negotiated agreements with several PICs, but the only one operational at this point is that with Kiribati because the EU has refused to cooperate in the implementation of the VDS in the manner required by other PICs;
- b) a multilateral agreement with the U.S. Government to which all PICs are Parties, and a multilateral agreement providing preferential terms for domestic purse seine vessels of PNA called the FSM Arrangement;
- c) arrangements loosely termed charters, including arrangements ranging from full bareboat or demise charters, sometimes involving reflagging to PICs, to simple contract arrangements with local processors, brokers, or agents. In most cases, such vessels are licensed directly under regulations and license conditions without agreements of any form with the PIC Government;
- d) joint ventures, including joint ventures in processing operations or vessels. Most of the joint ventures are between private foreign and national partners. Earlier experience of PIC government involvement in direct ownership of plants and vessels, either outright or through joint ventures was systematically negative, with some governments being involved in operations that incurred substantial losses. A 2003 report (Gillett 2003) recorded the reaction to that earlier outcome as follows:

Learning from past difficulties, most of the fisheries officers encountered expressed the sentiment that the government should refrain from commercial involvement and focus on improving the policy environment.

However, more recently, some PNA Member Governments have entered into joint ventures for purse seine vessel operation, attracted by the apparent high returns offered by some boat owners in an effort to secure stable access in the face of the increasing control of the purse seine fishery by PNA Members through the VDS, apparently with generally good results.

THE HARMONIZATION PROCESS

A key element in the approach of PICs to managing foreign fishing is the concept of harmonization of management regimes among PICs. The first formal instrument of harmonization was the 1st Implementing Arrangement under the Nauru Agreement which established a binding obligation on PNA Members to apply agreed minimum standards. This was broadened in scope and participation when the wider group of Forum Fisheries Agency members adopted a set of Harmonized Minimum Terms and Conditions for Foreign Fishing Vessel Access (MTCs). The adoption by Agency Members at the Forum Fisheries Committee is not legally binding but it carries high level political commitment. Over time, the range of conditions covered by the MTCs has been broadened to where they now cover:

- » common regional license form
- » good standing on the Forum Fisheries Agency vessel register
- » control and monitoring of transshipment
- » maintenance and submission of catch logs in zones and on high seas
- » vessel reporting requirements
- » onboard observers
- » appointment of an agent for service of legal process
- » transit controls
- » boarding and inspection
- » vessel marking,
- » vessel monitoring system (VMS)
- » identification of fish aggregating devices
- » pre-fishing inspections

Increasingly, the same conditions are also applied to domestic and joint venture vessels.

The development and extension of the MTCs is now broadly accepted by foreign fleets and their governments after earlier strong opposition. Some elements of the MTCs have been subject to particularly strong opposition including the Forum Fisheries Agency Regional Register, onboard observer requirements and VMS, and PICs have agreed to include these in PICs' legislation to remove them from fishing state pressure in negotiations.

The harmonization process has delivered a number of benefits. The key benefit is that individual PICs can develop their relations with foreign fleets in whatever way suits them, responding to their national objectives and differing patterns of comparative advantage, but within a framework that ensures that individual PICs cannot be played off against each other in the application of elements that are important for monitoring, control, surveillance, and enforcement. Over time, there have been proposals to move on from a harmonized approach to a more joint approach involving joint licensing, joint negotiations, joint surveillance programs, and so on, and while there are examples of joint licensing (for U.S. Treaty and FSA Arrangement vessels) and combined surveillance operations, and there is current interest in VDS pooling arrangements, PICs have strongly preferred management structures based on the exercise of their sovereign interests and sovereign rights that "harmonization" allows for.

Other benefits from harmonization have included:

- a) standardization has enabled the development over time of important databases, particularly of logsheet catch and effort data, and promoted data sharing on foreign fishing;

- b) standardized reporting procedures, and so on have been valued by vessel operators;
- c) harmonized approaches to laws, regulations, and licenses have enabled more effective, more focused capacity building and technical support from regional agencies;
- d) the requirement for good standing on the regional register has meant that vessels cannot evade the consequences of IUU fishing in one zone by moving elsewhere;
- e) the harmonized standards and programs applied by PICs in their EEZs have largely been adopted by the WCPFC and implemented in the high seas applying the compatibility principle from the UN Fish Stocks Agreement and the WCPFC Convention.

ACCESS FEE RETURNS

The table below summarizes the information available over time on access fee returns. This data is only approximate for reasons detailed in the source documents including differences in practice among PICs in recording revenue (some PICs record certain components of the access receipts as aid not fisheries revenue), differences in financial years, and differences in coverage—some include other fisheries revenue such as transshipment or observer fees; others do not. However, the table broadly indicates a substantial increase from the early 1980s to receipts of US\$60–80 million annually from around 1996–2007. By the 1990s, these earnings represented an important revenue source for many PICs, contributing 30–40 percent of central government revenue for several PICs.

The Indicative Return Rates in the table are those reported as being used as a basis for access agreements at the time. For example, the 1983 paper reported that “foreign fishing interests have generally accepted fee rates in the region of 3.5 to 4 percent,” while “a study of actual (ex post) fee receipts for the calendar year 1981 of Forum Fisheries Agency States showed actual fee rates of return ranging from around 2.2 percent to over 5 percent of landed market value.” The range in the ex post estimates between zones is largely due to annual variations in fishing patterns across zones.

The same paper noted that “the relatively low levels of these fee rates can be traced to:

- » The lack of any real scarcity value to the licenses purchased . . . , there are almost no effective quotas or limits

- on catch or effort associated with existing licensing arrangements.
- » The small number of buyers for licenses, with the foreign fishing interests generally strongly organized into a few buying agencies, often under strong government influence.
- » The relative large number of sellers of licenses, which has in the past provided scope for foreign fishing interests to choose from a number of license sellers, and even at times to play sellers off against each other.
- » The currently relatively unprofitable nature of distant water fishing operations.
- » The relative weakness of surveillance and enforcement efforts available to ensure compliance with agreements.

From the value of fees in the table above relative to the value of catches, it seems that most of the increase in fees from \$13.5 million in 1981 to \$60–80 million in the later years was due to the increase in the value of catches in PICs’ EEZs. In particular, there was very large growth in the value of purse seine catches growing from less than 30 percent of catch values in 1981 to around 70 percent by 2003. Most of the growth came from new purse seine fleets entering the fishery as PICs encouraged other fleets to enter the longline and purse seine fisheries to compete with Japanese fleets, and the Japanese share of access fees fell from around 90 percent in 1981 to around 15 percent by 2007. On the other hand, some of the increase in the value of catches would have come from the growing domestic fleets who would have generally paid relatively low fees.

Overall however, while most of the growth in access fees may have been due to increased catch values there was also substantial additional growth during the period from 1981 to 1996. Developments that could have been expected to contribute to that additional growth include:

- a) increased competition from new fleets as noted above;
- b) the higher earnings in particular from the Fisheries Treaty with the United States, which were returning 10–11 percent of the value of U.S. catches when the Treaty entered into force in 1987;
- c) improvement in monitoring, control, and surveillance programs, particularly the development of the Forum Fisheries Agency regional register and the adoption of Harmonized Minimum Terms and Conditions for Foreign Fishing Vessel

TABLE B.1. DEVELOPMENT OF ACCESS FEE RETURNS TO PICs SINCE THE 1980s

Year	Value of Fees (\$ millions p.a.)	Catch Value in PICs Waters* (\$ millions p.a.)	Indicative Return Rates	Source of Fees Data
1981	13.5	375 (1982)	3.5–4%	Clark (1983)
1995	60.0	1,101.1	n.a.	Swan (1997)
1996	66.3	875.4	n.a.	Gillett (1997)
1999	57.8	777.4	n.a.	Gillett and Lightfoot (2001)
2003	68.0	888.6	5+%	ADB (2004)
2007	78.5	1,796	n.a.	Gillett (2009)

Note: p.a. = per annum, n.a. = not available.

*The estimated catch value for 1982 is taken from the same paper referenced as the source for the fees data. The estimated catch values from 1995 are taken from Forum Fisheries Agency estimates (Forum Fisheries Agency 2013).

- Access, as well as the Australian supported regional patrol boat program and the Forum Fisheries Agency VMS;
- d) increased coordination between PICs, including sharing of information about access agreements and access negotiations; and
 - e) substantial efforts in capacity building including both training in the areas listed in this paragraph and institutional strengthening of national programs in tuna management and monitoring, control, and surveillance.

However, access fee earnings flattened out from the early 1990s, and there was a sense that there was little room for further growth in access fee revenues and that PICs needed to focus again on promoting domestic tuna industry development to achieve significant additional benefits from their tuna resources. As a major 2004 Asian Development Bank report from a project on Alternative Negotiating Arrangements to Increase Fisheries Revenue in the Pacific put it:

. . . agreements based solely on commercial considerations (that is, exclusive of strategic or political considerations, and based on ability to pay) seem unlikely to achieve much beyond 6–8% of the landed value of the catch. This ceiling has been the experience in most tuna fisheries, with even 6% seen as a significant if not burdensome “royalty payment” or “resource rental” in most resource sectors. The best placed PDMCs (Pacific Developing Members Countries) currently achieve a return of between 7 and 8% in some years. Even as competition for available tuna resources continues to increase, there is some evidence that this ceiling is a real one in economic terms, and those PDMCs which have the capacity or potential to do so, would best focus on domestic industry development or shore-based investment as a better prospect for, or an adjunct to, increasing returns from the fishery. (ADB 2004)

An alternative point of view based on bioeconomic analyses was that rents could be increased by restructuring regional tuna fisheries, and in particular by reducing effort, especially purse seine effort. The clearest expression of this approach was the conclusions of a 2000 report (Bertignac et al.) that said:

- » “the Fishery rent is fully dissipated at a level of effort 20–30% higher than the 1996 level”
- » “Both fishery rent and private profit are maximized at approximately 50% of the current effort level” (at around 16,000 fishing days)
- » “The results suggest that higher access fees could be sustained at lower levels of effort.”

In later work, with further development of this model, purse seine catch per unit effort (CPUE) and therefore rents were less sensitive to purse seine effort changes, but the work still found that “reductions in purse seine effort are likely to lead to an increase in the level of rent in the purse seine fishery,” and that rents were maximized at 17,000–23,000 fishing days depending on price elasticities.

In the same direction, Kompas and Che (2006) estimated that economic profits in the regional tuna fisheries would be maximized with significant reductions in effort from 2004 values, including a reduction of purse seine effort to 68 percent of the 2004 effort levels. With these reductions, profits were projected to increase by 30 percent p.a. or around US\$50 million p.a.

THE PNA PURSE SEINE VDS—A GAME CHANGER

Against the background set out above one recent development is bringing profound change to the management of purse seine fishing generally, and purse seine fishing by foreign fleets in particular in the WCPO. That development is the PNA purse seine Vessel Day Scheme (VDS). In fact, there are two PNA VDSs—the purse seine VDS is operational and the longline VDS is in a trial phase. But it is the purse seine VDS that has been the subject of much recent attention, and since that version is generally called the PNA VDS, the same terminology is used here.

The development, structure and operation of the VDS is described in the annex to this appendix. In brief it is a management scheme establishing tradable effort limits in fishing days in the purse seine fishery in the PNA EEZs (and Tokelau) that are allocated among PNA Members and Tokelau.

The VDS is not a FFA or arrangement, and foreign fishing interests are not directly involved in any aspect of the VDS. It is an instrument for PNA to manage purse seine fishing in their EEZs in their interests and in conformity with their international obligations, including the conservation and management measures of the WCPFC.

However, the VDS is centrally important to any consideration of FFAs in the Pacific Islands region because of the way that it is reshaping all fisheries arrangements in the Western Pacific purse seine fishery, including FFAs. It has also been adopted by the WCPFC as part of the regional management framework and WCPFC Conservation and Management Measure 2013–01 requires Commission members to “. . . support the ongoing development and strengthening of the PNA VDS including implementation and compliance with the requirements of the VDS. . . .”

Some of the defining features of the VDS as an economic instrument are:

- a) It aims to create scarcity of access to make access valuable. In the first three years, from 2008 to 2010, this aim was not achieved because the total allowable effort (TAE) was set at levels that exceeded the demand for days, as often happens when an allocation process is introduced to a fishery, and there was a procedure for carrying over unused days. Since the TAE was tightened and the carryover provision removed for 2011, fishing days have become scarce and more valuable. As indicators:

- i. Havice (2013)⁶ reports

“Since 2007, the value of a fishing day has increased dramatically fisheries specialists and industry representatives suggest that the rate of return on licensing fees has increased on average from 5–6% of catch value to 8–13%;”

- ii. The terms and conditions for the Treaty with the United States have been renegotiated increasing fees from \$21 million annually to \$63 million annually from mid-2013 for more limited access than previously; and

⁶ This reference provides the most comprehensive description of the VDS currently available.

TABLE B.2. FISHERIES REVENUES FOR SELECTED PNA MEMBERS (US\$ MILLION P.A.)

Marshall Islands	Nauru	Tuvalu
2007 n.a.	5.5	5.2
2008 n.a.	7.4	10.3
2009 n.a.	5.7	9.1
2010 2.2	5.3	9.0
2011 7.9	7.5	8.9
2012 8.4	11.8	10.5

Sources: Marshall Islands: (MIMRA 2013; Nauru: PNAO).

Note: n.a. = not available.

- iii. Table B.2 shows some recent changes in the fisheries revenues of Marshall Islands, Nauru, and Tuvalu, noting that these figures do not include the returns from joint ventures for Marshall Islands and Tuvalu, which have been in the range of \$1.5–2.5 million p.a., nor the increased fees for the U.S. fleet. Marshall Islands and Nauru have both been involved in trading days. For Marshall Islands the revenue growth has come from selling days for fishing in its waters, as well as the sale of days for fishing in other zones. Nauru on the other hand has been a buyer of days, and its revenue includes returns from sales of its Party Allowable Effort (PAE) supplemented by returns from additional days that it has bought for fishing in Nauru waters.
- iv. More recently based on 2013 earnings, the ADB has reported that in terms of government revenue “it is the second year in a row that Kiribati, Marshall Islands, Nauru and Tuvalu have had done better than they expected and it is all a result of the Vessel Day Scheme put in place by the 8 tropical tuna countries that are Parties to the Nauru Agreement” (ADB 2013).

Further substantial gains can be expected to be reported in the next few years as the increases in prices for vessel days now being put in place work through into revenue receipts, and as noted below, there remains substantial scope to further improve the effectiveness of the VDS as a management scheme.

- b) It aims at creating competition between fleets for access. This process is underway but is far from perfect. Days are still made available under a bilateral framework which is not yet fully open to competitive processes. When the process becomes mature, it should lead to less efficient vessels being removed from the fleet because they can't compete for VDS days, and being replaced by more efficient vessels. That hasn't happened yet, but there are signs that owners of less efficient vessels are being driven into more beneficial locally based ventures with PNA partners to survive. A fully competitive process should also reveal the real value of

VDS days and the values of features such as transferability, longer term contracts for days, and pooling arrangements that allow vessels to use VDS days more flexibly in different zones. In time, this should make the current important minimum benchmark price redundant.

- c) It allows for days to be traded between Parties: This enables Parties to take into account the wide range of annual changes in fishing conditions between zones resulting in particular from El Niño and La Niña phenomenon. It also allows Parties with less attractive fishing grounds to sell days to Parties where fishing is more profitable, and for both Parties to share the benefits.
- d) It allows each Party to use their allocation to meet their own national interests. Some may choose to use their allocation wholly for domestic fleets both in their own EEZs or in waters of others through the FSM Arrangement; some may choose to focus on sales of days to foreign fleets through existing bilateral frameworks; others show signs of moving to a completely competitive tendering type process—and in most cases there is likely to be a balance of these approaches. The important principle is that Parties should be free to maximize the benefits in terms of their own national interests and opportunities within the agreed framework of minimum terms and conditions for foreign vessels.
- e) It can provide effective leverage for promoting domestic development. Some Parties, including Papua New Guinea and Solomon Islands, have made it clear that they intend to provide longer term opportunities for purse seine fishing from their PAE only for vessels associated with onshore investments; others such as Kiribati have placed a priority on joint ventures in vessel operations.

NEXT STEPS ON THE VDS

The VDS is still in a very early stage of development, and far from fully successful or effective, with a mix of successes, difficulties, and failings in its performance. There are a number of weaknesses to be addressed and there is scope for improvements that can be expected to improve outcomes, and reduce risks to its sustainability, including:

- a) weaknesses in the way the scheme is being implemented, including inconsistent handling of non-fishing days, short-term decision-making on PAEs, outstanding issues in allocation;
- b) further development of support systems including electronic reporting and enhanced electronic monitoring;
- c) improved use of the scheme, with most administrations still in early stages of learning to use the scheme effectively and in particular of exploring new ways of managing access to increase returns;
- d) strengthened management of purse seine fishing outside the waters covered by the VDS to avoid effort being diverted to alternative fishing grounds;
- e) improved decision-making processes, including strengthened institutional arrangements, especially for commercial decision-making;
- f) developing new alliances with the global tuna industry: most distant water interests have substantially reduced their opposition to the VDS and their efforts to undermine it, except for the EU. Multinational interests have generally

- shown a more constructive interest in mutually beneficial arrangements through the VDS than national fleets and their governments;
- g) effort creep needs to be taken into account in the setting of the PAE. Even then, the VDS will still be subject to the weaknesses of input controls generally as a management instrument, including the bluntness of effort control for manage fishing mortality;
 - h) Extension to other fisheries: a VDS for the longline fishery in PNA EEZs is in a trial phase.

Some specific new directions that are under consideration⁷ include:

- a) **multi-annual arrangements:** The efficiency of businesses throughout the tuna supply chain is generally enhanced by longer terms for access to fish resources to reduce uncertainty about supply, allow enhanced planning and enable producers to give assurances to customers of a relatively smooth supply of products over time. With those kinds of benefit increased returns can be extracted for multi-annual access.
- b) **pooling:** In the regional purse seine fishery, there are potentially valuable gains to vessels from being able to roam freely across zones as fishing conditions change. The value of this flexibility will vary between vessels depending on their operating patterns. The Treaty with the United States and the FSM Arrangement are both pooling arrangements, but currently the days for those arrangements are taken off the top from the TAE before PAEs are calculated. Additional pooling arrangements would necessarily have to draw on contributions of days from PAEs of Parties. PNA have already raised the possibility of pooling in their 2012 report to the WCPFC (PNA 2012), and negotiations on pooling are understood to be advanced with two other fleets.
- c) **transferability:** An alternative to pooling is to allow days purchased from a Party to have a degree of transferability to some or all other Parties' EEZs (or to the high seas) under an arrangement providing for a premium payment for days used in that way to be shared between the Party providing the PAE and the Party whose waters are fished.
- d) **tendering/auctioning:** It is only a matter of time before days are tendered or auctioned, either bilaterally for access to a single zone, or more likely for pooled days to multiple zones. In addition to increasing revenue, selling at least some days through tendering or auctioning should have the very important benefit of revealing the real economic value of a fishing day and of fishing days made available under different conditions.
- e) **granting more well-defined rights for access:** especially for businesses with longer term investments at national level.
- f) **selling fishing opportunities to processors or brokers or brand owners instead of fleets:** selling access or days to larger businesses than the fleet owners could provide opportunities for securing vessel services

more competitively, competitively, and efficiently in a way that could increase economic rents and potentially access returns as well as providing opportunities for profitable joint ventures between the resource-owning governments and those businesses. In fact, as the PNA office (PNAO) Business Plan (PNAO 2011) sees it, if the VDS were to become fully competitive and effective, the result should be the stripping out of rents, in terms of above market returns, throughout the value chain, except at the brand owner and consumer end. Then PNA and brand owner ventures could be potentially relatively powerful.

- g) **fishery services imports model:** A model that would most closely fit the concept of "importing fishery services" would see PICs individually or collectively pay vessels to catch fish, instead of having the vessels pay PICs. In this model, harvesting would be competitively contracted. Instead of the vessels paying PICs the current 6–10 percent of catch value for catching rights, PICs would contract vessels by paying them a percentage of the catch with PICs retaining ownership of the catch, which they could then sell or have processed. Given the increased commercial involvement and risks that would be taken on by PICs from this form of transaction, it is more likely that this kind of arrangement would be implemented through a joint venture with a processor, broker, or brand owner. The partner needn't be a processor with its own plant—the joint venture could make arrangements for the catch to be processed under contract wherever the greatest value would be created, taking into account PICs interest also in generating employment domestically.

A highly likely outcome of the kind of development discussed above is that formal foreign fishing access agreements would diminish in importance and in many cases fall away. With sovereign rights secure and a greatly reduced need for the compliance umbrella offered, the original rationales for the use of access agreements are largely removed. In practice, the continued use of bilateral access agreements is largely:

- a) a matter of convenience, since they are already in place and developing alternatives such as direct licensing of vessels under regulations requires the development and adoption of detailed regulations on access terms and conditions; and
- b) a reflection of their political context, with fishing states and associations keen to retain the access to ministers and senior administrators that is implied in a process of negotiations on agreements, and potential benefits to PNA members where aid programs are linked to access, as is the case with Japan.

However, concerns about the lack of transparency, the political and commercial influences including the risk of corruption, and the inevitable tendency toward compromise outcomes that attend any negotiation process are increasingly likely to be seen as good reasons for moving to replace the process of negotiations over access agreements with more open and competitive processes, as the PNA CEO has recently noted (Aqorau 2014).

The development of the VDS has been challenging also for distant water fishing interests. Some private sector interests have welcomed its potential, while pointing to its shortcomings in limit-

⁷ See Aqorau 2013 for reference to some of these approaches.

ing effort and capacity. The U.S. government and industry opposed or questioned it for a long period before recently agreeing to the application of the VDS in an arrangement to extend Treaty licensing arrangements for U.S. vessels. As noted above, the EU continues to oppose it, apparently in order to protect its vessels from the economic implications.

Some of these reactions highlight the apparent policy incoherence in the situation where:

- » taxpayers in donor countries contribute valuable funding for aid for the sustainable development of PICs;
- » then pay taxes for subsidies to fleets and costs of their national administrations who act to protect the economic interests of their fleets operating in PICs waters in ways that undermine the potential sustainable development gains for PICs from the more efficient use of their tuna resources; and
- » then as consumers of tuna products pay higher prices because of tariffs to protect their national tuna fleets and processors when cheaper products are available from PIC or third country producers whose operations would contribute to PIC sustainable development.

THE VDS IN PERSPECTIVE

The development of the VDS reported above needs to be kept in perspective. It is a major undertaking. Havice describes it as “arguably the largest and most complex fishery arrangement ever to be put in place,” covering a fishery with an annual landed value of catches of over \$3 billion, and providing up to 50 percent of national government revenue for some PNA Members. But there are six PICs that don’t participate in the VDS, mostly because they don’t have significant purse seine catches in their waters. And all the PICs participating in the VDS are also involved in FFAs of different forms in the longline fisheries in their EEZs, which have a catch value of over \$500 million. Despite the success of the purse seine VDS, efforts to implement similar or alternative arrangements in the longline fisheries have not been effective, although PNA are trialing a longline VDS. There are serious management issues in the two major longline fisheries. In the tropical longline fishery, there is overfishing of the primary target species, bigeye tuna; and there has been rapid expansion of the southern longline fishery targeting mainly albacore, which has resulted in lower prices and lower catch rates to a degree that threaten the viability of local fleets.

FFAs AND SUSTAINABLE FISHERIES, AND THE WCPFC

The emphasis in this paper has been on the economic aspects of PICs’ experience with FFAs. For PICs, sustainability has always been an important objective of the FFAs in which they have been involved. The initial emphasis was on securing the data necessary for stock management, including assessments, and on improving knowledge and understanding of the major target stocks. Later, limits were introduced for both conservation and economic purposes, particularly through the Palau Arrangement for the purse seine fishery.

However, the establishment of the WCPFC in 2004 made conservation concerns and action central. The WCPFC itself is not

involved in FFAs, and has rejected proposals that it should be. However, there are very large implications for the outcomes from FFAs from the actions of regional fishery management organizations (RFMOs) generally, and for PICs from the actions of the WCPFC.

RFMOs, at least tuna RFMOs, have inherent tendencies:

- a) to manage a stock down to B_{MSY} [Maximum Sustainable Yield (MSY)] levels because of the focus on biological sustainability rather than optimal utilization, and because of consensus-based decision-making which tends to result in lowest common denominator type outcomes; and
- b) to entrench existing fleets through the development of flag-based limits based on historical catches or effort, by flag, that become quasi-rights, reinforced by capacity limits that make it harder for developing countries to secure fair opportunities to participate, especially in high seas tuna fisheries, or even to establish competitive arrangements for access to their waters, since fleet capacities are largely locked down.

These tendencies can be compounded and reinforced by developed fishing state domination of RFMO processes.

PICs have made a major effort to avoid those outcomes at the WCPFC with some success, particularly in the purse seine fishery, where the WCPFC limits are set in terms of zone-based effort limits, including the VDS.

WHAT TO TAKE FROM PIC EXPERIENCE WITH FFAs

What can be taken from this review of PICs’ experience with FFAs? Some features and key issues are:

- » **It’s a long haul:** PICs have been working at improving the management of their tuna fisheries generally, including their arrangements with foreign vessels, for around 35 years. There were some early easy gains in the 1980s, some “low-hanging fruit” that could be picked by short-term programs involving sharing and application of information and ideas, but otherwise substantial gains have required lengthy consultations at regional and national levels, cautious implementation, and the building of national and regional capacities. Much of this is due to the international nature of the regional tuna fisheries and the layers of complexity added by that feature compared to the management of a fishery within a single jurisdiction. But national capacity building in fisheries management is generally a long haul in any national context.
- » **Institutional and human resources development creates beneficial choices:** When PICs first entered into FFAs, they had little choice than to effectively legitimize fishing that was going on in their waters anyway, and secure some benefit from it. That is no longer the case, and it is the very substantial improvements in national, regional, and sub-regional capacities, both human and institutional, that have largely created the choices that most PICs now have in the way they manage fishing in their waters, their relations with foreign vessels, and the way in which they use various forms of FFAs. At the same time, especially for smaller PIC administrations, human resources and

institutional constraints remain the key factor in constraining them from securing greater benefits from FFAs and management of their tuna fisheries more generally.

- » **The VDS outcomes contradict much analysis and advice:** Much technical advice to PICs and PNA in particular was based on the conclusion that the potential for benefits and access fees would be increased by reducing effort, especially purse seine effort, and that increased effort would reduce rents. In practice, the PNA appear set to generate much greater gains in fees than projected by bioeconomic analyses from the opposite outcome in the purse seine fishery, with substantially greater earnings from a purse seine fishery with effort levels at or beyond the levels at which rents were projected to fall to zero. That doesn't invalidate the principles of the bioeconomic analyses—at some point rents and PICs' benefits will fall if purse seine effort continues to expand, but it does indicate the difficulty of applying standard bioeconomic models to this purse seine fishery.
- » **The potential benefits from effective, competitive access arrangements are greater than generally realized:** The scale of increases in fees and leverage of domestic development benefits already achieved by the VDS has surprised some of those involved, and there are potentially much greater benefits to come, especially if the scheme can be tightened to where less efficient vessels are driven out by higher fees.
- » **Market principles are important, especially competitiveness and scarcity:** If FFAs are to be used to generate revenue in the form of access fees, returns are increased by competition for access, and by access being scarce. When there are one or few buyers for access, and when essentially unlimited access is available, the value of access is low. The VDS experience in increasing returns is largely a measure of the value of limiting access and increasing competition for it, and there is substantial additional ground yet to be covered in these directions by the VDS participants. Among other things, umbrella agreements with foreign flag states or associations may have some advantages in terms of convenience and compliance, although these are likely to be declining, but making businesses and vessels compete for access, even from the same flag state, will increase returns.
- » **Rent creation and extraction are separate, though related, processes and both are necessary:** Increasing profitability of a fishery may generate higher levels of economic rent, but transforming that into higher benefits extracted through FFAs or otherwise requires transformation also in terms of more competitive processes to extract rents.
- » **Cooperation works:** Indeed, it is an imperative for PICs. But there are limits to jointness of action, and approaches that substantially retain the room for each state to use its rights and resources in its own interests are more likely to succeed. This is largely a matter of states being able to act on their own comparative advantages, which are more different than is often appreciated, and in pursuit of their national objectives. For the PICs, harmonization works because it creates a framework of agreed measures which

greatly reduce the extent to which they can play off against each other, while leaving them free to apply widely different approaches in their arrangements with foreign vessels and in the development of their tuna fisheries more generally. Similarly, for VDS participants, the jointness of the VDS secures each country's rights, but leaves them largely free to use their national PAEs in their interests and in response to their own comparative advantages, and they all exercise those rights differently.

- » **The actions of RFMOs for shared stocks can have very large implications for FFAs:** Furthermore, they are inherently tilted against developing country interests in securing benefits from FFAs.
- » **Development assistance packaged in 3–5 year project terms isn't a good fit with these long terms needed for real gains:** For PICs, the regional organizations and programs, particularly FFA and SPC, have been important agents in the process of merging fixed term, projectized packages of donor funding into coherent streams of support for PICs, often with real difficulty, and to their great credit.
- » **The PNA increased its independence and reduced its dependence to make the VDS work:** The PNAO and some commentators have ascribed some of the recent success of the PNA and the VDS to the increased self-reliance of the PNA since it established its own office and financing sources, that reduced its dependence on donors and organizations with links to major fishing states. In fact, the initial report on the VDS was financed by the ADB, and its development was very largely supported by the FFA. However, there was little support, and some opposition, from key donors, when the PNA adopted the VDS and then set up its own office, largely to implement the commercial aspects of the VDS.
- » **It's easier said than done:** Even with the clear results, both positive and negative, from the experience with the purse seine VDS, the PICs have not yet been able to extend a similarly cooperative framework into the longline fisheries, so replicability is clearly not straightforward.
- » **Are fishing access agreements on their way out?:** There are clearly less circumstances now in which it makes sense for states to enter into FFAs as Foreign Fishing Agreements relating to access to their waters. Without the original rationales for agreements of this kind of securing sovereign rights and compliance, an access agreement between a coastal state and a foreign fleet, especially a foreign business or association of business is little more than an agreement by the foreign fleet to comply with national laws in return for certain fishing opportunities. Why bother? That isn't how states regulate economic activity in other sectors. The key requirement is clear specification of the rules that apply to those wanting to engage in fishing, and preferably transparent processes for allowing and monitoring that participation. There is no question of securing businesses formal agreement to those rules, notwithstanding the value of consultation. Many PICs are already working in that direction which sees domestic and foreign vessels treated in

much the same process and under the same arrangements, though fees, and so on may be different for foreign vessels, without agreements. The VDS is simply accelerating that process for some PICs, because of the premiums that can be earned from more competitive processes, and the additional importance of transparency when there is so much more at stake.

REFERENCES

- ADB. 2004. A Review of Current Access Arrangements in Pacific Developing Member Countries (PDMCs).
- ADB. 2013. <http://www.radioaustralia.net.au/international/radio/program/pacific-beat/tuna-fee-revenue-higher-than-expected-in-four-pacific-countries/1228676?autoplay=1228416>
- Aqorau, T. 2014. "Challenges facing the region's tuna fisheries. What sort of year will 2014 be?" *Islands Business*. January 2014.
- Bertignac, M., H. Campbell, J. Hampton, and A. Hand. 2001. "Maximizing Resource Rent from the Western and Central Pacific Tuna Fisheries." *Marine Resource Economics* 15: 151–77.
- Clark L. 1983. "A Study on Fees and Other Economic Benefits from Foreign Fishing Access to the Fisheries of Exclusive Economic Zones of the States Participating in The South Pacific Forum Fisheries Agency." *Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones*, 293. Annex 8. FAO.
- Clark L. 2006. "Perspectives on Fisheries Access Agreements: Developing Country View." *Development Dimension, Fishing for Coherence, Proceedings of the Workshop on Policy Coherence for Development in Fisheries*. OECD.
- Carroz J., and M. Savini. 1979. "The new international law of fisheries emerging from bilateral agreements." *Marine Policy* 3: 2. pp. 79–98.
- Forum Fisheries Agency. 2013a. WCPFC Area Catch Value Estimates (for July 2013), found at <http://www.ffa.int/node/425#attachments>
- Forum Fisheries Agency. 2013b. FFA Fisheries Trade News 6: 3.
- Gillett R. 1997. The Importance of Tuna to Pacific Island Countries. FFA Report 97/15.
- Gillett R. 2003. Domestic Tuna Industry Development in the Pacific Islands: the Current Situation and Considerations for Future Development Assistance. FFA Report 03/01.
- Gillett, R. 2009. Fisheries in the economies of the Pacific island countries and territories. Asian Development Bank.
- Geen G. 2000. Review of the Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery.
- Havice, E. 2013. "Rights-based management in the Western and Central Pacific Ocean tuna fishery: Economic and environmental change under the Vessel Day Scheme." *Marine Policy* 42: pp. 259–67.
- Kompas T., and T. N. Che 2006. "Economic profit and optimal effort in the Western and Central Pacific tuna fisheries." *Pacific Economic Bulletin* 21 (3): pp. 45–62.
- MIMRA. 2013. Marshall Islands Marine Resources Authority. Annual report.
- Moore, G. 1987 "Enforcement Without Force: New Concepts in Compliance Control for Foreign Fishing Operations." *Law and the Sea: Essays in memory of Jean Carroz*. FAO.
- PNA. 2012. Vessel Day Scheme (VDS) report to the Eighth Regular Session of the Western and Central Pacific Fisheries Commission (WCPFC8). WCPFC8-2011-DP/23.
- PNAO. 2011. PNAO Business Plan, based on a draft prepared by T. McClurg. Toroa Strategy.
- Reid, C., M. Bertignac, and J. Hampton. 2006. Further development of, and analysis using, the Western and Central Pacific Ocean Bioeconomic Tuna Model (WCPOBTM).

ANNEX: THE PNA PURSE SEINE VESSEL DAY SCHEME (VDS)⁸

THE PNA

The PNA are the Parties to the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest. In the Agreement concluded in 1982, the Parties agreed to ordinate and harmonize the management of fisheries with regard to common stocks within the Fisheries Zones, and in particular to establish:

- principles for the granting of priority to applications by fishing vessels of the Parties to fish within the Fisheries Zones over other foreign fishing vessels;
- uniform terms and conditions under which the Parties may license foreign fishing vessels to fish within their Fisheries Zones

The eight Parties are the Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands, and Tuvalu. The catch of the three main tropical tuna species in their waters is around 1.5 million tons, annually, 95 percent of the catch in PICs' waters, and 35–40 percent of the global catch of these species, including a greater share of skipjack tuna, the primary tuna input for canned tuna.

To give effect to the Nauru Agreement, the Parties have adopted several arrangements, including:

- 1st Implementing Arrangement, 1983, setting minimum licensing standards, including reporting, inspection and onboard observation, vessel identification and "good standing" on the FFA regional register
- 2nd Implementing Arrangement, 1990, adding additional conditions relating to VMS, high seas reporting and a prohibition on transshipment at sea
- 3rd Implementing Arrangement 2008, applying a FAD closure, 100 percent observer coverage and catch retention/no tuna discards in PNA EEZs, and prohibition of fishing in high seas areas for licensed vessels
- the FSM Arrangement which provides a scheme of preferential reciprocal access for domestic vessels to PNA EEZs.
- the Palau Arrangement, within which the purse seine VDS is a management scheme, and a longline VDS is being implemented.

For most of its life, the PNA was serviced by the FFA, based in Honiara, in the Solomon Islands, and later from a PNA Unit within the FFA Secretariat. In 2010, the Parties established the PNA Office (PNAO), based in Majuro, Marshall Islands, because of the increased load of commercial work required for the Parties and to promote self-reliance. The PNAO is largely funded from revenues received from VDS registration fees, FAD licensing charges and a Conservation Levy on foreign vessels. The Papua New Guinea Government provided substantial funding for the start-up of the PNAO and VDS development. Other PNA Members also provided grants.

⁸The material in this annex to this appendix draws on data provided by Marine Resources Assessment Group (MRAG Ltd) in the context of this study, with some restructuring and updating.

The PNA are also engaged in other programs to support Members, the most prominent of which is the certification of the PNA free school skipjack purse seine fishery by the Marine Stewardship Council (MSC).

THE PALAU ARRANGEMENT

The Palau Arrangement⁹ was designed to establish a framework for coordinating the management of the Western Pacific tuna purse seine fishery among member states and came into force in 1995. The Arrangement was initially designed to implement a cap on the number of purse seine vessels fishing on PNA EEZs. The Arrangement sets out procedures for the coordination of the management of the fishery including arrangements for management meetings and matters to be considered (for example, scientific, management, and compliance measures). An agreement was reached in 1994 to cap purse seine license numbers at 205 under the Arrangement (although numbers in 2012 were around 280).¹⁰

A Review of the Palau Arrangement in 2000 (Geen 2000) found that the Arrangement had not been effective in limiting capacity, promoting domestic development or increasing access fees and proposed that it be replaced by a system of effort limits allocated to Parties in fishing days. This led to the development of the purse seine VDS, and subsequently the design of a longline VDS. The Palau Arrangement itself was revised in 2010 to provide for the operation of management schemes under the Arrangement. The purse seine VDS now operates as a management scheme under the Palau Arrangement, and the longline VDS is in a trial phase under the Arrangement.

THE PURSE SEINE VDS STRUCTURE

The purse seine VDS (called the VDS after this point, although there is also a longline VDS) is designed to address sustainability and economic gains. The objective of the VDS is to:

. . . enhance the management of purse seine fishing vessel effort in the waters of the Parties by encouraging collaboration between all parties, and:

1. promoting optimal utilization and conservation of tuna resources;
2. maximizing economic returns, employment generation and export earnings from sustainable harvesting of tuna resources;
3. supporting the development of domestic locally based purse seine fishing industries;
4. promoting effective and efficient administration, management and compliance.

A Total Allowable Effort (TAE) in fishing days for the purse seine within Party EEZs is agreed annually, taking into account, the best available scientific, economic, management, and other relevant advice and information, the provisions of the WCPFC Convention and the objectives of the Management Scheme—which brings into play the economic objectives. Provisions from the TAE

are currently made for fishing by U.S. vessels under the Treaty with the United States and a pool of days for domestic vessels under the FSM Arrangement. The FSMA Arrangement pool is currently capped at 3,907 days. (When this is finished, Parties may put up days from their PAE for fishing in the waters of other Parties, or domestic vessels may license bilaterally.) The TAE is allocated between Parties as Party Allowable Effort (PAE) based on a formula taking into account historical levels of fishing effort in EEZs and the relative biomass of skipjack and yellowfin in each Party's waters.

Parties are required to limit effort in their EEZs to their PAE with penalties when PAEs are exceeded.

Days are transferable between Parties within a management year.

The use of fishing days varies with vessel size. Effort by vessels shorter than 50 metres Length Overall is discounted and there is a premium attached to effort by vessels longer than 80 metres Length overall.

Vessels in the fishery must be licensed by at least one Party and registered on both the VDS Register and in good standing on the FFA Vessel Register. They must have an Automatic Location Communicator reporting at all times within the management area.

The PNAO as Administrator of the VDS maintains all information systems associated with the Scheme and reports to Parties. Vessels are monitored at sea through the FFA Vessel Monitoring System, from which data is transferred to a PNA Fisheries Information and Management System (FIMS) that allows national fisheries authorities, PNAO, fishing associations, some fishing states and vessel operators, access to real-time data on vessel operations including effort and locations.

There is a benchmark minimum fee per VDS day for foreign vessels, initially set at \$5,000 per day for 2012, and raised to \$6,000 per day for 2014.

The table below sets out the agreed PAEs and days fished by Parties as reported to the 8th session of the WCPFC by PNA in March 2012.

Party	PAEs	Days Fished
Federated States of Micronesia	5,522	5,041
Kiribati	5,450	4,376
Marshal Islands	2,234	2,236
Nauru	1,653	1,697
Palau	514	543
Papua New Guinea	10,073	11,613
Solomon Islands	2,146	1,898
Tuvalu	877	941
Adjusted TAE/Total Days Fished	28,469	28,345
FSMA days	3,907	5,550
U.S. Treaty days	2,760*	7,696

Source: PNA (2012).

⁹ Palau Arrangement for the Management of Western Pacific Fishery.

¹⁰ Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery, Annex 1, 27–29th April, 1994.

APPENDIX C

AREAS BEYOND NATIONAL JURISDICTION (ABNJ) FISHERIES

THE WESTERN AND CENTRAL PACIFIC OCEAN (WCPO) CASE

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INTRODUCTION

This paper discusses the ABNJ implications of the shared tuna fisheries of the Western and Central Pacific Ocean (WCPO). It highlights the critical role of design and implementation of effective frameworks for cooperation in addressing shared fisheries management and most importantly, the quality of governance exercised by participants in those frameworks. It provides some regional context that helps identify the priority areas where the greatest gains or most powerful exemplars are likely to be found.

ABNJ ISSUES

The challenge is to benefit coastal states through the better management of fisheries that extend well beyond their jurisdiction. Each individual state only has a minor stake in those fisheries, which are shared both with other coastal states and the high seas. At first sight, it appears impracticable for a small number of client countries, who are by definition undeveloped, to influence fisheries management under the exclusive jurisdiction of other states or fisheries management within areas entirely beyond any national jurisdictions. Nevertheless, that ambitious objective is what ultimately must be achieved.

A stake in shared tuna fisheries is the major natural resource and national asset of several small island States within the WCPO, particularly those comprised solely of atolls such as Kiribati, Tuvalu, and the Marshall Islands. This is also true in some neighboring States that contain high islands with their wider economic opportunities such as Nauru, Palau, and Federated States of Micronesia. The performance of these economies and the welfare of their citizens are very dependent upon their individual and collective capacity to derive value from those shared fisheries. That capacity has historically been suppressed by the lack of agreed methodology for the management of shared fisheries (even at the level of theory), few practical opportunities to implement effective shared fisheries management regimes, and a disappointing rate of progress from RFMOs in addressing these theoretical and practical problems.

All fisheries are replete with economic spill-over effects or externalities. A fish taken by one person cannot be taken by anyone else. This creates the economic imperative to race for fish and to continue racing for fish for as long as the marginal benefit of taking that fish is positive to the individual concerned. This phenomenon lies at the heart of all fisheries management problems and if not addressed leads to the destruction of economic value and even

environmental degradation. These externalities take their most potent (or toxic) form in valuable shared fisheries such as the purse seine skipjack fishery of the WCPO because the race for fish is occurring simultaneously on five levels:

- i. Competition between individual harvesters using the same fishing method
- ii. Competition between harvesters using different fishing methods
- iii. Competition between coastal States
- iv. Competition between Distant Water Fishing Nations
- v. Competition between coastal States and Distant Water Fishing Nations (DWFNs) fishing high seas areas within the geographic footprint of the shared fishery

All five forms of competition lead to the destruction of economic value if unconstrained but it is the search for practical solutions to the fifth form (coastal State versus high seas) that is discussed here. It follows from this analysis, however, that any solution that does not simultaneously address the other forms of competition will not deliver the potential economic benefits to the coastal states.

In summary, ABNJ fisheries management is crucial due to the combination of two salient facts: the importance of the stake held by some coastal states in shared fisheries to their economic well-being and the fact that the value of this stake may be seriously compromised if ABNJ removals from those fisheries are not effectively managed.

Given the dearth of alternative economic opportunities to these states, failure to establish an economically efficient shared fishery management regime will predictably focus fisheries development effort toward far more fragile inshore reef and lagoon resources. The track record of such inshore development in the region is very poor. Indeed, it would be a fair summary to suggest that the two biggest manageable threats to the capacity of these complex ecosystems to deliver food security and ecosystem services are ill-considered export ventures and land-based sources of pollution. Successful shared fisheries management will provide an economic climate whereby people can afford to manage inshore fisheries based upon considerations other than potential short-term cashflow.

SHARED FISHERIES: MANAGEMENT THEORY

Shared fisheries are by their nature very extensive, but this is not what makes them unusually difficult to manage successfully. The process of successful shared fisheries management contains the same seven general steps as for any other well-managed fishery:

- i. Define the fishery management unit (species, area, method)
- ii. Identify the right holders within the fisheries management unit
- iii. Agree upon the allocation of rights between those right holders

Edited from a paper prepared for the World Bank, April 2013.

- iv. Agree upon the collective management objectives for the fishery
- v. Agree upon the management decision rules, management measures, and sanctions against non-compliance with those measures
- vi. Monitor the fishery and analyze performance against the collective management objectives
- vii. Review objectives, rules, and measures in the light of real time performance

The reason shared fisheries are especially difficult to manage is that there is no robust jurisdictional framework for the decisions required to implement the process above; everything must be achieved by a process of international negotiation wherein no meta-rules governing behavior exist other than an exhortation within the Law of the Sea to cooperate. Even where Regional Fisheries Management Organisations have been established, their constitutional arrangements do not significantly improve this situation. For example, the Western and Central Pacific Fisheries Commission (WCPFC) has asserted a mandate over management of tuna fisheries from the Arctic to the Antarctic but has not yet defined any practical fisheries management units for those fisheries. This is a very basic fisheries management omission that is unlikely to be rectified by the agreement of some voluntary conservation and management measures by its members.

SHARED FISHERIES: WCPO CONTEXT

There are arguably four major shared fisheries in the WCPO:

- i. A northern albacore/longline and pole and line fishery extending north to Japan from above 10° north
- ii. A southern albacore/longline fishery extending south to New Zealand from below 10° south
- iii. A tropical bigeye/yellowfin/longline fishery extending from around 20° north to 20° south
- iv. A tropical skipjack/purse seine fishery extending from around 20° north to 20° south

These fisheries require separate management even though their theoretical geographic boundaries overlap and the target species of one fishery can be a bycatch of another. For example, bigeye tuna is a bycatch of the skipjack purse seine fishery. Currently, these four fisheries management units have not been delineated and consequently are not effectively managed. The discussion here focusses on the tropical skipjack purse seine fishery. It is by far the most valuable to coastal states in the region, is not yet overfished (and is therefore capable of generating large fisheries rents), and has an embryonic fisheries management framework in the form of a purse seine Vessel Day Scheme (VDS) operated by the Parties to the Nauru Agreement (PNA).¹

According to Secretariat of the Pacific Community's (SPC's) Division of Fisheries, Aquaculture and Marine Ecosystems, the WCP purse seine catch in 2010 was 1,818,255 tonnes of which 1,381,070 tonnes was skipjack. Total skipjack catch (including longline and other methods) was approximately 1.7 million tonnes and estimated Maximum Sustainable Yield (MSY) for that stock is approximately 1.5 million tonnes. The catch in 2010 was, therefore, above the MSY level but the skipjack biomass is also above the level that will produce MSY (although the SPC estimates that the stock is reducing by approximately 200,000 tonne per annum at current levels of effort). In comparison, the longline fisheries are smaller but in a more stressed condition. Catches of bigeye and yellowfin tunas in 2010 in the much smaller longline fisheries were 64,117 Mt and 82,485 Mt respectively.² Yellowfin tuna is already considered to be approaching the biomass capable of producing MSY (bMSY) and bigeye tuna is at bMSY.

To summarize the fishery context for the skipjack fishery, according to SPC, total annual catch is approximately 1.7 million tonnes of which 300,000 tonnes are taken outside of the purse seine fishery. These catch levels will have to be reduced by approximately 200,000 tonnes per annum as the stock size approaches bMSY over the next few years. At current skipjack prices of approximately US\$2,100 per tonne, total primary value of the WCP purse seine skipjack fishery is US\$2,940,000,000 per year (nearly US\$3 billion per annum).

Since 2009, PNA countries that comprise the geographic core of the skipjack purse seine fishery have operated a Vessel Day Scheme with a current Total Allowable Effort (TAE) of approximately 35,000 days allocated to the Parties (exclusive of the Federal States of Micronesia (FSM) Arrangement and U.S. Treaty commitments). At present, each Day under the Scheme is translating into roughly 30 tonnes of purse seine catch (including yellowfin, bigeye and other bycatch). This scheme has been successful in increasing annual license and Day revenues to the Parties from around \$70 million per annum to around \$170 million per annum in 2012. Vessel Day prices in 2010 were below \$2,000 and in 2012 were a minimum of \$5,000. However, there is a large amount of effort outside of the TAE. Indeed, the rough estimate presented in table C.1 suggests that at least 47 percent of skipjack purse seine catch may be outside of the PNA TAE in 2012.

The initial economic success of the VDS contains the seeds of its own destruction and the overriding need is to conceive and implement the actions necessary to prevent that outcome.

THE PNA VESSEL DAY SCHEME

From a fisheries management theory perspective, the PNA VDS has a number of things to commend it. Indeed, it is an internationally significant model for shared fisheries management. As it stands, however, it is a model that contains some potentially fatal flaws and there is wide agreement between its participants that it requires fixing. There is far less agreement about what needs fixing or how. In 2011, The World Bank provided assistance to the PNA Office

¹ The Parties to the Nauru Agreement are Papua New Guinea, Palau, the Federated States of Micronesia, the Marshall Islands, the Solomon Islands, Nauru, Tuvalu, and Kiribati. In 2013, the Cook Islands and Tokelau joined the VDS but are not Parties to the Nauru Agreement.

² Harley, S., P. Williams, S. Nicol, and J. Hampton. "Tuna Assessment Report." *The Western and Central Pacific Fishery: 2010 Overview and Status of Stocks*. Secretariat of the Pacific Community (SPC): 11, page 1.

TABLE C.1. ESTIMATED WCP PURSE SEINE EFFORT AND REMOVALS (2012)

Purse Seine Effort/Catch	Days	Equivalent Tonnes at 30T/Day
PNA TAE	35,000	1,050,000
U.S. Treaty	5,000	150,000
FSM Arrangement	6,000 ¹	180,000
Archipelagic Waters	8,000 ^{2*}	240,000
Other WCP Coastal States	7,000*	210,000
High Seas	5,000*	150,000
Total	66,000	1,980,000³

Source: Author's own data and PNA.

¹ Estimate of actual Days used within the FSM licensing arrangement.

²* denotes a rough, but credible estimate in the absence of data.

³ Note that this aggregated estimate exceeds the 2010 estimate of SPC of 1,818,255 tonnes (above) and is therefore about 300,000 tonnes above the long term level of sustainable harvest in this fishery. Given the high recent prices for skipjack tuna, it is likely that catch has expanded in the two years following 2010.

(PNAO) in the drafting of a Business Plan³ for that organization. Building upon the consultation and analysis carried out in 2011, it is possible to summarize some strengths and weaknesses of the VDS:

STRENGTHS

- i. A fisheries management unit has been defined: the tropical (20 north to 20 south) purse seine skipjack fishery from Kiribati in the East to Indonesia in the West.
- ii. Right holders in the fishery are being recognized. Currently the signatories to the Palau Arrangement include the eight PNA countries with Tokelau and Cook Islands scheduled to join the VDS in 2013. There is acceptance that coastal states within the fishery can join the VDS.
- iii. There is a formula by which right holders establish relative PAEs are established under the TAE. This formula is based upon a combination of EEZ size and historical skipjack harvest data.
- iv. Parties have established a minimum Day price (\$5,000 in 2012). This is effectively the marginal Day price within the VDS.

WEAKNESSES

- i. The VDS is incomplete (it is possible that almost half of all harvesting in the fishery is occurring outside of the VDS).
- ii. Compliance with the VDS by participants is inconsistent and arguably deteriorating. In 2012, Kiribati overfished its PAE by around 70 percent and Papua New Guinea applies its own definition of what constitutes a Day to accommodate much higher levels of fishing than would be allowed under the standard definition.

- iii. The proposed new structure, ownership, and governance arrangements for PNAO outlined in the 2011 Business Plan have not been implemented and an effective organization under robust governance that is capable of preserving the strengths and addressing the weaknesses above does not exist.

VDS: COMPETITION AT THE MARGIN

The VDS has given a hint of its economic power and potential to benefit its developing State members, many of whom have few other economic options or assets. Those economic benefits rely upon maintaining a limited supply of Days and a high marginal Day price. The value (quantity x price) of fishing that occurs within the VDS will be a function of the value (quantity x price) of fishing outside the VDS. The price of a Day is not simply determined by the profit obtainable by harvesters in the VDS but by how this profit compares with opportunities elsewhere. Harvesters (Day buyers) will react, not only to the Vessel Day price but also to the price of substitutes. Similarly, sellers of Days, or the substitutes to Days, will also react also to the opportunities they have to maximize their individual profits. The value of a Day is threatened by substitute or counterfeit Days.

Collectively, the interests of sellers are to limit the total supply of Days to sustainable numbers and to defend the integrity of those Days. However, while a successful collective arrangement is working, individual sellers can “game” the VDS by issuing themselves Days above their PAE (Kiribati) or by selling better Days than their colleagues through a lax Day definition where the seller, not the buyer of Days, carries the harvesting risk (Papua New Guinea). Lax enforcement of Days within the FSM Arrangement provides the third internal threat. The number of vessels in the FSM Arrangement is now over 60 and the number of Days used by them is expanding also. This is not surprising given that the effective Day price within the FSM Arrangement is only \$2,500. These examples illustrate the threats from within the VDS arising from misalignments between individual and collective interests within the VDS.

The Business Planning process for PNA Office in 2011–12 stimulated some very productive discussion between participants in the VDS about the appropriate boundary between their collective and individual freedoms and responsibilities. Parties identified that they had certain common interests as Day owners but unique interests as prospective Day users. Some wished to maximize Day rents, others preferred to trade Day rents against social objectives internally. As a result of these discussions, a one size fits all approach to economic development based upon the foundation provided by the VDS has been largely abandoned by PNA.

This is a step in the right direction. However, what is not yet generally recognized is the role that the VDS (in particular the Day market) must play over time in keeping the whole skipjack value chain focused on efficiency and the maximization of product value. Individual actions or trade-offs that weaken the Day market do not simply affect the Party concerned but potentially de-power the VDS as an efficiency driver of the entire sector. As a result, the uneasy peace over the present location of the boundary between individual and collective action is by no means the final word on

³ World Bank and PNAO. 2011. Business Plan PNAO Office 2011. 55 pages.

the subject and that uncertainty or instability is, in itself, an internal threat to the VDS.

The substantial external competitive threat to the VDS is two-fold. The first is represented by the terms and conditions applied to non-VDS participants to skipjack purse seine fishing within their respective EEZs. Their incentive is to maximize national revenues by setting terms and conditions that make harvesting more attractive in their EEZ than within the VDS. To the extent that their zone may have lower average catch rates than within the VDS, this disadvantage can be mitigated by offering licensing discounts. The second is represented by the freedom to fish the high seas at no cost. Fishing the high seas of the WCP purse seine fishery has traditionally not been very profitable compared to the returns that could be made by DWFN harvesters operating inside WCP EEZs in exchange for paying around \$70 million in total license fees to coastal States per annum. However, as Day prices increase, the relative attractiveness of high seas fishing improves and effort can be expected to migrate there. Such effort would not be under effective constraint by any WCPFC conservation and management measures currently in place.

This external threat to the VDS and its adverse economic consequences for developing States must be a primary focus for efforts to sustain and increase coastal state benefits although, as noted above, these efforts will be undermined if the internal threats are not managed as well.

PNA BUSINESS PLAN

The platform for the management of internal threats and issues to the VDS is obviously the governance arrangement for the VDS. To be effective, that governance arrangement has to be linked to robust funding and service delivery processes and structures. This governance arrangement is currently not strong enough to effectively meet the challenges it faces. Although colloquially called the PNA VDS, the purse seine VDS and the proposed longline VDS are actually implemented under the Palau Arrangement which is one of three overlapping but separate sub-regional arrangements or agreements:

1. **The Nauru Agreement** (a general political cooperation arrangement over fisheries issues in a sub-region of the WCPO. 8 members)
2. **The Palau Arrangement** (the body governing the design of the purse seine and longline VDSs. There were 10 members in the purse seine VDS in 2013, including a minimum of 5 signatories to initiate the longline VDS with the potential for both schemes to gain additional parties).
3. **The Federated States of Micronesia Arrangement** (a reciprocal purse seine access agreement effectively requiring the commitment of Days. 8 members).

All three arrangements necessitate separate meetings and a formal meeting of one of these bodies is not subject to the confirmation or endorsement of any other. In addition, there are separate PNA and foreign fishing arrangements (FFA) ministerial meetings and meetings negotiating a renewal of the U.S. Tuna Treaty that is partially integrated with the purse seine VDS. The complex relationships between these arrangements are not only

inefficient but also confusing for the participants and the PNAO has fallen into the roles of secretariat for the three bodies above. That is why the draft Business Plan included the following recommendations:

- » The core business of the PNAO was to fix and operate the purse seine VDS and the longline VDS should be put on the back-burner while this was achieved.
- » The FSM Arrangement, Archipelagic waters, and the U.S. Treaty catch should be folded into the VDS TAE and allocated to PAEs.
- » Efforts should be made to expand Coastal State participation in the purse seine VDS.
- » Funding of PNAO should be linked to contributions from all VDS Parties that were relative to PAE size.
- » PNAO should not be a secretariat for PNA unless under a tightly specified service delivery agreement.
- » PNAO should only undertake activities that deliver benefits to Parties in proportion to their relative PAEs and where existing activities do not satisfy this condition, such activities should be ring-fenced.

The overall impact of these recommendations would be to consolidate the core role of PNAO as the executive organization supporting the Palau Arrangement. As these recommendations have not been implemented, the outcome is that PNAO currently has several distinct but overlapping roles which lack clear or appropriate governance and funding arrangements. This is a recipe for increasing dysfunctionality if the membership of the three bodies above continues to diverge.

HIGH SEAS FISHERIES

Table C.1 above suggests that high-seas catch in the WCP skipjack purse seine fishery is less than 10 percent of the total. This level of catch is disproportionate to the area of the high seas in the WCP as would be expected from a general analysis of ABNJ catches. Globally, ABNJ amount to around 230 million km² and EEZs amount to around 130 million km². From this combined area of ocean, the FAO estimates that annual marine capture fishery production is approximately 80 million tonnes. The FAO also admits that it cannot provide an accurate breakdown of this total between aggregate EEZs and ABNJ. However, total ABNJ catches are small; probably comprising around 250,000 tonnes of demersal catches of species such as Patagonian toothfish and orange roughy and probably no more than 1,000,000 tonnes of pelagic species, mostly tunas. In other words, ABNJ account for 63 percent of ocean area but less than 2 percent of fisheries production. In the case of the WCP, the proportion of high seas catch is above average (perhaps up to 10 percent for skipjack) because of the greater relative significance of tuna fisheries in the region compared to elsewhere.

The explanation for this apparent discrepancy is ecological. The most biologically productive parts of the oceans are on continental shelves (mostly included within EEZs). In contrast, the high seas are relatively barren, containing a small number of sea mounts and providing a transitory home for highly migratory pelagic species. This raises the question of why such small high seas fisheries matter to the coastal states at all. The answer is that they matter very little in the case of demersal species or in open-access pelagic

fisheries. Where they become absolutely critical is in tuna fisheries that are managed sufficiently well to generate some fisheries rents as in the case of the PNA VDS.

THE LAW OF THE SEA

The international legal framework for the management of fisheries within EEZs and beyond (in the case of straddling stocks and highly migratory species) is provided by the 1982 *United Nations Convention on the Law of the Sea* (UNCLOS) and 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 “Fish Stocks Agreement”). UNCLOS deals with the establishment and recognition of Territorial Seas and EEZs, definition of terms such as continental shelf and archipelagic waters as well as defining the freedoms of the high seas for peaceful purposes such as navigation.

Within an EEZ, a coastal state has “sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed. . . .”⁴ Also, “the coastal State shall promote the objective of optimum utilization of the living resources of the exclusive economic zone. . . .”⁵ Optimum utilization is undefined although it is a general principle within the Fish Stocks Agreement that measures to promote this goal “are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States. . . .”⁶

UNCLOS makes clear that claims of sovereignty over the high seas are invalid. “No State may validly purport to subject any part of the high seas to its sovereignty.”⁷ Whereas, all States are free to fish on the high seas, all States fishing shared stocks have responsibilities to agree on conservation measures for them. “Where the same stock or stocks of associated species occur both within the exclusive economic zone and in an area beyond and adjacent to the zone, the coastal State and the States fishing for such stocks in the adjacent area shall seek, either directly or through appropriate subregional or regional organizations, to agree upon the measures for the conservation of these stocks in the adjacent area.”⁸ This responsibility is reinforced by Article 118 and again with direct reference to highly migratory species where the objective of optimum utilization is reintroduced. “The coastal State and other States whose nationals fish in the region for the highly migratory species listed in Annex 1 shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of each species throughout the region, both within and beyond the exclusive economic zone.”⁹

There is an asymmetry in the responsibilities of coastal States and DWFNs who utilize a shared fishery and there is also an asymmetry in the potential consequences of poor fisheries management

on those two classes of users. Within its EEZ, the coastal State is entitled to determine what catch limit for the fishery best accords with its particular definitions of optimum utilization and maximum sustainable yield as well as deciding what conservation and management measures are proper. If these judgements lead to adverse outcomes, the coastal State and its citizens must face those consequences. In other words, under UNCLOS, coastal States face sound long-term incentives.

In contrast, a DWFN operating on the high seas is only obliged to “seek agreement” with other users about conservation and management measures. Of course what is sought is not always found—or at least not quickly. Agreement is likely to prove elusive because of the fundamentally different nature of the investment in the fishery of DWFNs and coastal States. DWFNs own vessels and associated infrastructure with a relatively short physical and economic life. Coastal States may also have some investments of the same kind but, in addition, they collectively have a much larger investment in the form of fishery ownership within their EEZs. The consequences of adverse fishery outcomes are therefore generally much larger and more enduring for coastal States in a shared fishery than for DWFNS.

This asymmetry is recognized somewhat obliquely within the Implementation Provisions contained within the Fish Stocks Agreement. In determining compatible conservation and management measures, States shall; “(a) take into account the conservation and management measures adopted and applied in respect of the same stocks by coastal States within areas under national jurisdiction and ensure that measures established in respect of such stocks for the high seas do not undermine the effectiveness of such measures” and “(e) take into account the respective dependence of the coastal States and the States fishing on the high seas on the stocks concerned. . . .”¹⁰ This provision is also echoed within the Articles of the WCPFC, where, in determining allocation of catch, the Commission shall take into account, inter alia: “the needs of small island developing States, and territories and possessions, in the Convention Area whose economies, food supplies and livelihoods are overwhelmingly dependent on the exploitation of living marine resources;” and “the fishing interests and aspirations of coastal States, particularly small island developing States, and territories and possessions, in whose areas of national jurisdiction the stocks also appear.”¹¹

The conclusion to be drawn from this legal analysis is that fundamental differences between the relative responsibilities of coastal States and DWFNs, the nature of their investments and the consequences of sub-optimal shared fisheries management will present formidable barriers to attempts to improve the performance of RFMOs. While UNCLOS encourages the use of the RFMO framework, RFMOs do not have a monopoly on shared fisheries management and coastal States can seek agreement over shared fisheries measures directly. The PNA VDS is a leading example of such a direct process.

Ultimately, the fundamental differences between the interests of coastal States and DWFNs may necessitate a review of the

⁴ *United Nations Convention on the Law of the Sea*. 1982. Article 56, 1 (a).

⁵ Ibid. Article 62,1.

⁶ United Nations. 1995. “Fish Stocks Agreement.” Article 5 (b).

⁷ *United Nations Convention on the Law of the Sea*. 1982. Article 89.

⁸ Ibid. Article 63, 2.

⁹ Ibid. Article 64, 1.

¹⁰ United Nations. 1995. *Fish Stocks Agreement*. Article 7, 2, (b) and (e).

¹¹ *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. Article 10, 3 (d) and (j).

current “Fish Stocks Agreement” and the RFMO framework. In the meantime, however, it would be useful to support the PNA VDS initiative while remaining entirely within the existing constraints of UNCLOS, in particular the prohibition against any attempt to extend coastal State sovereignty into ABNJ. It should be noted that legitimate expansion of the VDS will simultaneously incentivize an expansion of high seas fishing while allowing the accurate calculation of the negative economic consequences of high seas fishing on the developing coastal States participating in the VDS.

The PNA VDS, as it stands is not an alternative to the WCPFC; rather it has been the source of several conservation and management initiatives that have been adopted by the Commission. The real test for the relationship between the VDS and the WCPFC will come if and when economic analysis shows that there are significant adverse effects of high seas fishing on the livelihoods and interests of small developing coastal States in the WCP who are members of the VDS.

MOVING AHEAD

The key issue is to identify ways by which some otherwise weak coastal States can secure and enhance the marginal price of Vessel Days within the PNA VDS. This is not primarily an issue about the mechanics of the Day market, whether it is electronic or whether there are multi-zone Days. The immediate issue is to close off alternatives to the use of Days to the greatest extent consistent with international law and to stabilize the attributes of Days as a strong and uniform property right. If this cannot be done, all other future

opportunities to enhance the VDS and its benefits will be moot as it will have collapsed as an effective shared fisheries management arrangement.

Even if wholly successful, the opportunity would remain for DWFNs to fish ABNJ areas. However, high seas fishing would carry two potentially significant opportunity costs for its practitioners. First, in the short term, VDS coastal States may refuse licenses to such vessels to fish within their respective EEZs (as is partially implemented now). Second, in the longer term, the RFMO may be required to restrict ABNJ fishing if it can be shown that such fishing undermines measures taken within areas of national jurisdiction (the VDS) or that it is contrary to the interests and aspirations of Coastal States.

The capacity of VDS participating coastal states (fisheries resource stakeholders or owners who are signatories of the Palau Arrangement) must be further strengthened to increase their governance influence in PNAO and other regional organizations. Durable and effective shared fisheries solutions cannot be designed and implemented by well-meaning external parties. Rather, those solutions must comprise real and effective voluntary collective actions by cooperating Parties. This implies three things:

- » the existence of an effective theory of shared fisheries management,
- » a suitable framework for cooperation, and
- » effective governance over that framework by participants.

The PNA, PNAO, and the VDS represent only very partial expressions of these requirements. The challenge is to create the conditions for effective governance.

APPENDIX D

REPORT ON FOREIGN FISHING: MOROCCO CASE STUDY OF THE VARIOUS ARRANGEMENTS IN FISHING COOPERATION RELATIONS

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January 2014

INTRODUCTION

In Morocco, where fishing assets are significant, foreign fishing began either as illegal fishing within territorial waters and or on the basis of historic rights. It progressively developed to include other aspects, such as chartering foreign vessels, joint ventures, or government-to-government agreements within a policy of openness and cooperation that took into account the needs of the national fishing sector and the guiding principles of the 1982 United Nations Convention on the Law of the Sea.

In 1973, along with the evolution of the international law of the sea, characterized by the tendency of coastal states to claim large marine areas as their own, Morocco established a 70-mile exclusive fishing zone, which was the first step toward national sovereignty over its maritime zones, and introduced a legal framework (code) to encourage investments in the maritime domain.

This attention by the government to developing the fishery sector was boosted in 1981 with the introduction of the 200-nautical-mile exclusive economic zone and the creation of a Ministerial Department in charge of marine fisheries.

Developing and implementing a proactive and clearly defined policy for the development and management of national fisheries required the creation of a monitoring and surveillance system for the new maritime zones, the strengthening of port infrastructure and scientific research, the constitution of a modern industrial fishing fleet, the promotion of maritime professional training, and other steps.

But such development programs required substantial financial and technical resources, which were lacking at the time. This led Morocco to promote bilateral cooperation using some of its national fishing potential as a funding source.

How did foreign fishing develop in waters under Moroccan sovereignty? What different forms of access did it take? What was its impact on national fisheries and on the sector's development as a whole? What is the current situation concerning the arrangements signed by Morocco with its different partners?

This report examines the following issues:

1. Historic rights and illegal fishing to sovereignly negotiated access rights;
2. Partnership agreements complying with sustainable fishing and national fisheries development requirements; and
3. Evaluation and impact on national fisheries.

The information used to write this report comes from the author's professional experience and personal expertise gained over the course of a career within the Marine Fisheries Department, documents (agreements, protocols, and official documents), and interviews with Maritime Fisheries Department staff.

FROM HISTORIC RIGHTS AND ILLEGAL FISHING TO SOVEREIGNLY NEGOTIATED AGREEMENTS

Until the 1980s, a large part of Moroccan waters was exploited by foreign fleets operating illicitly in the absence of any national or international system forbidding or regulating access to third countries' fishing zones. Maritime monitoring control and surveillance systems were also insufficient.

Beginning in the late 1970s, this illicit presence in Moroccan waters developed a more conventional type of cooperation, marking a new stage in the progressive control of the national biological resources and a reappropriation of maritime zones.

ILLICIT FISHING ACTIVITIES AND HISTORIC RIGHTS

Due to insufficiently binding national regulations, insufficient surveillance tools, and an international law of the sea still in its infancy, dozens of fishing vessels of various nationalities operated in Moroccan waters without any authorization, permit, or license.

These poaching activities targeted practically all areas and all fish species present in Moroccan waters. They involved vessels sailing under the flags of the former Soviet Union, Spain, Portugal, Poland, Ukraine, Japan, South Korea, Cuba, and other countries.

A 1977 Food and Agriculture Organization (FAO) report,¹ corroborated by official Spanish statistics, noted that, including all species, approximately 1.3 million tonnes of fish were caught off the Moroccan coast by foreign vessels.

Soviet vessels fishing in Moroccan waters were assisted by factory processing vessels, a scientific research boat, and cargo ships responsible for the transport of finished goods to the Soviet market and for their supplies of food, fuel, and fishing tools. They were also accompanied by a hospital ship and even war frigates to ensure their safety.

The catch level of this fleet reached its maximum with a global tonnage approaching 1 million tonnes, according to the 1979 FAO bulletin of statistics.

¹ See "Morocco and Maritime Fisheries Rights" by Abdelkader Lahlou, Paris, 1983.

The presence of the Spanish fleet was closely linked to the colonization of a large part of Moroccan territory and to the unequal treaties concluded between the two parties. On this basis, Spain claimed historic rights, which it considered to be perennial, and deployed a diversified fleet covering practically all fishing zones and types.

The first fishing agreements concluded between Spain and Morocco as an independent state were a determining factor in the package deal and limited the bilateral cooperation between the two countries to the fisheries sector.

The February 17, 1977 fishing agreement negotiated and concluded with the Spanish government followed from the historical conventional relations with Morocco and allowed Spain to deploy an exorbitant level of fishing effort in Moroccan waters. However, the agreement could not be implemented because of its considerable dimension (in terms of fishing capacity), which was incompatible with the biological capacity of the resource, and because of political differences that emerged between the two countries and delayed its ratification by the Moroccan parliament.

The situation was not resolved until 1979, when the two parties found a temporary solution to officially reactivate their fishing relations, given that Spanish fishing boats had continued their activity, completely illegally, while awaiting ratification of the 1977 agreement.

This entente between the two parties gave rise to a series of temporary agreements, lasting between three months and one year, over a total period of three years (June 1979 to June 1982).

In return for the fishing opportunities given to Spanish vessels (between 1,400 and 1,600 vessels in total), the Spanish government, in addition to paying license fees, funded the construction of four ice plants, a study into the cold chain, and grants for Moroccan students.

Such distortion between the colossal amount of fishing effort that was authorized and the derisory compensation illustrates the strong imbalance and unequal nature of the cooperation relations between the two countries in the fishing domain at the time.

CHARTERING

This type of arrangement for the exploitation of fish resources was first introduced in Morocco toward the end of the 1970s, in particular in the cephalopod fishery with the aim of increasing national operators' familiarity with this new type of fishing and its international market.

Despite the existence of a code for maritime investments that encouraged and subsidized the direct acquisition of fishing vessels, Morocco chose, as a first step, to go through this initiation phase to ensure that investments were based on reliable technical and economic hypotheses.

National operators were authorized to charter Spanish and Korean vessels for annual periods while waiting for the investment program to be implemented.

This practice was also mentioned in the February 17, 1977 cooperation agreement between Morocco and Spain and gave joint ventures the option to "charter vessels registered with one or the other contracting party." But, in fact, only Spanish vessels could benefit from this provision.

In the mid-1980s, Morocco chartered Soviet motherships that worked with national seiners in coastal fishing, collecting their catches on the fishing grounds to enhance their value and improve fishers' incomes. This operation was undertaken under the supervision of the National Fisheries Office.

Chartering: an Approach for Small Pelagics' Access to International Markets

Given the significant potential of the small pelagic catches in the southern part of the Moroccan Atlantic and the underutilization of these resources due to the limited range of action of the national coastal fleet, in 1995, the Moroccan authorities set up a program for chartering foreign vessels to target this fishery.

The objectives of the program were the optimal exploitation of this fishery, the mastering of both the technological fishing process in this zone and the marketing of small pelagics in the global market, and the smoothing of supplies to national canneries.

However, despite the large potential of this stock, the total allowable catch (TAC) allocated to this program was relatively modest. As a precautionary measure, it was set at 200,000 tons for 25 chartered fishing vessels, pending the implementation of a management plan regulating this fishery. These foreign ships came essentially from Ukraine and Russia.

This operation, which lasted for four years, not only had a financial impact through the funds generated for the national treasury (approximately €7.5 million) but also created direct and indirect employment and helped ensure adequate supplies to the fish-canning industry, thus contributing to preventing the temporary cessation of their activity and to maintaining jobs and market shares.

It also led to the introduction of a system to monitor the international market for small pelagics and master information flows. Additionally, it assisted national operators to better understand the markets and their potential and the fishing technologies (for instance, refrigerated sea water (RSW) freezer pelagic trawlers and large RSW seiners).

This experience was put to good use by the ministry in charge of maritime fishery management in its strategy for the exploitation of small pelagics in the southern Moroccan Atlantic and in establishing a specialized industrial fishery able to contribute to the country's economic and social development.

Chartering: A Way to Assist Struggling Freezer Plants

Following the financial difficulties encountered by owners of octopus freezer plants in the southern ports of the Kingdom of Morocco in 2003-04, the Department of Maritime Fisheries initiated a program to charter a foreign fleet specializing in small pelagics with the objective of helping these businesses pay their debts, maintain their activity and employment, and boost the local economy.

Operators who withdrew from octopus freezing and integrated the small pelagic sector were granted the exceptional right for a four-year period to charter foreign vessels to ensure a sufficient and regular supply of small pelagics to their freezer units.

A global quota of around 290,000 tonnes per annum was earmarked for this program, whereby private Moroccan companies, outside of any intergovernmental agreements, chartered foreign vessels, 12 of which were freezer trawlers. Among the countries providing these fishing vessels were Norway, Iceland, Sweden, and Belize.

Chartering authorizations were given (1) on the basis of a redevelopment program submitted by the relevant factories that included a debt-rescheduling plan agreed to by the creditor (the bank) and a commitment to maintain existing jobs and (2) on the basis of specifications setting out the technical conditions for small pelagic fishing in accordance with the statutory laws governing fishing and chartering activities.

In return for these chartering authorizations, the recipients had to pay a chartering tax of DH 1 million (US \$120,000) to the Moroccan treasury, as well as fees for their annual license and the use of port infrastructures.

The indebted companies were able to reimburse approximately 80 percent of their bank loan debts and regained financial equilibrium, giving them a more stable working environment. The program led to a three-fold increase in the number of jobs compared with the period prior to redevelopment.

Having helped to secure investment in about one third of the plants responsible for freezing fishery products in the southern ports of Morocco, the chartering program is now being wound down. Most of the foreign vessels that were chartered are gradually being reflagged to Morocco.

At the beginning of 2014, only 7 RSW vessels were still operational within the framework of this chartering arrangement, with 14 vessels registered in Morocco. Instead of paying the chartering tax, these “Moroccanized” vessels are now subject to the payment of a 10 percent royalty on the value of their catch, in addition to fees to use fish markets and port infrastructure.

JOINT VENTURES

From the outset, Morocco showed a particular enthusiasm for the creation of this type of international cooperation arrangement (that is, joint ventures) in the maritime fishery to increase participation in the exploitation of fish resources, and cephalopods in particular.

The Moroccan authorities saw this arrangement as a tool to launch a new industrial cephalopod fishery through the “Moroccanization” of part of the foreign fleet fishing inside the 70-mile exclusive fishing zone, to attract direct foreign investments, and to favor technology and skill transfers in this area, which were then a handicap for Morocco, and thereby develop its fisheries.

Beginning in 1972, joint ventures were established between the National Fisheries Office (ONP) and private Moroccan and foreign (Japanese, Spanish, Korean, Italian, and other) operators renowned for their knowledge and competence in fisheries exploitation.

After the pilot programs in the cephalopod fisheries, numerous joint ventures were set up that covered every existing fishery. However, this development was not part of a comprehensive fisheries policy, and few precautions were taken concerning the choice of partner or the target fishery.

Furthermore, the creation of these joint ventures was neither preceded by nor accompanied by the provision of port infrastructure, cold storage facilities, repair and maintenance shipyards, or shops selling replacement parts in Moroccan ports, which meant that the national fleet had to use foreign ports, Spanish in particular, as bases for their landing, maintenance, and refueling activities.

This situation, combined with a lack of qualified crews, had a negative impact on the exploitation costs of these joint ventures and

led to significant hard currency outflows, currency that Morocco needed and still needs. The recruitment of an expensive foreign workforce, also paid in hard currency, put a severe strain on the exploitation costs of the fishing boats and on the companies that managed them.

The repatriation of this fleet’s activity into the Moroccan ports of Agadir and TanTan and the financial and technical restructuring of offshore fishing companies enabled the situation to be improved and helped the Moroccan government monitor and control these companies’ activities, in particular landings and currency repatriation. This restructuring concerned the Moroccanization of the crews, the landings of all catch in Moroccan ports, and, at technical and financial levels, the recapitalization of businesses, the rescheduling of debts, the waiving of interests and late payment penalties, and the introduction of customs and exchange measures specific to this type of activity.

There are currently 64 joint ventures in national fisheries, with approximately 149 vessels, of which 100 are fish cephalopods (50 percent of the active vessels in this fishery) and 36 are fish shrimps (two thirds of the national fleet). Spain and China lead the way as the foreign partners in these joint ventures.

SOVEREIGNLY NEGOTIATED AGREEMENTS

Following an initial phase characterized by illicit fishing activities, the historic rights of foreign fleets in Moroccan waters, and unbalanced and unequal agreements, Morocco launched a first series of fishing arrangements, starting in the 1980s, with a view to improving compensation for access granted to its fishing zones and fishing potential.

From the 1983 Morocco-Spain Agreement to the Morocco-European Union Agreements

As noted above, even though the European fleet has long been in Moroccan waters through access agreements concluded with Spain and Portugal, the cooperation links with the European Union (EU) were only formalized in bilateral agreements from 1988.

The August 1, 1983 agreement initiated a new phase in the development of fisheries relations between Morocco and Spain after a long period of historic and unlimited rights held by Spanish fishing companies under old agreements and transitory arrangements. It was also the first agreement concluded in due form for a relatively long period of four years.

The main provisions of this agreement granted the Spanish fleet the possibility to fish using up to 136,602 GRT, with some 1,200 vessels. For the first time, there was a 40 percent reduction in the fishing effort, expressed in GRT (spread over the duration of the agreement), which enabled gradual substitution by Moroccan investments and thereby the constitution of a national fishing fleet.

In return, the Spanish government agreed to a substantial increase in fishing royalties (+70 percent over four years), to the opening of a commercial line of credit of \$400 million toward funding Spanish goods and equipment, and to the granting of a concessional credit facility of \$150 million, which was used to finance the construction of a new port in Agadir and to extend and develop the port of TanTan. The agreement also led to the creation of 550 jobs onboard Spanish vessels.

When Spain joined the European Economic Community in 1986, the legal nature of the cooperation links with Morocco changed, insofar as, from then on, only the Community institutions were empowered to conclude and manage new fishing agreements with third countries, in accordance with Community law.

The two parties agreed to extend the 1983 agreement until December 31, 1987 (it should have expired on July 31, 1987) pending the outcome of Morocco-EU negotiations of the first fishing agreement with the European Commission.

Morocco-European Economic Community Agreement of May 29, 1988

The first fishing agreement concluded with the European Economic Community (EEC), dated May 26, 1988, authorized some 100,000 GRT from 730 Community vessels to fish in Moroccan waters. In return, the European Commission paid the Moroccan government €281.5 million over the four years of the agreement and agreed to a preferential trade status for Moroccan canned sardines (a zero-duty quota of 17,500 tonnes).

The agreement also included €29.5 million, as part of the financial return, for sectoral development projects in the form of sectoral financial support and included the recruitment of approximately 660 Moroccan crew members onto Community ships.

Substantial reductions in the Community fishing effort were made in biologically sensitive fisheries. The negotiated reductions were 20 percent for cephalopods and 18 percent for the demersal fisheries in the north of the country. For the first time in the history of national fisheries, this agreement introduced the “biological rest period,” a seasonal closure designed to protect spawning and recruitment periods for the relevant species.

Morocco-EEC Agreement of May 1, 1992

Compared with the 1988 agreement, the May 1, 1992 agreement with the EU for a four-year period made several changes to take into account Morocco’s preoccupations with resource sustainability and financial compensation for fishing access.

It was agreed that some 82,290 GRT from some 650 Community fishing boats could operate in Moroccan waters, with a 17 percent reduction spread over the duration of the agreement.

In return, the agreement provided for Morocco a direct financial compensation of around €302.76 million for the entire duration of the agreement, of which €32.76 million was earmarked for sectoral support, a preferential trade status for its canned product exports on the Community market, and 900 jobs for national crew.

However, the implementation of this agreement did not go to its full term because Morocco used its right to a midterm revision if it were confirmed that the presence of the Community fleet was contributing to resource overexploitation. The agreement in question had renewed a very significant fishing capacity with a negative impact on the national fleet.

As a result of this clause and the discussions held between the two parties in June 1994, the fishing agreement of May 1992 was ended one year before the date initially planned and adjustments were made to reduce the Community fishing effort in an attempt to reverse the decline of Moroccan fish stocks.

The European Union had asked for a four-year agreement in order to launch a program to restructure its fishing fleet or find

other fishing zones through the negotiation of new access agreements or types of arrangements.

The midterm revision clause of the agreement made it possible for Morocco to shorten it by one year and to negotiate a new arrangement that better preserved its interests and those of the resource.

Morocco-EU Agreement of November 1995

The fishing agreement of November 1995 concluded with the European Union, which reduced global fishing effort by 40 percent compared with the tonnage granted in the previous agreement, continuing the process of reducing Community fishing capacity that was thought to contribute to the intensive exploitation of fish stocks and the declining profitability of Moroccan enterprises.

A fishing capacity of 64,720 GRT was authorized within the framework of this agreement, corresponding to 590 fishing vessels across all categories. The biological rest period was maintained and its duration extended to four months for cephalopod fisheries, and some fishing categories were transferred from one fishing zone to another to reduce pressure on sensitive fisheries.

The most significant reductions in terms of gross tonnage concerned cephalopods (-40 percent), shrimp (-56 percent), hake trawlers (-50 percent), and northern seiners (-38 percent). However, the pelagic potential was not fully used for reasons relating to the technical conditions of this type of fishing or the profitability of the relevant boats.

The financial return for this fishing potential was in the order of €500 million over the duration of the agreement (approximately €125 million per year), excluding license, observer, and other fees. These annual payments comprised €88.75 million as a direct financial contribution and €36.25 million as sectoral support. More than 1,200 jobs were also created.

Notwithstanding the successive reductions in Community fishing effort in Moroccan waters, the Morocco-EU fishing agreement of November 1995 “was by far, the most important ever concluded between the EU and a third country outside the EU,”² according to the European Commission officials. This was in terms of the fishing possibilities granted and in terms of financial compensation.

This observation is even more pertinent given that neither fishing capacity reductions nor the measures taken by Morocco to redress the situation (investment freeze, biological rest periods, strengthening of landing controls, and so on) had the desired results on the resource, which continued to show signs of weakness and overexploitation, illustrated by the decreasing yields and shrinking distribution areas of some species.

Wishing to prevent the total exhaustion of its fish stock and to develop its national fishing sector, Morocco confirmed to the European Commission (EC) that it did not intend to renew the agreement once it expired (on November 30, 1999). The Moroccan fisheries minister went so far as to say that “everything is negotiable except the renewal of the agreement.”

Morocco needed to begin preparations for the post-agreement era by developing the necessary port infrastructures, by modernizing

² http://ec.europa.eu/fisheries/cfp/international/agreements/morocco/index_fr.htm

its fishing fleet so that it could access zones previously out of reach, as its range of action was insufficient, and by developing plans for the rational management of its fish resources. An investment program of approximately \$900 million was implemented for that purpose by the Moroccan government.

At the same time, the Commission put into place significant financial facilities to compensate Community ship owners and crews affected by the nonrenewal of the agreement, including subsidies for scrapping vessels and socioeconomic measures in favor of fishers.

In any event, the 1995 fishing agreement was to mark a turning point in fishing relations between Morocco and the EU, ending the longstanding presence of some EC member states' fleets in Moroccan waters.

Fishing Cooperation with Russia

Following a phase of illicit activity involving Soviet vessels that was difficult to control, a new era began with the normalization of this presence within the framework of the 1992 agreement with the Russian Federation after the dismantling of the Soviet Union. This agreement was followed by others that progressively established a fishing cooperation framework between Morocco and Russia.

The 1992 Morocco-Russia Fishing Agreement

This agreement, signed on the August 28, 1992 for a period of three years, was the first concluded between Morocco and the Russian Federation in the area of maritime fisheries; Russian vessels became subject to the Moroccan legislation in regards to fishing quotas, technical fishing conditions, authorized zones, periods, and species.

This agreement allowed 43 large- and medium-tonnage boats to operate in Moroccan waters, beyond 15 nautical miles, and to fish a quota of 400,000 tons, exclusively small pelagics (sardines, sardinellas, mackerels, horse mackerels, and so on).

In return for these fishing opportunities, the Russian ship owners granted fishing licenses and paid an annual financial compensation corresponding to 17.5 percent of the value of the total final production, calculated on the basis of the reference price per tonne of finished product, set each year within the framework of the joint commission. The employment of Moroccan crew was not included in this agreement.

The 1995, 2002, and 2006 Morocco-Russia Fishing Agreements

Following the 1992 agreement, these various conventions established the rules and the terms of the cooperation between the two countries concerning the conservation of Moroccan fish resources and their development and defined "the conditions governing Russian vessels' fishing activity in the Atlantic waters of the exclusive economic zone of the Kingdom of Morocco" south of the 28°0'N parallel.

These agreements, which covered three-year periods, led to a significant reduction in the authorized fishing capacity, reducing the allowable catch from 400,000 to 200,000 tonnes and

then to 120,000 tonnes of small pelagics and the number of vessels from 43 to 28 and then to 12 units. However, an additional quota of 80,000 tonnes was earmarked to supply an integrated complex to be built within the framework of a joint venture. Annual adjustments were decided by joint commissions depending on the utilization rate of the quotas in the different agreements.

The financial compensation set in the 1992 agreement continued unchanged at 17.5 percent of the total final production value and varied between \$6.3 and \$14 million by agreement, not including the annual license fees. This percentage of the catch value is the same across all fishing agreements that Russia has negotiated with West African countries for small pelagic species.

In addition to the controls carried out by the Royal Moroccan patrol boats, the total allowable catch is also monitored and controlled by observers onboard every fishing boat.

The number of Moroccan crew has increased from 6 in the 1992 agreement to 9 and then 12 and 14 per vessel. Two permanent observers were also taken onboard every licensed vessel to control the fishing gear used, catches and discards, onboard processing techniques and catching, and trans-shipping operations.

Despite the improvement in the financial return of the last two agreements, because of the near-total use of the authorized quota, it should be noted that the most important benefit of the fishing cooperation relations with Russia concerns scientific research. Acoustic prospection cruises involving Moroccan researchers from the National Institute of Fisheries Research (INRH) were, and still are, carried out to assess small pelagic stocks using specialized Russian vessels.

The 1985 Morocco-Japan Fishing Agreement

The fishing cooperation agreement between Morocco and Japan was concluded and signed in September 1985. It only concerns the seasonal tuna fishery and in particular bluefin and bigeye tuna during their migratory run through Moroccan waters. It also relies on a selective fishing method, surface longlines.

Each year, the joint commissions define the technical fishing conditions, number of licenses, royalty rates, number of crew and scientific observers taken onboard, catch reports, and cooperation projects to be undertaken. The compensation paid by each Japanese longliner is estimated at around \$14,400, broken down as royalties (\$2,000), license fees (\$6,400), and observers' costs (\$6,000).

The number of boats authorized to fish continues to fall, decreasing from 30 to 15 units, of which only 8 have operated in Moroccan waters in the past few years, on account of the crisis encountered by this Japanese fleet segment.

However, it must be noted that maritime cooperation with Japan goes beyond this agreement with its royalties and license fees. Within the framework of the technical cooperation and through nonrefundable financial aid, Japan has funded various socioeconomic, scientific, and technical projects in the fisheries area, for a total of \$148 million spread over the 1981–2011 period.

The first phase of the foreign fleets' presence in Moroccan waters, whether illicit or based on historic rights that evolved toward sovereignly negotiated agreement, has now been replaced

by a cooperation based on a balanced partnership and a more rational management of the resource where the national sector must remain paramount.

PARTNERSHIP AGREEMENTS MEETING THE REQUIREMENTS FOR SUSTAINABLE FISHING AND NATIONAL FISHERIES DEVELOPMENT GOALS

Once the 1995–99 agreement on fishing relations between Morocco and the EC expired, the Moroccan fishing zone was unexploited by Community fishing boats for the first time and for a long time.

However, contacts were maintained with European Community officials in the hope of reaching an agreement for the continuity of fishing relations. Nonetheless, the poor condition of the resource and diverging interests killed any hope of continuing bilateral fisheries cooperation.

This “no agreement” situation lasted until 2005, when the two parties came back to the negotiating table to conclude a four-year partnership agreement. Why this return to the negotiating table? What factors induced such a change? What new types of relation were agreed? And what have been the consequences and the impact on the resource?

CONSIDERATIONS BEHIND THE CONCLUSION OF A NEW AGREEMENT WITH THE EU

The year 2005 was noteworthy for a favorable change in the European Commission bodies, leading to a reopening of dialogue, with the expectations and concerns of Morocco being taken into account in terms of sustaining national fish resources and their use, primarily for economic and social development.

Thus, with this new momentum in the bilateral relations, a new fishing agreement was concluded on July 28, 2005, launching a new type of cooperation based on partnership, the sustainable exploitation of marine biological resources, and the right of Morocco to manage them in order to ensure the development of its fisheries.

This new agreement, because of its dimension and the fishing types and zones concerned, was considered by Moroccan officials of the time to have safeguarded the interests of the sector and as “not to represent a threat to the sustainability of the resource.”³

Incidentally, this notion of sustainability emerges clearly from the text of the agreement:

- » The fishing effort authorized, expressed in GRT, not including pelagic fishing in the south, represented only one quarter of the fishing potential allocated within the frame of the 1995–99 agreement.
- » The vessels concerned were primarily artisanal, with a gross tonnage under 100 GRT, using selective gear such as longlines, lines, poles, pots, and seines, whereas trawling had been the dominant type of fishing in the previous agreement (cephalopod trawlers, shrimp trawlers, hake trawlers).

- » The cephalopod, shrimp, and swordfish fisheries, over-exploited with respectively 150, 170, and 50 boats in the 1995 agreement, were definitively excluded from the new convention.
- » The Mediterranean was spared from any fishing activity, given the fragility of its ecosystem and the scarcity of its fish resources.
- » Despite the fishing possibilities offered by the small pelagics in the south, a quota of only 60,000 tonnes was granted to the Community fleet to preserve the interests of the sector and the investment opportunities in projects involving Moroccans, in accordance with the national management and development plan of this fishery.
- » Finally, the 2005 fishing agreement stipulated that the fishing effort authorized could be revised or redistributed between the different fishing categories, if both parties agreed and if the state of the resource and the conclusions of the work undertaken by the Joint Scientific Committee so required.

“NEW GENERATION” FISHING AGREEMENTS

These agreements include the July 28, 2005 partnership agreement with the European Community, whose protocol was renewed on July 24, 2013 for a period of four years, and the February 14, 2013 agreement with the Russian Federation.

The Partnership Agreement with the European Community of July 28, 2005

This convention, in keeping with “the Euro-Mediterranean agreement establishing a relationship between the European Community ... and the Kingdom of Morocco” and the advanced status granted to Morocco states in its preamble that the two parties are determined to “cooperate, for their mutual benefit, toward responsible fishing in order to ensure the long-term conservation and sustainable exploitation of maritime biological resources.”

These general principles show a willingness to go beyond the narrow vision of access to the resource against financial return. Instead, the agreement sought to establish a partnership between the two parties for the integrated development of the national fisheries sector. In pursuing that goal, the agreement stipulates that “the two parties seek to create the right conditions for the promotion of technical, economic and commercial relations between their enterprises, by developing a business- and investment-friendly environment.”

Agreement Protocol of July 28, 2005

Based on the wish expressed by the two parties, the agreement stipulated a level of fishing effort compatible with the requirements for resource renewal and conservation, that is, a total of 119 vessels together with a quota of 60,000 tons of small pelagics.

In return, the EC paid Morocco an annual financial compensation of €40.25 million, not including royalties and license fees, that is, a total of €161 million over the duration of the agreement. This financial compensation included annual sectoral support of €13.5

³ Statement of July 28, 2005 by the head of the Moroccan delegation.

million, allocated to the development and implementation of the fishery sector policy in Morocco toward responsible and sustainable fishing.

This support was mainly directed toward modernizing and upgrading the fleet, the program for the withdrawal of drift nets, scientific research, restructuring the artisanal fishery, upgrading marketing networks, mechanizing landing and handling facilities, and assisting professional organizations in the Moroccan sector.

This protocol was also meant to promote the economic integration of Community operators into the Moroccan fishery sector and investments through the creation of a think tank and an initiative to raise awareness concerning commercial and industrial opportunities throughout the value chain.

To achieve this integration, Community vessels were required to land between 25 percent and 30 percent of their catches (for some categories) in Moroccan ports and take onboard Moroccan crew (approximately 300 jobs).

This agreement was only implemented in February 2007—the protocol expired in 2011—because of the delay in the ratification process involving the competent bodies of the two parties.

At the expiry of the 2005 protocol, the two parties had engaged in negotiating its renewal, but these discussions were tense and heated due to disagreements on fishing effort, financial compensation, and the very limited contribution of European funds to the development of Moroccan fishery policy.

Agreement Protocol of February 28, 2011

The compromise reached by the two parties was to renew the recently expired protocol on the same conditions as before but for a duration of 12 rather than 48 months. The aim was for the European fleet to be able to remain in Moroccan waters against a financial contribution of €36.1 million, of which €13.5 million was set aside for the development and the implementation of Moroccan fishery policy.

However, this protocol implemented on a provisional interim basis from February 28, 2011 was abruptly stopped after the negative vote of the European parliament on the grounds of the “poor benefit-cost ratio for the European Union and the excessive exploitation of demersal species. . .”⁴

Members of the European Parliament (MEPs) relied on the conclusions of a report on “Ex-post evaluation of the current Protocol to the Fisheries Partnership Agreement between the European Union and the Kingdom of Morocco, and an impact assessment of a possible future new agreement,” written by an external consultant for the Commission in December 2010.

Protocol of July 24, 2013

The Council gave a new mandate to the Commission that negotiated a new 4-year partnership protocol for the maritime fisheries sector partnership agreement dated July 24, 2013.

The fishing opportunities allocated within the framework of this protocol, ratified by the European parliament on December 10, 2013, comply with the relevant provisions of the 1982 United Nation Convention on the Law of the Sea, in terms of sustainable

and long-term management of fish resources. They represent the surplus available from Moroccan fish resources, in particular the pelagics in the south.

The negotiations were also based on the general principles established to safeguard Moroccan fisheries sector interests, sustain fish resources, and perpetuate the spirit and momentum created by the 2005 protocol, concerning in particular the renewed authorization of existing fishing categories and the exclusion of the Mediterranean and sensitive fisheries, such as cephalopods and shrimps.

The fishing capacity authorized through this protocol concerns 126 Community boats, 73 percent of which are artisanal units (and tuna units), mostly benefiting Spanish ship owners, who represent over 90 vessels in this category. Other beneficiaries of the fishing opportunities were Portugal, the Netherlands, Germany, Scotland, Ireland, Poland, Lithuania, Latvia, France, and Italy.

The number of boats was reduced by 8 percent (137 to 126 vessels) compared to the previous protocol. On the other hand, the small pelagic (sardines, sardinellas, mackerels, horse mackerels, and so on) quota was increased by 20,000 tons to reach 80,000 tons, giving several Community countries access to this fishery, whereas the demersal fishery categories were reserved exclusively for Spain and Portugal.

The financial return was set at €40 million per annum, of which €30 million comes from the European Commission and €10 million from the relevant ship owners, in terms of royalties and license fees. The protocol earmarked €14 million per year of this amount to support fisheries policy and to contribute to the funding and implementation of projects and objectives of the “Halieutis” strategy, geared toward the development and the competitiveness of the sector.

This support gave the Moroccan Department of Maritime Fisheries a budget of some €56 million over the duration of the protocol, sufficient to contribute to funding development projects and to upgrade fishing activities all along the coast within the framework of the Halieutis plan.

However, this financial support depended on the presentation by Morocco of projects that had to be approved financially within the budget and on the objectives identified by the two parties with the framework of the joint commission and their expected impact.

The EU retained the right to monitor and control these funds, as it considered that financial support was a way for the commission to promote its partnership policy and establish sustainable fishing in countries with whom it had cooperation ties in the fisheries area.

For similar reasons, the introduction of provisions concerning coordination between the two parties in terms of scientific research and experimental fisheries is intended to ensure the regular monitoring of the state of the resource and improved knowledge of new species or fisheries, potentially exploitable “based on the principle of non-discrimination between the existing fleets. . .”

Concerning the conditions governing fishing activities, the protocol stipulated some technical provisions accompanying access to the Moroccan fishing zone for all Community fishing boats with a fishing license, such as the obligation, for some categories, to land part of their catch in Morocco, to recruit Moroccan crew, and to respect the biological rest periods.

The system monitoring and controlling the fishing activity of authorized Community vessels and the surveillance mechanisms at

⁴ EP press release.

sea require, in particular, annual technical tests for fishing boats, the presence of scientific observers onboard, compulsory reporting of catches, permanent satellite monitoring of vessels, and the implementation of a system that will allow the electronic exchange of all information and documents relating to technical management (catch, Vessel Monitoring System [VMS], entrance into and exit from the zone).

Cooperation Agreement with the Russian Federation of February 14, 2013

Fishing relations between Morocco and Russia are currently governed by the provisions of the February 14, 2013 agreement that establishes an annual quota of 100,000 tons for pelagic freezer trawlers in the southern Atlantic zone of the country beyond 15 nautical miles from the coast.

In addition to reducing the quota and the number of fishing boats, a new feature in this agreement is the removal of the 80,000-tonne quota, included in all previous agreements to support the development of an integrated joint venture in the pelagic fishery.

Furthermore, and unlike previous agreements, the Russian government pays Morocco an annual financial compensation of \$5 million for its access right to the resource, and the relevant ship owners continue to pay annual royalties amounting to 17.5 percent of the value of the finished output, calculated on the basis of a reference price agreed on between the two parties, which was increased in December 2012 by 40 percent compared to previous years to take into account developments in the value of small pelagics on the international market.

Russian ships are also required to employ 16 Moroccan crew members per vessel and a scientific observer for monitoring fishing activities.

However, it should be noted that the scientific research carried out by Russian research vessels continues to be valued by the Moroccan side and the INRH in particular. The latter feels that the cruises studying the pelagic ecosystem undertaken by the Russian vessels constitute significant support to the program for the evaluation of pelagic resources implemented by this research institute.

Evaluation and Impact on National Fisheries

Having reviewed the different kinds of foreign fishing, including the main fishing agreements concluded between Morocco and its partners, this final section presents an evaluation of these arrangements in terms of their socioeconomic consequences and impact on the national fisheries and fleets.

Evaluation of Socio-Economic Impacts on the Fisheries Sector

Cooperation was used to finance programs for the equipment and the structuring of the maritime fisheries sector and thus to cover shortfalls in financial resources. However, although the study of the various arrangements used by Morocco over the past few decades clearly shows their positive impact on fisheries sector development, it also reveals some negative impacts, both on the resource and on the viability of the national fisheries sector.

Chartering and Joint Venture Contribution

Reputed to be an anti-investment formula in the sense that it concerns temporary access to a given resource, the chartering of foreign vessels has been used by Morocco for various purposes. The Ministry of Agriculture, Rural Development, and Maritime Fisheries (MPM), which is in charge of maritime fisheries, used it to improve biological, economic, and commercial knowledge of the small pelagic resources in the Moroccan south Atlantic, to develop a strategy to exploit these resources, and to develop a specialized industrial fishery capable of contributing to the economic and social development of the country.

Moreover, chartering helped the relevant Moroccan operators to gain experience in choosing fishing vessel technology (RSW pelagic freezer trawlers, large RSW seiners) for the processing and value addition of small pelagic species and in their positioning on the world market.

Compared with chartering, the contribution of joint ventures was of less interest, as they did not help achieve the objectives that justified their creation, namely the transfer of technology and know-how in maritime fisheries and the creation of value in Moroccan ports; the fisheries products landed by ships belonging to these societies were, and still are, exported with no value enhancement other than that they are frozen. Hence, the countries to which the exports are destined benefit far more from the added value created by the products landed by these joint ventures than does Morocco.

At best, they helped, through the import of second-hand foreign vessels, to create a national industrial freezer fleet specialized in cephalopods and shrimps and gave Morocco a place on the international scene, in particular for octopus, all of which is exported to the Japanese and European markets.

Contribution of Institutional Arrangements

The fishing agreements, in particular between Morocco and the EU, have contributed significantly to the overexploitation of the resource and limited the opportunities and the room for development of the national fisheries capacity, but their impact in terms of financial returns and sectoral support was relatively significant.

The financial contribution brought between €280 and €500 million per agreement to the Moroccan treasury until 1999.

Prior to that, the agreement with Spain financed the construction of part of the industrial cephalopod fleet, a new port in Agadir, and the development of the port of TanTan, which helped ensure the repatriation of this fleet that was active in foreign ports.

All the agreements, and their financial compensation, concluded with the EU included financial support for projects to develop the sector and strengthen the fisheries management and surveillance capacities. This support included the construction of 14 planes for maritime surveillance (approximately €155 million), the installation of semaphores along the southern coast of Morocco for the surveillance of fishing and maritime navigation, the construction of five rescue boats, the development of the ports of Dakhla and Laayoune, and the strengthening of the programs and structures for scientific research.

This financial support, from agreements during the first phase of cooperation (1983–99), came at a time when Morocco had launched an ambitious program for the development of its fisheries sector and required funds and investments to achieve it.

Over the 1992–2006 period, the agreements with the Russian Federation brought in some \$41 million in financial return through royalties on the value of the final production by authorized Russian boats.

However, the main interest of this cooperation with the Russian Federation concerns scientific research, in particular due to the research cruises undertaken by the Russian research vessel AtlantNiro, which provided invaluable information to the INRH as part of its small pelagic evaluation programs. For Morocco, this significant dimension of cooperation seemed to compensate somehow for the relatively low financial return given the level of fishing opportunities provided in these agreements.

The cooperation approach with Japan has been completely different: this country has accompanied Morocco in the development of its fisheries sector by funding projects concerned with important components, such as training, scientific research, coastal fishery development, and improving the economic and social conditions of fishers.

These projects, which covered the 1981–2011 period, were funded through nonrefundable financial aid granted to Morocco in excess of the fishing opportunities given to Japanese vessels to exploit tuna while in Moroccan waters. The total investment in these projects was approximately \$148 million over the relevant period.

The ending of the agreement in 1999 marked the end of an era in Morocco-EU fisheries relations, and a new era was born in 2005 with the partnership agreement in the maritime fishery sector based on sustainable fishing and the priority of meeting the needs of the national fisheries sector. The level of fishing effort, the nature of the fishing gear authorized, and the technical conditions linked to the fishing activities of the Community vessels show clearly the concerns and preoccupations of the two parties concerning the sustainability of the resource.

Apart from the demersal sector (11 trawlers), the 2005 and 2013 protocols authorize only vessels using selective and passive fishing gear and with greatly reduced vessel numbers (23 percent and 21 percent of the number in the 1995 agreement, respectively). And these protocols excluded all fishing in the Mediterranean and in sensitive fisheries such as cephalopods and shrimps.

The level of financial return and sectoral support is considered to be relatively satisfactory. The financial return provided for in the 2005 and 2013 protocols represents 29 percent and 32 percent of the 1995 agreement, respectively.

Impact of Foreign Fishing on National Fisheries

Although the socioeconomic impact on the national maritime fisheries sector has been broadly positive, the presence of foreign fleets in Moroccan waters had a negative impact on resource sustainability, particularly in the period up until 1999.

This situation had consequences for stock productivity as well for the profitability of fishing companies and the space for development of the national fishing fleet.

Impact on the Resource and the Profitability of

Moroccan Fishing Enterprises

The Community fishing effort on Moroccan fisheries before 2000 (in addition to the developing national fleet) greatly exceeded

the optimal effort and generated a strong pressure on fish stocks, reducing profitability margins and affecting the development of the national fleet.

The development of Moroccan fishing capacity had become dependent on variations and reductions in foreign fishing effort, in particular by the EU. The country had to wait for each negotiation or renewal of a fishing agreement or protocol before initiating a program for the development of its own fishing capacities, as a substitute for the foreign effort withdrawn from Moroccan waters.

But the unrestrained fishing effort of foreign fleets (authorized on the basis of a fishing effort expressed in terms of number of boats and GRT) made a major contribution to the depletion of national fish stocks, and their presence threatened Moroccan investments in the sector.

In seeking to reverse the situation, the Moroccan authorities in charge of the sector implemented a series of measures that restricted the national fishing companies, including a freeze on investments for the purchase of new fishing boats, biological rest periods, the systematic inspection of landings in Moroccan ports, and strengthened monitoring, control, and surveillance on the fishing zones.

Despite these management measures and the successive reductions relating to the different fishing agreements, the Moroccan fleet still could not reach its optimum exploitation and profitability and thereby maximize its economic and social benefits while safeguarding the fundamental equilibrium of the fisheries.

This shortfall for the Moroccan fishing sector was far from being compensated by the benefits resulting from the agreements because the estimated value of the foreign fleet catch, in all its components, was significantly higher than any Moroccan gain.

For comparison purposes, the annual average value of the catch of the authorized Community fleet during the period covering the 1988, 1992, and 1999 agreements was estimated, on the basis of the Moroccan fleet performance and assuming full utilization of the fishing possibilities, to be between €362 million for the first one and €472 million for the third one.

Table D.1 shows how the level of financial compensation increased during this period, from €70 to €125 million a year, even as the authorized fishing effort declined from 730 to 590 boats across all categories.

This level of compensation, which may seem high compared with other zones in the world, was justified by the quality of Moroccan fish and the nature of the species fished, sought after, and valued by Community fishers, as well the geographic proximity of Morocco to its European clients.

It is difficult to compare this situation with the 2005 and 2013 protocols because these excluded the most valuable fisheries (cephalopods and shrimps) to make the agreement compatible with a sustainable biological dimension.

The large reduction and the underutilization of fishing opportunities in the 2005 protocol, together with the exclusion of high-value species, meant that the annual value of the catch is estimated, in the independent report commissioned by the EU, to be only €30.2 million.

As a result, the report concludes that from a benefit-cost perspective, this agreement is toward the bottom of the ladder compared with agreements with other countries.

TABLE D.1. EU-MOROCCO FISHING AGREEMENTS: COMPARISON BETWEEN THE ESTIMATED CATCH VALUE AND ANNUAL FINANCIAL COMPENSATION

Fishing Agreement	Authorized Fleet	Estimated Catch Value (Million Euros)	Financial Compensation (Million Euros)	Percent Compensation/Value of Catches
1988 EEC agreement	730	472 ^a	70.3	15
1992 EU agreement	650	422 ^a	100.76	23.8
1995 EU agreement	590	362 ^a	125	34.5
2005 EU agreement	137	30.2 ^b	36.1	119.5

Sources: Author's data; Ministry of Agriculture, Rural Development, and Maritime Fisheries (MPM).

^aEstimates for the 1988 and 1995 agreements based on MPM official data (report of September 9, 1994 on the midterm review of the May 1992 agreement).

^bEstimate drawn from the independent "Ex-post evaluation of the current Protocol to the Fisheries Partnership Agreement between the European Union and the Kingdom of Morocco, and an impact assessment of a possible future new agreement," December 2010.

The reasons for the underutilization relate, in addition to the biological rest periods included in the protocol, to certain conditions relating to fishing, such as the GRT per vessel in the demersal fishery and light fishing for small pelagics in the north.

Among the criticisms that might be made of the agreement is the failure of the policy to integrate the fishing sectors of the two parties as expected through the use of joint ventures and to ensure the use of Moroccan ports as working bases for authorized foreign vessels. This provision remained an empty promise of the fishing agreements and protocols.

Little progress was also made in scientific research. It seems that only research aimed at resolving the specific problems of Community fishers was promoted through experimental fishing trips, outside of the authorized fishing capacity.

Consequences of the Nonrenewal of the 1995 Agreement

Long before the expiration of the 1995 agreement and in expectation of the European fleet departure, Morocco had put into place an ambitious program aiming to modernize its coastal fishing fleet and to improve port infrastructure to exploit its fish resources efficiently by accessing zones attributed that until now had been left to the Community fleet.

This program did not intend to increase the national fishing effort in any way, except for the small pelagic fishery in the south Atlantic stock where fishing capacity could still be developed because the full catch potential remained unused.

Incidentally, a freeze on investments for the purchase of new fishing boats had already been implemented in 1992 to reduce the strong pressure exerted on national fisheries, in particular cephalopod and coastal demersal fisheries.

However, whereas the octopus fishery had been almost entirely exploited by Moroccan and Community freezer trawlers, new fleet segments even before the 1995–99 agreement seemed to begin to become gradually important actors in the fishery and would partly replace the European fleet at the end of the agreement.

Unlike industrial and coastal fleets, the construction of artisanal fishing boats was not subject to an authorization at a regulatory

level (less than 2 GRT), and the decision to freeze investments did not involve the artisanal fleet.

This legal loophole resulted in the clandestine construction of artisanal boats and led to an explosion in their number, which increased from 3,000 units to more than 7,200 in 2003–04 in the cephalopod fishery alone, causing a biological imbalance of the resource and threatening the species and therefore the long-term future of the whole cephalopod sector.

The significant and uncontrolled increase in fishing capacity, related in particular to the artisanal segment, led to the intensive overexploitation of cephalopod resources. Their production reached a peak of 107,450 tonnes in 2000 and fell drastically to 20,515 tonnes in 2003, a drop of 81 percent. Artisanal landings reached a total of 45,000 tonnes in 2000, an 82 percent rise compared to the 1995 production.

Faced with an unprecedented crisis, amplified by an increase in fuel price and a drop in the octopus prices, a "cephalopod fishery management plan" was implemented on the basis of scientific recommendations from the INRH and a proactive policy from the government that aimed to save this sector and focused on restructuring the artisanal segment (reducing the number of boats to 2,500), instituting an individual quota system (by license), and strengthening the measures controlling landings and the traceability of catches.

In other fisheries, the increase in fishing capacity was less noticeable than in the cephalopod fishery. After the 1995 Morocco-EU fishing agreement, ships registered in Morocco were purchased to replace existing fishing units, generating no additional fishing effort. This concerned in particular shrimp and longline boats; these fisheries were strengthened by ships that had previously operated in Moroccan waters under fishing agreements now appearing as part of joint ventures.

Despite the purchase of new fishing units (50 longliners and 24 shrimp boats), there was no great change in total fishing effort; these ships did not take the place of foreign units but replaced existing national units that were lost or destroyed.

Furthermore, it is important to stress that European vessels, and Spanish and Portuguese in particular, registered in Morocco within the framework of joint ventures, benefited from compensation for the exit from the fleet granted by the European Commission.

Evaluation of the 2005 Morocco-EU agreement

The 2005 fishing agreement with the EU and its protocols were a complete break from the past, in keeping with the spirit of the United Nation Convention on the Law of the Sea and taking into account Morocco's aspirations to exploit and manage the fish resources of its exclusive economic zone in a sustainable way and to protect the interests of its fishing sector.

These protocols have a limited biological impact on the resource and the marine ecosystem given their modest and manageable dimension, the fishing effort authorized, the restrictive species, and technical conditions associated with the fishing activity of Community vessels.

Although the fishing categories authorized do concern fully exploited to overexploited species or groups of species, except for the small pelagic stock in the south, the level of fishing effort by EU vessels (again other than pelagic) and the level of catch (96 percent concern small pelagic) has negligible impact compared with the national production.

However, the following observations may be made concerning the partnership for the promotion of responsible fisheries and Moroccan investments included in the protocol:

- » As regards the definition of a sectoral policy, the EC realized that Morocco could not be compared to other countries involved in fishing agreements because it had competent and qualified institutions capable of formulating a national fisheries development strategy;
- » As regards scientific research, the proposed partnership has not materialized and the scientific committee intended for this purpose has not added any real value to efforts to monitor the state of Moroccan fish resources; and
- » As regards the partnership for economic integration, despite the protocol arrangements, no relevant initiative has been undertaken despite the presence of European operators in the Moroccan fisheries sector. The clause concerning the joint control of EU vessel landings has also not been implemented.

This agreement, intended to develop a partnership between the two parties, and containing provisions to facilitate the promotion of economic, scientific, and technical integration, has not had the expected results. It remains grounded in the same philosophy that underpinned the earlier agreements, namely to negotiate access to the resource against financial compensation with sectoral support taken as part of this compensation or coming from MEDA funds rather than constituting additional support.

This type of agreement is not well adapted to the case of Morocco, which has the institutional capacities and tools to develop and manage its fisheries sector alone (the evaluation and monitoring of the resource is done by Moroccan scientists, the fish resources are exploited by the national fishing fleet, and landings are processed, enhanced, and marketed by national companies).

Other cooperation and partnership formulas must be sought for the two parties' mutual benefit.

The 2005 protocol was also the subject of an evaluation by the European Commission through a study undertaken by an independent consultant. This evaluation focused on efficacy, efficiency, relevance, and viability.

- » The protocol **efficacy** relates to the fishing possibilities given to the Community fishing boats, but the contribution of the Community fleet to the market stabilization remains insignificant (annual catches seem marginal compared to the EU requirements totaling around 13 million tonnes).
- » From an **efficiency** viewpoint, the protocol generates a very high cost compared with the fishing potential actually exploited. On the basis of the above, the European parliament voted against the 2011 protocol, believing that the benefit/cost ratio was highly unfavorable to the EU.
- » As regards **relevance**, the protocol fulfills the needs of the Community fleet, allowing redeployment into a neighboring area and easing the pressure on European fish resources.
- » Finally, the **viability** of the protocol is proven for the European fleet, but its consequences on the Moroccan fishery sector are relatively negligible in terms of creation of local value added, jobs, or investment dynamics.

CONCLUSION

Given the abundance and diversity of fish resources, following the establishment of its exclusive fishing zone in 1973, Morocco inherited a large foreign fishing presence acting either illegally or on the basis of "historic rights" that Spain claimed to have acquired as a result of a colonial pact promoting Spanish fishing interests in this zone.

As it became aware of its fisheries assets and building on the relevant provisions of the United Nation Convention on the Law of the Sea, which it interpreted as an obligation for a coastal state to manage its fish resources in a sustainable way, Morocco instituted a series of measures aiming to strengthen the protection and the surveillance of its resources and to initiate programs for the development of national fishing capacities (exclusive economic zone [EEZ] and maritime investments code) in order to increase its contribution to their exploitation and their value enhancement while developing in parallel a cooperation policy with third countries.

The initial arrangements concerned joint ventures between Moroccan public and private operators associated with foreign partners and the chartering of foreign-flagged boats in a process to initiate the national exploitation of fish resources.

However, while chartering produced benefits concerning the mastery of fisheries exploitation technology where it was implemented and for the positioning on the global market of the species concerned, joint ventures did not achieve the objectives for which they were created, in particular the technological and skills transfer in maritime fisheries and the creation of value added, which only partially benefited the Moroccan fisheries sector.

The fishing agreements concluded first with Spain and Portugal and then from 1988 with the European Union had a positive economic and social impact on the fisheries sector in Morocco in terms of financial returns and sectoral support having contributed to projects for the development, the equipment, and the management of national fisheries activities.

However, it must be noted that these agreements, and in particular those in force until the end of the second millennium, maintained a significant and disproportionate fishing effort compared to the natural stock renewal requirements and restricted the fishing capacity development potential and the profit margins of the Moroccan fleet.

The impact of the agreements with the Russian Federation on the resource remains limited, insofar as the fishing opportunities effort granted to Russian boats concerns a particular fish stock that remains underutilized. Financial return remains low, but these agreements make a major contribution in terms of scientific research enabling the monitoring and the evaluation of small pelagic species in the southern stock.

The cooperation with Japan is of a different nature; the 1985 framework agreement does not have a major impact on the tuna passing through Moroccan waters. However, thanks to this agreement, Morocco benefited from important funds within the framework of technical cooperation and nonrefundable financial aid for projects structuring its maritime fisheries sector.

Following a situation of “no agreement” that lasted almost 7 years, fisheries relations with the EU were relaunched with the new 2005 partnership agreement in the maritime fisheries sector and its protocols, inaugurating a new era of balanced cooperation taking into account the imperatives of sustainable fishing and the requirements for the development of the national fisheries sector.

However, the partnership dimension advocated by this “new generation” agreement has not had the expected effect and no progress has been recorded concerning economic, scientific, or technical integration pursued by this cooperation convention. Obligatory landings of a proportion of the catch in Moroccan ports, the use of port infrastructure as working bases for Community ships, the joint control of landings in the ports of both parties, and scientific research are all provisions that have not been applied.

At this level, the agreement remains consistent with the spirit of earlier agreements, namely access to the resource against financial compensation.

BIBLIOGRAPHY

Fishing agreements:

- » The 1983 Morocco-Spain fishing agreement
- » The 1985 Morocco-Japan fishing agreement
- » The 1988, 1992, and 1995 Morocco-EU fishing agreements
- » The 1992, 1995, and 2006 Morocco-Russia fishing agreements; information drawn from Europa website (http://ec.europa.eu/fisheries/cfp/international/agreements/index_en.htm)
- » The 2005 Morocco-EU fishing agreement and the 2013 protocol
- » The 2013 Morocco-Russia agreement

Reports, Studies, and Websites:

“Filière de la pêche des espèces des petits pélagiques dans le sud atlantique marocain: Diagnostic et stratégie de développement,” Mémoire pour l’obtention du Diplôme du Cycle Supérieur de Gestion de l’ISCAE, M. Rouchdi, Juillet 1999.

“Evaluation Ex-Post du Protocole de 2005 d’accord de partenariat dans le domaine de la Pêche Maritime entre l’Union Européenne et le Royaume du Maroc, étude d’impact d’un possible futur protocole d’accord,” réalisée pour le compte de la Commission européenne par Océanic Développement (France), Octobre 14, 2010.

“Le Maroc et le Droit de Pêches Maritimes,” par Abdelkader Lahou, 1983.

Website: ec.europa.eu/fisheries

MPM site: www.mpm.gov.ma

APPENDIX E

INTERACTION BETWEEN FOREIGN FISHING AGREEMENTS AND SMALL-SCALE FISHERS

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FOREIGN FISHING AGREEMENTS: ISSUES AFFECTING SMALL-SCALE FISHERS

Within this section we consider the interactions that can occur between local small-scale fishing fleets and the commercial fishing entities that gain access to fish resources under foreign fishing agreements (FFAs). These interactions are important because small-scale fishing¹ represents an important livelihood strategy, either full time or as part of a portfolio of activities, for millions of people living in coastal regions in developing countries. These fishing activities play an important role in food security and poverty alleviation. Indeed, recent estimates suggest that over 90 percent of people employed globally in capture fisheries and related activities can be classified as small-scale fishers (World Bank/Food and Agriculture Organization [FAO]/WorldFish Center 2008). The fisheries on which these fishers depend contribute to the livelihoods and well-being of over 500 million people worldwide (Béné et al. 2007; FAO 2012). Some researchers also suggest that these figures may be underestimates, given that official statistics often fail to capture the true extent and contribution of small-scale fishing activities (for example, Jacquet et al. 2010).

Fishing operations under FFAs have the potential to lead to interactions between fishers that can affect small-scale fishers. These interactions can include interactions related to the fish stocks but can also extend to processing, marketing, and other fisheries-related activities. These interactions can be negative, but there can also be positive interactions (FAO/RAP/FIPL 2004; Jacquet and Pauly 2008). While such interactions can occur in any case within national waters, global agreements can bring large-scale commercial operators into national waters and regional agreements can facilitate migration of small-scale fishers, both affecting host nation small-scale fishing operations and creating new markets for fish.

¹ For the purpose of this report we are using the FAO definition of small-scale fisheries as “labour intensive harvesting, processing and distribution technologies to exploit marine and inland water fishery resources. The activities of this sub-sector, conducted full-time or part time, or just seasonally, are often targeted on supplying fish and fishery products to local and domestic markets, and for subsistence consumption” (FAO 2004).

Furthermore, the fact that the fishers are foreign creates additional challenges due to the division of responsibility for controlling their activities in national waters and lack of local institutions for dealing with any interactions that arise. In this section we consider the interactions that can occur through global and regional fishing agreements and some of the steps that have been taken at the international and national levels to address and reduce negative interactions.

GLOBAL AGREEMENTS

Global agreements represent a set of foreign fishing agreements that provide fishing opportunities for distant water fishing nation (DWFN) fleets that normally involve a cost for the access. This cost can be financial but may also be a reciprocal trade of fishing rights, for example between the European Union (EU) and Norway. The focus here is on agreements that enable fishing by large-scale fishing vessels in the waters of developing countries. A diverse range of FFAs have emerged, including multilateral arrangements (for example, U.S. arrangement with the Parties to the Nauru Agreement [PNA] or EU Fisheries Partnership Agreements), bilateral arrangements between governments to provide fishing companies access to resources (for example, United States and Russia), and private arrangements between governments and private-sector fishing associations (for example, Seychelles arrangements with Japanese fishing associations). Other arrangements are also possible, such as shared investment or joint ventures. The critical aspect of the arrangements is that they provide fishing opportunities for large-scale commercial operators and access by these operators can lead to a variety of interactions with local small-scale fishers.

INTERACTIONS

Small-scale fishing operations, particularly in developing countries, have been the focus of increased attention in recent years. In the context of global fishing agreements, it is suggested that fishing operations by foreign commercial operators can directly and indirectly impact local small-scale fishers. Foreign commercial operations can affect fishing operations and also undermine local management, generally as a result of weak governance that results in commercial encroachment and use of large-scale and/or destructive gears, privatization of common resources, and weak rule of law. The nature of the interactions can be both direct and indirect. Direct interactions between fishers include instances of competition for the same resources and fishing in the same locations (competition for space). Indirect interactions include at-sea effects, for example when the bycatch of one fleet is the same as the target species of another fleet, and post-harvest, where there is

competition in the marketplace or over post-harvest processing and marketing capacity.

Many of the documented interactions between foreign and small-scale fishers concern the more direct interactions; for example, the Mauritanian exclusive economic zone (EEZ) octopus stocks have been targeted by both the small-scale fishers and an EU fleet fishing under a Fisheries Partnership Agreement (FPA). The octopus stock has been described as being overexploited by the EU fleet, affecting catch rates for the small-scale fishers (Nagel and Grey 2012). The EU fleets have also been implicated in negative impacts on small-scale fishers' livelihoods in Senegal (Brown 2005; Gorez 2005). Again, the cause of these impacts is through the depletion of fish stocks and disruption to fishing activities (Kaczynski and Fluharty 2002). This is, however, contested, and evidence indicating that the EU fishing fleet had negligible impact on Senegal's fisheries resources is presented by Stilwell et al. (2010).

Some of the disruption is due to the effect that foreign fishing operations have on the environment. Fishers in Liberia and Sierra Leone report that trawling operations close to shore that are targeting croaker and shrimp tend to have high discard rates and disturb the sediment. The disturbance generally means that it is not worthwhile to fish after a foreign vessel has been spotted fishing in an area and, as a result, fishing opportunities are lost.² Similarly, the activity of foreign fishing vessels in Maldives has been identified as disrupting tuna school formation in near-shore areas and affecting catchability of tuna, impacting local small-scale fishers (De Young 2006).

The disruption of fishing activities can also endanger small-scale fishers' lives. In a study across seven countries in West Africa, Gallène (1995) identified incidents with industrial vessels getting their trawls entangled in fishing nets and dragging them away while canoes are fishing as among the main causes for accidents at sea. Similar concerns over competition for resources and space and safety at sea were also reported among small-scale fishers in Congo, Guinea, and Gabon (Njock 2007).

In general, the results suggest that where foreign fleets are operating in the same space and targeting or catching the same species as the local small-scale fleets, the interactions are considered more significant. These interactions could be exacerbated by weak control over the fishing activities of the foreign fleets that can give rise to conflict. This weak control is a critical aspect and is often allied to limited opportunity for small-scale fishers to hold the state to account for the impacts and costs that are incurred. Foreign fishers do also present opportunities for small-scale fishers. In some countries, canoe fishers collect bycatch from industrial trawlers. In Mozambique, fishers whose fishing activities were impacted by the operations of shrimp trawlers developed their own agreements with the crew and made a business of selling shrimp that they caught to the trawler crews and receiving bycatch in return, which they were able to sell. This was also an important source of fish for local fish processors (World Bank/FAO/WorldFish Center 2008). This sort of bycatch collection at sea by small-scale fishers has been reported in many countries, including Ghana, Mozambique, and Senegal (Clucas 1997; Béné et al. 2007; World Bank/FAO/WorldFish

Center 2008). The example from Mozambique also highlights another form of interaction whereby small-scale fishers supply the foreign industrial fleet. This has also been reported in Guinea and, more recently, Sierra Leone and Senegal, where foreign firms buy fish from local fishers to supply Asian markets, organizing wooden canoes with ice boxes to collect fish from the local fishers. This form of operation provides fishers with an opportunity to get higher rates for desirable fish species than they would get in the local markets but may have implications for local fish supply (Environmental Justice Foundation, personal communication). Again, the issue is that the introduction of commercial large-scale operations creates changes that local institutions have to respond to but that may prove challenging given weak governance and rule of law. Because these interactions occur and can negatively impact small-scale fishers, many of whom in developing countries may be amongst the poorer sections of society, steps have been taken to establish a framework for good governance at the international level through a number of agreements.

RECOGNIZING SMALL-SCALE FISHERS: INTERNATIONAL AGREEMENTS

The needs and rights of small-scale fishers have been recognized in a number of international agreements, including the UN Fish Stocks Agreement (UNFSA), which requests states take into account the "need to avoid adverse impacts on, and ensure access to fisheries by subsistence, small-scale and artisanal fishers." The voluntary FAO Code of Conduct for Responsible Fisheries (CCRF) also requests states to protect the rights of small-scale fishers and goes further than the UNFSA by asking that states provide "preferential access, where appropriate, to traditional fishing grounds and resources." The voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication that were published in May 2013 are intended to complement the CCRF and echo the statement on preferential access to resources. In relation to FFAs, the guidelines request that states ensure that small-scale fishing communities are "given priority consideration before agreements on resource access are entered into with third countries and third parties." These international agreements have framed a number of national legal frameworks (see below) as well as the activities of the regional fisheries management organizations (RFMOs) that address management of highly migratory species. With respect to the latter, it is important in the calculation of the available surplus that the activities and interests of small-scale fishers who are targeting these stocks are more explicitly accounted for.

GLOBAL AGREEMENTS AND NATIONAL LEGAL FRAMEWORKS

One of the important issues has been that FFAs have been granted on the pretext of national economic growth without any analysis of the social costs and benefits or discussions regarding the negative impact on small-scale fishers and the natural environment. This has often led to conflict where there are interactions, and as

² In general, tropical shrimp trawl fisheries have been identified as having the highest discard rates, followed by other shrimp and finfish trawl fisheries (Kelleher 2005).

a result, recognition of impacts on small-scale fishers in national legal frameworks has increased. Indeed, these frameworks increasingly reflect the request within the CCRF. For example, in Marshall Islands, priority is given to artisanal fishers in the allocation of licenses and reserved areas are established for artisanal fishing. The establishment of reserved areas for small-scale fishing, inshore exclusion zones (IEZs), and territorial use rights in fishing (TURF) areas is becoming a common feature in Africa, and examples can be found in Kenya, Sierra Leone, Liberia, Angola, Mozambique, Senegal, and Mauritania, among others. These areas, typically in the inshore areas, are designed to reduce the direct interactions and competition for space between fleets and, allied to increased monitoring and surveillance, are credited with reducing interactions between fishing vessels. However, the introduction of reserved areas has been identified as reducing fishing opportunities for foreign fleets, particularly for those targeting shrimp.

REGIONAL AGREEMENTS

In addition to global agreements that provide DWFN fleets with access to fish stocks, often in developing countries, there are also examples of regional agreements that provide access to fish stocks by small-scale fishers from other regional countries through either migration or transboundary fishing. For example, significant numbers of Thai registered vessels fish in the waters of Bangladesh, Malaysia, Indonesia, and Myanmar under cooperative arrangements and joint ventures, such that some 40 percent of Thailand's catch is from outside Thai waters (Kadfaf et al. 2012). These agreements can arise for a number of reasons but are often a response to the fact that fishers are targeting seasonally abundant and often migrating stocks and that this means that fishers are migrating within and across national borders, for example in East and West Africa and South Asia. Within these regions, there is a long history of fishers migrating to follow the fish and the suggestion (for example, Atta-Mills et al. 2004; Njock and Westlund 2010; Binet et al. 2012) that this is an increasing phenomenon, in part due to increasing access to markets. Access agreements are also a response to a situation where small-scale fishers fishing close to national borders may unintentionally find themselves fishing in the waters of another country. Although presented as a fisheries issue, unlike the global fisheries agreements, regional access agreements may not always originate within the fisheries sector. As Crona and Rosendo (2011) and Binet et al. (2012) note, the movement of fishers across administrative boundaries has received little attention to date, partly due to the fact that the extent of fisher migration remains largely unknown and there is little effort to monitor migration.

RECOGNIZING SMALL-SCALE FISHERS: REGIONAL AGREEMENTS

This review has identified a couple of examples of regional agreements that facilitate access to resources by foreign small-scale fishers. As mentioned, these have not always originated from the fisheries sector but have implications for it. In West Africa, for example, the Economic Community of West African States' (ECOWAS'

Protocol on Free Movement of Peoples adopted in 1979 recognizes cross-border migration as a way of life in the region and a means to enhance the benefits of movement of people, goods, and services. The Revised ECOWAS Treaty identifies free movement as a key objective and an important means of establishing the common market. Article 59 (1) specifically addresses the right of entry and residence of community citizens and the obligations on member states to recognize these rights within their territories. The situation in East Africa is similar, with traditional patterns of fisher migration and a regional body, Common Market for Eastern and Southern Africa (COMESA), that supports the free movement of peoples.

These regional economic agreements can lead to fairly significant foreign fishing effort in national fisheries, such that foreign fishers may constitute the majority (Njock and Westlund 2010). For example, in Gambia, Everett (1991) estimated that approximately half of the canoes operating in the coastal fisheries were foreign owned, and in Liberia, data suggests that in 2013 some 25 percent of canoes were foreign owned and that foreign fishers made up 35 percent of total canoe-based fishers.³ These fishers are present at most of the landing sites across the coastal counties (Kebe et al. 2009). It is also important to note that, unlike many of the global agreements, movement of fishers is accompanied in many cases by the movement of wives and other relations who can often have important roles in the processing and marketing of fish (for example, Njock and Westlund 2010). Migrant fishers are often quite well organized within the host country and develop local fisher associations both to regulate their own activities and to interact with other fishers and local and national authorities on their behalf.

REGIONAL AGREEMENTS AND NATIONAL LEGAL FRAMEWORKS

Across East and West Africa, national legal frameworks and fisheries regulations have been developed that seek to ensure that access to fisheries resources is allowed so long as fishers comply with the resource-use rules and regulations defined by the state (for example, Crona and Rosendo 2011). Often the state seeks to regulate through licenses and permits that include reference to foreign fishing. However, as Crona and Rosendo (2011) point out, the legal texts on the authorization of foreign vessels to fish in territorial waters generally make no distinction between types and scales of operation and tend to relate primarily to foreign fishing operations related to global agreements rather than the operation of foreign small-scale fishers.

In addition to the broad frameworks and regulations, there are examples where regulatory measures have been developed to deal with specific instances of interactions between small-scale fishers. These measures are a reaction to the arrest and detention of small-scale fishers for illegal, unreported, and unregulated (IUU) fishing and entering the territorial waters of neighboring countries. Having said this, the initial cause of detention is often the development of maritime laws and regulations that are derived from international instruments that promote the sovereignty of the state

³ Data from West Africa Regional Fisheries Programme (WARFP) in Liberia.

at the expense of traditional and customary rights and of traditional migrations of fishers (for example, Atta-Mills et al. 2004; Gupta and Sharma 2008). Examples of reciprocal bilateral agreements that address border area issues and fishing in areas where there may be disputed sovereignty include the Sino-Vietnam Fishery Cooperation agreement (2000), Eritrea-Yemen agreement of 1998, and establishment of a “sea of tolerance” between Costa Rica and Nicaragua (Béné et al. 2007; Vivekanandan 2008).

Within national waters, the rhetoric of decentralized fisheries management, community-based management, and co-management has been widely adopted by fisheries departments in developing countries. This has led to a variety of efforts to establish local management committees and management units, often associated with territorial management areas or stretches of the coast. These often have to deal with the reality of migrant fishers and their rights to fish, but there is little evidence of these rights being recognized explicitly in any decentralization initiatives.

INTERACTIONS

While there are regional commitments to free movement under ECOWAS and COMESA, Béné et al. (2007) have suggested that instability and a lack of political will have affected implementation and that migrant fishers often find themselves marginalized and liable to be evicted when it is politically expedient. These are typically interactions that extend beyond the sector (see also Haakonsen and Diaw 1991; Njock and Westlund 2010). Similarly, with national legal frameworks tending to focus on activities under global fishing agreements, there is a risk that regional migrant fishers may operate outside the law and be vulnerable to exploitation and prosecution (for example, Crona and Rosendo 2011; Kadfak et al. 2012).

Fisher migration across borders can lead to similar interactions as the global agreements, and Binet et al. (2012) have suggested that migration is increasingly leading to conflict between local and migrant fishers. However, Haakonsen (1991), in an earlier review of fisher migration in West Africa, was able to conclude that, although not fully socially and culturally integrated, with respect to fishing activities, the majority of migrant fishers are usually living in peaceful coexistence with local communities. He suggests that conflicts tend to occur when the same resource is exploited by different groups using the same gear or when the gear of one group affects the other. He also suggests that conflicts may occur more easily if catches are not sold locally.

The interactions are again not always negative (in practice, the relationships tend to be beneficial to both parties but often also accompanied by conflict). Foreign small-scale fishers can, for example, benefit local communities through increased supply of fish. In the case of West Africa, foreign fishers may be responsible for significant landings of fish that are not a major target of national small-scale fishers but that make important contributions to national food security. In the case of Liberia, Ratcliffe and Lindley (1988) estimate that Ghanaian fishers at the time were responsible for around three quarters of total domestic catch. This is an important point. Foreign fishers may also have an important role in the spread of fishing technology (including fishing gears, canoe construction, and post-harvest processing). In the context of West

Africa, this is a role that has been identified with regard to Ghanaian and Senegalese fishers operating across the region. Foreign small-scale fishers are identified as having largely contributed to the development of the small-scale fisheries in Mauritania and in Liberia, for example (Diop and Thiam 1991; Kebe et al. 2009), and the effect can be a transformation in perceptions of marine resources to one in which they represent a significant potential source of wealth (Diaw 1991). Furthermore, in a developing country context, there are benefits from fishing under these agreements that can accrue to the host landing site (for example, fish supply and employment) as well as to the fishers’ home port in the form of remittances and reinvestment.

POLICY RESPONSES TO INTERACTIONS AND LESSONS LEARNED

In this section, some of the policy responses that have been developed to address interactions under FFAs are reviewed. The two main efforts that have been identified are (1) efforts to increase the transparency of agreements, particularly global agreements, and the accountability of the actors involved (including international guidelines that recognize the need to address the interactions) and (2) management measures designed to reduce interactions between fishers operating under FFA.

TRANSPARENCY AND ACCOUNTABILITY

Transparency and accountability have been identified as important means to shed a light on the policy processes and improve responsiveness. At the very least, public disclosure of information on fishing agreements and licenses can increase the likelihood that fishers and others can identify illegal fishing activities (for example, Standing 2011). In relation to FFA, the fact that fisheries’ access agreements in general, and those signed with Asian countries in particular, lack transparency has been highlighted. Indeed, clause 7.1.9 of FAO’s CCRF (2000) recommends that mechanisms for fisheries management and related decision-making processes should be made transparent by the management authorities. As it stands, knowledge of who is fishing where and for what, the quantities of fish being caught, and where this fish is going is often unclear. In the context of global agreements, how much is being paid for access and how this is being used by coastal state authorities are often guarded and obscured from public scrutiny.

To address these issues with negotiation of agreements, the issue of wider access to information and calls for greater transparency have become central to efforts to combat illegal fishing and influence fisheries policies (for example, Standing 2011). However, these arise from different sources with divergent motivations. For international agencies, the motivation is control and regulation (for example, EU IUU and traceability measures, FAO arrangement on port state measures, and Transparent Sea analysis of donor activities). For civil society organizations, such as the Coalition for Fair Fisheries Arrangements and Transparent Sea, it is a means to achieve greater transparency on access arrangements.

The process of determining national fisheries policy and policy objectives and whether (including on what terms) to enter into global FFAs is, in practice, seldom transparent or inclusive. For example, within Mauritania, civil society is not represented within fishing agreement negotiations, but there are concerns within both the local industrial and small-scale fishing fleets about the effect that agreements will have on long-term sustainability as well as more immediate competition that might hinder the development of local fisheries businesses. As a result of concern over interactions, the EU-Mauritania FPA has four strategic priorities that were aimed at mitigating negative impacts of EU fisheries exploitation. Despite this recognition of the need to address interactions between the EU fleet and domestic fishers, including small-scale fishers, implementation of the agreement has been criticized (for example, Nagel and Gray 2012). By contrast, the Ministry of Fisheries and Marine Resources (MFMR) in Namibia routinely consults extensively with stakeholders during policy or management strategy development, and a number of consultative mechanisms are in place.

A key challenge for any host nation is ensuring that there is the political will to see through the negotiation and implementation of global agreements in ways that ensure that they deliver the maximum benefits to the state with minimum risks. There are a number of steps that can assist with this or, alternatively, undermine it. One aspect that can be beneficial is simply for the objectives of entering negotiations to be explicit. This provides a focus to the process and can also increase accountability. An example of where there has been a positive outcome is with the policy of Namibianization in Namibia and the definition of social goals as part of the objective of the policy. However, the reality in many cases is that objectives are likely to remain less well defined given the motivations of firms and national interests discussed above. This can result in government-to-government bilateral support, and aid that is linked to fisheries agreements complicates economic considerations. Foreign governments, notably the EU and China, have been identified as supporting fishing interests to gain access to fisheries as a means to achieve wider strategic interests as well as a means to secure fish supplies and employment. For example, in Mauritania, Chinese military aid is being provided in return for opportunities in the local industrial fishing fleet.

Within the coastal state, there are internal political factors that affect the ability to negotiate. For regional agreements where the negotiation may be outside the sectoral remit, fisheries issues and implications may be marginalized. Internal struggles for control over the resources are typical within governments with various ministries and agencies seeking to establish a role and to benefit from agreements. The same is true of global agreements, where Mauritania provides an example. The main stakeholders in the Mauritanian fisheries include the Ministry of Fisheries and Maritime Affairs, the Ministry of Finance (which has responsibilities for public accounts, customs, investment, and economic development), and the Central Bank (which manages foreign exchange and is therefore also influential in the negotiation of fishing agreements). In crude terms, the Ministry of Finance is interested in short-term benefits (contributions to the balance of payments), whereas the Ministry of Fisheries has a longer-term vision, namely that of sustainable development of the fisheries sector. In cases of disagreement, the head of government may act as an arbitrator, but

a critical constraint remains that the fisheries sector is seen as a foreign exchange earner by the Ministry of Finance.

Calls for greater transparency in relation to FFA is accompanied by calls for greater accountability and consideration of the role and contribution of small-scale fishers. Two of the main international guidelines that address interactions are CCRF and the recent voluntary for securing sustainable small-scale fisheries in the context of food security and poverty eradication. Although both of these recognize the important contributions that small-scale fishers make and their role in relation to food security, they represent voluntary agreements with no legal force in international law. This fact, together with the broad scope of the CCRF, has presented challenges when it comes to implementation. For example, a review by Pitcher et al. (2008) suggested that compliance with the CCRF was relatively poor and that there is a lack of attention to the small-scale fishing sector despite the fact that small-scale fishers are very important as a source of food security and livelihoods in many countries. However, the guidelines do provide a reference point for civil society and a means to increase accountability of national governments and others.

In situations where potential resources or fishing grounds are shared between the small-scale fishers and DWFN and the existing small-scale sector makes only limited contributions to government revenues (despite any other benefits that might be generated), these factors can all contribute to create high discount rates that, in turn, can lead to rent-seeking behaviors (for example, Stilwell et al. 2010). In most cases, the decision to enter into a global agreement is based on a simplistic assessment of the benefits that usually only considers the landed value of fish. Given the often poorly documented state of national fisheries, there is a pressing need to understand the (full range of) benefits from small-scale fishing activities and the way that costs and benefits of any foreign fishing agreement would be distributed across actors dependent on the fisheries. In particular, there should be greater consideration of the nature and extent of local economic linkages and multipliers. These need to be factored into decision-making models so that the full range of social and economic costs and benefits of policy options can be accounted for.

Beyond costs and benefits, it is the values, needs, and aspirations of those dependent on the fisheries that should have an active influence in shaping fisheries policy, particularly because through the subsequent interactions they may be bearing some of the costs. This hints at the more significant impact of foreign access agreements on small-scale fishers. Small-scale fishers become more vulnerable when their social cohesion and self-determination are undermined and when they are unable to counter the interactions and impacts on their way of life. Rather than seeking to extract, quantify and use information about the fisheries, there are increasing calls, including within the CCRF, for those who may be affected by decisions to have more of a role in the decision making—provide the poor with a voice in development decisions; ensure access to productive assets and a share in the development benefits.

AVOIDING NEGATIVE INTERACTIONS

Negative interactions can be reduced if host and flag states commit to more effective monitoring, control, and surveillance (MCS) of fishing activities. However, efforts to improve control should not be

at the expense of efforts to improve accountability and representation in decision making. The lack of capacity for effective MCS and management can often represent the greatest single threat to the resource and to its capacity to deliver economic benefits. It can also be presented as an important prerequisite if negative interactions are to be avoided. Commitment to MCS can be particularly important for global agreements in a context where there can be downward pressure from retailers and buyers onto vessel owners. This can be beneficial for the coastal states, as it can increase demand for access to resources, but it can also have consequences, as vessel owners may be under pressure also to fish harder and faster, reduce costs, and avoid regulation where possible.

The benefits of improving control of fisheries are highlighted by examples such as Namibia and, more recently, Liberia, where improvements in MCS capabilities have resulted in reduced levels of illegal fishing by DWFNs in inshore waters. However, responsibility for control of fishing does not rest with the coastal state alone. Indeed, the FAO Code of Conduct for Responsible Fisheries states that “The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources.” Furthermore, “States authorizing fishing and fishing support vessels to fly their flags should exercise effective control over those vessels so as to ensure the proper application of this Code.”

Measures to avoid interactions have often led to the establishment of exclusion zones to separate small- and large-scale fishers and reduce some of the more direct forms of interaction. Associated with exclusion zones have often been initiatives to introduce some form of decentralized management (for example, co-management or community-based management). These initiatives are intended to provide locally appropriate management strategies and increase the role of local people in setting fisheries management priorities. Although it would appear to be reducing the role of the state in fisheries management, the granting of foreign access could also be seen to run in contrast to decentralized resource management. Demand for access instead provides an opportunity for the state to actually increase its power and control over the exploitation of natural resources.

Although reserved areas can potentially reduce conflict, it is important that the process of recognizing rights over these areas or resources is not also a means to reduce or take away rights to other areas or resources. Providing areas for small-scale fishers may be welcomed by local people, who may feel that they are benefitting from an exclusive right over marine space and the resources within it. However, these initiatives can also be seen as an effective tool to effectively create state ownership of certain areas and to exclude local people from them. Hence, the state can legitimately allocate the nonreserved areas to someone else, in this case foreign fishing entities for the purpose of exploitation, usually large-scale commercial production.

Granting reserved areas to small-scale fishers therefore has a number of risks. In the first instance, these fishers in many developing countries are also developing, and therefore restricting their fishing activities to “traditional” areas or reserved spaces could risk reducing their development potential at the expense of foreign fishers, who may have greater political and economic influence. This risk may be reduced if the request within the voluntary guidelines

on small-scale fisheries is acted on to ensure “active, free, effective, meaningful and informed participation of small-scale fishing communities [...] in the whole decision-making process related to fishery resources and areas where small-scale fisheries operate as well as adjacent land areas, and taking existing power imbalances between different parties into consideration. This should include feedback and support from those who could be affected by decisions prior to these being taken, and responding to their contributions” (FAO 2014). However, realizing this can be challenging for national governments (for example, Blaikie 2006; Evans et al. 2011) because there are usually a number of government departments that have some responsibility related to resource management and each may be drafting its own policy and legislation. The extent to which these policies are coherent and supportive of decentralized management can vary. Even where there is agreement on decentralization, the difficulty in identifying what co-management or community-based management is can create significant difficulties for practitioners and provide opportunities for various actors, both within political elites and in civil society, to variously support or resist meaningful transfer of power (for example, Blaikie 2006).

A second risk is that at the local level the establishment of reserved areas can also represent a change in ownership and rights over the resources that can affect the relationships between actors. Often there are complex and dynamic relationships between boat owners, crew, fish buyers, and processors operating at the local level. Access rights to fisheries and to fish and the benefits that are derived from these result from this complex web of institutions, interpersonal relationships, and human behaviors. Changing the nature of rights can lead to significant shifts in power and the nature of relationships and institutions that may have unforeseen and even undesired consequences.

Changes in institutions at the local level as a result of introducing a spatial element or granting rights to local communities can also have implications for migratory fishers (national and foreign). This is seen in particular in the context of decentralized management of fisheries resources, where the simple presence of foreign fishers can create difficulties. Despite widespread enthusiasm for decentralized forms of management for small-scale fisheries, the implications of fisher migration for these forms of management tends not to be explicitly recognized or addressed (for example, Njock and Westlund 2010; Crona and Rosendo 2011). Furthermore, there is often little recognition of the autonomy of customary law or representation in the decision-making bodies of the state. In practice, the movement of fishers can lead to various responses at the local level that can affect efforts at establishing decentralized management. The responses include motivating local fishers to engage in decentralized management as a means to exclude foreign fishers from local waters and the undermining of such efforts due to the difficulty of including foreign fishers in co-management—because of cultural differences (including language), different fishing technologies and practices that complicate management, and locals or foreign fishers not engaging with the process, including undermining regulations and institutions through their actions (for example, fishing in closed areas and using illegal gears).

Regional movement and the activities of migrant fishers under regional agreements need to be placed in the wider context of the

historical and cultural dynamics and drivers of migration, which often lie outside the fisheries sector (for example, Haakonsen 1991; Atta Mills et al. 2004). Migrant fishers face the issue that they tend to lack rights within the host country. In practice, this can lead to marginalization, conflict, exploitation, and persecution. Even where migrant fishers may be responsible for the majority of the fish landings, this may be overlooked and their needs and aspirations overlooked. There are wider developmental and social justice implications, but even from a sectoral perspective, as Haakonsen (1991) concludes, “On a wider scale, ignoring the importance of migrant fishermen may lead to policy decisions by governments which drastically reduce national fish production and increase import dependency.” For this and the wider reasons, it is therefore necessary that the rights of migrant fishers are legitimized and that fisheries management institutions are strengthened and reviewed to ensure that they recognize the reality of migrant fishers and include them within policies and initiatives within the sector. This necessity to review national management frameworks and also to ensure regional coordination has been recognized, for example, within ECOWAS, but implementation to date has proved problematic.

CONCLUSIONS

The granting of access to national fish resources through global and regional access agreements can provide important benefits in terms of national revenues, increased landings, and employment opportunities. At the same time, there is also a range of potential interactions (both positive and negative) between foreign fishers and national small-scale fishers that can arise. While some of these interactions, in particular those under global agreements, can be similar to the types of interactions that can occur between small-scale fishers and commercial, industrial fishers, a critical aspect to draw attention to is the institutional frameworks in these cases. In many cases the role and significance of small-scale fishing activities (including the wider economic and social dependencies) have not been taken into account in the process of negotiating access and calculating the costs of the agreements and who will bear these costs. Beyond this, there is often little consideration of the potential role of small-scale fishers as drivers of development. Furthermore, there is a transparency issue whereby small-scale fishers may be excluded from the negotiations and may even be unaware that they are occurring. While this is often the result of poor information on the fisheries, there is also the suggestion that internal political conflict between ministries at the national level and even rent-seeking by the state can lead to the exclusion and/or marginalization of small-scale fishers and carries the risk of excluding and cornering the existing rights of small-scale fishers. These points are particularly important with respect to the CCRF and voluntary guidelines on small-scale fisheries, and there is more that could be done.

With respect to implementation, the institutions in place in many developing countries and the agencies responsible for enforcing the terms of agreements are often weak and unable to prevent negative interactions. Furthermore, while the flag state has responsibility for the operations of foreign vessels, they often have a weak role in ensuring that vessels operating under an agreement are taking steps to avoid interactions. This is an area where improved

MCS capability could be effective. One common step to reduce interactions has been to establish reserved areas—territorial use rights and inshore exclusion zones. This segregation has helped to reduce direct interactions between large-scale and small-scale fishing operations, but it is critical that the process of recognizing small-scale fishers’ rights over certain areas or resources is not also used as a means to reduce or take away rights to other areas or resources.

Within many countries, there are examples of migrant and transboundary fishing activity. In many cases, the agreements that permit access originate outside the sector but within the sector these fishers and their activities may not be fully recognized or considered in national regulations. Furthermore, and perhaps more significantly in the context of efforts to decentralize fisheries management, there is often no clear understanding of how these fishers can be accommodated within co-management and community-based management initiatives, so that the risk arises that they become marginalized and negative interactions and conflict are increased. At the very least, this requires clearer consideration of the role and rights of migrant and transboundary fishers in national policy and regulations and at the local level.

REFERENCES

- Atta-Mills, J., J. Alder, and U. R. Sumaila. 2004. “The Decline of a Regional Fishing Nation: The Case of Ghana and West Africa.” *Natural Resources Forum* 28: 13–21.
- Béné, C., G. Macfadyen, and E. H. Allison. 2007. “Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security.” FAO Fisheries Technical Paper 481, Food and Agriculture Organization, Rome.
- Binet, T., P. Failler, and A. Thorpe. 2012. “Migration of Senegalese Fishers: A Case for Regional Approach to Management.” *Maritime Studies* 11 (1): 1–14.
- Blaikie, P. 2006. “Is Small Really Beautiful? Community-Based Natural Resource Management in Malawi and Botswana.” *World Development* 34 (11): 1942–57.
- Brown, O. 2005. “Policy Incoherence: EU Fisheries Policy in Senegal.” Human Development Report Office Occasional Paper 2005/29.
- Clucas, I. 1997. “A Study of Options for Utilisation of Bycatch and Discards from Marine Capture Fisheries.” FAO Fisheries Circular C928, Food and Agriculture Organization, Rome.
- Crona, B., and S. Rosendo. 2011. “Outside the Law? Analysing Policy Gaps in Addressing Fishers’ Migration in East Africa.” *Marine Policy* 35: 379–88.
- De Young, C., ed. 2006. “Review of the State of World Marine Capture Fisheries Management: Indian Ocean.” FAO Fisheries Technical Paper 488, Food and Agriculture Organization, Rome.
- Diaw, M. C. 1991. “Migrant Fishermen from Casamance and Southern River Areas.” In *Fishermen’s Migrations in West Africa*, edited by J. W. Haakonsen and M. C. Diaw. Report of the Programme for Integrated Development of Artisanal Fisheries in West Africa. IDAF/WP/36.
- Diop, H., and I. Thiam. 1991. “Some Aspects of Fishermen’s Migrations in the Artisanal Maritime Sector of Mauritania.” In *Fishermen’s Migrations in West Africa*, edited by J. W. Haakonsen and M. C. Diaw. Report of the Programme for Integrated Development of Artisanal Fisheries in West Africa. IDAF/WP/36.
- Evans, L., N. Cherrett, and D. Pemsl. 2011. “Assessing the Impact of Fisheries Co-management Interventions in Developing Countries: A Meta-Analysis.” *Journal of Environmental Management* 92 (8): 1938–49.

- FAO. 2012. "The State of World Fisheries and Aquaculture 2012." FAO Fisheries and Aquaculture Department, Rome.
- FAO. 2014. "Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication." In: *FAO Fisheries and Aquaculture Department* [online]. Rome. Updated 15 April 2014. [Cited 25 November 2014]. <http://www.fao.org/fishery/ssf/guidelines/en>
- FAO/RAP/FIPL. 2004. "A Research Agenda for Small-Scale Fisheries." FAO Regional Office for Asia and Pacific (RAP) Publication 2004/21 and FIPL/C 10009. FAO Regional Office for Asia and the Pacific, Bangkok.
- Gupta, C., and M. Sharma. 2008. *Contested Coastlines: Fisherfolk, Nations and Borders in South Asia*. New Delhi: Routledge.
- Haakonsen, J. W. 1991. "Towards a Better Understanding of Fishermen's Migrations in West Africa." In *Fishermen's Migrations in West Africa*, edited by J. W. Haakonsen and M. C. Diaw. Report of the Programme for Integrated Development of Artisanal Fisheries in West Africa. IDAF/WP/36.
- Haakonsen, J. W., and M. C. Diaw, eds. 1991. "Fishermen's Migrations in West Africa." Report of the Programme for Integrated Development of Artisanal Fisheries in West Africa. IDAF/WP/36.
- Gallène, J. 1995. "Data Compendium on Safety at Sea for Seven West African Countries: Mauritania, Senegal, the Gambia, Guinea-Bissau, Guinea, Sierra-Leone and Cape Verde, 1991–94." Programme for Integrated Development of Artisanal Fisheries in West Africa (IDAF). Technical Report 71. Danida and Food and Agriculture Organization, Rome.
- Jacquet, J., and D. Pauly. 2008. "Funding Priorities: Big Barriers to Small-Scale Fisheries." *Conservation Biology* 22 (4): 832–35.
- Jacquet, J., H. Fox, H. Motta, A. Ngasuru, and D. Zeller. 2010. "Few Data but Many Fish: Marine Small-Scale Fisheries Catches for Mozambique and Tanzania." *African Journal of Marine Science* 32 (2): 197–206.
- Kaczynski, V. M., and D. Fluharty. 2002. "European Policies in West Africa: Who Benefits from Fisheries Agreements?" *Marine Policy* 26 (82): 75–93.
- Kadfak, A., N. Bennet, and R. Prugsamatz. 2012. "Scoping Study on Migrant Fishers and Transboundary Fishing in the Bay of Bengal." Report prepared for the Bay of Bengal Large Marine Ecosystem Project, February 2012.
- Kebe, M., P. Jern, R. Collins, W. Kay, and E. Kekula. 2009. "A Livelihoods Analysis of Coastal Fisheries Communities in Liberia." FAO Fisheries and Aquaculture Circular 1043, Food and Agriculture Organization, Rome.
- Kelleher, K. 2005. "Discards in the World's Marine Fisheries: An Update." FAO Fisheries Technical Paper 470, Food and Agriculture Organization, Rome.
- Nagel, P., and T. Gray. 2012. "Is the EU's Fisheries Partnership Agreement (FPA) with Mauritania a Genuine Partnership or Exploitation by the EU?" *Ocean & Coastal Management* 56: 26–34.
- Njock, J.-C. 2007. "Projet Pilote Aménagement participatif des pêches en zone côtière au Congo, au Gabon, en Guinée et en Mauritanie." Rapport Terminal. May 2005. Sustainable Fisheries Livelihoods Programme (SFLP) report.
- Njock, J.-C., and L. Westlund. 2010. "Migration, Resource Management and Global Change: Experiences from Fishing Communities in West and Central Africa." *Marine Policy* 34: 752–60.
- Pitcher, T.J., D. Kalikoski, G. Pramod, and K. Short. 2008. "Safe Conduct? Twelve Years Fishing under the UN Code." WWF-International and University of British Columbia.
- Ratcliffe, C., and R. Lindley. 1988. "Report on Artisanal Fisheries Sector Study." MacAlister Elliott and Partners Ltd. Lympington, UK.
- Standing, A. 2011. "Making Transparency Work in Africa's Marine Fisheries." U4 Issue 11, Chr. Michelsen Institute. Bergen, Norway.
- Stilwell, J., A. Samba, P. Failler, and F. Laloë. 2010. "Sustainable Development Consequences of European Union Participation in Senegal's Marine Fishery." *Marine Policy* 34 (3): 616–23.
- Sumaila, U. R., and M. Vasconcellos. 2000. "Simulation of Ecological and Economic Impacts of Distant Water Fleets on Namibian Fisheries." *Ecological Economics* 32 (3), 457–64.
- Vivekanandan, V. 2008. "Whose Waters Are These Anyway? Analysis: Transborder Fishing." *Samudra* 51: 29–32.
- World Bank/FAO/WorldFish Center. 2008. "Small-Scale Capture Fisheries: A Global Overview with Emphasis on Developing Countries. A Preliminary Report of the Big Numbers Project." WorldFish Center Report 1885, Penang.

APPENDIX F

EU NORTHERN AGREEMENTS

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ACRONYMS

CFP	Common Fisheries Policy
CS	coastal state
DG MARE	Directorate-General of Maritime Affairs and Fisheries (European Commission)
DWS	distant water state
EC	European Communities
EEA	European Economic Area
EEC	European Economic Community
EEZ	exclusive economic zone
EP	European Parliament
ERS	Electronic reporting system
EU	European Union
EUR	Euro
FMC	Fisheries Monitoring Centre
FPA	Fisheries Partnership Agreement
GRE	Greenland
ICES	International Council for the Exploration of the Sea
IQ	Individual Quota
ITQ	individual transferable quota
IUU	Illegal, Unreported, and Unregulated fishing
MCS	Monitoring, Control, and Surveillance
MFCA	Ministry of Fisheries and Coastal Affairs (Norway)
NAFO	North Atlantic Fisheries Organization
NEAFC	North-East Atlantic Fisheries Commission
NOK	Norwegian Krone
OECD	Organisation for Economic Cooperation and Development
RFMO	Regional Fisheries Management Organisation
STECF	Scientific, Technical, and Economic Committee for Fisheries
TAC	Total Allowable Catch
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
WGNSSK	Working Group on the North Sea and Skagerrak

All dollar amounts are U.S. dollars unless otherwise indicated.

INTRODUCTION

The European Union (EU) has bilateral fisheries agreements with neighboring countries in the northern hemisphere, which are on the basis of the reciprocal exchange of quotas. These agreements are with Norway, Iceland, and the Faeroe Islands (“northern agreements”). The EU also has an agreement with Greenland (the government of Denmark and the home rule government of Greenland), although this is a Fisheries Partnership Agreement (FPA), made on the same basis as the “southern” agreements—the provision of fishing opportunities for EU vessels within the Greenlandic exclusive economic zone (EEZ) in exchange for a financial contribution for access and for the support and implementation of Greenlandic sectoral fisheries policy.

The northern agreements aim to coordinate fishing activity between the EU and neighboring countries. Many of the stocks targeted by EU vessels in the Northeast Atlantic and North Sea are shared stocks that are jointly managed between the coastal states (the EU, Norway, Iceland, and the Faeroe Islands) or managed through the intergovernmental North East Atlantic Fisheries Convention.

The FPA with Greenland is also included in this case study to inform the analysis of the EU’s agreements with countries in the northern hemisphere, in particular to compare and contrast them with the agreements with countries in the southern hemisphere.

This case study aims to explore the nature of these agreements, the benefits obtained and how these are shared between the coastal state (CS) and the distant water state (DWS), and the implementation and enforcement of the agreements, including fishers’ behavior under the agreements. Comparisons with the EU’s FPAs with “southern” states are made where appropriate. Aspects of good practice and lessons that may be applicable to other agreements, in particular agreements with developing coastal states, are discussed.

The following hypotheses are explored:

- » For both CSs and DWSs to benefit fully from foreign fishing arrangements, it is essential for CS to have in place effective fishery management arrangements;
- » Benefits will be more sustainable if foreign fishers are an integral part of CS fishery management arrangements rather than being an appendage managed by a different set of legal instruments; and
- » The “northern” CSs are more demanding in terms of good behavior by the fishers, with accurate catch data, no discards, and so on, depending on the jurisdictions.

To explore these issues in more depth, this case study focuses on the EU’s agreements with Norway (as the most important agreement for EU vessels) and Greenland (as the only FPA with a northern country). Furthermore, at the time this report was written (December 2013), no quotas were being exchanged under the agreements with Faeroes and Iceland due to ongoing disputes over mackerel and herring quotas.

BACKGROUND AND HISTORY

With the establishment of 200-nautical-mile EEZs and fisheries zones under the United Nations Convention on the Law of the Sea (UNCLOS), it became necessary for the EU to establish

agreements with coastal states to preserve access for fishing vessels to fishing grounds and stocks that they were already exploiting. In particular, the creation of a 200-nautical-mile fisheries zone in Community waters with effect from January 1, 1977 led the Council to agree that fishing rights for Community fishermen in the waters of third countries must be obtained and preserved by appropriate Community agreements. The fisheries agreements between the EU and Norway and between the EU and the Faeroe Islands were therefore developed and signed in 1977 and came into force in 1981. The first agreement with Greenland began in 1985, when Greenland left the European Communities (ECs). The fisheries agreement between the EU and Iceland was signed in 1992 and came into force in 1993.

OVERVIEW OF CURRENT AGREEMENTS

The EU's agreements with Norway, the Faeroe Islands, and Iceland have a broadly similar structure and contain similar provisions, the main ones being the following:

- » The parties to the agreements grant access to the fishing vessels of the other party to fish within their areas of fisheries jurisdiction;
- » The parties determine the total allowable catches (TACs) for individual stocks or complexes of stocks, based on the best available scientific evidence, interdependence of stocks, and the work of appropriate international organizations;
- » Each party determines allocations (subject to negotiations) of fishing possibilities for the fishing vessels of the other party in its area of fisheries jurisdiction, with the objective of establishing a “mutually satisfactory balance in their reciprocal fisheries relations”;
- » Vessels must comply with the conservation measures, other terms and conditions, and all rules and regulations governing fishing activities in the area;
- » The agreements provide for monitoring, control, and surveillance of the fishing activities of the vessels of the other party when in their area of fisheries jurisdiction, to ensure compliance with the provisions of the agreement; and
- » The parties should facilitate scientific research.

The agreements are established on a reciprocal basis, with each party providing fishing opportunities to the other that are deemed to be of equivalent worth. The parties must first agree on TACs for shared stocks, which are jointly managed where appropriate. They then agree on the quotas to be provided to the other party in the area of their fisheries jurisdiction.

The quotas provided to the EU are then allocated to member states according to relative stability,¹ reflecting historical fishing patterns, with quotas per member state specified in the annual regulation

on fishing opportunities. Member states can allocate quotas to the fishing industry in the way that each one sees fit, since the management (allocation) of fishing rights remains an exclusively national responsibility, to be decided on by individual member states (MRAG et al. 2009) in accordance with national priorities. This may therefore be based on a pool quota for a group of vessels or fleet segment, through producer organizations, as individual vessel quotas (nontransferable), or as individual transferable quotas.

An important aspect of the agreements is that the vessels must comply with the CS fishery regulations in place and therefore operate under the same management framework as the national vessels. This is discussed in more detail in the country-specific sections below.

In addition to complying with the provisions of the agreements and the quota allocations, vessels fishing under the agreements (both EU vessels fishing in Norwegian, Icelandic, or Faeroese waters and vessels from those countries fishing in EU waters) must have a fishing authorization, issued by the relevant authority for the waters in which the fishing activities take place, in accordance with regulation (EC) 1006/2008. This allows for control over the total number of foreign vessels fishing in the CS's waters. The agreement requires foreign vessels (for example, from Norway or Faeroes), when fishing in EU waters, to submit data (the “data required under the agreement concerned”) both to their national authorities and to the European Commission. EU vessels must transmit information on their catches to the national competent authority of the flag state, which forwards them to the European Commission, which then forwards them to the Norwegian authorities. In both cases, data should be transmitted on a weekly basis, or on a daily basis for vessels over 15 meters.

The EU's agreements with Norway, the Faeroe Islands, Iceland, and Greenland are described in more detail below.

NORWAY

BASIS OF THE AGREEMENT

The EU and Norway have extensive and long-standing cooperation on a range of fisheries issues of common interest. The EU's agreement with Norway is the most important fisheries agreement that the EU has; the European Commission indicates that it provides for shared access to nearly 750,000 tonnes of fish worth in excess of €2 billion² (EC 2009).

It comprises three agreements—the bilateral agreement for stocks in the North Sea and Atlantic; the trilateral agreement for Denmark and Sweden covering the Kattegat and Skagerrak (for which a new agreement was negotiated on October 24, 2013, providing for improved coastal state control [DG MARE 2013]); and the neighboring agreement for Swedish fisheries in Norwegian waters of the North Sea (DG MARE 2012), which includes fishing opportunities transferred from Norway to Sweden in accordance with the fisheries agreement between the two countries of 1976. The bilateral agreement with Norway is the agreement that is the subject of analysis in this case study. It provides approximately 35,000 tonnes of quota for various stocks to the EU, worth €76 million (first sale value of landings) (see table F.1).

¹ Relative stability is the principle by which the EU's quotas for various fish stocks are shared among Member States, according to a fixed allocation key based on their historic catches (reference period 1973–78). The allocation key has been adapted over the years to accommodate new Member States (EC 2009).

² A billion is 1,000 million.

The agreement is based on a Framework Agreement (OJ L 226, 29.8.1980, p. 48), adopted by Council Regulation (EEC) 2214/80 of June 27, 1980. The original agreement was for a period of 10 years; it is now renewable for 6-year periods, with tacit renovation unless expressly terminated (for which 9 months' notice must be given).

The agreement provides for the following:

- » Cooperation on the management and protection of marine resources. This is an important overarching objective of the agreement that ensures the parties work toward sustainable management;
- » The setting and sharing of TACs of the main joint stocks (allocation of quota to each party) in the North Sea and Norwegian Sea, between the EU and Norway. The stocks that are managed jointly in the North Sea are cod, haddock, plaice, saithe, whiting, herring, and mackerel. TACs are based on advice from the International Council for the Exploration of the Sea (ICES);
- » The possibility to fish some of each party's quota in other party's waters (for example, Norway can fish some of its mackerel quota in EU waters and vice versa). This is subject to negotiations between the parties; and
- » The exchange of quotas (subject to negotiations) for
 - » Jointly managed stocks, for example, the EU receives additional quota for plaice and whiting in Area IV and Norway receives additional quota for saithe in Area IV;
 - » Stocks that are shared but not jointly managed, such as shrimps and anglerfish in IV for the EU and blue whiting for Norway; and
 - » Nonshared (exclusive) stocks, for example, the EU receives additional Arcto-Norwegian cod and haddock in the Barents Sea (among others) from Norway and provides additional quota for sand eel, ling, horse mackerel, sprat, and stocks in Greenlandic waters to Norway.

The sharing of TACs for joint stocks is done according to an agreed percentage, based on "zonal attachment" (the spatial distribution of the stock over time and over its various life stages) for each species (see annex to this appendix). These allocations began in 1978–79, and the percentages have not changed over the years, but it is formally an annual agreement, allowing for potential changes in the future (Ervik 2013).

The exchange of quotas is subject to negotiations, and the stocks and quantities involved vary from year to year according to quota availability and the interests of each party and their respective fishing industries.

VALUE OF THE AGREEMENT

Instead of providing fishing opportunities in exchange for a financial contribution, the EU-Norway agreement provides the EU with fishing opportunities in Norwegian waters in exchange for fishing opportunities granted to Norway in EU waters. Quota exchanges provide access for the EU to cod, haddock, and saithe in Norwegian waters in the Barents Sea and access to Norway for Greenland halibut, shrimp, Atlantic halibut, and redfish from EU quotas in Greenland waters (which in turn are obtained for the EU

under the FPA with Greenland) and sand eel, blue whiting, and ling (among others) in EU waters. The aim is to achieve a balanced exchange.

In 2012, the EU received 30,786 tonnes of quota for various stocks in Norwegian waters (predominantly cod, saithe, haddock, anglerfish, Norway lobster, ling, plaice, whiting, and shrimps) in exchange for 83,017 tonnes of various species for Norway in the Community fishing zone (predominantly blue whiting, sand eel, sprat, horse mackerel, ling, and tusk) and Greenlandic waters (predominantly shrimp, Greenland halibut, and redfish) (table F.1).

In 2013, the EU received 32,879 tonnes of quota in exchange for 77,927 tonnes of quota for Norway (table F.1). The main change was the loss of sand eel quota for Norway in IV, additional blue whiting quota for Norway, and additional cod quota in the Barents Sea for the EU. In March 2013, an additional exchange was agreed to. Norway was granted 22,450 tonnes of sand eel in EU waters, ICES Area IV. The EU was granted 1,769 tonnes of Arctic cod in the Barents Sea, 250 tonnes of plaice, and 95 tonnes of ling in Area IV.

In addition to these quota exchanges, quotas are provided for Sweden and quotas are shared between the EU, Sweden, and Denmark in the Kattegat and Skagerrak.

The value of the fishing opportunities exchanged (based on the first sale value of the potential catch provided for by the quota exchanged) was €55 million for Norway and €69 million for the EU in 2012 and €59 million and €76 million, respectively, for 2013 (using 2012 average prices in Norway and the EU, respectively). However, if EU prices are applied to the quotas that Norway receives, the value of the opportunities for Norway would be €110 million in 2012 and €124 million in 2013.

Another aspect of importance to the EU is that the agreement provides not just quotas, but also access to Norwegian waters. The EU quota for cod in the North Sea includes the Norwegian zone, but without access to Norwegian waters, EU vessels cannot fish there. Cod in Norwegian waters are generally of larger size and better quality, so there is additional value to be gained by EU vessels from fishing their quota in Norwegian waters (Gibbs 2013).

Achieving a Balance

The basis for the exchange of quotas was established in 1983 when the EU and Norway agreed on a "balanced exchange." The mix of stocks exchanged varies each year, with the balance being maintained in terms of "cod equivalents." This refers to weight and implies the relative value of different fish species compared to cod. The cod-equivalents key was established in the 1980s and has not been updated since; therefore, it does not always reflect the market situation of the prices for all species (Ervik 2013).

If the key were to be updated, there would inevitably be winners and losers. In the absence of an agreed-upon process and period regarding how and when to update the key, the original key remains in place. Over the long term, it may be that gains and losses for each party balance each other out.

In connection with the European Economic Area (EEA) negotiations, separate negotiation sessions on the further development of bilateral cooperation in the fisheries area were conducted. In this agreement, Norway assumes obligations that have an impact

TABLE F.1. QUOTA EXCHANGES BETWEEN THE EU AND NORWAY FOR 2012 AND 2013

Species	ICES Area	Quotas Exchanged (tonnes)				Average First Sale Prices, 2012 (EUR/tome)				Potential Value (EUR million)			
		2012		2013		For Norway		For EU		For Norway		For EU	
		To Norway	To EU	To Norway	To EU	In Norway	In EU	(Norwegian prices)	(EU prices)	(Norwegian prices)	(EU prices)	(Norwegian prices)	(EU prices)
Saithe	IV, IIIa VIa	300 400	n.a. n.a.	n.a. 500	n.a. 2,550	1,028 n.a.	1,926 n.a.	0.31 0.41	0.58 0.77	n.a. n.a.	n.a. 0.51	n.a. 0.96	n.a.
I, II													4.91
Whiting	IV	n.a.	400	n.a.	n.a.	n.a.	n.a.	1,125	n.a.	0.45	n.a.	n.a.	n.a.
Blue whiting	II, IVa, VIa, VIIb, VII	30,000	n.a.	45,000	n.a.	313	945	9.39	28.35	n.a.	14.08	42.52	n.a.
Horse mackerel	IVb,c	3,550	n.a.	3,550	n.a.	912	1,209	3.24	4.29	n.a.	3.24	4.29	n.a.
Sprat	IV	10,000	n.a.	10,000	n.a.	373	468	3.73	4.68	n.a.	3.73	4.68	n.a.
Plaice	IV	n.a.	700	n.a.	n.a.	n.a.	1,429	n.a.	n.a.	1.00	n.a.	n.a.	n.a.
Sole	IV	50	n.a.	30	n.a.	10,461	10,660	0.52	0.53	n.a.	0.31	0.32	n.a.
Sand eel	IV	20,000	n.a.	n.a.	n.a.	277	895	5.54	17.90	n.a.	n.a.	n.a.	n.a.
Blue ling	IV, Vb, VI, VII, IIa	150	n.a.	150	n.a.	994	1,907	0.15	0.29	n.a.	0.15	0.29	n.a.
Ling	IV, Vb, VI, VII, IIa	6,140	n.a.	6,140	n.a.	1,507	1,787	9.25	10.97	n.a.	9.25	10.97	n.a.
IV	n.a.	850	n.a.	850	n.a.	1,787	n.a.	n.a.	n.a.	1.52	n.a.	n.a.	1.52
Tusk	IV, Vb, VI, VII, IIa	2,923	n.a.	2,923	n.a.	1,048	1,460	3.06	4.27	n.a.	3.06	4.27	n.a.
IV, Vb, VI, VII, IIa	n.a.	170	n.a.	170	n.a.	1,460	n.a.	n.a.	n.a.	0.25	n.a.	n.a.	0.25
Angelfish	IV	n.a.	1,500	n.a.	1,500	n.a.	4,208	n.a.	n.a.	6.31	n.a.	n.a.	6.31
Norway lobster	IV	n.a.	1,200	n.a.	1,000	n.a.	6,730	n.a.	n.a.	8.08	n.a.	n.a.	6.73
Shrimps	IV	n.a.	357	n.a.	357	n.a.	9,125	n.a.	n.a.	3.26	n.a.	n.a.	3.26
XIV, Va	2,900	n.a.	2,700	n.a.	3,637	9,125	10.55	26.46	0.00	9.82	24.64	0.00	
Arcto-Norwegian haddock	I, II	n.a.	1,350	n.a.	1,350	n.a.	1,497	n.a.	n.a.	2.02	n.a.	n.a.	2.02
Arcto-Norwegian cod	I, II	n.a.	16,309	n.a.	18,202	n.a.	2,519	n.a.	n.a.	41.08	n.a.	n.a.	45.85
Cod	NAFO I, XIV, Va	n.a.	n.a.	500	n.a.	1,436	2,519	n.a.	n.a.	0.72	1.26	n.a.	

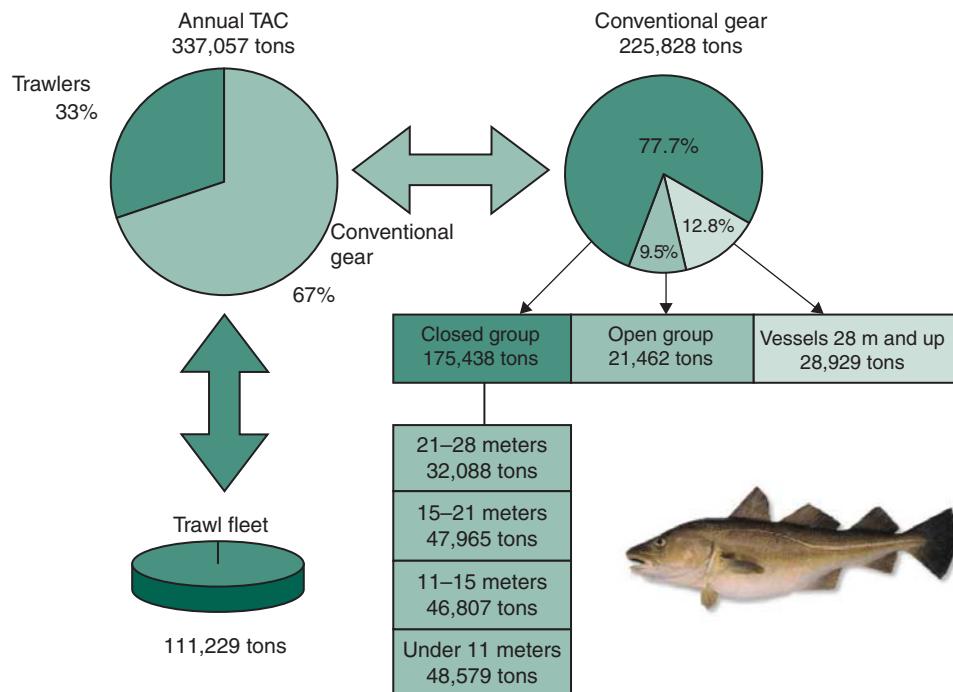
TABLE F.1. QUOTA EXCHANGES BETWEEN THE EU AND NORWAY FOR 2012 AND 2013

Species	ICES Area	Quotas Exchanged (tonnes)				Average First Sale Prices, 2012 (EUR/tonne)				Potential Value (EUR million)			
		2012		2013		2012		2013		For Norway		For EU	
		To Norway	To EU	To Norway	To EU	In Norway	In EU	In Norway	In EU	(Norwegian prices)	(EU prices)	(Norwegian prices)	(EU prices)
Greenland halibut	IIa, VI	350	n.a.	824	n.a.	3,108	3,709	1,09	1,30	n.a.	2,56	3,06	n.a.
NAFO I, XIV, Va	1,624	n.a.	1,150	n.a.	3,108	3,709	5,05	6,02	n.a.	3,57	4,27	n.a.	
I, II (bycatches)	n.a.	50	n.a.	50	n.a.	3,709	n.a.	n.a.	0,19	n.a.	n.a.	0,19	
Halibut	NAFO I, XIV, Va	150	n.a.	150	n.a.	4,869	10,716	0,73	1,61	n.a.	0,73	1,61	n.a.
Grenadier (bycatches)	NAFO I, XIV, Va	120	n.a.	120	n.a.	471	471	0,06	0,06	n.a.	0,06	0,06	n.a.
Redfish	XIV, Va	1,500	n.a.	800	n.a.	1,351	1,353	2,03	2,03	n.a.	1,08	1,08	n.a.
Combined quota	Vb, VI, VII	140	n.a.	140	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Others	IV, IIa (EU zone)	2,720	5,000	3,250	6,500	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Others (bycatches)	I, II	n.a.	350	n.a.	350	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SUB-TOTAL		83,017	30,786	77,927	32,879			55,10	110,10	69,06	52,89	104,27	71,03
Additional quotas exchanged in March 2013													
Sand eel	IV	n.a.	n.a.	22,450	n.a.	277	895	n.a.	n.a.	n.a.	6,21	20,09	n.a.
Arcto-Norwegian cod	I, II	n.a.	n.a.	n.a.	1,769	n.a.	2,519	n.a.	n.a.	n.a.	n.a.	n.a.	4,46
Plaice	IV	n.a.	n.a.	n.a.	n.a.	250	n.a.	1,429	n.a.	n.a.	n.a.	n.a.	0,36
Ling	IV	n.a.	n.a.	n.a.	n.a.	95	n.a.	1,787	n.a.	n.a.	n.a.	n.a.	0,17
TOTAL		83,017	30,786	100,377	34,993			55,10	110,10	69,06	59,10	124,36	76,02

Source: Norwegian Delegation and European Union Delegation, 2011a; Norwegian Delegation and European Union Delegation, 2013.

Notes: EU prices calculated from STECF (2013), for MS with quota allocated under the agreement, for each species, average 2012. Norwegian prices from Statistics Norway, except Grenadiers, for which EU price is used because Norwegian price was not available. Exchange rate used NKR 1 = €0.13375 (average for 2012) (source: www.oanda.com).

FIGURE F.1. QUOTA ALLOCATION BY NORWAY FOR COD AMONG DIFFERENT FLEET SECTORS, 2012



Source: Norwegian Ministry of Fisheries and Coastal Affairs.

on the size of the reciprocal quota exchanges involved in the annual quota agreements. In keeping with the provisions of the agreement, the EU was granted a larger share of the overall quota for Northeast Arctic cod in the Norwegian economic zone. However, Norway has to be compensated for this by means of quota allocations from the EU to Norway within the framework of the annual quota agreements.

The first sale value of potential landings (see above), based on applying EU prices to the quotas that the EU receives and Norwegian prices to the quotas that Norway receives, the EU receives greater benefit from the agreement (25–29 percent more). However, if EU first sale prices are applied to both EU and Norway's quotas, it appears that Norway receives greater value from the agreement due to the larger quantity of pelagic quota provided to Norway and the relatively greater increase in price of pelagic species in Europe since the time when the cod equivalents were established. The main difference is due to the higher prices in Europe compared to those in Norway for sand eel and blue whiting (three times), and shrimp (two and a half times).

The relative value of the agreement for each party varies considerably depending on the metric used to assess value and the way in which the metric is calculated (for example, first sale prices from one party or both parties). A detailed assessment of the value of the agreement could also take into account the costs of fishing for each party and other value-added benefits such as processing that derive from the catches made under the agreement. It is therefore important that, for non-market-based access mechanisms, the metric on which exchanges are calculated is agreed upon in advance, together with a process and periodicity with which it is to be updated.

Integration with CS Internal Quota Allocations

The quotas exchanged between Norway and the EU are within each party's overall quota allocation, from which they must also provide quota to their national fleets and for research purposes. An example is provided for Norway's cod quota in figure F.1. The quota provided to the EU (16,309 tonnes in 2012) is first deducted from the national allocation; quotas are then allocated to Norwegian trawlers (33 percent) and Norwegian "conventional" gear vessels (67 percent). The allocation to conventional gears is split into vessels larger than 28 meters, 15 to 28 meters, 11 to 15 meters, and under 11 meters and an open group (vessels not allocated with individual quotas [IQs]).

Responding to Industry Needs

The exchanges of quota have changed over the years in response to availability of stocks and industry demands. EU quotas for shrimp in Greenlandic waters that are provided to Norway are now a less important part of quota exchanges than previously because it is now less profitable for Norwegian vessels to fish shrimp in Greenlandic waters. Blue whiting was a larger part of the exchange earlier, and in 1980, Norway was granted 20,000 tonnes of mackerel compared to zero now (Ervik 2013).

In Norway, the fishing industry is an integral part of the Norwegian delegation for the negotiations, represented through the fishing organizations. The representatives must have an overview of the interests of the whole Norwegian fleet and be able to balance the requirements of the pelagic fleet against the demersal fleet (Ervik 2013).

In the EU, coordination with the fishing industry takes place within individual member states. In the case of Scotland, there is

close coordination with the fishing industry prior to the negotiations through a series of discussions with industry representatives (for both the pelagic and the whitefish sectors), to understand the stocks they are interested in obtaining and those that they wish to retain. Industry representatives are often present at the negotiations so that as negotiations progress, they can be consulted for their opinions on various negotiating proposals (Gibbs 2013).

A further level of coordination also takes place among EU member states such that a single European negotiating position is obtained and the formal negotiations only involve Norway and the EU. There are therefore various tradeoffs that must be made, both within member states (for example, pelagic quota for demersal quota) and between member states (for example, quota that one member state is interested in at the expense of quota that another is interested in). These tradeoffs must be acceptable to all member states, as the signed agreement must be subsequently ratified by the Council of Ministers (Gibbs 2013).

IMPLEMENTATION

The implementation of the agreement is simplified in that Norway adheres to EU fisheries conservation measures and the quota system (Miller 2013). The allocation of quotas to the parties is included in the EU's annual Council Regulation on fishing opportunities.

Enforcement of Management Measures

Both parties are responsible for ensuring their own vessels comply with the management rules and regulations, and both may take action, within their area of fisheries jurisdiction, to ensure compliance by the other party's vessels with the provisions of the agreement.

The EU and Norway have extensive cooperation that aims to harmonize management measures; monitoring, control, and surveillance (MCS); and enforcement systems. This includes standardized levels of control, monitoring and enforcement, certified weighing scales, standardized pumping systems for pelagics, a recently introduced electronic reporting system (ERS), vessel monitoring systems (VMS), actions under the fight against illegal, unregulated, and unreported (IUU) fishing, port state control, and licensing.

EU vessels fishing in Norwegian waters must adhere to Norwegian fisheries management regulations (and Norwegian vessels fishing in EU waters must adhere to EU regulations). These cover a suite of measures, including an obligation to land all catches (with certain exemptions), an obligation to change fishing ground and real-time closures if the intermixture of juveniles or level of bycatches exceed the relevant criteria, gear restrictions, and minimum fish and mesh sizes (Gullestad 2013) (the mesh size for whitefish is 10 millimeters larger than the EU minimum mesh size). The main objective is to promote a harvest pattern where recruits and undersized fish are protected and where unwanted bycatch is minimized. Norwegian regulations also require foreign fishing vessels to have a license (MFCA 2010a). The costs for EU vessels to comply with these regulations are not excessive, and the Norwegian authorities advise in advance of any changes to the regulations (Gibbs 2013).

Norwegian fisheries regulations are enforced through stringent controls in all Norwegian fishing waters. There are checks at sea,

TABLE F.2. COST OF FISHERIES MANAGEMENT IN NORWAY (1996)

Area of Expenditure	Cost (million \$)	Percent of Catch Value
Coast Guard, enforcement and surveillance	55.0	4.36
Ministry of Fisheries	3.7	0.3
Marine research	30.91	2.45
Regional administration	15.1	1.19
TOTAL	104.71	8.3

Source: Arnason et al. 1999, cited in Latif 2002.

when fish are landed, and when they are exported. Norway places an emphasis on control at sea, and the Norwegian Coast Guard plays an important role, carrying out inspections of vessels at sea and checking their catches against their log books. More than 1,800 inspections are carried out annually (MFCA 2010b). There is a program for the exchange of inspectors onboard vessels.

It is difficult to estimate the cost of fisheries management in Norway, as there are many authorities that have competence in control and enforcement, in particular, and the tasks are heavily integrated with other tasks. For example, a Coast Guard vessel may carry out both fisheries enforcement actions and rescue operations on the same voyage. However, a previous study indicated that the cost of fisheries management in Norway was \$105 million in 1996, which represented 8.3 percent of the catch value (table F.2).

There have been a number of instances of the Norwegian authorities taking action against an EU vessel. If a violation is detected, the Norwegian Coast Guard would take the vessel to port to be investigated. The normal outcome of a confirmed violation would be the application of a fine or prosecution, which may be against either the vessel owner or the skipper of the vessel (Ervik 2013).

The total number of EU fishing authorizations (637 in 2013) was approximately 10 percent of the size of the Norwegian fleet, but with a maximum of 327 EU vessels present in the Norwegian fishing zone at any one time, which is approximately 50 percent the number of Norwegian vessels larger than 15 meters (table F.3). The presence of foreign vessels requires extra MCS and at-sea inspections to be carried out by the Norwegian authorities and therefore increases the costs, in particular because control and enforcement of these vessels relies heavily on presence at sea.

The system is not exempt from illegal and unreported activities, and discrepancies exist between reported catches and official catch statistics used by ICES (see Analysis of Agreement: Implementation). In the case of an infraction by an EU vessel, if it were detected in Norwegian waters, the Norwegian authorities could take action. The normal procedure would be for the Norwegian Coast Guard to take the vessel to port to be investigated, and the vessel owner and/or skipper could be fined or prosecuted. If an infraction were detected on landing in an EU port or at a later date,

TABLE F.3. COMPARISON OF THE SIZE OF THE NORWEGIAN FLEET WITH THE NUMBER OF EU VESSELS AUTHORIZED TO FISH IN NORWEGIAN WATERS

Vessel Size Class	Norwegian Fleet (Number of Vessels) (2010)	Number of EU Vessels Authorized to Fish in Norwegian zone (2013)	
		Total Number of Fishing Authorizations	Maximum Number of Vessels Present at Any One Time
<15 m	5,631	n.a.	n.a.
15–28 m	325	637 (herring, 77; demersal, 80; industrial species, 480)	637 (herring, 57; demersal, 50; mackerel, 70; industrial species, 150)
>28 m	258		
TOTAL	6,214	637	327

Source: Fiskeridirektoratet, 2012; Council Regulation (EU) No 297/2013.

member state (flag state) authorities could take action through their legal mechanisms.

There have been EU infraction cases where evidence has come to light that landings have exceeded declared catches; similar situations have also occurred in Norway. However, such occurrences are becoming less frequent as people realize the importance of accurate data, particularly where there is a commitment to follow scientific advice in setting TACs.

Exclusivity

The agreement does not contain a specific exclusivity clause, but EU vessels are only able to access Norwegian waters under the agreement, and not outside of it. The respective fishing industries of the two parties may be in contact with each other, but they cannot directly trade or lease quotas individually or on a company-to-company basis. Quota transfers and exchange are regarded as national issues, with negotiations taking place at the government-to-government level. The national authorities (European Commission and member states, or Norwegian Ministry of Fisheries and Coastal Affairs) then allocate quota to the industry (Ervik 2013).

Norway allocates its quotas to individual vessels as individual quotas and to groups of vessels as maximum quotas. In the latter, the fishery is stopped when the total quota is reached, regardless of each vessel's individual catch (MFCA). Because Norwegian quotas are linked to vessels, vessels cannot be chartered to fish unused quota.

The EU's quotas are allocated to member states under the principle of relative stability. Member states then allocate quotas to the fishing industry according to their national priorities and policy objectives, which may include individual transferable quotas (ITQs) (within the member state or fleet segment), IQs, and pool quotas, where groups of vessels fish against an overall quota. Inside the EU, there is the possibility to swap quotas between member states. There have been some instances of EU vessels reflagging to Norway to access Norwegian quotas, but Norwegian rules on ownership are strict and such cases are the exception rather than the norm (Gibbs 2013).

Maintaining national control and ownership of quota is important to the parties, and there is a concern that allowing vessels to trade quota directly would result in a loss of sovereignty and loss of benefits from the catching sector.

Obligation to Land Catches

There is no requirement to land catches into coastal state (Norwegian) ports, unlike some FPAs with southern countries. Likewise, there is no obligation for Norwegian vessels to land only into Norwegian ports, nor for them to land only into EU ports if fishing in EU waters. However, under the North East Atlantic Fisheries Commission (NEAFC) Port State Control measures, vessels must provide advance notification of their intention to land fish and the flag state of the vessel must confirm that the vessel had sufficient quota, authorization to fish in the area where the catches were taken, and that VMS records confirm the presence of the vessel in the relevant area (NEAFC 2013).

Cooperation and Data Sharing

The agreement includes joint technical measures and covers issues relating to control and enforcement. Norway and the EU cooperate with respect to information and inspections, with involvement of Norwegian inspection services in the operation of specific control and inspection programs, exchange of officials as observers in relation to control and enforcement, and exchange of information on landings by vessels of either party and of third countries in their ports (Norwegian Delegation and European Union Delegation 2011a). This has helped strengthen cooperation between the parties and improved the effectiveness of enforcement activities.

Data sharing and submission of catch information by vessels is not explicitly included in the Framework Agreement but is provided for in subsequent bilateral agreements between the EU and Norway. Requirements for foreign vessels are specified in Norwegian fisheries regulations, as well as in the record of annual fisheries consultations (for example, Norwegian Delegation and European Union Delegation, 2011a). In particular, the Norwegian “reporting obligation” requires foreign vessels to report what catches they have onboard when they enter the Norwegian zone, report weekly what catches they have made, and report when they leave the Norwegian zone and what catches they have taken onboard since their last report (MFCA 2010a).

Monthly catch statistics are provided by the parties for catches made by their own vessels. No issues relating to the EU's submission of catch data were reported by Norway (Ervik 2013), indicating that the EU vessels comply with catch reporting requirements. The introduction of an electronic reporting system with harmonized

TABLE F.4. VALUE OF FISHING OPPORTUNITIES UNDER THE EU-FAEROES AGREEMENT IN 2010

	Quotas from EU to Faeroes (t)	Quotas from Faeroes to EU (t)	Price (EUR/t) ^a	Value of Fishing Opportunity for Faeroes (EUR million)	Value of Fishing Opportunity for EU (EUR million)
Sand eel	2,500	n.a.	895	2.24	n.a.
Herring	1,110	n.a.	660	0.74	n.a.
Blue whiting	9,000	2,700	945	8.51	2.55
Ling and blue ling	350	2,700	1,787	0.63	4.83
Mackerel	4,536	3,765	1,882	8.54	7.09
Sprat	9,160	n.a.	468	4.29	n.a.
Horse mackerel	2,000	n.a.	1,209	2.42	n.a.
Other species	150	760	n.a.	n.a.	n.a.
Northern prawn	1,335	n.a.	9,125	12.18	n.a.
Greenland halibut	225	n.a.	3,709	0.84	n.a.
Redfish	385	1,600	1,353	0.52	2.16
Cod and haddock	n.a.	500	2,008	n.a.	1.00
Saithe	n.a.	2,425	1,926	n.a.	4.67
Flatfish	n.a.	300	1,429	n.a.	0.43
TOTAL	30,751	14,750	n.a.	40.88	22.73

Note: t = tons.

^aBased on EU average landed values for 2012, taken from analysis for EU-Norway agreement; cod and haddock is average price for cod and haddock; herring and mackerel are the average for Belgium, Denmark, Germany, the Netherlands, United Kingdom, and Sweden.

electronic logbooks mean that catches will be reported in as near real time as possible.

FAEROE ISLANDS

BASIS OF THE AGREEMENT

The fisheries agreement with the Faeroe Islands is on the basis of a Framework Agreement signed in 1980 (Council Regulation [EEC] 2211/80 of June 27, 1980, OJ L 226 p. 11). The initial agreement was for 10 years, subsequently extended for 6-year periods with tacit renovation unless expressly terminated (for which 9 months' notice must be given).

The agreement is based on the same principles as the agreement with Norway but is less extensive and covers fewer stocks. It provides for the reciprocal exchange of stocks and the sharing of the Western mackerel stock. The agreement also provides for discussions on monitoring and control and regular exchange of statistics.

VALUE OF THE AGREEMENT

The EU receives quota for whitefish, blue whiting, and mackerel in exchange for quotas of industrial species (mackerel, horse mackerel, pout, sprat, sand eel, and so on), whitefish, and fish in Greenlandic waters. In 2010, the EU received 14,750 tonnes of fish (4,825 tonnes of cod, haddock, saithe, redfish, and flatfish and 9,925 tonnes of blue whiting, ling, blue ling, mackerel, and other species) in exchange for 30,751 tonnes for Faeroes—28,806 tonnes

of mainly industrial species in EU waters (sprat, blue whiting, mackerel, sand eel, horse mackerel, herring, and ling) and 1,945 tonnes of fish in Greenlandic waters (Northern prawn, Greenland halibut, and redfish via the FPA with Greenland) (table F.4).

The quota received by the EU was worth €22.7 million (first sale value of catch). Using EU prices, the value of the quota received by the Faeroes was €40.9 million. However, as seen with the analysis of the EU-Norway agreement, if Faeroese prices were used, the value would likely be less and more in line with the value of the EU opportunities.

IMPLEMENTATION

Fishing opportunities have not been exchanged under the agreement with Faeroes since 2010, due to the ongoing dispute over mackerel and herring quotas.

During coastal states' consultations in 2009 over joint management of the Northeast Atlantic mackerel stock (between Norway, EU, Faeroe Islands, and Iceland), the Faeroe Islands requested a higher share of the TAC and finally withdrew from the existing international arrangement, setting a unilateral quota for its vessels of 85,000 tonnes, about three times their previous share. Since 2009 there have been no internationally agreed catch limits on the Northeast Atlantic mackerel stock (Weissenberger 2013). Iceland and Faeroes cite a shift in mackerel migration farther into their waters as the reason for requesting a renegotiation in the distribution of the TAC among the coastal states.

TABLE F.5. VALUE OF FISHING OPPORTUNITIES UNDER THE EU-ICELAND AGREEMENT

Quotas from EU to Iceland	Quotas from Iceland to EU	Reference Price (EUR/t) ^a	Value of Fishing Opportunity (EUR/t)
Capelin	30,000	n.a.	190
Redfish	n.a.	3,000	1,700

^aReference prices established in the Protocol to the EU-Greenland FPA.

The Atlanto-Scandian Herring (Norwegian spring-spawning herring) was managed through arrangements agreed to by the five coastal states (EU, Russian Federation, Norway, Iceland, and the Faeroe Islands) since 2007. During consultations in 2012 for 2013 fishing possibilities, the Faeroe Islands requested a revision of the existing catch allocation proportions (which accorded 5.16 percent or 31,000 tonnes to the Faeroes) and in March 2013 set a unilateral national catch limit of over 105,000 tonnes (Weissenberg 2013). These disputes have resulted in a suspension of quota sharing under the fisheries agreement.

ICELAND

BASIS OF THE AGREEMENT

The fisheries agreement with Iceland is on the basis of a Framework Agreement signed in 1993 (EC 1993) for a period of 10 years. The agreement was then renewed for two 6-year periods to 2015 and provides for subsequent tacit renewal unless 9 months' notice is given.

VALUE OF THE AGREEMENT

The fishing opportunities provided under the agreement are considerably less extensive than those with Norway and the Faeroe Islands, providing for the provision of 3,000 tonnes of redfish quota for the EU in exchange for 30,000 tonnes of capelin quota to Iceland, to be fished in Greenlandic or Icelandic waters. The volumes of quota to be exchanged are agreed upon on an annual basis following bilateral consultations.

The value of the fishing opportunities provided to the EU are €5.1 million, and the value of the fishing opportunities provided to Iceland are €5.7 million (based on the value of the potential catch using reference prices from the EU-Greenland FPA) (table F.5). The distribution of the benefits from the agreement are therefore fairly equally shared between the parties.

IMPLEMENTATION

There are various restrictions on when and where EU vessels may fish in Icelandic waters, making it difficult for them to catch their full quota (DG MARE, no date). This therefore limits the potential value that the EU can obtain from the agreement.

The agreement with Iceland contains an additional clause that is not present in the Norway and Faeroes agreements, specifically

obliging each party to provide information to the other concerning landings of any fish caught under the agreement. This is likely to be because the Iceland agreement was developed more than a decade later than the Norwegian and Faeroe Islands agreements, by which time there was a greater awareness of the type of provisions needed for such agreements.

Fishing opportunities have not been exchanged under the agreement with Iceland since 2011, due to the ongoing dispute over mackerel quotas. During coastal states' consultations in 2009 over joint management of the Northeast Atlantic mackerel stock (between Norway, EU, Faeroe Islands, and Iceland), Iceland requested a higher share of the TAC and subsequently set a unilateral quota for its vessels of 130,000 tonnes (Iceland's catches were around 300 tonnes in 2005 and gradually increased to 116,000 tonnes in 2009). Since 2009, there have been no internationally agreed catch limits on the Northeast Atlantic mackerel stock (Weissenberger 2013). Iceland and Faeroes cite a shift in mackerel migration farther into their waters as the reason for requesting a renegotiation in the distribution of the TAC among the coastal states.

GREENLAND

BASIS OF THE AGREEMENT

The agreement between the EU and Greenland is an FPA, providing fishing opportunities to the EU in return for a financial contribution, in contrast to the other northern agreements, which are for reciprocal fishing opportunities. The first agreement was established in 1985 after Greenland withdrew from the then-European Communities to enable the Community to retain its traditional fishing activities.

The current FPA runs from 2013 to 2018 (6 years), and the current protocol to the agreement was signed in 2012 for the period of January 1, 2013 to December 31, 2015 (3 years) (OJ L 293, 23.10.2012). The protocol establishes indicative levels of fishing opportunities available to the EU and provides for a joint committee to establish the concrete level of fishing opportunities available for the EU in Greenlandic waters each year. The allocation of quotas is submitted to the EU's annual TAC and quota regulation.

VALUE OF THE AGREEMENT

The agreement provides the EU with access to 85,765 tonnes of fish, predominantly capelin (60,000 tonnes) (part of which has been provided to Iceland through the agreement with that country), but also significant volumes of shrimp, Greenland halibut, redfish, and cod (table F.6). Some of these quotas are subsequently transferred to Norway and the Faeroes under the agreements with those countries. The value of the indicative fishing opportunities provided were €77.7 million (potential value of landings of the quotas, using reference prices in the protocol); average revenues from the agreement were €45.6 million (EP 2012).

In the event of quota not being available for the EU in a particular year, Greenland is required to compensate the EU in subsequent years by the equivalent corresponding fishing opportunities or in the same year by other fishing opportunities. If no compensation is agreed on, the financial value of the agreement is adjusted proportionately.

The financial contribution provided by the EU is €15.1 million (including a financial reserve of €1.5 million for potential

TABLE F.6. FISHING OPPORTUNITIES, FINANCIAL CONTRIBUTION, AND SHIP OWNER CONTRIBUTIONS FOR THE CURRENT PROTOCOL TO THE EU-GREENLAND FPA

Species	Area: GRE Waters of ...	Indicative Level of Fishing Opportunities (tonnes)		Reference Price (EUR/t)	Fishing Authorization Fee (EUR/t)	EU Contribution ^a (EUR/t)	Ship owner Contribution as Percent of Total ^b
		Opportunities (tonnes)	Reference Price (EUR/t)				
Snow crab	NAFO 1	250	5,500	120	962.5	962.5	11.1
Cod	NAFO1 and XIV	2,200	1,800	90	315	315	22.2
Atlantic halibut	V and XIV	200	4,100	217	717.5	717.5	23.2
Atlantic halibut	NAFO1	200	4,100	217	717.5	717.5	23.2
Grenadiers ^c	V and XIV	100	2,204	n.a.	385.7	385.7	n.a.
Grenadiers ^c	NAFO1	100	2,204	n.a.	385.7	385.7	n.a.
Capelin	V and XIV	60,000	190	5	33.25	33.25	13.1
Northern prawn	V and XIV	7,500	2,500	90	437.5	437.5	17.1
Northern prawn	NAFO1	3,400	2,300	80	402.5	402.5	16.6
Greenland halibut	NAFO 1, S of 68N	2,500	3,500	129	612.5	612.5	17.4
Greenland halibut	V and XIV	4,315	3,500	129	612.5	612.5	17.4
Redfish (pelagic)	NAFO 1F, V, and XIV	3,000	1,700	53	297.5	297.5	15.1
Redfish (demersal)	NAFO 1F, V, and XIV	2,000	1,700	53	297.5	297.5	15.1
TOTAL	n.a.	85,765	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Protocol to the EU-Greenland FPA; author's calculations.

Note: t = tons.

^aEU financial contribution per tonne of species = reference price \times 17.5 percent.

^bFishing authorization fees paid by ship owners, if authorizations for the full level of quota were taken out, expressed as a percentage of the total revenue for Greenland (fishing authorization fees plus EU contribution).

^cBycatches only; therefore, there are no fishing authorization fees.

additional fishing opportunities). This represents 17.5 percent of the reference price for the species, as set out in the protocol. Greenland has full discretion regarding the use of the financial contribution. An additional €2.7 million is provided for the support and implementation of Greenlandic sectoral fisheries policy. The use of these funds is determined by a multiannual sectoral program agreed to by the joint committee, as in the southern FPAs.

According to the ex-post evaluation of the previous protocol to the EU-Greenland FPA, approximately half of the FPA-linked financial contribution was spent on fisheries research to improve the sustainability of the Greenland fisheries sector. A significant part of the budgetary support appeared to have been used for investments rather than current expenditures (for example, buying a research vessel) (EP 2012). The sector support program, implemented by the Ministry of Fisheries, Hunting and Agriculture, was found to have achieved positive results on measures related to fisheries research,

training of staff, and fisheries control, but the FPA was not effective in delivering significant benefits to the local economy, such as investments in joint ventures, increased onboard employment, or higher numbers of landings (EP 2012).

EU vessel owners pay a license fee per tonne according to the species. This ranges from 11 percent (snow crab) to 23 percent (Atlantic halibut) of the total financial contribution (EU contribution plus ship-owner license fees), depending on the species (table F.6). This compares with 35 percent that is paid by EU ship owners under the southern tuna FPAs (Walmsley et al. 2007), but the average of 15 percent is in line with the ratio of ship owner to public contribution in other mixed FPAs (EP 2012). With a population of 57,000, Greenland therefore receives a minimum of €312 per person (financial contribution plus sectoral policy support) and up to €334 per person (if the maximum possible fishing authorizations are taken out by ship owners).

The agreement with Greenland provides a benefit-to-cost ratio to the EU of 1.3, with value-added benefits (€20.3 million per year) equal to approximately 45 percent of catch revenues (EP 2012). The benefits to Greenland comprise the financial contribution, payment for sectoral support, and ship owner contributions (€15.8 million per year under the previous protocol). The benefits therefore weigh slightly in the advantage of the EU. The cost of administration for the agreement is €93,000 per annum for the EU (EP 2012).

IMPLEMENTATION

Enforcement of Management Measures

EU vessels operate under the applicable laws and regulations in Greenland and the Kingdom of Denmark when in the Greenlandic EEZ (article 9 of the protocol). To facilitate this, EU fishing vessels are provided with an English-language version of the Greenlandic fisheries legislation concerning catch reporting, control, technical conservation measures, and observer scheme.

Vessels are required to use a vessel monitoring system (VMS), with transmissions to the Fisheries Monitoring Centre (FMC) of the flag state on an hourly basis. The FMC of the flag state must automatically transmit the position messages of the vessel to Greenland's FMC when the vessel is in Greenlandic waters.

The Protocol provides for in-port and at-sea inspections to be carried out on EU vessels.

Exclusivity

The Greenland FPA includes an exclusivity clause, which means that all EU fishing vessels' activity within Greenlandic waters must be carried out only under the FPA—Greenland cannot issue fishing authorizations to EU vessels other than under the protocol to the FPA. This means that all EU vessels are subject to the same regime and requirements when in Greenlandic waters.

In the specific case of Northern prawn, quota transfers may take place between EU and Greenlandic vessels on a company-to-company basis, to allow East Greenland quota to be fished in areas west of Greenland (protocol, article 1, paragraph 3). This is the only situation where company-to-company quota transfers are provided for in the agreement.

Obligation to Land Catches

There is no obligation on EU vessels to land catches in Greenlandic ports.

Cooperation and Data Sharing

Chapter III of the annex to the protocol specifies reporting requirements. Vessels must keep a logbook of their operations indicating all quantities of each species caught and kept on board or discarded above 50 kilograms (live weight equivalent). The logbook must be completed on a haul-by-haul basis, and the information must be transmitted daily (electronically) to the Greenlandic authorities via a national competent authority of the flag member state.

Use of Fishing Opportunities

The ex-post evaluation of the previous protocol (2007–12) showed that 63 percent of available fishing quota was utilized by EU vessels; 90 percent of the available quotas were utilized when including

transfers to other third countries (Norway, Iceland, and Faeroe Islands) (EP 2012).

Greenland was not able to provide all of the opportunities specified in the protocol on nine occasions over the period 2007–11, in particular for capelin. The system of offering alternative fishing opportunities worked well for small fluctuations in quota availability but was unable to cope with the “debt” for larger quantities of capelin (EP 2012).

Benefits from the Agreement

Average revenues (based on fish prices in Iceland) from the agreement were €45.6 million per year, 70 percent of which went to EU vessels and 30 percent to third-country vessels. Net value-added benefits were estimated at €20.3 million per year, giving a benefit-to-cost ratio of 1.3, in line with other “mixed” agreements (EP 2012).

For Greenland, the agreement generates income from resources that might otherwise not be exploited. However, the previous protocol was not effective in delivering significant benefits to the local economy, such as investments in joint ventures, onboard employment, or higher amounts of local landings (EP 2012).

ANALYSIS OF AGREEMENTS

This section provides an analysis of the agreements in terms of

- » the negotiating procedure;
- » content of the agreements;
- » implementation; and
- » outcomes, including the sharing of costs and benefits between the parties.

NEGOTIATING PROCEDURE

The northern agreements are based on the exchange of reciprocal fishing possibilities, the objective being to establish a “mutually satisfactory balance in their reciprocal fisheries relations.” This is in contrast to the EU’s southern FPAs and the FPA with Greenland, in which fishing possibilities are provided to the EU in exchange for a financial contribution.

The costs of negotiating the agreements are low; they were initially established for 10-year periods and are subsequently renewed for 6-year periods, unless notice is given. This minimizes the transaction costs to the EU and the partner countries of regularly having to renegotiate the agreements. For the EU-Norway agreement, there is an annual requirement to negotiate and agree on the volumes of quotas to be exchanged each year. This is done alongside the annual negotiations that must be carried out between the parties for setting and sharing of joint TACs. Sharing of joint TACs is based on percentage allocations, which formally are subject to annual negotiations but in practice have been stable.

Two rounds of negotiations are usual (one in Bergen and one in Brussels) to set TACs and other regulations and management plans concerning shared stocks (OECD 2011). Although it does represent additional work to come to these annual agreements on quota exchanges, it is not a significant additional burden over and above the negotiations that must be carried out on TACs and their

BOX F.1. EXAMPLE OF NEGOTIATING PROCESS: EU-NORWAY AGREEMENT, 2013

In-year discussions took place in Kirkwall, Orkney, for 3 days in June 2012, to discuss the long-term management plans for cod, saithe, and herring. More than 30 delegates were present, including representatives from seven EU member states. The meeting followed on from a scientific seminar held in Svalbard on long-term management plans for these species.

Three rounds of talks followed on how shared stocks would be fished. The first took place in late 2012, the second concluded on December 7, 2012, without agreement (Marine Scotland 2012), and the third round successfully concluded in January 2013, with agreement on 2013 quota decisions for North Sea cod, haddock, whiting, plaice, saithe, and herring and the setting of a catch limit for mackerel, in the absence of agreement with Iceland and Faeroe Islands (Marine Scotland 2013).

division that are required as part of the parties' responsibilities as coastal states under UNCLOS.

In 2010 and 2011, negotiations with Norway were concluded in December with two rounds of negotiations. However, despite the agreement being in place for over 30 years and general good relations between the two parties, negotiations can stall. Three rounds of negotiations were needed in 2012–13 (see box F.1), and in 2009, negotiations stalled over how much of the Norwegian mackerel quota they would be allowed to fish in the EU zone. Norway wanted 125,000 tonnes (down from 153,000 tonnes), but the EU did not want to go beyond 80,000 tonnes. An agreement was not reached prior to the December Council of Ministers meeting, which meant TACs for joint North Sea stocks had to be set even though they may not have coincided with the final EU-Norway deal (Fishnewseu 2009).

Industry is involved in identifying the fishing opportunities of interest to them. Coordination takes place between the CS and EU and member states' fisheries authorities and industry, but the negotiation is centralized and takes place on a government-to-government level. It is not possible for vessels to access quota directly, such as through leasing or company-to-company swaps between EU and Norwegian companies. This is due to a concern that allowing direct transfers might result in a loss of the benefits that stem from the catching sector.

The use of cod equivalents as the basis for achieving the balance in fishing opportunities means that the actual value of the catch, and the profit, deriving from those opportunities may not be balanced and may not reflect current market prices. However, the assessment of relative value to each party varies considerably according to the metric used (for example, EU prices, CS prices). The real value of the opportunities needs to take into account the prices achieved as well as the cost of fishing and other added value benefits, such as processing that may be linked to the agreements.

The negotiation of reciprocal fishing possibilities necessitates the involvement of the departments responsible for fisheries (for example, Ministry of Fisheries, or DG MARE on behalf of the

Council of Fisheries Ministers in the case of the EU). In contrast, in the southern agreements, because of the financial contribution, the Ministry of Finance is often involved (explicitly or implicitly) in the negotiations on the side of the CS. This can result in fisheries access being traded off against other concerns and agreements being made that are not always based on rational exploitation of the stocks. However, the negotiation of sharing agreements is not exempt from politics, and it is important in all agreements to establish fundamental principles that commit both parties to sustainable levels of exploitation and practices.

FRAMEWORK AND CONTENT

Many of the stocks for which access is provided to the EU under the northern agreements are stocks that the EU also fishes in its own waters, and TACs are set jointly or under international coastal states arrangements. For these stocks, the EU is fishing against its own quota, and the important aspect of the agreement is to provide access to the CS waters, to be able to fish their own quota. This is similar to the access provided to CS waters under the tuna FPAs, where the EU vessels are fishing against EU quota provided by the Regional Fisheries Management Organisation (RFMO).

In the northern agreements, both parties have the same responsibilities—that is, to determine the TACs for stocks in their fisheries jurisdiction (including cooperating to determine TACs for joint stocks where appropriate) and to determine and agree on the allotments of fishing possibilities for the other party, to achieve a balance. Both parties also determine other necessary conservation and management measures.

The northern agreements and the Greenland FPA all take place within the coastal states' national fisheries management framework. Foreign fishing vessels must comply with the national legislation and management measures when fishing in the waters of the other party and are therefore subject to the same rules and regulations as the vessels of the CS. This is in contrast to the southern agreements, where technical measures, closed seasons, and so on can be specified in the protocol to the FPA—and are therefore the subject of negotiations—and do not necessarily correspond with the national fisheries regulations of the CS. This is more of a concern in the “mixed” southern agreements for demersal and inshore stocks than in the tuna agreements, for which catching activities are regulated by the appropriate RFMO.

The reciprocal nature of the northern agreements reduces the incentive for the CS to provide access to stocks where a surplus does not exist. This is because if they cannot provide access to one stock (for example, if the TAC has been reduced or set to zero), there is no financial contribution to be reduced; instead, other fishing opportunities will be offered. In some cases, fishing opportunities may be relinquished on an *ad hoc* basis, without compensation (see box F.2). Even in the Greenland FPA, the financial contribution is not reduced if the agreed fishing opportunities cannot be provided; instead, the EU is compensated in subsequent years or with quota for other species in the same year.

If a similar situation arose in a southern FPA (that is, the coastal state denies access to a resource for the EU on the basis that the stock is overexploited or no surplus exists), the financial contribution paid for access would be correspondingly reduced (although

BOX F.2. LOSS OF REDFISH FISHING OPPORTUNITIES WITHOUT COMPENSATION

Norway made a commitment to facilitate the enlargement of the EU in 1986 (accession of Spain and Portugal) by allocating 1,500 tonnes of redfish north of 62°N outside the balance of the bilateral fisheries arrangement. ICES advice for 2012 was that there should be no directed fishery on this stock and that only bycatches should be allowed north of 62°N. As a result, the EU accepted (as an ad hoc measure for 2012) that its fishing possibilities for redfish should be limited only to bycatches (Norwegian Delegation and European Union Delegation 2011a).

This demonstrates that even where an agreement for the exchange of certain stocks or quotas exists, it is possible for these commitments not to be realized (without compensation) if this runs counter to scientific advice and management measures.

not the payment for the development of fisheries policy in the coastal state). This means that there is an incentive for the coastal state to provide access to stocks, even if no surplus exists (otherwise they risk reduced financial contribution), a situation that does not occur in the northern agreements.

The northern agreements and the FPA with Greenland do not include a requirement to land catches in the CS's ports. Vessels are therefore free to land their catches in the economically most favorable port for their fishing patterns and catches.

The northern agreements and the FPA with Greenland all contain an “exclusivity” principle (either explicitly or in associated agreements) whereby foreign vessels can only access the CS's waters under the agreement and not outside it. This is the same as the southern FPAs.

The balance of exchange of quotas under the northern agreements is determined according to cod equivalents, which have not been updated since the agreements were established and therefore may not reflect current market values. However, the metric used to assess value makes a large difference to the relative value for each party, and it appears that the value to each side is relatively balanced in terms of catch value.

IMPLEMENTATION

The northern agreements and the Greenland FPA are conducted as an integral part of the fisheries management framework in the CSs. The CSs tend to have well-developed fisheries management and governance systems in place, and fisheries are an important part of the economies of all the CSs in the northern agreements. As a result, the northern agreements tend to be more demanding than the southern FPAs in terms of “good behavior” by fishers with respect to accurate catch data, selectivity measures, and no discarding.

The effective fisheries management frameworks in place in the northern CS are backed up by VMS, MCS and enforcement activities, and electronic catch reporting, with at-sea inspections and port state controls. In Norway, fisheries management cost an estimated \$105 million in 1996 (for national and foreign vessels), or 8.3 percent of catch value (Arnason et al. 1999; cited in Latif 2002). The

BOX F.3. IMPROVING REPORTED CATCH STATISTICS FOR COD

The quality of the commercial landings data for cod deteriorated in the 1990s following reductions in the TAC without associated control of fishing effort. ICES indicates that estimated total removals from the stock varied between 0.9 and 2.0 times the recorded landings over the period 1993–2005 (average, 1.3 times). While it is assumed that these unaccounted-for removals originated mostly from fishing activities (discards and misreporting and underreporting catches), changes in natural mortality may also have had an influence.

The mismatch between reported and actual landings is now estimated to be decreasing. In particular, the incidence of under-reporting landings in the Scottish fleet fishing for cod has declined significantly since 2003 and is likely to have been extremely low since 2006 (in large part due to the implementation of the Scottish Conservation Credits scheme); the Danish Directorate of Fisheries also estimates that the placement on the market of illegal fish does not occur on a large scale (ICES 2013).

range of enforcement and MCS measures in place provide a strong disincentive against illegal fishing and misreporting of catches, helping ensure responsible behavior on the part of fishers, and result in rational exploitation of the stocks for long-term sustainability. This is backed up by a commitment to sustainability by the parties, including following scientific advice in setting TACs, and a growing realization by the fishing industry and that responsible behavior and accurate reporting of catches reaps rewards.

Agreements are an integral part of CSs' fisheries management frameworks. All stocks involved are managed through TACs and quotas, and the quotas provided to foreign vessels under the agreements are part of the CSs' overall quotas, within which the CSs' fleets also fish. This applies both to national large-scale and small-scale fleets.

Agreements are not exempt from problems of inadequate reporting and exchange of information on catches. The minutes from the meeting between the EU and Norway to agree quotas and quota exchanges for 2012 noted “a recurring problem in relation to discrepancies between reported official catches or landings and catch statistics utilized by ICES. The discrepancies are assumed to be due to misreporting, inadequate accounting of discards, by-catches and other factors contributing to the total out-take of the stocks” (Norwegian Delegation and European Union Delegation 2011a).

This is a problem that is highlighted in the negotiations on an annual basis and is not exclusive to the agreement but relates to the wider fisheries context and in particular the management regime under the EU's common fisheries policy (CFP), which has resulted in high levels of discards. For cod, the discrepancy was up to 100 percent of the reported landings (see box F.3). This is a situation that is improving as a result of a suite of management and enforcement measures (for example, fully documented fisheries, electronic reporting, improved selectivity, real-time closures, and sales notes). Such measures are not dependent on the agreement, but the cooperation between the EU and Norway has played a role in developing these measures, including efforts to harmonize management

measures in the North Sea and Norway's pressure on the EU to eliminate discards.

There are extensive data exchange requirements under the agreements, including a recently introduced requirement for electronic reporting systems under the agreement with Norway (with the first agreement signed on February 23, 2010). These requirements are complied with (Ervik 2013).

OUTCOMES

Sharing of Costs and Benefits

The exchange of quotas in the northern agreements provides each party with quota for stocks in which they have an interest, informed by the involvement of fishing industry representatives in the negotiations. The costs of negotiating and implementing the agreements are shared in a similar manner between the parties, since both parties have reciprocal responsibilities.

The exchange of quotas is balanced according to cod equivalents, the value of which are not updated annually and therefore do not necessarily reflect current market values. As a result, the actual value of potential catches under the agreements may not be equally shared. The indicator with which value is assessed can result in large differences in apparent value to each party, but in practice, the value appears to be reasonably equally shared in the reciprocal agreements. Greenland receives a minimum of 19.4 percent of the reference value of the fishing possibilities from the agreement and up to 24.5 percent depending on the opportunities taken out by ship owners under the agreement.

The cost of implementing the reciprocal northern agreements are not quantified but can be assumed to be equally shared, since both parties have the same responsibilities under the agreements. In the EU-Greenland FPA, the cost of implementing the agreement falls predominantly on Greenland (for MCS, enforcement, and so on), with only negotiating costs and €93,000 per year in administration costs for the EU.

Sustainability of Stocks

The status of a number of stocks in the North Sea is improving, but many are still fished beyond sustainable levels. The latest ICES report of the Working Group on the North Sea and Skagerrak (WGNSSK) states that fishing mortality for most demersal stocks in the North Sea has been declining significantly, leading to progressive improvements of abundance for a number of stocks. Nevertheless, recruitment remains poor for most stocks and there are still some stocks that have low or decreasing abundance (ICES 2013).

The stock status is not a result of the agreements but is the result of a range of management and enforcement measures implemented over recent years. Nevertheless, the fact that the agreement with Norway operates within the overarching management framework for the stocks, that vessels fish in accordance with CS management measures, and that the cooperation provided for under the agreement has contributed to harmonizing and improving management measures in the North Sea have contributed to the improving situation of the stocks that is observed today.

There are concerns over sustainability of some stocks in Greenlandic waters, with cod, Greenland halibut (in east Greenland),

and redfish (deep pelagic stocks) subject to unsustainable levels of exploitation. However, other stocks are considered to be subject to sustainable management. All fisheries reported low bycatch rates and no known negative ecosystem impacts (EP 2012).

Negotiation and cooperation between the parties takes place through annual negotiations on fishing possibilities, and in general relations are good. However, the disputes with Iceland and the Faeroe Islands over mackerel and herring quotas demonstrate how easily seemingly effective agreements can come undone and overfishing can occur, contrary to scientific advice.

Profitability of Fisheries

After two consecutive years of declining profitability, the EU fleet made a recovery in 2010, moving from an overall loss-making position to one of profit, which it sustained and improved in 2011 (STECF 2012, 2013). While costs have been increasing and landings have declined in quantity, higher average prices have ensured overall profitability, with 6 percent of income retained as profit.

As with stock status, it is not possible to attribute the economic situation of the EU fleet to a specific agreement, as vessels target various stocks as part of diverse fishing strategies. Profitability is also dependent on the national (member state) management framework and priorities within which vessels operate, including quota allocation and transfer mechanisms.

The agreements do not provide for an economic approach for vessels to manage access to quotas (for example, through ITQs or leasing quota), as these are governed by national quota management policies, which vary from member state to member state.

CONCLUSIONS

The northern agreements are based on the reciprocal exchange of fishing opportunities. Such sharing agreements are appropriate for neighboring states where the fishing industries have an interest in the stocks in each other's waters. The reciprocal nature means that the parties have the same responsibilities and the costs are equally shared between the parties. The first levels of benefits go directly to the fishing industry involved in catching the quotas provided, rather than a financial contribution that may or may not be used to benefit the fishing sector and coastal communities.

The agreements are long term, providing a degree of certainty to the fishing industry for planning purposes. However, fishing opportunities are negotiated (northern agreements) or adjusted (Greenland FPA) on an annual basis, providing the potential to respond to the most up-to-date scientific advice.

The reciprocal nature of the agreements (and possibility of quota substitution in Greenland) means that there is not an incentive to provide access to overexploited stocks—unlike the southern FPAs, for which the financial contribution is based on the fishing opportunities provided. If access to one stock is restricted due to conservation measures or to limited or no TAC, access to other stocks can be provided. Even under the Greenland FPA, fishing opportunities can be reduced without loss of financial compensation if the fishing opportunities are compensated in future years or by access to other stocks.

Quota division and swaps are based on historical fishing patterns and adjusted with respect to current interest, with the fishing industry involved in identifying appropriate fishing opportunities under the agreements. The negotiation of fishing opportunities through this centralized system may limit the overall profitability of the agreements but ensures the benefits are evenly distributed between the parties. The benefits to each party are affected by market prices, the cost of fishing, and associated value-added activities and may also include the possibility to access larger, better quality fish that may fetch higher prices.

Vessels fishing under the northern agreements and Greenland FPA must comply with CS rules and regulations regarding fisheries. Foreign vessels therefore fish within the management framework of the CS. The quotas are allocated from within the overall quota to foreign, national large-scale, and national small-scale vessels.

The experience and capacity of the northern CS in fisheries management mean that the governance and management arrangements tend to be effective at controlling fishing effort and ensuring sustainable exploitation of the stocks. This, coupled with enforcement and control capacity (for example, through electronic catch reporting, VMS, at-sea inspections, and port state control measures), helps to reduce the possibility for infractions and circumvention of the rules.

Compliance with the provisions of the agreements (for example, data submission) is good, and requirements are becoming more stringent and more effective at ensuring compliance with catch limits and technical measures, such as through electronic catch reporting. Increasingly responsible behavior on the part of the fishing industry also contributes to this.

RECOMMENDATIONS

There should be an overarching commitment to sustainability from both parties based on internationally agreed-upon standards and following scientific advice on exploitation levels. This should be established at the beginning of any agreement and can be particularly important for later negotiations in the event that scientific advice recommends reducing TACs, which will necessitate sacrifices from both parties.

Agreements should be medium- to long-term to provide a degree of certainty for the fishing industry's planning purposes, but with short-term flexibility to allow for adjustments based on the most up-to-date scientific advice.

The way in which value is calculated affects the apparent value of the opportunities for the parties. There should be an agreed basis for valuing the fishing opportunities to be exchanged or provided and an agreed process and time scale for it to be periodically updated. This avoids changes in market conditions affecting the balance of the exchanges.

The CS's fishing industry should be involved in identifying fishing opportunities in which they have an interest and the fishing opportunities that may be provided to foreign vessels.

Foreign vessels' activity should take place within the CS fisheries management framework, with the same rules and regulations applying to national and foreign vessels and quota allocations for foreign vessels occurring within the overall catch limits. To facilitate

this, foreign fishing vessels should be provided with a compiled version of the CS fisheries legislation in an appropriate language to cover catch reporting, control, technical conservation measures, and observer schemes. For this to be effective, the national management framework and legislation must be able to ensure sustainable exploitation of the stocks in question.

There must be sufficient MCS capacity in the CS's waters to ensure compliance with the rules and regulations in force, so that catch limits are observed and conservation measures implemented. This must be complemented with flag state control through VMS, verification of catches, and timely exchange of data.

REFERENCES

- Arnason, R., R. Hannesson, and W. E. Schrank. 1999. "Costs of Fisheries Management: The Cases of Iceland, Norway and Newfoundland." Cited in Latiff, 2002.
- Council Regulation (EC) No. 1006/2008 of 29 September 2008 concerning authorisations for fishing activities of Community fishing vessels outside Community waters and the access of third country vessels to Community waters, amending Regulations (EEC) No. 2847/93 and (EC) No. 1627/94 and repealing Regulation (EC) No. 3317/94.
- Council Regulation (EU) No 40/2013 of 21 January 2013 fixing for 2013 the fishing opportunities available in EU waters and, to EU vessels, in certain non-EU waters for certain fish stocks and groups of fish stocks which are subject to international negotiations or agreements. OJ L 23, 25.1.2013, p. 54.
- Council Regulation (EU) No 297/2013 of 27 March 2013 amending Regulations (EU) No 44/2012, (EU) No 39/2013, and (EU) No 40/2013 as regards certain fishing opportunities.
- DG MARE. "Fact Sheet: Northern Agreements." http://ec.europa.eu/fisheries/documentation/publications/cfp_factsheets/northern_agreements_en.pdf.
- DG MARE. 2012. "Norway. Northern Agreement." http://ec.europa.eu/fisheries/cfp/international/agreements/norway/index_en.htm.
- DG MARE. 2013. "Negotiations Complete on New Agreement on Reciprocal Access to Fishing in the Skagerrak." http://ec.europa.eu/information_society/newsroom/cf/mare/itemlongdetail.cfm?item_id=12541&subweb=347&lang=en.
- EC. 1993. Agreement on Fisheries and the Marine Environment between the European Economic Community and the Republic of Iceland. OJ L 161, February 7, 1993, pp. 2–3.
- EC. 2008. Council Regulation (EC) No 1006/2008, of 29 September 2008, concerning authorisations for fishing activities of Community fishing vessels outside Community waters and the access of third country vessels to Community waters, amending Regulation (EEC) No 2847/93 and (EC) No 1627/94 and repealing Regulation (EC) No 3317/94.
- EC. 2009. *The Common Fisheries Policy: A User's Guide*. Luxembourg: Office for Official Publications of the European Communities. http://ec.europa.eu/fisheries/documentation/publications/pcp2008_en.pdf.
- EP. 2012. Recommendation on the draft conclusion of the Protocol setting out the fishing opportunities and financial contribution provided for in the Fisheries Partnership Agreement between the European Community on the one hand, and the Government of Denmark and the Home Rule Government of Greenland, on the other hand (11119/2012-C7-0299/2012-2012/0130 [NLE]). Committee on Fisheries. Rapporteur: Ole Christensen. 1.11.2012. A7-0358/2012. <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A7-2012-0358+0+DOC+PDF+V0//EN>.

- Ervik, G. 2013. Telephone discussion/interview with Geir Ervik, Ministry of Fisheries and Coastal Affairs, Norway, regarding the EU-Norway agreements and cooperation. December 18.
- Fishnewseu. 2009. “Break in Stalled EU-Norway Fisheries Talks Will Only Raise the Stakes Says NFFO.” <http://fishnewseu.com/latest-news/news-archive/44-latest-news/uk/2450-break-in-stalled-eu-norway-fisheries-talks-will-only-raise-the-stakes-says-nffo.html>.
- Fiskeridirektoratet, 2012. Economic and biological figures from Norwegian fisheries—2012. Bergen: Fiskeridirektoratet.
- Gibbs, A. 2013. Telephone discussion/interview with Allan Gibbs, Marine Scotland, regarding the EU-Norway agreements and cooperation. January 7.
- Gullestad, P. 2013. “The ‘Discard Ban Package’: Norwegian Experiences in Efforts to Improve Fisheries Exploitation Patterns.” http://www.fisheries.no/PageFiles/21748/HSM/pdf_vedlegg/Norwegian_percent20discard_percent20policy.pdf.
- ICES. 2013. “Report of the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK).” Paper presented at the International Council for the Exploration of the Sea, Copenhagen, April 24–30, 2013. http://www.ices.dk/sites/pub/Publication_percent20Reports/Expert_percent20Group_percent20Report/acm/2013/WGNSSK/WGNSSK_percent202013.pdf.
- Latiff, Z. A. 2002. *Auction Market for Fisheries in Iceland: Increasing Catch Value and Enforcement in Fisheries*. The United Nations University Fisheries Training Programme. <http://www.unuftp.is/static/fellows/document/zarinaprojectprfa.pdf>.
- Marine Scotland. 2012. “EU-Norway Fish Talks.” <http://www.scotland.gov.uk/News/Releases/2012/12/fish07122012>.
- Marine Scotland. 2013. “No Cut in Cod Quota in 2013.” <http://www.scotland.gov.uk/News/Releases/2013/01/Fish18012013>.
- MFCA. Norwegian Comments to the Commission Green Paper on the Reform of the Common Fisheries Policy. http://www.fisheries.no/PageFiles/21748/HSM/pdf_vedlegg/Norsk_svar_paa_EUs_groennbok_om_CFP_reform.pdf.
- MFCA. Review of National Policies on Fisheries Rebuilding Programmes: Template on Economic and Institutional Aspects. Submission from Norway. http://www.fisheries.no/PageFiles/423783/pdf_vedlegg/The_economics_of_rebuilding_fisheries_Norway_case.pdf.
- MFCA. 2010a. “The responsibility of foreign vessels.” Norwegian Ministry of Fisheries and Coastal Affairs. http://www.fisheries.no/resource_management/control_monitoring_surveillance/The_responsibility_of_foreign_vessels_in_Norwegian_waters/#.Uq2GDvRdWpo.
- MFCA. 2010b. “Control and Enforcement.” Norwegian Ministry of Fisheries and Coastal Affairs. http://www.fisheries.no/resource_management/control_monitoring_surveillance/Control_and_enforcement/#.Uq2GGfRdWpo.
- Miller, V. 2013. Leaving the EU. Research Paper 13/42, edited by Vaughan Miller. House of Commons Library.
- MRAG, IFM, Cefas, AZTI, and Polem. 2009. An Analysis of Existing Rights Based Management (RBM) Instruments and on Setting up Best Practices in the EU. London: MRAG Ltd.
- NEAFC. 2013. NEAFC Scheme of Control and Enforcement 2013. London: North East Atlantic Fisheries Commission. <http://www.neafc.org/scheme>.
- Norwegian Delegation and European Union Delegation. 2011a. Agreed Record of Fisheries Consultations between Norway and the European Union for 2012. Bergen. December 2. <http://www.regjeringen.no/upload/FKD/Vedlegg/Kvoteavtaler/2012/EU/norgeEU.pdf>.
- Norwegian Delegation and European Union Delegation. 2011b. Protocol of Fisheries Consultations between Norway and the European Union, on behalf of Sweden, for 2012. Bergen. December 2.
- Norwegian Delegation and European Union Delegation. 2013. Agreed Record of Fisheries Consultations between the European Union and Norway for 2013. Clonakilty. January 18.
- OECD. 2011. OECD Territorial Reviews. NORA Region 2011: The Faroe Islands, Greenland, Iceland and Coastal Norway. OECD Publishing. <http://dx.doi.org/10.1787/9789264097629-en>.
- STECF. 2012. Summary of the 2012 Annual Economic Report on the EU Fishing Fleet. Scientific, Technical and Economic Committee for Fisheries. Luxembourg: Publications Office of the European Union. http://stecf.jrc.ec.europa.eu/documents/43805/366433/2012-08_AER_EU+FLEET+SUMMARY+2012_JRC73372.pdf.
- STECF. 2013a. 2013 EU Fleet Landings by species_fleet segment level dataset. http://stecf.jrc.ec.europa.eu/documents/43805/581354/2013+EU+Fleet+Landings+data+by+species_fleet+segment+level.xlsx.
- STECF. 2013b. Summary of the 2013 Annual Economic Report on the EU Fishing Fleet (STECF 13 18). Scientific, Technical and Economic Committee for Fisheries. Luxembourg: Publications Office of the European Union. <http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/29545/1/lbar13001enn.pdf>.
- Walmsley, S. F., C. T. Barnes, A. I. Payne, and C. A. Howard. 2007. Comparative Study of the Impact of Fisheries Partnership Agreements: Technical Report. London: MRAG, CRE, and NRI.
- Weissenberger, J. 2013. North-East Atlantic Fish Stock Disputes: The Mackerel and Herring Conflicts. Briefing, European Parliamentary Research Service.

ANNEX: ZONAL ATTACHMENT

The “Zonal attachment” principle can be used to determine the shares of an overall TAC for straddling and shared stocks that should be allocated to various coastal states, in whose waters the stocks occur. It has been suggested as a way to overcome disputes on how to share the quotas of such stocks and has been used for the management of shared stocks between the EU and Norway (see Bjørndal and Lindroos 2004; Hannesson 2013). The zonal attachment of a stock is the share of the stock residing within a particular country’s EEZ, weighted by the time it spends in a country’s zone over a year, if necessary. This then determines or influences the share of the TAC that each country receives for that stock (Bjørndal and Ekerhovd 2013).

Changes in fish migration patterns can be caused by changing in environmental conditions and increases or decreases in spawning stock biomass (among others factors) and can cause problems for agreements based on zonal attachment. The ongoing disputes over mackerel and herring in the Northeast Atlantic are examples of this. For mackerel, changing migration patterns (possibly brought about by an increase in stock size) have resulted in the stock expanding into Icelandic and Faeroese waters, where it was not previously prevalent, and these coastal states thus requesting a proportionately greater share of the TAC.

Based on modeling studies, Hannesson (2013) concluded that where zonal attachment varies over time and more than one stock is involved, zonal attachment may not be an appropriate way of allocating the TAC because it would give the coastal state with a minor interest in the stock a worse outcome than if it were to pursue its own interest in the absence of cooperation. The scope for cooperation is greater if more than one stock is involved.

Specific life stages can be included (as in the Hamre model [1993]) used in the 1995 work on Norwegian spring-spawning

herring) or all life stages. Fishery-dependent (for example, catch data by month and by square [0.5° latitude, 1° longitude] or by economic zone) and fishery-independent (for example, survey data on biomass and abundance or appropriate proxies, by age and by area) data can be used (Coastal States Working Group 2013).

REFERENCES

Report of the 1st meeting of the Coastal States Working Group on the Distribution of Norwegian Spring-Spawning Herring in the Northeast Atlantic and the Barents Sea. Copenhagen, November 13 and 14, 2013.

- Bjørndal, T., and N. Ekerhovd. 2013. "Management of Pelagic Fisheries in the North East Atlantic: Norwegian Spring Spawning Herring, Mackerel and Blue Whiting." SNF Working Paper 13/13. Bergen: Institute for Research in Economics and Business Administration. <http://www.snf.no/Publications/SNF-publications-2.aspx?year=2013&mode=detail&RowId=12&ViewPID=135&PubID=4589>.
- Bjørndal, T., and M. Lindroos. 2004. "International Management of North Sea Herring." *Environmental and Resource Economics* 29: 83–96.
- Hamre, J. 1993. "A Model of Estimating Biological Attachment of Fish Stocks to Exclusive Economic Zones." ICES C.M 193/D:43.
- Hannesson, R. 2013. "Zonal Attachment of Fish Stocks and Management Cooperation." *Fisheries Research* 140: 149–54.

APPENDIX G

CHINESE DISTANT WATER FISHING ACTIVITIES

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China is the world's largest producer of seafood, including production from both capture fisheries and aquaculture. In the past few decades, China has increasingly engaged in trade in fishing services, both harvesting and post-harvesting services such as processing. China is a significant seafood processor of both aquatic products originating domestically for national and international markets and products that are imported for processing and then re-exported. With a total processing capacity of 26.38 million tons annually, China's 9,706 processing enterprises nationwide processed 19 million tons in 2012.¹ Over 90 percent of U.S. seafood exports to China in the early 2000s were re-exported elsewhere.²

In line with the emphasis of this report, however, this appendix will focus on China's harvesting services in the capture fisheries industry. Since the initial expansion of its fishing industry to areas beyond its own national jurisdiction in 1985, China has become a significant global fishing nation. China maintains fishing operations on both the high seas and in the exclusive economic zones (EEZs) of other countries. China accesses the waters of host countries through foreign fishing arrangements (FFAs), which take the form of bilateral fisheries access agreements, joint ventures, and the chartering of foreign fishing vessels.

As this report's overview discussed, FFAs have been criticized for contributing to unsustainable use of fisheries resources and for negatively affecting the socioeconomic development of host countries.³ China's FFAs likewise have been criticized for their principal-agent problems, in the form of lack of transparency and association with corruption, inequitable benefit sharing, poor flag state control, and conflict with small-scale and artisanal fisheries.⁴ The Chinese fishing industry is also believed to

¹ 农业部渔业局 [Ministry of Agriculture Bureau of Fisheries]. 2013. 2013 中国渔业年鉴 [2013 China Fisheries Yearbook]. 北京: 中国农业出版社 [Beijing: China Agriculture Publishing Company].

² Clarke, Shelley. 2009. *Understanding China's Fish Trade and Traceability*. TRAFFIC East Asia.

³ Mwika, Stephen Mbithi. 2006. "Fisheries Access Agreements: Trade and Development Issues." ICTSD Natural Resources, International Trade and Sustainable Development Series Issue Paper 2. International Centre for Trade and Sustainable Development, Geneva, Switzerland; Walmsley, S. F., C. T. Barnes, I. A. Payne, and C. A. Howard. 2007. *Comparative Study of the Impact of Fisheries Partnership Agreements—Technical Report*. MRAG, CRE, & NRI.

⁴ Standing, André. 2008. *Corruption and Industrial Fishing in Africa*, Chr. Michelsen Institute U4 Anti-Corruption Resource Centre; EJF. 2009. "Dirty Fish—How EU Hygiene Standards Facilitates Illegal Fishing in West Africa." Environ-

engage in illegal, unreported, and unregulated (IUU) fishing in both areas governed by FFAs and outside them, vastly under-reporting the true volume of its catch.⁵

This case study seeks to examine China's fishing activities in the context of the overarching goals of the study—both assisting host countries to identify and enable means to secure equitable and sustainable returns from FFAs and encouraging flag states to adopt more responsible policies and practices with regard to the activities of their fleets. The case study begins with (1) background information on China's distant water fishing industry in order to inform (2) an analysis of the economic and legal principles underpinning China's FFAs, then (3) places China in comparative perspective with other Asian nations, and finally concludes with (4) a discussion of the costs and benefits associated with China's FFAs and lessons that can be drawn from the China experience.

BACKGROUND

VESSELS

Chinese fishing vessels are defined as those flagged to the People's Republic of China (or Mainland China, excluding Hong Kong, Macau, and Taiwan), unless otherwise indicated. Evidence suggests that some fishing vessels that are linked to or controlled by Chinese entities are also fishing under non-Chinese flags. Chinese regulations generally forbid the registration to China of vessels owned by non-nationals.

Whereas *distant water fishing* is usually defined as fishing operations taking place in areas beyond the national EEZ, China's Distant Water Fishing Supervisory Provisions, promulgated by the Ministry of Agriculture in 2003, define distant water fishing (DWF) as "citizens, legal entities, and other organizations of the People's Republic of China engaging in marine fishing and its processing, supply and product transportation activities on the high seas and in the sea areas under the jurisdiction of other countries, but does not include fishing activities in the Yellow Sea, East China Sea, or South China Sea."⁶ Therefore, Chinese fishing operations that occur, for example, in the western EEZs of South Korea or Japan

mental Justice Foundation, London; Environmental Justice Foundation. 2007. "Pirate Fish on your Plate: Tracking Illegally-Caught Fish from West Africa into the European Market." Environmental Justice Foundation, London; Hanich, Quentin, and Martin Tsamenyi. 2009. "Managing Fisheries and Corruption in the Pacific Islands Region." *Marine Policy* 33, 386–92; Mallory, Tabitha Grace. 2013. "China's Distant Water Fishing Industry: Evolving Policies and Implications." *Marine Policy* 2013, 99–108.

⁵ Pauly, Daniel, et al. 2013. "China's Distant Water Fisheries in the 21 Century." *Fish and Fisheries*. March 23.

⁶ 农业部 Ministry of Agriculture. 远洋渔业管理规定 [Distant Water Fishing Supervisory Provisions]. April 14, 2003, entered into force June 1, 2003. See articles 2 and 3. www.cndwf.com/news.asp?news_id=19.

are not considered DWF activities and China has bilateral fisheries agreements with South Korea, Japan, and Vietnam to manage shared stocks.

The 2013 *China Fisheries Statistical Yearbook* reports that in 2012, of the 695,555 Chinese-flagged motorized fishing vessels, 194,240—representing a total tonnage of 7.707 million and combined engine power of 17.31 million kilowatts—were marine capture vessels.⁷ Of these, 1,793 vessels with a total engine power of 1.112 million kilowatts were DWF vessels. The 2012 *China Fisheries Yearbook* reports that China had 2,230 DWF vessels in 2011. The discrepancy in the size of the fleet is because while a majority of the DWF industry operates on a regular basis, a few hundred vessels operate on a temporary basis for a few months every year in Russian and North Korean waters.⁸ Therefore, sometimes the total vessel numbers account for these temporary vessels and sometimes they do not. The 2013 *China Fisheries Yearbook* reported 1,830 permanent DWF vessels and 599 short-term vessels for a total of 2,429 vessels operating in distant waters.⁹

China's DWF fleet is the world's largest in terms of number and is continuing to grow, although the size and technological capacity of its vessels lags behind the fleets of more developed countries. The Chinese government has outlined plans to expand the number of DWF vessels.¹⁰ The 2013 *China Fisheries Yearbook* announced that the industry had built more vessels in 2012 than ever before, including China's first domestically constructed large-scale purse-seining vessel and a new saury vessel. China also imports vessels secondhand, including in 2012 two tuna purse-seining vessels, 17 ultralow-temperature tuna vessels, and a krill fishing vessel with processing capability. In the same year, China had 967 vessels on the high seas, adding 115 from the previous year; another 863 vessels operated in the EEZs of other countries, with 86 new vessels added that year.¹¹ China reported 410 tuna vessels and 546 squid jiggers.

Chinese ownership information and vessel reflagging activities can be challenging to trace. Of the 1,955 Chinese DWF vessels assembled in one report, 279 had no ownership information.¹² Vessels were flagged to 24 other countries or entities, including Argentina, Belize, Brazil, Cambodia, Fiji, Georgia, Ghana, Honduras, India, Indonesia, Japan, Kiribati, Micronesia, Mongolia, Morocco, Myanmar, Nigeria, North Korea, Panama, Saint Vincent and the Grenadines, Taiwan, China, Tonga, Uruguay, and Vanuatu.¹³

⁷ 农业部渔业局 [Ministry of Agriculture Bureau of Fisheries]. 2013. 2013 中国渔业年鉴 [2013 *China Fisheries Statistical Yearbook*]. 北京: 中国农业出版社 [Beijing: China Agriculture Publishing Company].

⁸ Mallory, Tabitha. 2013. *China, Global Governance, and the Making of a Distant Water Fishing Nation*. PhD dissertation, Johns Hopkins University.

⁹ 2013 *China Fisheries Yearbook*.

¹⁰ 农业部 [Ministry of Agriculture]. 2011. 全国渔业发展第十二五年规划 (2011–15年) [National Fisheries Development Twelfth Five-Year Plan (2011–15)], October 17. http://www.moa.gov.cn/zwllm/ghjh/201110/t20111017_2357716.htm.

¹¹ 2013 *China Fisheries Yearbook*.

¹² Clarke, Shelley. 2009. *Unpublished Research*. p. 34.

¹³ *Ibid.*, p. 17.

CATCH

Evidence indicates that China's DWF capture production data reported by China are neither comprehensive nor accurate. Whereas fisheries experts showed that China was overreporting its domestic catch due to domestic political reasons, they believe that China is underreporting its DWF catch.¹⁴ Official sources report that China's DWF industry produced 1.223 million tons of catch in 2012, valued at Y 13.21 billion (approximately \$2.17 billion or \$1.77 per kg).¹⁵ However, fisheries experts estimated that the real amount and value of Chinese catch taken outside of its own EEZ annually to be 4,604,000 tons (with a margin of error of $\pm 687,000$) from 2000 to 2011, for an ex-vessel landed value of €8.93 billion (± 1.53 billion) a year.¹⁶ Excluding Japan and Korea, whose EEZs, according to China's definition, are not included in the DWF industry, the total is 4,498,000 tons, or over three and a half times more than China's official statistics report. The largest source of China's distant water catch is Africa, with an annual estimated volume of 3.1 million tons ($\pm 690,000$), followed by Asia at 948,000 tons ($\pm 241,000$), Oceania at 198,000 tons ($\pm 31,000$), Central and South America at 182,000 tons ($\pm 53,000$), and Antarctica at 48,000 tons ($\pm 26,000$).¹⁷

China's high seas catch targets two main species—tuna and squid. A third species, jack mackerel, has been targeted in recent years. Squid accounts for about one third of China's overall distant water catch—32 percent of total catch in 2012, according to Chinese official statistics.¹⁸ China's most productive fishing grounds on the high seas for squid are the North Pacific, Southeast Pacific, and Southwest Atlantic. Squid catch in 2012 amounted to 388,000 tons worth Y 2.82 billion (about \$1.20 per kg), according to China's official statistics. China is adding vessels to the squid industry. In 2010, 100 new squid jiggers built in Zhoushan were introduced into the industry.¹⁹ In 2011, 82 new vessels were added. The added capacity meant that catch of jumbo squid (*Dosidicus gigas*, 茎柔鱼) in the Southeast Pacific doubled between 2010 and 2011.²⁰

Tuna accounted for 14 percent of total catch in 2012, according to Chinese official statistics.²¹ China has both high seas and EEZ operations and is a member of four of the five tuna regional fisheries management organizations (RFMOs).²² Catch of tuna, a particularly high-value species, amounted to 172,000 tons worth Y 3.28 billion (about \$3.14 per kg) in 2012, according to official Chinese statistics.²³ China is also adding vessels to the tuna industry, for example 30 new vessels in 2010 and 86 new vessels in 2012.

¹⁴ Watson, Reg, and Daniel Pauly. 2001. "Systematic Distortions in World Fisheries Catch Trends." *Nature* 414 (29), 534–36.

¹⁵ 2013 *China Fisheries Yearbook*.

¹⁶ Pauly, 2013.

¹⁷ *Ibid.*

¹⁸ 2013 *China Fisheries Yearbook*.

¹⁹ 2011 *China Fisheries Yearbook*.

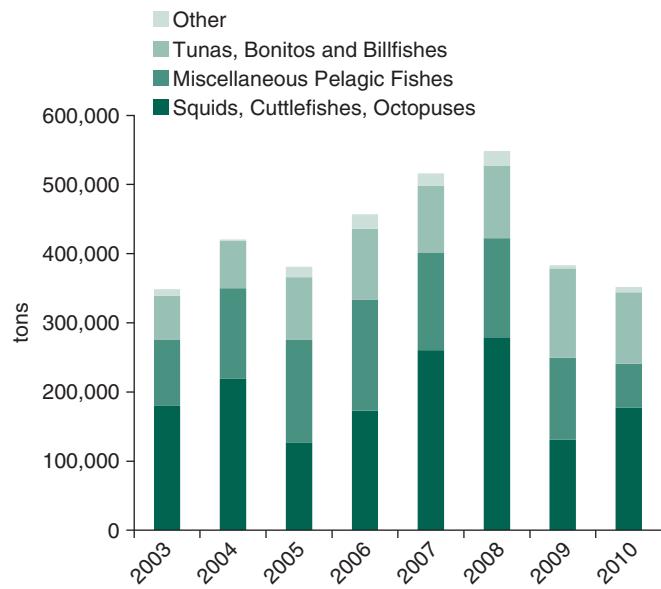
²⁰ 2012 *China Fisheries Yearbook*.

²¹ 2013 *China Fisheries Yearbook*.

²² All but the Commission for the Conservation of Southern Bluefin Tuna (CCSBT).

²³ 2013 *China Fisheries Yearbook*.

FIGURE G.1. COMPOSITION OF CHINA'S DWF CATCHES (EXCLUDING "ASIA-INLAND WATERS" AND "PACIFIC, NORTHWEST") AS REPORTED TO THE FAO, 2003–10, IN TONS¹



¹ FAO, Fishstat, 2012.

China's jack mackerel catch is on the decline since 2007, which is in line with what international observers are saying about the jack mackerel stock. After four years of steady decline, the vessels in the area have moved on to target Antarctic krill and resources in the EEZs of Mauritania and Russia.²⁴ This flexibility to move to new fishing grounds is an example of the malleability of DWF fleets that Monro discussed in appendix A of this report.

Figure G.1 depicts the catch composition of China's DWF as reported to the Food and Agriculture Organization (FAO) in all marine areas beyond the Northwest Pacific (Area 61) and Asia-Inland Waters (Area 04). Catch quantities of Chilean jack mackerel (*Trachurus murphyi*, shown as "Miscellaneous pelagic fishes") exhibited a noticeable decrease in 2010. There were increases in the reported catches of skipjack tuna (*Katsuwonus pelamis*) in 2005 and albacore tuna (*Thunnus alalunga*) in 2009.

DWF COMPANIES

In 2012, the Chinese government licensed 120 Chinese companies for DWF, and 43,000 people were working offshore in the industry.²⁵ China has 45 companies engaged in tuna fishing and 55 engaged in squid operations. Of the 86 percent of Chinese fishing vessels for which ownership information was available in a 2009 study, 48 percent (804 vessels) of these were associated with the China National Fisheries Corporation (中国水产) (CNFC, or

中水).²⁶ Since the CNFC website claimed at the time to operate only 250 vessels, it is likely that the remaining vessels are operated by one of CNFC's 67 (or more) subsidiary companies.²⁷ In decreasing order by fleet size, the largest CNFC regional affiliates are located in Zhejiang, Shandong, Shanghai, Liaoning, and Guangdong provinces or municipalities. One report, citing data from 2003, characterizes the Chinese distant water fleet as one-third government owned and suggests that the government now has less control over the fleet than it previously did.²⁸ In this sense, DWF fleets may exhibit their own internal principal-agent problem, in addition to the principal-agent problem described in appendix A, in which the coastal state is the principal and DWF nations are the agents. Whereas the central authority (the principal) may desire to follow international or coastal state fishing regulations in order to benefit from maximum economic returns through time from sustainable fisheries, vessels flagged to the state (the agents) may violate those regulations because fishermen are acting in their own short-term interests.

ANALYSIS

DWF POLICIES AND DRIVERS

Chinese government policies toward domestic fishing versus DWF reflect some policy incoherence with regard to long-term global stock sustainability. Whereas China's domestic fisheries management tends to be strict, that of the DWF industry is less so. In this regard, China is no different than the DWF fleets that launched their operations in the 1950s and 1960s—such as the then Soviet Union, the now European Union, Japan, South Korea, and Taiwan, China. Even if some of these entities have begun to re-evaluate their policies, their decades of unfettered fishing overwhelmingly contributed to the current fisheries crisis. Furthermore, some of the unsustainable fishing operations should not be attributed to China's policies but rather to poor governance in host countries and the principal-agent problems described by the summary report and in appendix A.

Acknowledging depletion of domestic fisheries, China's first policy to mention DWF—a State Council report in 1983—calls for relieving pressure on domestic resources by encouraging the development of DWF through preferential fiscal treatment. The state subsequently promulgated a series of supportive policies, including income, value-added, and import tax exemptions.²⁹

Development of the DWF industry was specifically mentioned as a component of the "going out" (走出去) policy, which first appeared in the 2001–05 Tenth Five-Year Economic and Social Development Plan and encourages Chinese companies to seek markets and investment opportunities abroad.³⁰ Later in 2001, the State Council approved the Master Plan for Developing China's

²⁴ Clarke, 2009.

²⁵ China National Fisheries Corporation, <http://www.cnfc.com.cn/>.

²⁶ Mallory, Tabitha. 2012. "China as a Distant-Water Fishing Nation." Testimony before the U.S.-China Economic and Security Review Commission, January 26. http://www.uscc.gov/hearings/2012hearings/written_testimonies/12_01_26/12_1_26_mallory_testimony.pdf.

²⁷ Mallory, 2013.

²⁸ Mallory, 2012.

Distant Water Fishing Industry (2001–10). As the Chinese state increasingly worked to address overcapacity and overfishing in the domestic industry, particularly after the ratification of the United Nations Convention on the Law of the Sea (UNCLOS) in 1996, it saw DWF as a means of creating employment and business opportunities abroad for the Chinese fishing industry. The most recent 2011–15 Twelfth Five-Year Plan also mentions developing DWF catch.³¹

The national economic Five-Year Plans have been accompanied in recent years by more detailed National Fisheries Five-Year Plans. The inaugural 2006–10 National Fisheries Eleventh Five-Year Plan called for expanding the industry to 2,200 vessels and engagement from 34 to 38 countries by the end of the plan.³² The 2011–15 National Fisheries Twelfth Five-Year Plan aimed to raise total DWF catch to 1.3 million tons and expand the number of DWF vessels from 1,991 to 2,300 by 2015.³³

State policies combined with other Chinese publications, including academic, media, and industry reports, emphasize the strategic importance of the DWF industry to China. A 2010 report of a task force composed of 12 people affiliated with the State Council, Chinese DWF companies, industry associations, and universities identified several reasons for such importance. DWF is a means of

- » Supplying high-quality food to Chinese consumers, whose demands are rising with increased economic affluence;
- » Reducing pressure on China's own heavily exploited coastal resources;
- » Securing a stable supply of fish meals and oils to support China's massive aquaculture and mariculture industries;
- » Creating jobs for thousands of Chinese workers;
- » Driving development in related industries, such as vessel and gear construction and maintenance, fishing infrastructure (piers, cold storage), and fish product transport and processing;
- » Establishing a catch history in as many fisheries as possible and, thus, under some fisheries management systems, laying a basis for claiming fishing rights and catch allocations; and
- » Safeguarding China's national sovereignty and interests, including improving bilateral diplomatic and economic ties and securing military supplies.³⁴

Whereas Chinese policy changes and publications emphasize the importance of managing domestic fish stocks for long-term ecological and food security reasons, little mention of this principle occurs with regard to distant waters, nor do DWF policies reflect this concern to the extent that domestic policies do. Unlike the

EU, which has acknowledged the need for policy coherence across both domestic and international policies, China retains a gap in its policies toward domestic and DWF.³⁵ China has signed but not ratified the UN Fish Stocks Agreement, significant for management of targeted DWF stocks like tuna.³⁶ Although China follows many of the stipulations in the agreement nonetheless, for example joining several RFMOs, the quality of China's compliance with the procedural requirements of those RFMOs is not high. China has not signed the Compliance Agreement, an important agreement outlining flag-state responsibilities for vessels on the high seas, and there is little discussion of this agreement in Chinese policy discussions or publications.³⁷ In a 2009 study scoring countries' compliance with the nonbinding UN Code of Conduct for Responsible Fishing guidelines across nine indicators in six evaluation fields, overall China ranked 22 out of 53 fishing countries, with a score just above failing.³⁸ China received passing scores in the areas of evaluation that are important for domestic fishing. However, in two areas relevant to DWF, IUU fishing and flags of convenience, China ranked 44 and 46, respectively, with failing scores on both counts.

At the same time, the Chinese state is concerned with its image, status, and reputation in the world. As one observer stated, “Reputation, both abroad and at home, [is] an intangible resource but a highly valuable one. . . . International rules may thus be respected because Chinese policy makers may be eager to bolster the country's image. . . .”³⁹ Rhetoric from the government acknowledges the need to ensure the sustainability of fish stocks in distant waters, especially in more recent years. Some Chinese academics also call for more attention to the importance of sustainability and conservation in their writing. Until recently, IUU fishing was rarely mentioned, if at all, in Chinese literature. However, an academic article in 2009 called for China to more adequately address IUU fishing, and in a document issued by the Ministry of Agriculture at the end of 2012 on suggestions for the sustainable and healthy develop-

³⁵ For more on the EU policy coherence approach, see European Union, Policy Coherence for Development, http://ec.europa.eu/europeaid/what/development-policies/policy-coherence/index_en.htm.

³⁶ United Nations. *The Agreement for the Implementation of the Provisions on UNCLOS Relating to the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks (UNFSA)*. Signed 1995, entered into force on December 11, 2001. www.un.org/depts/los/convention_agreements/convention_overview_fish_stocks.htm.

³⁷ UN FAO. *The Agreement to Promote Compliance with International Conservations and Management Measures by Fishing Vessels on the High Seas*. Signed 1995, entered into force on April 24, 2003. www.fao.org/docrep/meeting/003/x3130m/X3130E00.HTM.

³⁸ UN FAO. *The Code of Conduct for Responsible Fisheries (CCRF)*. Adopted by the FAO on October 31 1995. www.fao.org/docrep/005/v9878e/v9878e00.HTM; Pitcher, Tony, et al. 2009. “Not Honouring the Code.” *Nature* 457 (5), 658–59.

³⁹ Mushkat, Roda. 2011. “China's Compliance with International Law: What Has Been Learned and the Gaps Remaining.” *Pacific Rim Law and Policy Journal* 20 (1). For similar observations, see, for example, Lampton, David M. 2008. *Three Faces of Chinese Power: Might, Money, and Minds*. Berkeley: University of California Press; and Deng, Yong. 2008. *China's Struggle for Status: The Realignment of International Relations*. New York: Cambridge University Press. p. 29.

³¹ Mallory, 2013.

³² 农业部 [Ministry of Agriculture]. 2006. 全国渔业发展第十一五年规划 (2006–10年) [National Fisheries Development Eleventh Five-Year Plan (2006–10)]. December 31. http://zhs.mofcom.gov.cn/article/zt_guigua/subjectcc/200612/20061204195436.shtml.

³³ [National Fisheries Development Twelfth Five-Year Plan (2011–15)].

³⁴ “扶持和壮大我国远洋渔业研究”课题组 [“Supporting and Strengthening Distant Water Fisheries” Task Force], 《把远洋渔业作为一项战略产业加以扶持》 [“Support Distant Water Fisheries as a Strategic Industry”]. September 2010. www.stats.gov.cn/tjsj/jkjg/t20101018_402676860.htm.

ment of China's DWF industry, a call is made to "strictly prohibit IUU fishing activities" (严格禁止非法、不报告、不管制 [IUU] 的渔业活动).⁴⁰ Another academic article calls for active cooperation with other countries for sustainable use of fisheries resources, emphasizing the need for China to establish an image of a responsible fishing country.⁴¹ The authors warn that if China does not adopt a cooperative attitude with coastal countries on protecting fisheries resources nor abide by their laws, then China will lose the permission from many host countries to fish there. China's national fisheries plans, discussed above, also mention the importance of cooperation in the international arena on fisheries management.

China has taken some steps to better control its vessels and regulate the industry. In January 2012, the Ministry of Agriculture required all DWF vessels to have vessel monitoring systems (VMSs) and to report their positions daily.⁴² The state has also made some efforts to improve the quality of logbooks for tuna operations, large-scale trawlers, and krill fishing vessels; started an independent observer program; and launched a certification system for some high-value imports from DWF, such as bluefin and bigeye tuna, swordfish, and Patagonian toothfish.⁴³ Yet, overall, fewer concrete measures have been taken to address issues in distant waters than in domestic waters. The measures that do exist are in conflict with some policies that support the expansion of the industry.

Perhaps the most damaging policy to long-term stock sustainability is the provision of subsidies to the fishing industry, although China is certainly not alone among fishing nations in such subsidization. A 2010 study estimated China's subsidies to be \$4.1 billion per year, which would represent 26 percent of the declared value of all of China's marine fisheries production for that year.⁴⁴ China's estimated subsidies are the second largest of any single nation and are exceeded only by Japan at \$4.6 billion per year.⁴⁵ Another study calculated subsidies provided by the Chinese central government to the fishing industry in 2011 as \$3.876 billion, and possibly as high as \$5.168 billion including provincial-level

⁴⁰ 许浩 [Xu Hao]. 2009. 《管制 IUU 捕捞德渔业法对策》 ["Law and Policy for Controlling IUU Fishing"]. 海洋开发与管理 [Ocean Development and Management] 26 (8), 26–29; 农业部 [Ministry of Agriculture]. 2012. 于促进远洋渔业持续健康发展的意见 [Suggestions on Promoting the Sustainable Healthy Development of DWF]. November 22. www.moa.gov.cn/zwilm/tzgg/tz/201211/t20121122_3069037.htm.

⁴¹ 高强, 王本兵, 杨涛 [Gao Qiang, Wang Benbing, Yang Tao]. 2008. 《国际海洋法规对我国远洋渔业的影响与启示》 ["Impacts of International Marine Laws on Distant Water Fisheries in China"]. 中国渔业经济 [Chinese Fisheries Economics] 6 (26).

⁴² 农业部 [Ministry of Agriculture]. 2012. 《远洋渔船船位监测管理暂行办法》 [DWF Vessel Monitoring System Interim Measures]. Fisheries Document 4. January 19. http://www.cnfm.gov.cn/yyyzzj/zhyyy/201201/t20120131_2722947.htm.

⁴³ 万晨 [Wan Chen]. 2013. 《我国远洋渔业监管体系基本完整建立》 ["Building a Basic Comprehensive Regulatory System for China's DWF Industry"]. 中国水产 [China Aquatic Production] 9..

⁴⁴ SSumaila, Ussif Rashid, et al. 2010. "A Bottom-Up Re-estimation of Global Fisheries Subsidies." *Journal of Bioeconomics* 12, 201–25; FAO, 2004. Calculated as 4.1 billion / (\$45.9 billion; that is, the value of total fisheries production in 2004 × 0.35; the proportion of marine to total production).

⁴⁵ Sumaila, 2010.

expenditures.⁴⁶ Most of these subsidies were in the form of fuel subsidies, which are direct monetary transfers from the central government to fishermen to offset fuel costs. China also provides some shipbuilding subsidies to the DWF industry. Reported subsidies do not include indirect subsidies, such as the preferential fiscal policies also granted to the DWF industry, which have similar effects as direct subsidies.

The 2010 Task Force report called for increased government subsidies. Specific reference is made to adjusting the subsidy ratio as high as 30 to 50 percent for projects involving technological modernization of fishing vessels and claims that for years developed countries have offered their fleets surreptitious subsidies that represent 15 to 20 percent of the landed value of the catch. Analysis by three Chinese economists of subsidies to CNFC during 2003–08 concluded that "subsidies necessary for the company to remain profitable rose steeply beginning in 2006, to the point that subsidies were equal to approximately half of the company's net profit in 2008."⁴⁷

AREAS OF ACTIVITY

China has a number of FFAs that allow its DWF fleets access to resources in the EEZs of other nations. These agreements are in the form of state-to-state bilateral agreements and interagency-level agreements, such as among companies or fishing associations. According to industry promotional material, China has signed 14 state-level bilateral agreements and 7 interagency agreements.⁴⁸ China is also a member of six regional fisheries management organizations (RFMOs). China has more than 100 representative offices, joint ventures, and logistical bases around the world.⁴⁹ The 2013 *China Fisheries Yearbook* reported that China had DWF operations in 38 countries in 2012.⁵⁰ However, a report from early 2013 showed evidence that Chinese DWF vessels were active in 93 countries.⁵¹ The uncertainty surrounding the actual number of countries in which China operated reflects the lack of transparency in FFAs and the problems with IUU fishing and vessel reflagging. The lack of transparency also means that the terms of the FFA negotiations, for example how much DWF nations pay for fishing agreements and licenses, is largely unknown. While it is estimated that EU FFAs pay approximately 10 to 15 percent of landed value, Japan pays 5 to 6 percent of the export value of the catch, and Taiwan, China's and South Korea's access fees in the Pacific are estimated to be less than 4 percent of the landed value (between 2–6 percent and 3–6

⁴⁶ Mallory, Tabitha. Forthcoming report.

⁴⁷ Mallory, 2012.

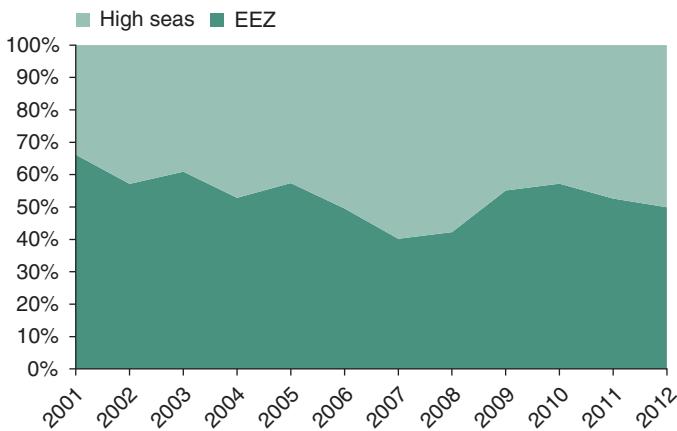
⁴⁸ 中国远洋渔业协会 [China Overseas Fisheries Association]. 2012. Promotional brochure.

⁴⁹ 肖乐 [Xiao Yue]. 2012. 《中国远洋渔业协会在京成立:回良玉致信祝贺,农业部部长韩长赋、副部长牛盾出席会议 并为中国远洋渔业协会揭牌》 ["China Overseas Fisheries Association Established in Beijing: Hui Liangyu Writes Congratulatory Letter, Agriculture Minister Han Changfu and Vice Minister Niu Dun Attend Inauguration Ceremony"]. 中国水产 [China Aquatic Production] 6, 3.

⁵⁰ 2013 *China Fisheries Yearbook*.

⁵¹ Pauly, et al., 2013.

FIGURE G.2. HIGH SEAS AND EEZ AS PERCENTAGES OF TOTAL DWF CATCH¹



¹ Based on data from the *China Fisheries Yearbook series*. Note that the data provided for the year 2011 was not as comprehensive as other years and thus is an estimate.

percent, respectively).⁵² If China's access fees are similar to those of the other Asian countries (2–6 percent of landed value), and China's EEZ catch in 2012 amounted to \$1.053 billion, then China would have paid between \$21.1 and \$63.1 million total in access fees.

Citing increased restrictions over fishing in the EEZs of other countries, China gradually has been trying to increase high seas catch as a percentage of overall DWF catch. In March 2000, China introduced “Efficiency First” as a new direction of DWF development.⁵³ The policy marked a shift away from an emphasis on merely enlarging the size of the DWF fleet toward a more comprehensive economic approach that consolidated and built upon existing fisheries programs. The new policy called for increasing the competitiveness of China’s high seas fishing, aiming to bring the percentage of high seas catch as a percentage of overall DWF catch to 20 percent by the year’s end (although it appears this target was not reached). EEZ catch gradually fell for a few years (but then rose again in the late 2000s) (see figure G.2). The 2013 *China Fisheries Yearbook* reports that in 2012, of the total catch, 611,000 tons worth Y 6.4 billion⁵⁴ came from the EEZs of other countries, whereas 613,000 tons worth Y 6.77 billion was taken from the high seas.⁵⁵ These figures are likely skewed by the fact that many coastal fishing operations backed by Chinese capital are conducted through joint venture operations flagged to the coastal state. The increased emphasis on high seas fishing points to the need for better high-seas fishing governance.

The next section discusses Chinese operations in Asia, Africa, and Oceania in accordance with this study’s geographical focus.

⁵² Gagern, Antonius, and Jeroen van den Bergh. 2013. “A Critical Review of Fishing Agreements with Tropical Developing Countries.” *Marine Policy* 38, 375–86.

⁵³ 龙春 [Long Chun]. 2000. 《效益第一远洋渔业确定新方向》 [“Efficiency First DWF Determines New Direction”]. *经济日报 [Economic Daily Report]*, March 29. www.people.com.cn/zcxx/2000/03/032911.html.

⁵⁴ A billion is 1,000 million.

⁵⁵ 2013 *China Fisheries Yearbook*.

Much of the information is drawn from the Chinese fisheries yearbooks. China does have DWF operations in Latin America and elsewhere, but they are smaller scale in comparison.

Asia

China’s DWF operations in Asia are significant, with larger-scale operations in North Korea, Indonesia, and Myanmar. In 2012, China’s Asia operations accounted for 60 percent of China’s overall DWF catch and 52.8 percent of the overall value.⁵⁶ Chinese vessels account for 95 percent of the vessels entering the fisheries in Asian countries. One reason Asian countries are important hosts for Chinese DWF is their proximity to China. As the Chinese government works to decrease excess domestic fishing capacity through programs such as vessel decommissioning, it encourages privately or collectively owned smaller Chinese fishing vessels to fish in distant waters in lieu of domestic waters.

In 2012, China had 1,037 vessels in 10 neighboring Asian countries—including North Korea, Indonesia, Myanmar, Malaysia, Thailand, Bangladesh, and India—and produced 367,000 tons of catch worth Y 3.38 billion, according to official sources. This represented an increase from 732 vessels in 2010 but a decrease by one country—the Philippines. In 2010, China had 456 vessels, predominantly squid jiggers, operating off the east coast of North Korea. In 2011, production from North Korean waters was 80,000 tons worth Y 1.35 billion. China’s FFA with North Korea is affected by the political instability in that host country.

China’s operations in Indonesia are steadily ramping up. Although 200 vessels had exited Indonesian waters in 2006 because of government changes (52 vessels with valid licenses remained), 121 vessels re-entered Indonesia in 2008, producing 110,000 tons worth Y 660 million. China had 133 vessels in Indonesia in 2010. In 2011, China invested in some land-based facilities in Indonesia to earn more fishing licenses for Chinese vessels. In 2011, production amounted to 133,000 tons worth Y 990 million.

China had 72 vessels in Myanmar in 2010. In 2011, because of declining resources, the Myanmar government made some adjustments to policies on foreign fishing vessels, and Chinese production declined 15.1 percent and 26 percent to 45,000 tons worth Y 280 million, respectively.

China’s program in Thailand began in 2008 with 10 vessels. Operations began in Bangladesh in 2010. After consecutive years of decline in India, Sri Lanka, and Pakistan in 2006, 2007, and 2008, China pulled operations out of Pakistan and Sri Lanka in 2009 because these activities were not profitable, although Chinese vessels still operate in Indian waters and recently reached another fishing agreement with Sri Lanka.⁵⁷ Malaysia’s production was up in 2006 but has mostly suffered losses since then.

China historically had significant operations in Southwest Asia, although Chinese fleets have pulled back because of resource scarcity and piracy. The 2004 *Yearbook* notes that operations in Yemen

⁵⁶ 2013 *China Fisheries Yearbook*.

⁵⁷ “Sri Lanka Lures Foreign Fishing Companies.” 2013. *Business Standard*. August 22. http://www.business-standard.com/article/news-ians/sri-lanka-lures-foreign-fishing-companies-113082201003_1.html.

TABLE G.1. CHINA'S OFFICIALLY REPORTED DWF OPERATIONS IN WEST AFRICA¹

	2000	2001	2002	2003	2004	2005	
Countries	13	16	15	—	—	13	
Vessels	-	401	376	—	—	371	
Catch	147,000 tons	170,000 tons	160,000 tons	—	—	166,000 tons	
Value	\$200 million	—	—	—	—	Y 2.07 billion	
	2006	2007	2008	2009	2010	2011	2012
Countries	12	—	—	10	11	11	12
Vessels	365	393	393	375	394	394	389
Catch	—	189,000 tons	210,000 tons	190,000 tons	166,000 tons	190,000 tons	216,000 tons
Value	—	Y 2.28 billion	Y 2.4 billion	Y 1.9 billion	Y 1.71 billion	Y 2.41 billion	Y 2.78 billion

¹ 2001–13 *China Fisheries Yearbook* series.

ended in 2003, although the *2009 Yearbook* mentions operations in Yemen (and Oman) again in 2008.

Africa

The *2013 China Fisheries Yearbook* reports that in 2012, DWF enterprises operated 389 vessels in 12 West African countries. According to the yearbook, China produced 216,000 tons of catch valued at Y 2.78 billion (table G.1).

China's larger-scope operations are in Mauritania, Guinea, and Morocco, with about 60 percent of Chinese fishing vessels in Africa operating in these three countries. China had 76 licensed vessels fishing in Guinea's waters in 2011. Operations in Guinea remained steady in 2011, producing 26,000 tons worth Y 370 million. In Morocco, where China has 65 licensed vessels, the fishing moratorium season was lengthened, and thus production fell by 12 percent in 2011. However, because prices increased, revenue from operations in Morocco increased by 50 percent; catch amounted to 15,000 tons worth Y 500 million.

The largest Chinese fishing operations in West Africa are in Mauritania, especially because cooperation increased in the early 2010s. The *2011 Chinese Fisheries Yearbook* reported that in 2010 several DWF companies acquired fishing licenses in Mauritania "through more flexible and mature methods of cooperation like mergers and investment." The 2012 yearbook stated that Mauritania had licensed 88 Chinese fishing vessels operating in its coastal waters in 2011. Total production in 2011 amounted to 53,000 tons valued at Y 580 million, an increase of 51 percent and 66 percent over the previous year. The sizeable increase was attributed to CNFC putting into use two large trawlers. The yearbook noted that because fuel prices were high, overall profit was not great.

Mauritania depends heavily on fisheries license fees for its national budget—these fees accounted for 27 percent of the state budget in 2004.⁵⁸ In 2011, the country agreed to a controversial deal with the Chinese fishing company 福州宏东远洋渔业公司

(Poly Hon Done Pelagic Fishery).⁵⁹ The deal gives the Chinese company a 25-year fishing license in exchange for a \$100 million investment for building a processing center that will process 100,000 tons of fish per year, a manufacturing center for traditional fishing vessels, and a training center. The company obtained fishing licenses for 66 of its vessels.⁶⁰ The deal claims it will create 2,500 jobs for Mauritanians. The firm does not face any import duties and for the first five years does not have to pay taxes on profits equivalent to 20 percent of its investments. Up to 30 percent of the company's staff may be foreign. Whereas opponents cited these exemptions as well as a lack of transparency and disregard for sustainability in the deal as reprehensible, some supporters in Mauritania point to Chinese involvement as boosting the overall economy. Success of the arrangement will depend on Mauritania's monitoring, control, and surveillance (MCS) ability.

China has also made inroads into East African fisheries. In 2010, new partnerships were reached with Madagascar and Mozambique.⁶¹ Operations were expanded the next year. The *2012 Yearbook* stated that in 2011, "through wholly acquiring fishing vessels and fishing quotas in Mozambique and Madagascar, China has filled a hole in the space for cooperation in East Africa."

Other data about Chinese operations in West Africa is gleaned in bits and pieces from the fisheries yearbooks and other documents. A 2010 publication mentioned 202 trawling vessels in West Africa, 110 of them over 20 years old and "in need of replacement in order to maintain competitiveness."⁶² In 2009, China National Fisheries Corporation replaced 12 of its trawling ships in Africa, "which has increased production efficiency."⁶³ In 2005, there were approximately 70 foreign trawlers and sardine purse seiners in Sierra Leone's waters, and among them, Dalian International

⁵⁸ Alder, Jacqueline, and Ussif Rashid Sumaila. 2004. "Western Africa: A Fish Basket of Europe Past and Present," *The Journal of Environment Development* 13, 156.

⁵⁹ 2012 *China Fisheries Yearbook*.

⁶⁰ 2011 *China Fisheries Yearbook*.

⁶¹ "Supporting and Strengthening Distant Water Fisheries" Task Force, 2010.

⁶² 2010 *China Fisheries Yearbook*.

Company and China Water Distant-water Fisheries Company LLC had 20 and 16 shrimp trawling boats, respectively.⁶⁴

China's relationships with host countries in Africa through FFAs face certain challenges. Liberian fisheries officials cite unsustainable fishing methods such as pair trawling, issues with the Chinese commercial fishing vessels violating the 6-nautical-mile artisanal zone, and language problems in dealing with the Chinese.⁶⁵ Officials are hesitant to outlaw pair trawling because they worry that Chinese DWF companies will leave for countries whose policies are less strict, thereby losing the revenue earned from Chinese purchase of fishing licenses.

One article in Chinese discussed how to maximize Chinese gains from FFAs with three African countries: Guinea, Morocco, and Cameroon.⁶⁶ The author explains that Chinese fleets should take advantage of the system of issuing only temporary fishing permits to outsiders by purchasing permits when fish stocks are plentiful and withdrawing when resources are down. The author then elaborates on joint-venture schemes with Morocco and Cameroon that preserve the important management jobs for Chinese and the autonomy of Chinese management. In the case of Morocco, the author points out that the local partner will be reliant on China for parts and repair. In the case of Cameroon, which does not allow foreign fishing, the local company becomes the front for the Chinese operation.

Oceania

Oceania, home to Pacific Island Nations (PINs), is the world's largest tuna fishing ground. Because tuna is a highly migratory and straddling stock, the system of bilateral FFAs between DWF nations and host countries is overlaid by an international convention that governs the stocks through the Western and Central Pacific Fisheries Commission (WCPFC). Although DWF nations may have a comparative advantage in providing harvesting services in the WCPFC area, these arrangements may be stymied by corruption and other principal-agent problems. PINs are concerned that these issues could contribute negatively to future development (see box G.1).

China has both tuna longline and purse seine fishing operations in Oceania, launching its longline tuna operations in 1988.⁶⁷ China's first purse seine vessel, from a Shandong DWF company, obtained a fishing license from the Federated States of Micronesia (FSM) on January 14, 2002.⁶⁸ In the area covered by the WCPFC, China reports that catch from the longline and purse seine industries in 2012 was 49,476 and 49,148 million tons, respec-

tively.⁶⁹ China had 286 longline and 13 purse seine vessels in the area in 2010.⁷⁰ China has longline operations in FSM, Fiji, and the Marshall Islands. For the purse seine industry, the greatest catch comes from Papua New Guinea (56.91 percent),⁷¹ followed by FSM (23.03 percent), the high seas (10.36 percent), Nauru (7.55 percent), Marshall Islands (1.45 percent), Kiribati (0.45 percent), and the Solomon Islands (0.27 percent).⁷²

China aims to continue and expand its fishing activities in the WCPFC area. In 2012, China reported that it signed an agreement with the Cook Islands to allow 17 tuna vessels to enter their waters. China also negotiated a transfer of 4,000 tons of tuna quota from Japan in 2011.⁷³ Chinese fishing companies are also targeting fisheries that are relatively undeveloped or unregulated. For example, the 2011 *China Fisheries Yearbook* states, "The productivity of the albacore industry is relatively good, and because albacore is not subject to international organizational management measures, the zeal of China's shipbuilding industry has been fairly high, adding 30 albacore long-line vessels."⁷⁴

In the WCPFC, fisheries specialists from other countries have pointed to domestic capacity challenges in China that manifest in a variety of areas, such as inadequate resources, education, and language and technical skills. These inadequacies point to a clear need for capacity building as a precursor for successful fisheries management. According to one specialist, the Chinese delegation is not big enough, and the lack of resources affects the quality of the delegation.⁷⁵ The lack of resources by the delegation reflects a larger capacity problem domestically. For example, the Chinese delegation expressed dismay at a possible change in the vessel monitoring system (VMS) rules, stating that it is hard to educate their fishermen about the new rules, plus the change would entail high administrative costs.⁷⁶

According to the guidelines of the WCPFC, China has a scientific observer program to monitor catch and bycatch and ensure that fishing is done according to WCPFC rules; however, China faces some challenges in carrying out this program. China began its observer program in June 2009, making four observer trips in 2010, six in 2011, and eight in 2012.⁷⁷ China's observers, often students, are poorly trained, and thus their observer data is poor.⁷⁸ Capacity-building efforts would be useful in this area.

The data in China's daily fishermen logbooks is also poor compared to other fishing nations since knowledge and skills are lacking. For example, China's logbooks have no entry of nontarget species. The WCPFC has questioned China about data on its albacore catch, noting that the catch was unusually concentrated

⁶⁴ 柴秀芳, 石建高, 汤振明 [Chai Xiufang, Shi Jianggao, Tang Zhenmin]. 2006. “塞拉利昂的海洋渔业现状及发展建议” [“Status of Marine Capture Fisheries and Recommendation of Its Development in the Sierra Leone”]. 现代渔业信息 [Modern Fisheries Information] 21 (4).

⁶⁵ Mallory, 2013.

⁶⁶ 吕雨竹 [Lu Yuzhu]. 2007. 《中国渔业公司在非洲管理模式的研究》 [“Research on Management Models of Chinese Fishing Companies in Africa”]. 新西部 [New West China] 16, 36. Cited in Mallory, 2013.

⁶⁷ 张青, 王锡昌, 刘源 [Zhang Qing, Wang Xichang, Liu Yuan]. 2009. 《中国金枪鱼渔业现状及发展趋势》 [“Status and Development Trend of Tuna Fishery in China”]. 南方水产 [South China Fisheries Science] 5 (1).

⁶⁸ 宋来军, 苏晓飞 [Song Laijun, Su Shaofeng]. 2011. 《中西太平洋金枪鱼围网渔业及资源分析》 [“Analysis of WCPO Tuna Purse Seining and Resources”]. 辽宁经济 [Liaoning Economy] June, 83–85.

⁶⁹ Dai, Xiaojie, et al. 2013. *China Annual Report to the Commission*. WCPFC-SC9-AR/CCM-03. August.

⁷⁰ Ibid.

⁷¹ See also box G.1. which examines Papua New Guinea's policy on supporting its domestic fishing industry.

⁷² 宋来军, 苏晓飞 [Song Laijun, Su Shaofeng], pp. 83–85.

⁷³ 2012 *China Fisheries Yearbook*.

⁷⁴ 2011 *China Fisheries Yearbook*.

⁷⁵ Author interview.

⁷⁶ WCPFC Ninth Annual Meeting Proceedings, December 2012.

⁷⁷ Dai, *China Annual Report to the Commission*; PRC. 2011. *Review of Chinese Scientific Observer Programme in the Pacific Ocean in 2010*. Report WCPFC-SC7-2011/EB-WP 12 to the Scientific Committee of the Seventh Regular Session. August.

⁷⁸ Author interview.

geographically, possibly because of inaccurate logbook data that should have been more spatially representative.⁷⁹ Conflict exists in WCPFC meetings over China accurately identifying shark species, with China arguing that shark identification requirements should be relaxed because of the difficulty of identifying different species at the specific level of detail required by the Commission. Capacity building would improve logbook data.

China's catch data reporting to the WCPFC has been problematic. In 2010, China reported its 2009 longline bigeye catch from the Western and Central Pacific Ocean, excluding the portion of the Eastern Pacific Ocean that is covered by the WCPFC (a value of 9,793 tons was reported, whereas the total was actually 11,565 tons).⁸⁰ This was also the case for the years 2004–08 and 2010, and the WCPFC has requested that China resubmit its data from those years to ensure that the data covers the WCPFC area. Additionally, in 2009, the Chinese did not report 4,133 tons of Chinese bigeye longline catch from the Kiribati EEZ in their catch data, nor was it reported by Kiribati.⁸¹ This 4,133 tons is a significant amount—it is over the total amount of bigeye that the United States is allowed to catch in the entire WCPFC Convention area.

PINs are allocated favorable catch quotas because of their status as developing island countries; therefore, it is in the interest of DWF nations to partner with PINs so that catch data will be attributed to the islands and not the flag state. FSM, Kiribati, Palau, the Marshall Islands, the Solomon Islands, and Fiji have reported that Chinese-flagged longline vessels are considered chartered to these countries and therefore their catch should be considered as catch from these countries, not China.⁸² This issue has caused some uncertainty in the reported catch data from these countries. Indeed, the Chinese literature, in its calls for expansion of China's DWF industry, suggests joint ventures as a strategy to avoid catch limitations. One article advises utilizing the influence of foreign aid programs to develop large-scale purse seining. For example, the piece says, "China has already successfully built the Tuna Commission's headquarters in FSM, and got permission to have 25 boats in FSM EEZ in 2007. Because restrictions are about to increase, China should seize the opportunity to develop while it can." The article continues, saying that "by investing in the Pacific Island nations, [China] can earn bonus points, thereby obtaining fishing licenses." The article goes on to say, "The governments of the Pacific Island countries and the corresponding Tuna Commission mostly control overall catch, so China should have more joint ventures with Pacific Island countries to buy second-hand vessels. If the ship's registry is in the Pacific Islands, or if the companies employ a portion of local workers, vigorous support of the Pacific Island governments will be earned."⁸³ On the face

of it, arrangements in which coastal countries receive development aid and retain management over foreign fishing fleets may benefit both coastal and DWF countries. However, if aid is used as leverage to procure licenses through corrupt means, or if DWF countries form joint ventures in which management and operations are largely controlled by the DWF nation—some evidence suggests that this has occurred on both accounts—the result will be unsustainable management of fish stocks and little benefit to developing countries. Increased transparency in FFA negotiations would improve understanding of the link between aid and FFAs.

China has been implicated in corruption cases involving the procurement of fishing licenses. China's activities in Fiji's tuna industry have been detrimental to closer economic relations because of corruption.⁸⁴ China had 54 vessels licensed to fish in Fijian waters in 2000. Former Fijian Prime Minister Laisenia Qarase created an affirmative action program to increase the percentage of Fijians working in the tuna industry to 50 percent by the year 2020. This would be done through joint ventures with outside countries, including China. On a visit by Qarase to China in May 2002, Fiji was awarded a grant of \$3.4 million. On that visit, Fijian and Chinese governments signed a memorandum of understanding on fisheries that established a joint venture between China National Fisheries Corporation and Fiji National Fishing Company. While the Prime Minister was there, four CNFC vessels set sail for Fiji from Dalian. In 2002, 44 more Chinese vessels were added, raising the total to 131. Local fishermen opposed these moves, stating that these fishing vessels were unsustainable. In 2003, tuna catch had decreased 60 percent from previous years. Qarase visited China again in 2004 with Fiji's fisheries minister in tow, and the delegation met with Premier Wen Jiabao and CNFC. The Fijian side requested a fishing vessel for training and research purposes, and the Chinese committed another \$3.4 million to Fiji. Reports emerged that Chinese vessel operators had bribed Fijian fisheries officials to obtain licenses and that the joint ventures between Fiji and China were fronts for largely Chinese operations, neither meeting joint venture standards nor benefiting the Fijians. An investigation in 2004 led to the convictions of several Fijian fisheries officials. Issuance of fishing licenses was reformed, and subsequently 60 out of 84 mostly Chinese license applications were rejected. The number of licenses decreased to 75 in 2005 and 63 in 2006. By 2006, Chinese vessels held 24 licenses.

In another example of corrupt practices, in 2009, six Chinese fishing vessels were caught in the EEZs of the Solomon Islands without fishing licenses. The vessels had apparently been issued "Letters of Comfort" by the Solomon Islands fisheries officials as provisional fishing licenses.⁸⁵ The government of the Solomon Islands stated that these Letters of Comfort had not been obtained legally but instead "by colluding with and corrupting Solomon Islands fisheries officials." The issue will be taken up by Solomon Island domestic courts. Increased transparency would mitigate corruption as well.

⁷⁹ Williams, Peter. 2011. *Issues with Chinese Longline Fleet Data Submitted to the WCPFC*. Report WCPFC-SC7-2011/ST IP-03 to the Scientific Committee of the Seventh Regular Session. August.

⁸⁰ Williams, *Issues with Chinese Longline Fleet Data*.

⁸¹ *Ibid.*

⁸² Williams, *Issues with Chinese Longline Fleet Data*.

⁸³ 王学锋, 孙华, 卢伙胜 [Wang Xuefeng, Sun Hua, Lu Huosheng]. 2010. 《中国中西太平洋金枪鱼围网渔业的可持续发展》[“Sustainable Development of China's Tuna Purse Seine in the Western and Central Pacific Ocean”]. 水产科学 [Fisheries Science] 29 (2), 120–24.

⁸⁴ The information in this paragraph comes from Tarte, Sandra. "Fiji's 'Look North' Strategy and the Role of China." In *China in Oceania*, edited by Wesley-Smith and Porter, pp. 122–123, 127–128.

⁸⁵ WCPFC. 2010. *Technical and Compliance Committee Summary Report*. Sixth regular session, September 30–October 5, Pohnpei, Federated States of Micronesia.

BOX G.1. ARE FFAs ECONOMICALLY EFFICIENT FOR PAPUA NEW GUINEA?

Papua New Guinea (PNG) is an example of a PIN that is considering relying solely on domestic fishing services versus importing fishing services from foreigners. In PNG, all longline operations are domestic, but purse seining is conducted by DWF nations, including China.¹ The existing fisheries access agreements are between the Chinese DWF association China Overseas Fisheries Association (COFA) and the PNG government. Because artisanal fishermen and small and medium enterprises (SMEs) have different technology and target different species than the commercial industry, there is not much competition between these two groups. However, the commercial fishery is of concern to PNG because of domestic employment issues. PNG is encouraging landing more fish locally, as the government would like to capture more of the value added in the industry and eventually have no foreign fishing in their waters. Because of the high capital intensity in the tuna industry, PNG does not currently have the technology or processing capability needed to make the industry more domestic in nature; this would require investment. PNG does require foreign fishing nations to employ a certain number of domestic workers. The Philippines is responsible for 80 percent of PNG's tuna processing domestically, and some is processed in Malaysia. The Chinese have proposed building a tuna processor in PNG, but the proposal is still pending agreement and approval by the PNG government. Whether FFAs are more economically efficient than domestically provided services would be an interesting case to study in further detail.

¹Author interview.

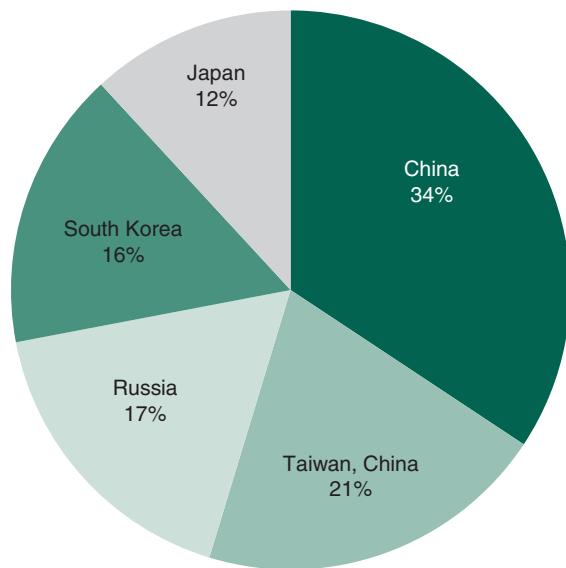
CHINA IN COMPARATIVE PERSPECTIVE

The all-time largest DWF nations or entities are the Russian Federation and Japan, followed by Spain, South Korea, Taiwan, China, and, most recently, China. A 1998 report stated that the most significant nations were Russia (with 32 percent of DWF catch), Japan (21 percent of the total), Spain (10 percent), South Korea (5 percent), Russia and Poland (4 percent each), Taiwan, China, Portugal, Germany, and France (3 percent each), Ukraine (2 percent), Norway, Romania, Cuba, Bulgaria, and the United States (1 percent each), followed by 53 countries with less than 1 percent each.⁸⁶ The Soviet Bloc accounted for 50 percent of total global DWF catch at its height. Yet already in the early 1990s, these nations or entities were reducing their fleet sizes, and it was predicted that China would take over some of the effort from these entities.⁸⁷ Today China accounts for about a third of global DWF catch (see figure G.3).

⁸⁶Bonfil, Ramon, et al., eds. 1998. "Distant Water Fleets: An Ecological, Economic and Social Assessment." *Fisheries Centre Research Reports* 6 (6), 17.

⁸⁷Wildman, Mark R. 1993. *World Fishing Fleets: An Analysis of Distant-Water Fleet Operations Past, Present, Future, Vol. 3—Asia*. Silver Spring, MD: National Marine Fisheries Service, National Oceanic and Atmospheric Administration.

FIGURE G.3. PERCENTAGE OF DISTANT WATER CATCH OF MAJOR DWF NATIONS, 2011–13¹



Source: compiled by author from range of data sources.

¹ China, Taiwan, and South Korea, 2012; Russia, 2013; Japan, 2011.

TABLE G.2. JAPAN'S DISTANT WATER CATCH BY FISHING METHOD IN TONS, 2011¹

Distant water trawl	52,549
Distant water skipjack and tuna	184,210
Distant water tuna longline	105,843
Distant water skipjack pole and line	67,889
Distant water squid anglings	12,223

¹ Government of Japan, Ministry of Agriculture, Forestry and Fisheries. http://www.maff.go.jp/e/tokei/kikaku/nenji_e/88nenji/index.html#nse011.

Japan

Japanese DWF vessels have operated globally since the end of World War II, particularly since 1952, when the American occupation relaxed restrictions on Japanese fishing vessels. The Japanese government encouraged the expansion of the DWF industry with the slogan "from coastal to offshore, from offshore to distant waters."⁸⁸ Tuna catch grew from 10,000 tons before 1950 to 50,000 tons in 1960. Since the advent of UNCLOS, Japanese vessels have been decreasing in number rapidly as the fleet was excluded from the coastal waters of other countries and became less competitive in the face of other, more cost-effective fleets. The number of Japanese DWF vessels diminished threefold between 1975 and 1992, and Japan's share of the global

⁸⁸Barclay, Kate. 2009. "Ocean, Empire and Nation: Japanese Fisheries Politics." In *Water, Sovereignty and Borders in Asia and Oceania*, edited by D. Ghosh, H. Goodall, and Donald S. Hemelrijk, pp. 38–49. London: Routledge.

total DWF catch decreased from 20 percent in 1980 to 12 percent in 1991.⁸⁹ Japan's total distant water catch was 458,000 tons in 2012.⁹⁰

Russia

Fishing came under the control of a small number of large state-owned enterprises during the Soviet era.⁹¹ In the mid-1950s, the Soviet Union initiated an enormous program of shipbuilding and fishing around the world. With the help of massive state subsidies, by the late 1950s, the USSR became a significant DWF nation, with fleets off the coasts of Africa and South America.

The USSR caught less than 500,000 tons of fish in 1950. But by 1970, the annual catch was over six million tons. The Soviet Union's fishing fleet became the largest in the world, and its total catch just second to Japan's. After the fall of the Soviet Union, DWF operations were almost completely terminated because Russian vessels concentrated on catch in the Russian EEZ.⁹²

The last director of Russia's Federal Fisheries Agency, Andrey Krayniy, who came into office in 2007 and resigned in January 2014, led efforts to reform and revive the Russian fishing industry, including DWF. Krayniy set forth plans to regenerate the DWF industry initially through the activities of a state-owned enterprise, which may then be followed by commercial ventures. Krayniy stated that Russia has signed fisheries agreements with 14 African countries and aims to sign agreements with all African coastal states. In 2013, the Russian DWF industry caught 617,100 tons of fish, with 446,300 tons coming from the EEZs of host countries, with 229,700 tons from Africa alone. Morocco, the West Sahara, and Guinea-Bissau account for the bulk of this catch, at 36.3, 26, and 25.7 percent, respectively.⁹³

South Korea

South Korea's DWF industry began in 1957, when South Korea sent an exploratory catch mission to the Indian Ocean to conduct longline tuna operations. South Korea went from 100 vessels in the early 1960s to a high of 850 vessels in the late 1980s and then shrank to 645 vessels in 1993.⁹⁴ According to official statistics, in 2012, South Korea's fleet of 344 vessels caught 575,308 tons of fish worth 1,655,406.⁹⁵

TABLE G.3. TAIWAN'S DWF CATCH IN TONS¹

Type/Year	2011	2012
Otter trawling	37,885	36,134
Purse seine (tuna)	176,109	200,958
Longline (tuna)	216,867	223,422
Jigging (squid)	104,513	98,126
Torch light (saury)	160,531	161,514
Total	695,905	720,154

¹ *Ibid.*

Taiwan, China

Taiwan's DWF fleet began in the 1960s, fishing for tuna, which until the mid-1970s was mostly exported for tuna canning. Since then, Taiwan shifted to production of sashimi-grade tuna, largely destined for Japan. Taiwan's fleet has been decreasing as well, from a high of 1,800 in 1990. In 1991, Taiwan froze applications for new DWF vessels, introducing a zero-growth policy, and prohibited the purchase of foreign vessels.⁹⁶ In 2012, Taiwan's DWF industry landed 726,775 tons worth NT\$50.14 million.⁹⁷ In the same year, 6,037 households and a total of 15,840 fishermen were engaged in DWF.

Conclusions and Recommendations

This case study has examined China's DWF operations in ABNJ, including through FFAs with host countries, and now turns to summarizing the key principles discussed in the analysis and identifying lessons learned.

- » Host countries benefit from the income generated through the sale of fishing licenses to China. One way to improve the terms for host countries is through regionally coordinated bargaining as opposed to bilateral negotiations where the Chinese side is advantaged because of its size vis-à-vis the coastal state. While the WCPFC has been criticized for not setting adequately strict fishing quotas, there are benefits to having a regional governance structure in place to decide on fishing practices. Within the WCPFC, a few PINs have an arrangement called the Parties to the Nauru Agreement, which aids in their designation of purse seine licenses to outsiders. Similar regional bargaining arrangements might benefit Africa. For example, Liberian officials were hesitant to ban pair trawling because Liberia might lose Chinese fishing vessels to another country in the region that still allows the practice. However, if all countries in the region would agree to ban pair trawling, the risk of losing foreign vessels is removed.
- » Ownership information about Chinese vessels and Chinese reflagging are challenges to enforcing rules against illegal

⁸⁹ Wildman, *World Fishing Fleets*, p. 27.

⁹⁰ Government of Japan, Ministry of Agriculture, Forestry and Fisheries, Japan Fisheries Agency 2013 Annual Report. http://www.jfa.maff.go.jp/e/annual_report/2013/pdf/25suisan-sankou.pdf.

⁹¹ Jørgensen, Anne-Kristin. 2009. "Recent Developments in the Russian Fishery Sector." In *Russia and the North*, edited by Elana Wilson Rowe. Ottawa: University of Ottawa Press.

⁹² Jørgensen, p. 89.

⁹³ "Глава Росрыболовства: 'Расширение российского присутствия у берегов Африки не нравится конкурентам'" [Head of the Federal Fisheries Agency: 'Expanding Russian Presence off the Coast of Africa and I Do Not Like Competition']. Interfax. January 13, 2014. <http://www.interfax.ru/txt.asp?sec=1483&id=351264>.

⁹⁴ Wildman, pp. 88–89.

⁹⁵ Korean Overseas Fishing Association

⁹⁶ Waldman, pp. 121–25.

⁹⁷ Fisheries Agency, Council of Agriculture, Executive Yuan. 2013. *Fisheries Statistical Yearbook: Taiwan, China, Kinmen and Matsu Area 2012*. Taipei.

fishing. Requiring commercial fishing vessels to have permanent, nontransferable International Maritime Organization (IMO) numbers would ameliorate this problem. China should be encouraged to better address the reflagging of its vessels.

- » The ownership structure of Chinese DWF companies matters because deep-pocketed state-owned enterprises (SOEs) command resources from the government that possibly give them an unfair advantage by skewing their profits in a more favorable direction for the company. At the same time, the Chinese government has less control over its fishing vessels both because of the increasing privatization of the industry and the decrease in direct management over SOEs that the government once had.
- » The development of China's DWF industry is partly because of domestic overfishing and unemployment, and the spillover affects China's Asian neighbors most directly. There is a disjoint between domestic and DWF policies and a lack of policy coherence in terms of long-term sustainability. Whereas China has taken concrete measures to address fisheries depletion domestically, the lack of such measures belies Chinese rhetoric about sustainability in the DWF industry. Nonetheless, Chinese-language sources increasingly call for attention to responsible DWF, and the Chinese state is concerned about its image and reputation abroad. China also exhibits a certain lack of a sense of reality in terms of the potential expansion of DWF—other countries are pulling out because DWF is no longer profitable. This dissonance is a result of subsidies and favorable fiscal policies toward the industry, as well as China's various strategic interests in having a DWF industry.
- » Subsidies are probably the most destructive contributor to overfishing. China is one of the top fishing industry subsidizers. However, because subsidies are pervasive throughout the entire fishing industry, more effort needs to be made to address the removal of fishing subsidies in a multilateral fashion.

- » Catch data accuracy remains a problem.
- » Poor governance in host countries is a statistically significant predictor of IUU fishing. This problem is particularly pronounced in West Africa. Strengthening governance in host countries through capacity building will enable better enforcement of fishing regulations and monitoring of arrangements like joint ventures and chartering.
- » Because host countries have restricted fishing in their waters, China is increasing its high seas operations. Gaps in the governance of high seas fishing need to be filled. The current patchy arrangement of RFMOs is not globally comprehensive, so fishing capacity that is reduced in one region may easily move to another. After the jack mackerel stock showed signs of decline for several years, China simply moved its fishing vessels elsewhere, to Africa and off the coast of Russia. Having a global fisheries management organization that features a system of individual transferable quotas is one way to address the issue of governance gaps.⁹⁸ Requiring IMO numbers of fishing vessels and creating a global record of fishing vessels would also contribute to solving this problem.
- » As this case study showed through numerous examples, capacity-building efforts to improve the skills not only of host countries but also of DWF nations would improve overall management. The Chinese are not as skilled as the fishermen from other more advanced DWF nations. The Chinese have language-barrier issues and other capacity problems, such as poor logbook and observer knowledge. Improving education and awareness among Chinese would contribute to improving sustainable fisheries management.
- » Some of the costs identified by those skeptical of FFAs were observed in the case study, including problems attributing catch appropriately because of murky joint ventures and evidence of corruption in licensing and aid being used as leverage to obtain fishing licenses. These issues essentially stem from a lack of transparency in the negotiation of FFAs.

⁹⁸ Barkin, J. Samuel, and Elizabeth R. DeSombre. 2013. *Saving Global Fisheries: Reducing Fishing Capacity to Promote Sustainability*. Cambridge: MIT Press.

APPENDIX H

THE NEW ZEALAND EXPERIENCE OF JOINT VENTURE FISHING OPERATIONS: 1977 TO 2013

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Fishing of New Zealand's inshore waters for domestic consumption has taken place since very early days. The relative isolation of New Zealand from the large industrialized fishing nations of the northern hemisphere delayed the development of commercial fishing in the deep water surrounding New Zealand until the early 1960s (New Zealand Ministry of Agriculture and Forestry 2012). Foreign fishing fleets exploited resources in areas beyond the territorial sea: Taiwan, China, Japan, Korea, and then the Soviet Republic exploited demersal fisheries while the United States and Japan exploited pelagic tuna and squid resources.

In the late 1970s, New Zealand passed the Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977, which extended New Zealand's jurisdiction over its fisheries out to the 200-nautical-mile limit of the exclusive economic zone (EEZ). The Act defined New Zealand's territorial sea as extending from shore to 12 nautical miles (previously it was limited to 3 miles) and defined the EEZ as extending from the outer limit of the territorial sea to 200 nautical miles (New Zealand Ministry of Agriculture and Forestry 2012).

By the late 1970s, New Zealand still had only limited capacity to fish in the EEZ. Catch that domestic vessels could not harvest was allocated to foreign countries under government-to-government license agreements. Under those agreements, vessels from Japan, Korea, and the Soviet Republic were permitted to fish in New Zealand and return their catch to foreign ports for processing. These vessels were catching in excess of 200,000 tonnes of fish each year from the EEZ.

At the time, foreign license agreements were considered to be a temporary measure while domestic fishing capacity was built up. To help expand the domestic fishing industry, New Zealand operators were encouraged to engage in joint ventures with overseas fishing companies. The nature of these joint ventures ranged from foreign parties investing capital in New Zealand to the provision of additional fishing capacity in the form of foreign-owned and -flagged vessels chartered by New Zealand fishing companies. All joint venture arrangements required government approval and were subject to an assessment of the benefits they would deliver to the New Zealand economy (New Zealand Ministry of Agriculture and Forestry 2012). This measure resulted in an expansion of onshore processing capacity as catch from joint venture vessels was landed, processed, and exported from New Zealand. These arrangements were for an initial period of five years and expired in 1983.

In 1983, the Deepwater Allocation System (DAS), a precursor to the Quota Management System (QMS), was introduced to con-

trol the harvest of seven deepwater species (barracouta, hake, hoki, ling, orange roughy, oreo dory, silver warehou, and later squid). Quota was allocated to fishing companies that could demonstrate that they had the capacity to operate in these fisheries and could process the catch. The government allowed these companies to use foreign-owned and -flagged vessels to harvest their catch entitlement (New Zealand Ministry of Agriculture and Forestry 2012). An undefined competitive quota remained for domestic vessels fishing these species.

An interesting development at the time was an application for community quota by the Federation of Commercial Fishermen, a body of independent inshore fishermen. The government declined this application but left a competitive quota available for individual small-owner operators.

The government at the time opted for the DAS as a response to a huge number of applications by both fishing companies and outside investors to import fishing vessels to secure a stake in the fishery and to avoid having vessels built in New Zealand, as import policies required.

The number of applications was so large that the catch capacity exceeded the total allowable catch (TAC), and the government foresaw a potential tragedy of the commons if the applications were approved and the vessels were permitted to fish under an Olympic system.

The government also saw that the regulatory framework that existed at the time resulted in fishing companies gaming the system rather than making decisions on rational economic and commercial grounds. They wanted a system that allowed firms the greatest possible flexibility for decision making. This resulted in giving the firms the flexibility to either charter or purchase vessels and to process onshore or offshore, as they saw the most profitable option. The only return government would claim was a \$NZ 3 per tonne rental fee.

While it was hoped that free trade in fisheries services would lead to jobs, domestic investment, technology transfer, and marketing opportunities, the government set no targets or requirements. The government's principle motive was to create a system that removed itself from interfering in the economic decision making of the industry with the belief that rational economic decisions were better made by the private sector than by the government and that this would lead to a profitable industry that would not make claims on the government purse. The government would, however, retain control over decisions that related to the conservation and management of the fish stocks and environmental issues.

The New Zealand policy move at this time was unique and bold in terms of international fisheries policy. Iceland was the only other country that was opting for an individual quota-based system, but that did not provide for free trade in catching capacity and processing capacity.

No known definitive economic study appears to exist of the economic benefits that have flowed to New Zealand from this approach, and there have been both failures and successes among the original fishing companies allocated quota. Nonetheless, there have been no calls for government subsidies to support the industry or to radically change the system.

The Quota Management System was introduced in 1986. Under this system, fishing companies and other individuals were able to own a share of each fish stock managed under the QMS. This quota entitled the owner to a fixed quantum of catch from a fish stock. The initial allocation of quota was based on fishers' catch history, and quota shares were granted in perpetuity.

In 1990, the QMS was amended so that quota shares entitled the holder to a proportion of the annual catch levels set by the Minister of Fisheries for each fish stock (according to its assessment of the state of the stock) rather than a fixed quantum. Further amendments that came into force in 2001 introduced the concept of annual catch entitlement (ACE) as a tradable catching right generated each year from quota.

The initial allocation model for the QMS did not recognize any treaty rights for native people of New Zealand (Māori). Māori challenged the legality of the QMS, and in 1989, the Crown and representatives of Māori reached an interim settlement of Māori claims to fisheries. This settlement provided for the allocation of quota (or the cash equivalent) covering 10 percent of the total quota for each fish stock in the QMS. This was in effect an allocation of community quota, as it was held and managed for and on behalf of Māori tribes (Iwi) on a collective basis.

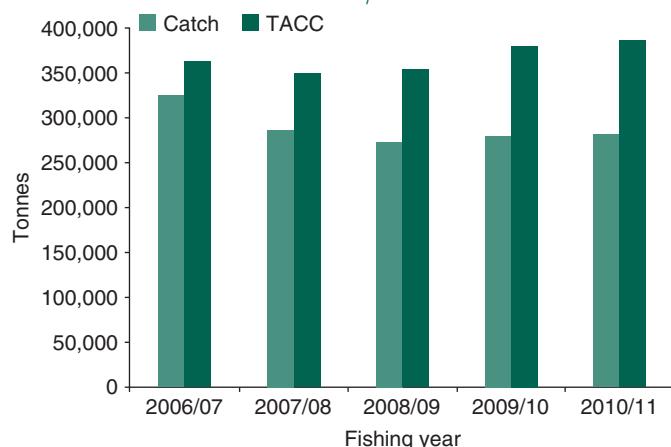
In 1992, the Waitangi Tribunal reported on a claim by Ngai Tahu that Māori had a right to participate in the use of all of New Zealand's fisheries resources subject to the QMS. The Tribunal found that such a development right existed, and the government and Māori returned to negotiations. A full and final settlement was agreed that provided for

- » The purchase of a share in Sealord Products Limited;
- » 20 percent of any quota for fish stocks brought into the QMS after the settlement date; and
- » The establishment of the Treaty of Waitangi Fisheries Commission to hold assets on behalf of Iwi and to allocate those assets for the benefit of all Māori. (From a community quota perspective, this is the most important aspect, as it provided for the central body, which would minimize transaction costs to either hold the quota or allocate to Iwi for the Iwi to use or to divest to individuals.)

Quota received from the Crown as part of the settlement had limitations placed on its tradability: it could be sold only to other Iwi or to the Treaty of Waitangi Fisheries Commission, now known as Te Ohu Kaimoana. On the other hand, annual catch entitlement derived from the settlement quota could be sold on the open market (New Zealand Ministry of Agriculture and Forestry 2012). This protected a community asset from divestment, while the ACE tradability allowed Iwi the flexibility to fish themselves, engage others to do so, or sell on the open market without losing their perpetual property right.

The significance of this provision is that it was an allocation of Community quota. Te Ohu Kaimoana is a community-elected

FIGURE H.1. TACC vs. CATCH FROM MAJOR EEZ SPECIES FOR THE 2006/07 TO THE 2010/11 FISHING YEARS



Source: The Blue Book, FishServe. <http://www.fishserve.co.nz/services/bluebook>

body that could allocate ACE to individual communities engaged in foreign joint ventures or put ACE on the market to the highest bidder, making decisions as they saw best for the interests of the community as a whole.

Te Ohu Kaimoana was also mandated to come up with a plan and allocate quotas and company shares to individual Iwi (tribes) so eventually the ownership would be vested in individual communities who could then use it as they wished to the benefit of the Iwi as a whole.

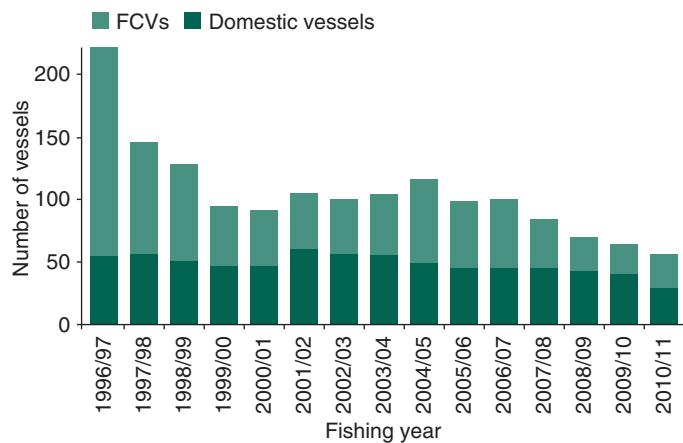
Iwi have used their ACE both individually and in combination with each other to engage foreign charter vessels rather than purchase vessels and processing capacity themselves, as they have no or limited capital for investment. This allows them to build both experience in fishing and a capital base with minimal risk. The expressed wish of Iwi is to eventually conduct these activities themselves once they have built a strong capital base from the charter vessel arrangements.

The scale of New Zealand fisheries is demonstrated in figure H.1. Foreign joint ventures are currently catching approximately 50 percent of the total allowable commercial catch (TAC). This is 35 years after the first approval of foreign joint ventures.

USE OF FCVs IN NEW ZEALAND'S EEZ FISHERIES

Foreign charter vessels (FCVs) are vessels that are owned by a foreign person and fish in New Zealand waters under contract or charter to a New Zealand company. These vessels are restricted to operating in the EEZ outside the territorial sea and other defined areas to avoid conflict with small inshore vessels. The fishing fleet operating in New Zealand's EEZ is a mix of domestically owned and operated fishing vessels and FCVs. FCVs have operated in New Zealand since the earliest days of its EEZ fishing activity. The overall number of fishing vessels and the number of FCVs operating in the EEZ has fluctuated over time (see figure H.2 for levels

FIGURE H.2. NUMBER OF FCVs AND DOMESTIC VESSELS OPERATING IN NEW ZEALAND'S EEZ BY FISHING YEAR



Source: MAF database.

for the last 15 years) (New Zealand Ministry of Agriculture and Forestry 2012).

New Zealand companies charter FCVs from foreign vessel owners under either a demise or a time charter arrangement.

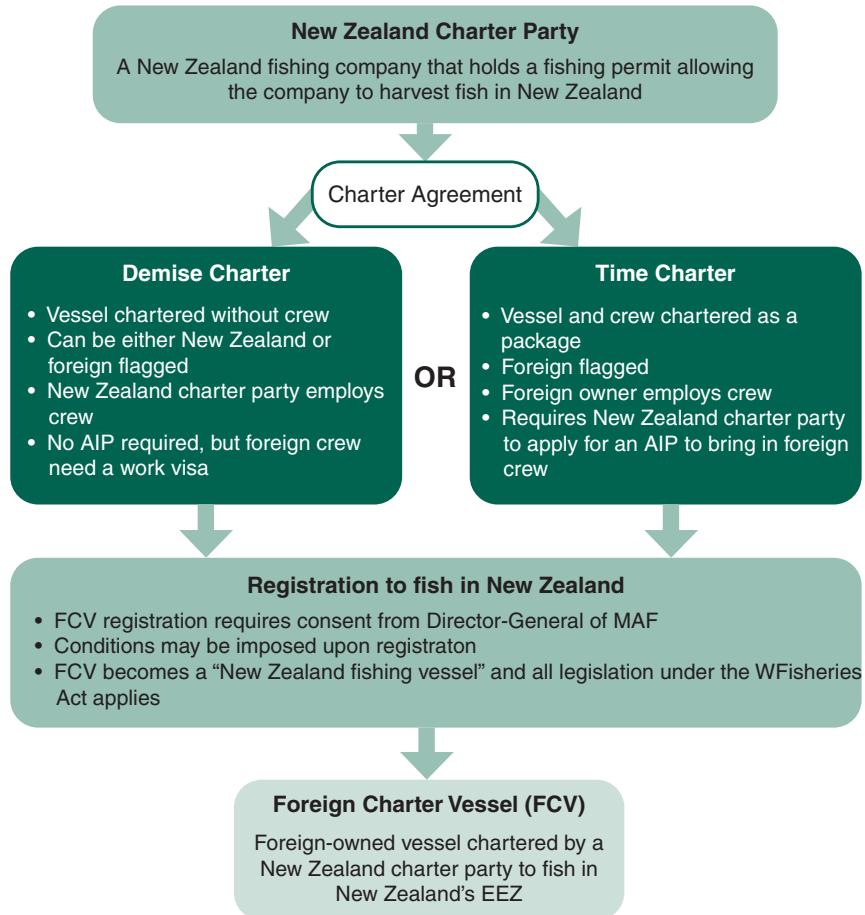
Under a demise charter (also referred to as a bareboat charter), only the vessel (including plant and fishing gear) is chartered. The company chartering the vessel (referred to as the New Zealand charter party) assumes control and possession of the vessel for the duration of the charter period, including the right to employ officers and crew to operate the vessel. This arrangement has the vessel and crew subject to all aspects of New Zealand law.

A time charter is where both the vessel and crew are chartered as a package. Under this arrangement, control and possession of the vessel are retained by the vessel owner. The vessel and crew are only subject New Zealand fishery law and limited aspects of New Zealand maritime law.

Of the 27 FCVs operating in the EEZ in the 2010/11 fishing year, 26 operated under a time charter and 1 under a demise charter. The procedures are outlined in figure H.3.

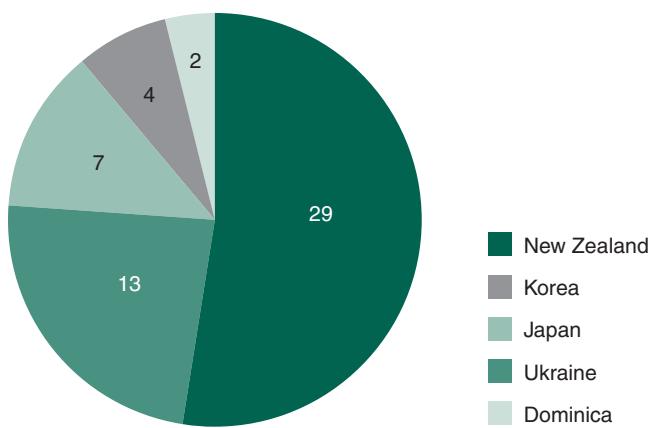
All commercial vessels, including fishing vessels, are required to fly the flag of the country in which they are registered. (All vessels

FIGURE H.3. KEY STEPS AND PARTIES INVOLVED IN ENABLING AN FCV TO OPERATE IN NEW ZEALAND'S EEZ



Source: Secretariat Inquiry into the Operation of Foreign Charter Vessels in New Zealand, 2012.

FIGURE H.4. THE NUMBER OF FISHING VESSELS OPERATING IN NEW ZEALAND'S EEZ IN THE 2010/11 FISHING YEAR BY FLAG STATE



Source: MAF database.

are required to be registered in their flag state. Note that in the New Zealand context this refers to registration under the Ship Registration Act 1992 and not the registration under the Fisheries Act.)

Vessels may fly only one flag at a time but are free to change flags as long as there is a genuine link (*genuine* is not defined internationally) between the vessel and the flag state and the vessel satisfies any conditions set by the flag state. Decisions on which flag state a vessel operates are made for a variety of reasons, including the state in which the vessel is owned and the state in which the vessel operates. In some cases, a vessel may be reflagged to a state with lower regulatory requirements or a less-vigorous enforcement regime to reduce operating costs. These states are referred to as “flags of convenience.”

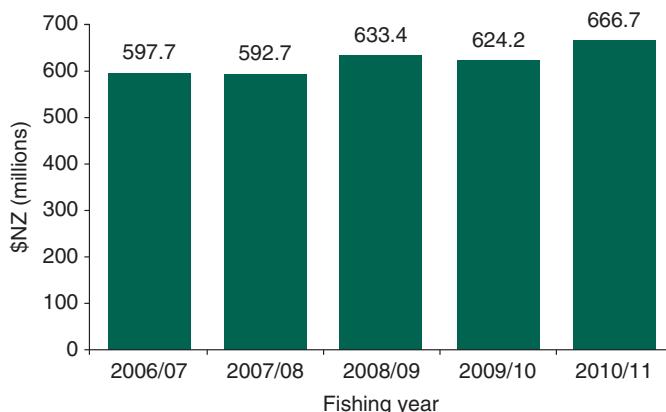
Under New Zealand’s Ship Registration Act, only fishing vessels chartered on a demise basis may be flagged to New Zealand. (The one vessel currently operating in New Zealand under a demise charter is flagged to New Zealand). Of the time-chartered vessels currently operating in New Zealand’s EEZ, 13 are flagged to the Republic of Korea, 7 to Japan, 4 to Ukraine, and 2 to Dominica (see figure H.4).

The majority of FCVs operate year-round in New Zealand’s EEZ. In the 2010/11 fishing year, there were 56 deepwater vessels operating in New Zealand’s deepwater and pelagic EEZ fisheries. Twenty-seven of these vessels were FCVs, and 29 were domestic vessels. Six of the FCVs were seasonal vessels fishing in the EEZ for only part of the fishing year. These vessels operated in fisheries, such as the squid jig and tuna longline fisheries, that require specialist gear or particular vessel capabilities.

The FCVs that remain in the EEZ year-round are all trawl vessels, apart from one that pots for hagfish.

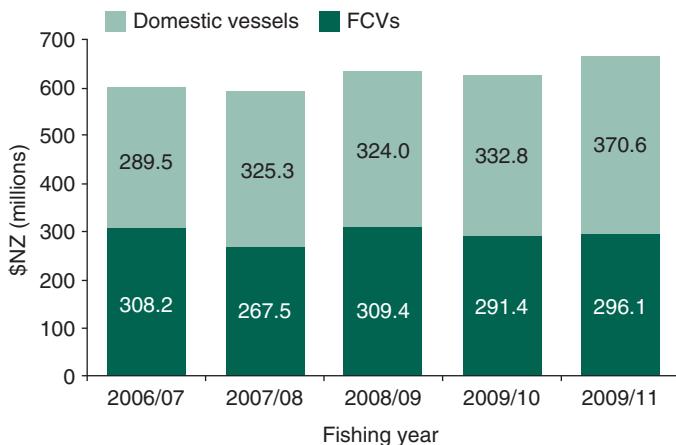
The use of a number of foreign-flagged vessels to fish privately-owned quota under contract to a domestic permit holder within the EEZ is unique to New Zealand. This reflects the size of the New Zealand EEZ (the fourth largest in the world), the comparatively limited capacity of the domestic fishing industry, and the use of an individual transferable quota system (the QMS) (New Zealand Ministry of Agriculture and Forestry 2012).

FIGURE H.5. EXPORT VALUE OF MAJOR EEZ SPECIES FOR THE 2006/07 TO 2010/11 FISHING YEARS



Source: Seafood Industry Council Export Statistics.

FIGURE H.6. ESTIMATED EXPORT VALUE BY VESSEL TYPE FOR THE 2006/07 TO 2010/11 FISHING YEARS



Source: Seafood Industry Council Export Statistics.

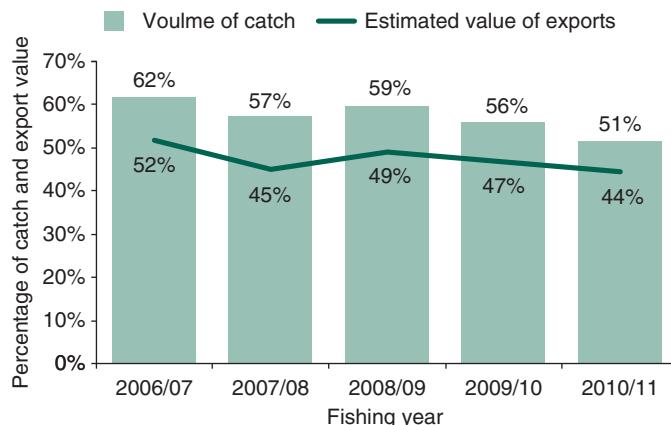
SPECIES TARGETED BY FCVs

The main EEZ species covered by the QMS include deepwater species (orange roughy), middle-depth species (southern blue whiting), and highly migratory pelagic species (southern bluefin tuna). The majority of species targeted by the FCV fleet are high-volume, low-value stocks, such as squid, barracouta, and southern blue whiting. Japanese FCVs that fish in the EEZ for only a few months each year operate in seasonal fisheries, primarily the squid jig and the tuna long-line fisheries.

The export value of New Zealand’s EEZ fishery by all vessels has increased in recent years and currently exceeds \$NZ 650 million, as shown in figure H.5 below (New Zealand Ministry of Agriculture and Forestry 2012).

Estimated export value by vessel type and the proportions of catch taken by FCVs are shown in figures H.6 and H.7 below. These figures show that the export value of product taken by FCVs has remained relatively stable over the past five years and that the

FIGURE H.7. FCVs PROPORTION OF THE MAJOR EEZ SPECIES CATCH BY VOLUME AND EXPORT VALUE FOR THE 2006/07 TO 2010/11 FISHING YEARS



Source: Seafood Industry Council Export Statistics.

growth in export value over this period has come primarily from domestic vessels.

THE INTERNATIONAL LEGAL FRAMEWORK

The rights and duties of flag states and coastal states within whose waters a vessel operates are set out in United Nations Convention on the Law of the Sea (UNCLOS). UNCLOS represents an attempt to strike a balance between the traditional rights of flag states under the concept of “freedom of the high seas” and the notion that a coastal state should be entitled to exercise a degree of control over the waters off its coast.

There are limits on a coastal state’s authority over the activities of foreign-flagged vessels in its EEZ. The basic UNCLOS principle governing the activities of vessels in an EEZ is that the flag state has primary jurisdiction over all technical, administrative, and social matters relating to its vessels. This means there is limited control over health and safety issues, crew abuse, and wage conditions by the coastal state.

A coastal state’s authority over foreign-flagged vessels in its EEZ stems from its “sovereign rights” with respect to the resources of the seabed and water column, including the right to control and regulate fishing activity. These rights are not absolute and are carefully balanced against the high-sea freedoms traditionally enjoyed by flag states. A key duty of coastal states is to establish conservation and management measures to ensure that fisheries are not overexploited. Coastal states also have responsibility for the protection and preservation of the marine environment in their EEZ.

FISHERIES MANAGEMENT

The legislative framework for managing New Zealand fisheries is set out in the Fisheries Act 1996 and regulations made pursuant to it. The purpose of the Fisheries Act is to provide for the

utilization of fisheries resources in a sustainable manner. It applies to all commercial, recreational, and customary fishing in New Zealand’s marine environment. The Ministry of Agriculture and Fisheries (MAF), now known as the Ministry of Primary Industries (MPI), is responsible for enforcing all fisheries legislation, including the provisions of the Act relating to the protection of New Zealand’s marine environment.

Under the Fisheries Act, FCVs fishing in New Zealand waters are considered to be New Zealand fishing vessels and, as such, must comply with all relevant provisions of the Fisheries Act and regulations. Under UNCLOS, there are no jurisdictional issues regarding the application of New Zealand fisheries laws and regulations to FCVs operating in New Zealand’s EEZ. The situation is, however, less clear in respect to safety standards and labor conditions.

MARITIME SAFETY

While New Zealand, as the coastal state, has certain rights under UNCLOS in relation to the management of the natural resources of its EEZ, the flag state is responsible for the health, safety, and qualifications of crew onboard its fishing vessels and for the safety standards of the vessel’s construction and operation.

There are currently no international conventions or standards in force that apply to the design and construction, seafarer certification, or equipment standards for fishing vessels. Fishing vessels and crews are expressly excluded from the two major International Maritime Organization (IMO) conventions to which New Zealand is party: the International Convention for the Safety of Life at Sea (SOLAS) and the Convention on Standards of Training, Certification and Watchkeeping (STCW).

Two IMO conventions dealing with fishing vessels have been developed: the 1993 Torremolinos Protocol for the Safety of Fishing Vessels (Torremolinos Protocol) and the 1995 International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F Convention). STCW-F came into force in October 2012, and it is anticipated that the Torremolinos Protocol will come into force in October 2015. New Zealand is not yet a signatory to either convention.

Maritime New Zealand (MNZ) is a Crown entity with responsibilities under the Maritime Transport Act 1994, the Maritime Rules and Marine Protection Rules (the Rules), and the Ship Registration Act 1992. MNZ was established in 1993 and is governed by an independent board appointed by the governor general on the recommendation of the minister of transport.

MNZ is the regulatory authority responsible for ensuring the safety of fishing vessels and enforcing marine pollution standards. Under the Rules, all New Zealand-flagged commercial fishing vessels are required to be in the oversight of a safe ship management (SSM) organization. The actual assessment and approval of vessels as meeting New Zealand’s requirements has been transferred to approved SSM organizations, with MNZ retaining an audit function to ensure that SSM companies apply appropriate inspection and approval processes.

Foreign-flagged vessels are not required to enter into the SSM regime until they have completed two years of continuous operation in New Zealand. There are potential jurisdictional questions around the application of New Zealand’s maritime safety regime to foreign-flagged FCVs. At present, there is no legal requirement

for operators of FCVs to report incidents and mishaps in the EEZ. MNZ has no authority to investigate accidents or incidents involving FCVs in New Zealand's EEZ unless requested to do so by the flag state.

MNZ is responsible for ensuring that officers and crew working on New Zealand-flagged fishing vessels have the necessary qualifications, as specified in the Rules. The qualifications required of officers and crew working on foreign-flagged FCVs are set by the flag state.

EMPLOYMENT CONDITIONS

The International Labour Organization (ILO) is the United Nations' specialized agency responsible for the promotion of social justice and internationally recognized labor rights. While the ILO has, in recent years, negotiated and adopted conventions and recommendations that set standards for migrant workers and workers on fishing boats, New Zealand is not party to these conventions.

CODE OF PRACTICE ON FOREIGN FISHING CREW (THE CODE OF PRACTICE)

The rights of foreign-flagged FCV crews are set out in an industry code of practice. In the absence of specific legal provisions, the code of practice was introduced to impose a broad range of employment requirements on the use of foreign labor on foreign-flagged FCVs operating within the EEZ. The code of practice was agreed on after negotiations involving the industry, the government, and the New Zealand Fishing Industry Guild. The code of practice includes minimum working and living conditions for FCV crews (including regular reporting and provisions for onboard inspections during port visits), minimum remuneration requirements, and the right of foreign crew to access employment dispute resolution mechanisms under the Employment Relations Act 2000.

MINIMUM WAGES

The Fisheries Act extends the application of the Minimum Wage Act and Wage Protection Act to FCV crew. It does this by conditioning the approval of the FCV. The Fisheries Act also allows labor inspectors to exercise their powers under these Acts. It is the responsibility of the Department of Labour (DoL) to ensure that FCVs operating in the EEZ comply with these Acts.

WORK VISAS FOR FCV CREW

Under the Immigration Act 2009, New Zealand work visas for foreign crew on FCVs are approved using a two-stage process. The New Zealand-based company that is party to the charter agreement for a particular FCV (referred to as the New Zealand charter party) must generally obtain an Approval in Principle (AIP) to employ foreign crew on an FCV, and the particular crew members must apply for, and be granted, an appropriate work visa. The following three conditions must be met (in addition to generic requirements of health, character, and bona fides):

- » Immigration authorities are satisfied that the New Zealand charter party has made a genuine attempt to recruit New Zealanders;
- » Immigration authorities are satisfied that the terms and conditions of the code of practice will be adhered to; and
- » The New Zealand charter party provides a guarantee of payment of minimum levels of crew remuneration in the event of default by the foreign employer.

HEALTH AND SAFETY OF CREW

As indicated above, two IMO conventions have been developed that set safety standards for the protection of crews of fishing vessels: the Torremolinos Protocol and the STCW-F Convention.

The health, safety, and well-being of all those onboard foreign-flagged vessels in the EEZ remain the responsibility of the flag state. While coastal states have jurisdiction over artificial islands or installations (such as oil rigs) in their EEZ, they have no general jurisdiction over foreign-flagged vessels. New Zealand's Health and Safety in Employment Act (HSE Act) does not currently apply to FCVs.

CRIMINAL ACTIVITY

UNCLOS does not give coastal states general jurisdiction over criminal activity on foreign-flagged vessels in their EEZ. New Zealand's criminal law extends beyond New Zealand territory and into the EEZ only in certain circumstances. Extraterritorial jurisdiction may be exercised in limited circumstances for international crimes and for general criminal offending in the case of vessels operating out of New Zealand ports where the flag state consents to prosecution. In either case, prosecutions require the consent of New Zealand's attorney.

GENERAL

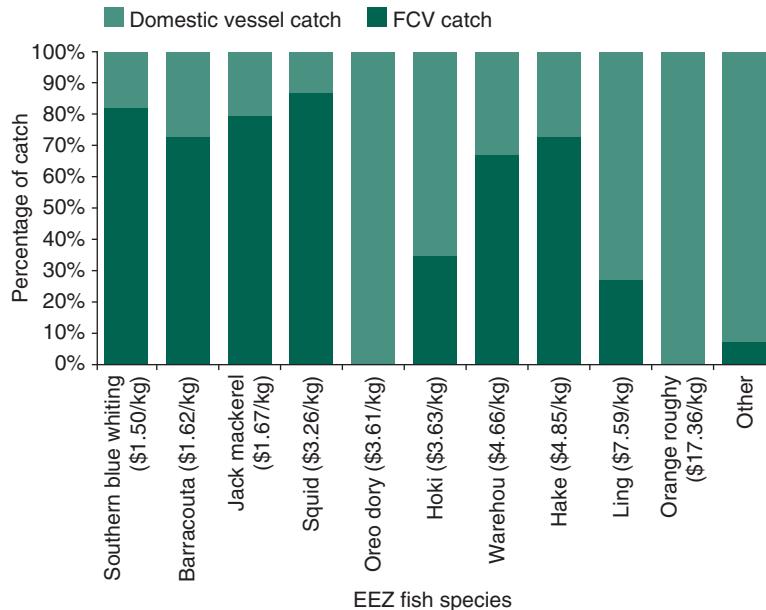
FOOD SAFETY

MAF is responsible for the regulatory regime established to ensure that food is safe for human consumption. The Animal Products Act 1999 sets out New Zealand's legal requirements for ensuring food safety and the suitability of animal products, including seafood. MPI is responsible for setting and administering all food safety standards under this Act and has entered into a number of intergovernmental agreements on the recognition of food safety standards.

Risk management programs (RMPs) are required for all factory vessels (fishing vessels that fillet on board or carry out further processing). The same requirements and criteria are applied whether the vessel is New Zealand flagged or foreign flagged. Before a vessel is allowed to fish, an onsite evaluation by an independent MAF-approved evaluator and a MAF assessment of the program is required. Limited processing vessels operate under a Regulated Control Scheme (RCS). A registered Limited Processing Fishing Vessel's operation is restricted to limited processing (the washing, scaling, gutting, deheading, tubing, tailing, chilling, freezing, storage, packing, or transport of fish material or fish product for human consumption).

Verification of compliance with RMP and RCS requirements is undertaken in port on a performance-based frequency (New Zealand Ministry of Agriculture and Forestry 2012).

FIGURE H.8. PERCENTAGE CATCH BY FCVs AND NEW ZEALAND FLAGGED VESSELS FOR THE 2010/11 FISHING YEAR



Source: Seafood Industry Council Export Statistics October 2011 and MAF catch database.

TRADE ACCESS

Some New Zealand companies currently benefit from preferential access to the Korean and Japanese markets by virtue of their use of FCV's flagged to those states. New Zealand companies using Korean or Japanese vessels in charter operations can export their share of the catch to those countries as domestic product, thereby avoiding duty and quota restrictions. This is particularly beneficial for New Zealand companies when it comes to low-value species like jack mackerel and squid. This privilege does not extend to companies who are not operating in a FCV.

The value of fish species in figure H.8 is based on the average processed price. New Zealand vessels that catch hoki obtain a much higher price, as it is filleted and snap frozen at sea (headed and gutted compared to filleted). FCVs do not target oreo dory, despite its lower value, as it is caught in conjunction with orange roughy. Orange roughy is a high-value fishery targeted by domestic vessels.

Figure H.8 demonstrates that after 35 years of joint ventures, there has been little progress to a domestic industry for the lower-value species of southern blue whiting, baracouta, jack mackerel, squid, hake, and warehou.

It might be argued that by keeping import restrictions and tariffs on squid and mackerel in particular, foreign joint ventures have been able to stop the development of a New Zealand domestic industry, as it is only possible to harvest and market these species without the cost of market restrictions.

In a recent submission to The Ministerial Inquiry into the Operation of Foreign Charter Vessels, a New Zealand domestic company provided the following economic analysis to illustrate the disadvantage of a domestic operator.

THE COST DISTORTIONS ADDED UP

The operating costs (fuel, repairs and maintenance, and cost of capital) between charter vessels and domestic vessels are very similar in most cost centers. The big variance occurs in the cost of labor and the benefits associated with privileged market access. Hence, this is the source of comparative advantage.

When the added advantages of free market access are added to the disparity in crewing costs, the level of distortion created for New Zealand crewed vessels is enormous. The distortion arises from New Zealand vessels being constrained by New Zealand law, which causes them to incur greater operating costs relative to the unrestrained foreign charter vessels. As an example,

In a recent trip (April 2011) of the New Zealand owned Amatal Explorer the vessel caught 626 M/T of Squid for an export value of NZD (\$NZ) 2.1 million. Had the vessel been flagged as a Korean FCV vessel, the landed catch value would have increased by NZD 400,000 due to the tariff reduction.

In addition to the duty free export premium of NZD 400,000 there is also the reduced wages incurred on the Korean FCV of NZD 330,000. The New Zealand vessels wage costs equated to NZD 546,000 for the Squid trip whereas the Korean wage bill would be approximately NZD 210,000.

On this single voyage of only 40 days the New Zealand vessel Amatal Explorer incurred an effect cost surcharge of NZD 730,000 compared to a similar sized Korean FCV.

Cost of Tariff on Squid NZD 400,000

Wages Differential NZD 330,000

NZD 730,000

It is of little wonder that the FCVs are catching 62.3 percent of our main deep water fish stocks.

No formal studies are known to exist on the total disparities and comparisons between domestic and charter operations.

If the domestic chartering nation required that trade barriers by the country of vessel registration had to be lifted prior to authority to fish in the NZ zone, it would create a more level playing field and lead to potential domestic development. Such an approach would need to be treated carefully to avoid the nation of the foreign vessel provider withdrawing approval for their vessels to operate in the EEZ.

It is equally clear why those domestic operators of FCVs wish to continue to operate them with subsidized capital, preferential market access, and lower wages; provided they can negotiate effectively with their foreign partner, they are likely to be more profitable than domestic operations.

CONTRIBUTION OF FCVs TO THE NEW ZEALAND ECONOMY

EEZ fishing requires significant investment because large vessels and specialized equipment are needed. New Zealand's EEZ fishing industry is dominated by a small number of large companies that can achieve economies of scale by fishing large-quota parcels with multiple vessels. This is in contrast with the in-shore fleet, which has many small businesses catching fish on behalf of quota owners. The in-shore fleet has relatively low barriers to entry because small vessels are relatively inexpensive and do not require specialist equipment.

The QMS provides flexibility for quota owners to make commercial decisions on the most profitable methods of harvesting their rights. This means that quota owners can decide whether to catch the fish themselves or sell their ACE. Having access to FCVs, either through a charter arrangement or by selling ACE to a New Zealand company chartering an FCV, gives quota owners a range of options for maximizing profits from the use of their quota. It also allows companies that do not own quota to purchase ACE and fish using FCVs.

Some smaller businesses decide to use FCVs because they do not have the funds to make the capital investment needed to purchase a vessel. The only options for quota holders with small quota parcels are to sell their ACE or partner with larger commercial interests. It is worth noting that, at present, smaller businesses have chosen to operate FCVs under time charters and the option to demise charter is not generally taken.

Using FCVs gives companies operational flexibility, including the ability to increase or reduce catching capacity without significant capital investment or incurring the costs associated with decommissioning excess capacity. If total allowable commercial catches are reduced, FCVs offer companies the possibility of restructuring without the loss of New Zealand jobs and assets.

In addition, some EEZ fisheries require specialist equipment and have only a relatively short season when it is profitable to catch a particular species of fish. In these situations, FCVs allow companies access to these fisheries without requiring them to purchase a vessel that cannot be used for the remainder of the year or in other fisheries.

Some of the larger fishing companies use FCVs primarily to catch high-volume, low-value species. However, they can also be

used to balance out catch plans for vessels across a company's fleet. This gives companies greater flexibility if, for example, a domestic vessel requires unscheduled maintenance or the total allowable commercial catch for a species is reduced.

The use of FCVs by New Zealand companies can form part of wider business relationships. These business relationships can extend to numerous points on the post-harvest supply chain from storage, processing, and market access to marketing.

Some of the foreign companies that charter FCVs to New Zealand companies have large global distribution networks. The use of FCVs may provide access to these networks for New Zealand companies that may be used for catch taken by domestic vessels as well as FCVs. For example, Sealord is 50 percent owned by Māori and 50 percent owned by Nippon Suisan Kaisha Ltd (Nissui) of Japan. Being co-owned by Nissui provides access to Nissui's global network of subsidiary companies, affiliates and partners.

Business arrangements associated with the use of FCVs have also facilitated investment by New Zealand seafood companies in offshore processing ventures in Asia. For example, Sanford Limited and Dong Won Fisheries Co Ltd of Korea each own a 50-percent share in the Weihai Dong Won Food Co Ltd located in China. Weihai Dong Won Food Co is an added-value seafood plant that processes fish sourced from New Zealand and other countries into added-value products. These products are then exported to other parts of Asia, the EU, America, Australia, and New Zealand. Sanford and Dong Won Fisheries Co Ltd also jointly own San Won Ltd, which operates a large cold-store facility in Timaru.

The example above relating to Sanford Ltd is not unique. Other large New Zealand seafood companies have developed processing interests offshore, particularly in China, through subcontracting or joint venture arrangements.

FCVs appear to allow low-value fish to be harvested economically. It has not been possible to ascertain whether the less economically attractive stock would continue to be fished if there was a significant change in the underlying structure of current FCV approvals. There is a strong counterargument that this activity should be taking place in New Zealand. This is on the basis that if New Zealand-caught product was not discriminated against by tariffs, existing ventures would be able to sell it into Korea and Japan and operate profitably. FCV operators who are exempt from the tariffs that New Zealand operators face maintain that they cannot operate profitably without cheap Indonesian crew.

The key financial-impact arguments that arise from the use of FCVs in New Zealand's EEZ fisheries can be grouped into the three categories set out below.

DISCREPANCY BETWEEN WAGES PAID TO CREW ON DOMESTIC VESSELS AND FCVs

From the information that has been provided to the Ministerial inquiry into FCVs, it is clear that crew on domestic vessels are paid significantly more than crew on FCVs.

However, it is an increasing global trend for service-based industries to be outsourced to where the cost of labor is significantly cheaper. This is particularly the case for highly mobile workforces

such as fishing crews. Some see this as unfair competition; others see it as a legitimate use of more competitive international wage rates.

PRESENCE OF FCVs IN THE EEZ FLEET APPEARS TO INCREASE THE VALUE OF ACE

Due to the reporting requirements on ACE trading, it has not been possible to quantify the impact of FCVs on the price of ACE. However, the argument that a larger fleet provides competition in the ACE market to the benefit of quota holders has been commented on by a number of industry players on both sides of the argument in submissions to the Ministerial inquiry into FCVs. It seems that Iwi, in particular (typically not holding a package of ACE sufficient to comprise an economic catch plan), benefit from the ability to sell their ACE holdings to third parties that utilize FCVs. Any decrease in TACC limits may also increase competition in the ACE market as vessels compete to purchase ACE to make up an economically viable catch plan. FCVs with lower wage costs and perhaps lower maintenance and compliance costs can afford to pay more for ACE, hence the argument that FCVs have artificially increased the value of ACE to the detriment of domestic vessels.

PRESENCE OF FCVs IS HAVING A MIXED IMPACT ON ACCESS TO CERTAIN EXPORT MARKETS

The use of FCVs by New Zealand companies can directly provide for better access to foreign markets. Fish caught on FCVs and exported to Korea and Japan receives tariff-free entry into their flag-state markets, as it is considered to be product of Korea or Japan under flag-state principles. For example, the tariff on squid entering Korea is 22 percent. A New Zealand vessel that catches 1,000 tonnes of squid with a market value of NZD 1,680,000 and exports it to Korea would incur a tariff of NZD 369,600 that catch from a Korean-flagged vessel would avoid. The Korean-flagged vessel does not have to pay the tariff because the squid is considered a product of Korea, notwithstanding that it was caught in New Zealand's EEZ.

The use of FCVs is causing some market access difficulties in key markets, such as the EU, which are investigating the use of slave labor on Korean vessels.

HOW FCVs CONTRIBUTE DIRECTLY TO LOCAL ECONOMIES

FCVs are in New Zealand's EEZ to catch fish on behalf of New Zealand quota owners. This differs from arrangements in other countries, where foreign-flagged vessels fish under license arrangements between the coastal state government and a foreign government. Depending on the commercial arrangements agreed on with the FCV owner, a proportion of the profit from the fish caught by

FCVs can be retained in New Zealand by New Zealand entities such as quota owners and the New Zealand charter parties. This occurs either directly through profit sharing arrangements or from the sale of ACE.

Benefits that accrue to the local economy from servicing the FCV fleet include the provision of supplies, repairs and maintenance, packaging, and cool-store facilities. Most of the FCVs in New Zealand have been here since the 1990s. A proportion of the repairs and maintenance of these vessels is done in New Zealand (often benefiting local economies such as Timaru, Lyttelton, and Nelson), and supplies are sourced from local businesses. These contributions to local economies remain only to the extent that the size of the EEZ fleet remains constant and operates out of the same ports. These local economies would be disadvantaged if FCVs left New Zealand's EEZ and were not replaced by other vessels.

TREATY SETTLEMENT QUOTA ADVANTAGES

As previously mentioned, the community nature of settlement quota shares cannot be freely sold as other quota shares can: the Maori Fisheries Act prevents the sale of settlement quota outside Iwi and Te Ohu Kaimoana. On the other hand, ACE derived from settlement quota can be freely traded on the open market.

In addition, Iwi have only progressively become owners of settlement quota since 2005, so there has been limited time for them to develop a long-term business model that would maximize the return on their quota asset. The individual quota shares tend to be relatively small, which means that in many cases, it is not economic for individual Iwi to fish their own quota.

Iwi use different models to maximize the return from their quota asset, including

- » Joint venture arrangements with foreign companies;
- » Long-term arrangements with domestic fishing companies;
- » Selling ACE through quota brokers or directly to fishing operators; and
- » Aggregating (or collectivizing) their ACE with other Iwi (New Zealand Ministry of Agriculture and Forestry 2012).

DAMAGE TO NEW ZEALAND'S INTERNATIONAL REPUTATION

During 2011, there were complaints and allegations by FCV crew to New Zealand authorities over their physical treatment and payment on FCVs operating in the New Zealand EEZ. Issues raised included vessel safety, living and working conditions, physical and sexual abuse by officers, underpayment, and manipulation of time sheets. The government has ongoing investigations into these claims.

There is no doubt that these allegations of exploitative labor practices and substandard working conditions have been damaging to New Zealand's reputation as a progressive and fair-minded nation. Reports have appeared in *The New York Times*, *Le Monde*, *China Daily*, *Jakarta Globe* and *The Guardian* newspapers, publications including *Bloomberg Businessweek*, and a number of New Zealand newspapers and industry publications. A range

of international online media agencies have also picked up the allegations.

Most of the incidents reported that are causing damage to New Zealand's reputation appear to have occurred on Korean-flagged vessels. The alleged abuse is against predominantly Indonesian crew members. Very few complaints were made about FCVs flagged to other states, although some of these have been the subject of complaints in the past.

All five FCVs investigated by government agencies for breaches of employment law or safety standards are flagged to Korea. The Ministry of Primary Industry withdrew its consent to register one vessel in February 2012. Maritime New Zealand placed one vessel in detention and a second vessel under an Imposition of Conditions (IOC) order.

There have been allegations in both the domestic and international media of human trafficking on FCVs in New Zealand waters. The U.S. State Department produces an annual Trafficking in Persons Report that assesses 184 countries, including New Zealand, on measures taken to combat human trafficking. The United States has identified fishing as a problem area. New Zealand's handling of recent FCV allegations, including the Ministerial inquiry, has been closely followed by the U.S. State Department. The U.S. ambassador for trafficking in persons visited New Zealand for discussions with officials and the industry. A further Trafficking in Persons Report is scheduled to be issued by the U.S. State Department later this year.

RISKS TO NEW ZEALAND'S SEAFOOD INDUSTRY

Repeated complaints about the activities of FCVs in such areas as vessel safety and workplace conditions put New Zealand's fishing industry's reputation and continued access to markets at risk (New Zealand Ministry of Agriculture and Forestry 2012).

Fishing companies have noted that retailers in markets such as the United Kingdom are paying close attention to consumer concerns about the sustainability of and ethical considerations around the food they buy. A recent U.K. government report found that ethical standards as well as sustainability issues are now closely linked to consumers' purchasing decisions.

NEW ZEALAND GOVERNMENT RESPONSE (DRAWN FROM THE PRIMARY PRODUCTION COMMITTEE RESPONSE TO FISHERIES [FOREIGN CHARTER VESSELS AND OTHER MATTERS] AMENDMENT BILL)

The government has introduced legislation to protect New Zealand's reputation and market access, although it had not been passed at time of this report.

The bill proposes to amend the vessel registration process specified in s103 of the Fisheries Act 1996 to provide a more

coordinated and detailed assessment of the risks of FCVs across agencies.

Risks associated with fisheries management, employment, or vessel safety will be able to be considered by the chief executive rather than only fisheries management. This reflects that the government is implementing an integrated risk-management framework, so that the chief executive has a complete government-wide picture of risk when making decisions. From May 2016, the approach would apply to all vessels irrespective of ownership status, ensuring an equitable, responsive, and simple approach.

The risk assessment will consider the compliance history of vessels, crew, and operators and will also inform the deployment of agency management interventions (for example, audits, inspections, observer coverage, and monitoring).

In the period leading up to May 2016, the registration process in the Fisheries Act will continue to distinguish between FCVs and domestic vessels. This reflects that foreign-flagged vessels will operate in New Zealand waters during that time.

The bill increases the enforcement powers of the chief executive through the introduction of new vessel suspension powers and extended cancellation powers.

The intent of the vessel registration suspension process proposed in the bill is to enable the chief executive to cease operations until the issues are resolved and, if necessary, call the vessel back to port. This power provides the flexibility to mitigate the risk of illegal activity while not going as far as cancelling the vessel registration. This is a two-step process. If the matter that led to the suspension is not resolved, then the vessel registration can be cancelled.

Suspension can occur if the chief executive is satisfied on reasonable grounds that the vessel's registration for the time being poses a risk of a breach of fisheries management, employment, or vessel safety laws justifying that action or there has been a breach of any condition of its registration.

The proposed amendments extend the functions of MPI observers to enable them to capture information on employment and vessel safety matters, along with existing fisheries management information.

The purpose of these changes is to support the new coordinated risk-management approach between MPI, MBIE, and MNZ. Information on employment, vessel safety, and fisheries management activities on board vessels will be fed back from observers to support agencies in assigning risk to individual vessel operators and crew.

The changes also empower regulations to be made and amended to enable the government to recover the cost of these new observer functions and empower the government to make regulations specifying the requirements for electronic monitoring equipment to be installed and maintained on vessels. This change is necessary to increase the range of monitoring and surveillance options available to the government in future.

The most significant change proposed in the bill requires that all FCVs be flagged as New Zealand ships (reflaging) by May 1, 2016.

This change is a fundamental shift from the vessel management regime in the Fisheries Act 1996, and for this reason, the government allowed a four-year transition period to minimize the impact on fishing vessel operators.

The government made this decision because it is serious about protecting New Zealand's international reputation as a responsible and world-leading manager of fisheries. The intent of the change is to firmly and transparently place the accountability for possession and control of FCVs with a New Zealand party. Reflagging ensures the responsibility of the New Zealand party to ongoing compliance with the respective New Zealand labor, safety, and fisheries rules and standards.

The government considers the reputational risks of continued use of vessels flagged to other States to be too high to use time charter or demise charters. Neither time nor demise arrangements (in absence of reflagging) would guarantee that New Zealand employment laws would apply while operating in New Zealand waters.

Reflagging will create a level playing field for all vessels operating in New Zealand waters. From May 2016, all references to FCVs in the Fisheries Act 1996 and regulations will be removed and the existing vessel registration process will be redundant.

The government wants to send a clear message domestically and internationally that the bar has been raised. New Zealand is serious about ensuring effective employment, vessel safety, and fisheries management for all vessels fishing in our EEZ.

It remains to be seen whether existing FCV arrangements will convert to New Zealand registered operations, although one Ukrainian venture has already done so. For operators of FCVs, it will mean they will potentially face higher labor costs and the possibility of losing preferential access to the home markets of the vessel origin. While some in the industry would see this as an impediment to free trade, others both inside and outside the industry see this as ensuring New Zealand meets its international obligations and is not an impediment to legitimate free trade.

To support the policy in the bill, the government has also adopted the following nonlegislative measures to manage FCVs:

- » Require observer coverage on all FCVs;
- » Establishment of an interagency steering group to improve coordination between agencies when making decisions on FCVs;
- » Improved MBIE auditing of labor standards and immigration requirements through a tightened code of practice for fishing crew and immigration tests; and
- » Stronger enforcement and auditing of vessel safety standards through a new Maritime Operator Safety System (MOSS).

The benefit of reflagging is that it fully addresses employment, health and safety, and jurisdictional and market access issues associated with FCVs.

Domestic operators will also be held accountable for the employment of foreign crew and vessel, which makes any enforcement action by government agencies more effective. New Zealand criminal law applies in full to New Zealand-flagged vessels. Trade access and reputational concerns will be resolved through New Zealand's complete control over the activities of FCVs in our EEZ, including the ability to regulate in the areas of vessel safety, health and safety, and labor standards.

LESSONS FROM THE NEW ZEALAND EXPERIENCE

FCV operations mean that New Zealand quota and ACE holders do not need to raise capital for vessels and processing facilities needed to operate in the EEZ.

Given a free market in fisheries services, industry operators will choose those services that are the most economic, transferring processing offshore and using the cheapest labor options for catching.

There can be some market advantages for companies that involve themselves in FCV operations, but it does not extend to the sector as a whole.

There are advantages to community quota holders or small parcel holders in being able to combine charter-catching capacity without having to raise capital for vessels of their own, particularly when their individual holdings would not support a vessel.

A bigger demand is created for ACE or leased quota to the advantage of those who have small quota holdings.

FCV operations do not lead automatically to development of domestic processing and marketing arrangements. FCV operations on their own do not result in technology transfer.

It is difficult for the coastal state to exercise control over the activity of foreign-registered fishing vessels in their zone without sovereignty.

Some FCV operators place profit ahead of reputation, which undermines the operations of those running legitimate operations both in the FCV sector and in the domestic sector.

Activities that undermine the credibility of the host nation will in the end be dealt with severely.

REFERENCES

- New Zealand Ministry of Agriculture and Forestry. 2012. Report of the Ministerial Inquiry into the Use and Operation of Foreign Charter Vessels. Personal communication. 2011.
- Report of the Ministerial Inquiry into the use and operation of Foreign Charter Vessels Feb 2012; ISBN 978-0-478-38783-4 (Print); ISBN 978-0-478-38784-1 (Online); Ministry of Agriculture and Forestry PO Box 2526, Wellington 6140, New Zealand.

ACRONYMS USED IN THIS DOCUMENT

ACE	Annual Catchment Entitlement
DAS	deepwater allocation system
DoL	Department of Labour
EEZ	exclusive economic zone
FCV	foreign charter vessel
ILO	International Labour Organization
IMO	International Maritime Organization
IOC	Imposition of Conditions
MAF	Ministry of Agriculture and Fisheries
MBIE	Ministry Business Innovation and Employment
MNZ	Maritime New Zealand
MPI	Ministry of Primary Industries
NZD	New Zealand Dollar
QMS	Quota Management System
TACC	total allowable commercial catch
UNCLOS	United Nations Convention on the Law of the Sea

APPENDIX I

THE BERING SEA POLLOCK FISHERY

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THE BERING SEA POLLOCK FISHERY: TRANSITION FROM FOREIGN TO DOMESTIC

INTRODUCTION

The walleye pollock (*Theragra chalcogramma*)¹ fishery is the world's second largest fishery in volume, behind the Peruvian anchoveta fishery. Walleye pollock stocks are distributed on both sides of the North Pacific in the eastern and western Bering Sea and Aleutian Islands (BSAI), in the Gulf of Alaska, and off Japan and Russia in the Seas of Japan and Okhotsk (figure I.1). Pollock were historically harvested off the coasts of Korea and Japan in the 1930s by small vessels for local consumption and for processing into fish meal and oil. In the 1960s, the Japanese began to build distant-water fleets to harvest pollock in the Sea of Okhotsk and Bering Sea. During the same period, Soviet fleets began to expand operations into the Bering Sea. North Pacific pollock harvests exploded during the 1960s, from 465,000 tons in 1961 to 3.6 million tons by 1971. By 1975, Japan and the Soviet Republic were harvesting a combined 4.6 million tons of pollock with large-scale distant-water industrial-scale fleets (table I.1).

The buildup of Soviet and Japanese harvests of pollock was an important impetus for the distant-water shipbuilding boom precipitated by a relentless need for protein sources following World War II. New and rebuilt ships embodied innovations in navigation (such as Loran radar), echo sounders, and refrigeration, all of which improved during the war effort. These new technologies allowed vessels for the first time to range far from home ports, efficiently harvest and process fish at sea, and return with holds full of frozen products. Japan's effort was part of its economic rebuilding strategy that sought access to food supplies as its economy recovered from World War II. Japan has historically been a high fish-consumption country, harvesting and processing many species into multiple forms, including a traditional industrial fish product called surimi. Pollock was traditionally utilized as fish oil, fish meal, and fillets, but in 1967, Japanese technicians discovered how to process pollock into surimi. This fueled the development of a fleet of Japanese floating surimi processors that pursued pollock and other flatfish

stocks in the western and eastern Bering Sea. The Soviet Union also pursued pollock as part of a national effort to increase Soviet bloc per-capita consumption of fish and to obtain supplies of fish meal for boosting agricultural output. The Soviet effort was mobilized by state-run bureaucracies that managed fleet construction and fishing operations with production plans and command and control directives.

Pollock grow to 60 centimeters and attain individual weights of 1.5 kilograms. They are caught in large aggregations during spawning periods using trawl gear near the bottom or in the midwater column. The flesh of pollock is delicate, and the raw fish deteriorate quickly. In some places, parasites are prevalent that further degrade quality and divert catch into lower-valued uses, such as fish meal. Human-use pollock are headed and gutted by machine or hand and then converted into fillets, whole frozen blocks, or surimi. Surimi is made by deconstructing and reforming the flesh into an industrial seafood base. The base is then used to create a variety of wholesale products, including fish sausage, imitation crab, and other food items.

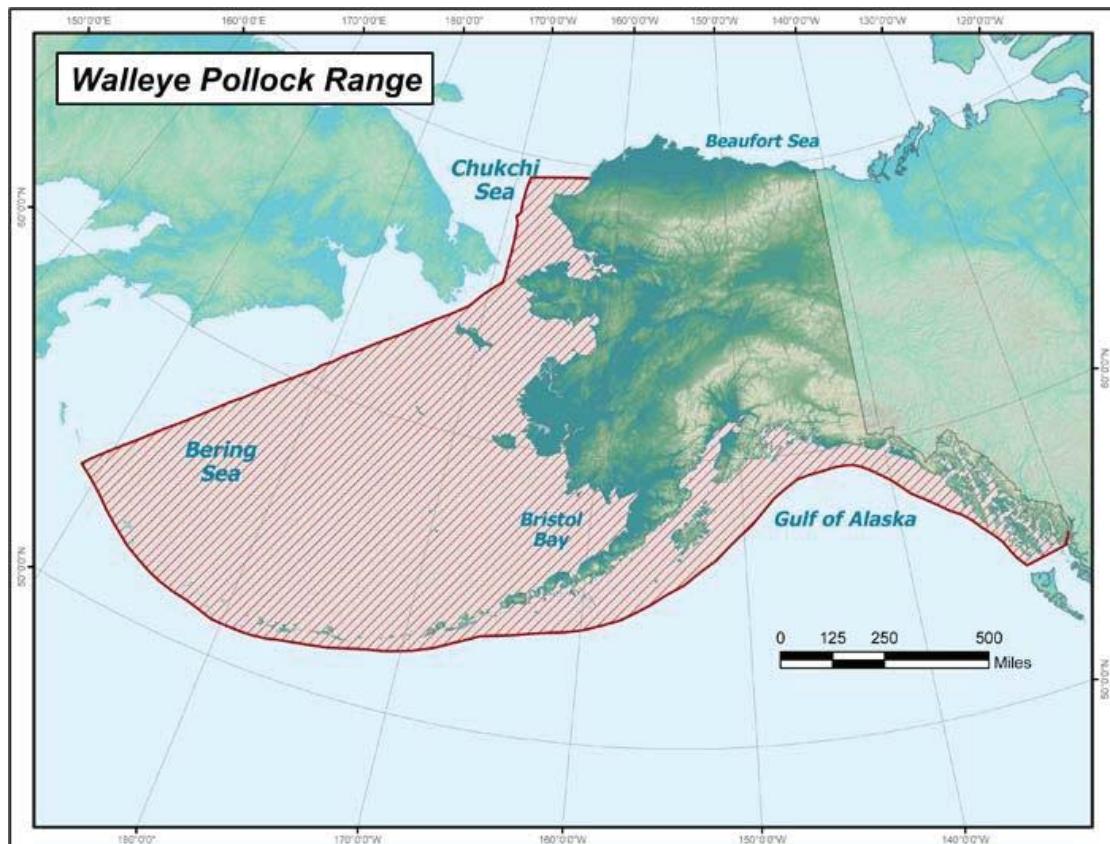
Pollock are caught and processed with one of three kinds of industrial-scale operations: (1) motherships with catcher fleets, (2) integrated catcher-processor (CP) vessels, or (3) shoreside processors served by mobile catcher fleets. Motherships are floating processors with processing lines below deck. Catcher vessels deliver cod ends of pollock onto the decks of motherships, ideally in a coordinated operation that achieves constant throughput. Optimal processing of pollock occurs a few hours after harvest, when rigor begins to set in, a narrow timing window that further complicates the operation. Integrated CP vessels have both trawl net operations above deck and processing facilities below deck. They move to the fish and also attempt to integrate both harvest and processing to maximize product recovery.

In the early development of the BSAI fisheries, the Japanese harvested with both mothership/catcher vessel fleets and with integrated catch-processor vessels.² During the same post-World War II rebuilding period, the Soviet Union built large and sophisticated factory trawlers and mothership/catcher vessel fleets to fish in the eastern and western Bering Seas for pollock, flatfish, and demersal fish. The Soviet fleets soon became the largest harvesters of pollock in the world (table I.1). Soviet vessels caught and processed pollock into frozen blocks of fillets and headed and gutted fish destined for Soviet bloc consumers. Some pollock were also processed into fish meal and fish oil for the Soviet agricultural system. Soviet and Japanese fleets were not the only foreign fleets fishing off U.S. coastal

¹ Sometimes called Alaska pollock.

² In 1971, the Japanese fleet took 1.25 million metric tons. Seventy-one percent was taken by 206 catcher vessels (100–200 feet) that delivered to 12 motherships of 12,000 GRT. Catcher processors took the remainder (Miller et al. 1976).

FIGURE I.1. WALLEYE POLLOCK RANGE



Source: Alaska Department of Fish and Game.

TABLE I.1. WORLD WALLEYE POLLOCK CATCH BY COUNTRY (1975–84)

Country	Catch ('000 tons)									
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
U.S.S.R	1,958	2,091	1,975	2,012	2,049	2,112	2,138	2,498	2,747	3,450
Japan	2,677	2,445	1,928	1,546	1,551	1,552	1,595	1,570	1,434	1,606
United States	0	0	0	2	3	1	61	130	285	455
South Korea	388	533	391	362	297	286	279	262	367	399
Poland	0	0	1	1	40	61	93	0	0	54
Germany	0	0	0	0	0	6	10	16	24	24
Canada	0	1	1	2	3	2	1	1	1	1
TOTAL	5,024	5,070	4,296	3,925	3,944	4,021	4,177	4,478	5,047	5,986

Source: Herrfurth, 1987.

Note: There are other references to "South Korea" in the text.

waters in the 1960s and 1970s. According to Alverson, Soviet ships moved into the Gulf of Alaska (GOA) in 1962 and to the Aleutians in 1963, fishing year round for herring and bottomfish (Finlay 2013). Then they moved southward toward Washington and Oregon in 1966. Polish and East Germans appeared off the West Coast in 1973, Koreans in 1974, West Germans in 1975, and Bulgarians and Taiwanese in 1976.

It was this rapid growth of foreign fishing fleets off U.S. waters and other developed country waters that led to the United Nations Law of the Sea Convention III (UNCLOS III), under which coastal nations asserted control over coastal zones to 200 miles. This enclosure of the commons led to a transition period and subsequent array of foreign fishing agreements designed to control, manage, and ultimately replace the foreign distant-water fleets.

INSTITUTIONAL IMPETUS: OPEN ACCESS, FOREIGN FISHING, AND UNCLOS III

The international institutional setting that provided backdrop for the development of the Bering Sea pollock fishery spanned both periods of open access use and use under new international limited-access jurisdiction. In 1956, the United Nations convened the first of three Law of the Sea conventions, intended to reformulate outdated conventions on use rights at various distances from coastal nations' shores. Conflicts were developing over long-held historical rights of passage for shipping, safe zones to protect coastal nations from aggressive actions, rights to seabed minerals, and rights to other marine resources, including fish in offshore zones. UNCLOS III convened in 1973 in New York, with momentum behind it for the creation of exclusive economic zones (EEZs) that would give coastal nations rights to control use out to 200 miles from their coasts.

MANAGING THE NEW EEZs: U.S. FISHERY CONSERVATION AND MANAGEMENT ACT (FCMA) 1976

In 1976, before UNCLOS III was ratified, the United States and other nations moved multilaterally to extend jurisdiction over marine resources to 200 miles. During the same year, the United States passed the Fishery Conservation and Management Act (FCMA), implemented in March 1977.³ The FCMA was the enabling legislation that gave direction to the management and use of newly claimed EEZs off the United States, including the large and productive zones in the BSAI and Gulf of Alaska regions. To get buy-in from countries excluded from coastal waters in the newly formed EEZs, UNCLOS III called for a transition mechanism whereby countries with insufficient domestic capacity would make surplus fish within their EEZs available to foreign fleets until sufficient domestic capacity had been built.⁴

The Alaska pollock fishery thus began the 1977 season with a new set of institutions and a new direction that governed not only the scientific determination of total allowable catches (TACs) but the allocation of those allowable catches to traditional users and new potential users. An important explicit aim of the FCMA was to set up mechanisms, incentives, and plans to ultimately replace, with domestic fleets, the foreign fleets that had previously plied the rich waters off Alaska. From the start, the United States was committed to a path intended to "Americanize" these previously common property resources in the North Pacific that had been

dominated by Soviet and Japanese fleets for the prior decade. It was anticipated, at first, that this process would be gradual because the American fishery was not prepared to take over fishing the vast number of fisheries in the newly formed EEZ off U.S. coastlines. The processing sector off the Pacific Coast states and in Alaska was underdeveloped and very labor intensive, without the ability to handle large throughputs of raw fish and with markets limited mainly to domestic consumers. Foreign fleets built by Soviet, Japanese, Korean, and other nations over the previous decade to fish in the Pacific were, in contrast, powerful, sophisticated, and industrial sized, and they outclassed anything West Coast fishermen were operating.⁵ For the most part, the fish foreign fleets harvested were low valued, delivered into specialized channels in home countries, and unknown in the U.S. market chain.

The FCMA directed regional fisheries management councils to manage fish species within the newly delineated EEZs "for the benefit of U.S. citizens." This unequivocally established an overarching goal and *raison d'être* for management actions.⁶ Management councils promptly assigned their scientist staffs to determine sustainable total allowable catch levels for species in the new EEZs. Once TACs were determined by biologists, they were allocated in priority to their expected benefits to U.S. citizens. The rankings of priority uses for any and all species were as follows:

First tier: fish caught and processed by U.S. firms

Second tier: fish caught by U.S. catchers and processed by foreign processors

Third tier: fish caught and processed by foreign processors The third tier priority was the all-important total allowable level of foreign fishing (TALFF) provided for by UNCLOS III negotiations and a transition mechanism.⁷ Foreign fish harvest was monitored by a system of onboard monitors at 100 percent coverage rates after the FCMA was passed.

TRANSITION TO JOINT VENTURES

In 1977, the United States embarked on the first steps of a path intended to eventually eliminate foreign fleets from its EEZ and replace that foreign processing and catching capacity with domestic capacity. Joint ventures became the first contractual instrument to facilitate the transition from foreign-dominated fisheries to domestic

³ Also called the Magnuson Act and later the Magnuson-Stevens Act after the principal authors.

⁴ Article 62.2 states, "the coastal State shall determine its capacity to harvest the living resources of the exclusive economic zone. Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall, through agreements or other arrangements and pursuant to the terms, conditions, laws and regulations referred to in paragraph 4, give other States access to the surplus of the allowable catch . . ." (United Nations Convention on the Law of the Sea).

⁵ Lee Alverson reported attending a meeting in Hamburg in 1957 and examining Purshkin Class Soviet catcher processors. He was impressed with "the tremendous advancements in net designs and fabrication, diesel engines, power deck machines and navigation . . . new synthetic twines and navigational and acoustical depth- and fish-finders. . . . The Russian vessel was so big it looked like a cruise boat or small whaler. I was almost embarrassed to give my talk on small West Coast stern trawlers." Reported in Finlay, May 4, 2012.

⁶ Note, however, that the notion of "benefits" was not specified or formalized in any rigorous way and was therefore left to interpretation and subsequent refinement by the regional fisheries management councils.

⁷ "The TALFF, if any . . . is that portion of OY . . . which cannot or will not be harvested by vessels of the United States . . . the total allowable level shall be zero for fisheries determined to have adequate or excess domestic harvest capacity." FR 32540, June 24, 1996.

TABLE I.2. ANNUAL WHITING CATCHES (TONS) OFF WASHINGTON, OREGON, AND CALIFORNIA BY FOREIGN NATIONS, 1966–85

	Bulgaria	East Germany	Japan	Poland	U.S.S.R.	Total	TALFF
1966	0	0	0	0	128,000	128,000	0
1967	0	0	0	0	195,092	195,092	0
1968	0	0	0	0	67,896	67,896	0
1969	0	0	98	0	109,225	109,323	0
1970	0	0	1,400	0	200,754	202,154	0
1971	0	0	799	0	146,726	147,525	0
1972	0	0	307	0	111,269	111,756	0
1973	0	0	3,782	2,200	139,060	145,042	0
1974	0	0	8,259	44,354	156,708	209,321	0
1975	0	2,000	3,214	41,542	155,405	202,161	0
1976	24,200	26,000	3,334	23,668	154,129	231,331	0
Magnuson Act Implementation							
1977	0	0	0	16,805	110,208	127,013	123,200
1978	0	0	0	26,721	70,106	96,287	120,000
1979	0	0	0	18,073	96,837	114,910	161,400
1980	0	0	0	44,023	0	44,023	120,000
1981	7,023	0	0	63,342	0	70,365	95,000
1982	7,089	0	0	0	0	7,089	35,000
1983	0	0	0	0	0	0	35,500

Source: Nelson, 1985.

fisheries. A joint venture (JV) is an agreement between two or more parties to combine equity and other resources to achieve some task. To be successful, a JV must be able to accomplish what the parties could not accomplish independently; that is, there must be some “gains from trade.” JVs are generally temporary and often face difficulties determining how to organize joint resource use and share the profits. In the U.S. EEZs, joint ventures became the first contractual mechanism by which U.S. fishermen developed a toehold in the industry previously dominated by foreign entities. For the most part, the JVs that emerged during this era were simple contractual arrangements whereby foreign floating processors purchased roundfish from U.S. catcher vessels at some negotiated prices.

MARINE RESOURCE COMPANY INTERNATIONAL AND THE HAKE FISHERY

The first joint venture on the Pacific Coast was the brainchild of a cold-storage owner from Seattle who recognized in the early 1970s the emerging momentum building to remove foreign fleets from the coastlines of the United States. He believed that new business opportunities could be developed by collaborating with Soviets over Soviet-caught fish in U.S. waters. He wrote to the Soviet Minister of Fisheries in 1973 proposing an arrangement. After not receiving a response for one and a half years, he wrote again and quickly received word from the Ministry that the Soviets were interested. The joint venture Marine Resources Corporation International (MRC) was formed in 1976.

The fishery prosecuted under the newly formed MRC joint venture was the hake (or whiting) fishery off the lower Pacific Coast states of Oregon and Washington. Hake are a species very similar to Alaskan pollock, caught during large spawning aggregations with midwater trawls, with delicate flesh that is prone to disintegrate if not handled properly and processed quickly. The Soviets had been fishing whiting off Oregon and Washington since 1966 (Philbin 1980), landing 128,000 tons that year (table I.2). American fishermen, on the other hand, avoided hake (Fisher 1991). Hake was not utilized by U.S. vessels because domestic shoreside processing plant capacity was too small to handle the fish, which was difficult to process, and there were no American markets for pollock products.⁸ The Soviets, on the other hand, had a ready-made administratively generated market for protein in the Soviet bloc.

⁸ The flesh of hake is soft and delicate and rapidly becomes mushy soon after harvest, and hake also contain a parasite that causes the fish to deteriorate in 5 to 15 percent of the fish. In 1976, the U.S. industry was not sophisticated. It lacked large enough vessels with electronics, and refrigeration was just being experimented with. Plants also lacked chilling and holding equipment and were heavily labor intensive. American fishermen and processors knew that the fish ought to be profitable because the Soviets were taking it. There was constant experimentation with filleted products marketed into the California market. Also, Oregon State Seafood Lab at Astoria was attempting to solve the parasite flesh breakdown problem (Fisher 1991).

TABLE I.3. PACIFIC WHITING CATCH IN THE JOINT VENTURE FISHERY OFF WASHINGTON, OREGON, AND CALIFORNIA, WITH U.S. CATCHER VESSEL AND FOREIGN PROCESSOR VESSEL EFFORT

Year	Pacific Whiting Catch (Tons)	Number of U.S. Vessels	Number Foreign Processors
1978	856	2	2
1979	8,834	7	11
1980	27,537	16	11
1981	43,557	22	20
1982	67,437	21	15
1983	72,100	19	16

Source: Nelson 1985.

In addition, the Soviets were successful in exploiting economies of scale using catcher processors and floating mothership vessels to convert large volumes of raw whiting throughput into headed and gutted and fillet frozen blocks. Finally, it should be emphasized that the Soviet economy was a fully planned economy, in which operations were not constrained to be efficient or profitable to persist.

The aim of the first JV was to have U.S. trawlers harvest pollock off Washington and Oregon and offload the cod ends onto Soviet floating processor ships. The Soviets had a decade of experience both catching hake and processing hake at sea with large integrated operations. But U.S. fishermen were inexperienced catching hake, and the first American catcher vessel partners in 1978 encountered a number of difficulties almost at once. The first midwater trawl net was installed on a West Coast vessel that was too small and incapable of towing the net fast enough to keep it open in the mid-water column. Vessels with more power thus had to be recruited for midwater trawling. U.S. fishermen had to learn to offload the cod end from their trawls to the Soviet processor vessels, no easy task in rough seas. The first attempted transfer resulted in the net full of hake sinking to the bottom. In the first abbreviated year, two American catcher vessels participated in the joint venture with two floating Soviet processors. The American vessels lost money on their catch of less than 1,000 tons, but they established proof of concept.

In 1979, MRC JV operations scaled up to seven catcher vessels delivering to 11 floating Soviet processing ships that took close to 9,000 tons (table I.3). In 1980, 16 vessels delivered to 11 processors approximately 27,000 tons. The joint venture generated benefits for both parties. U.S. fishermen most importantly gained access to a foreign market for fish that has not been profitable to harvest and market domestically. In addition, U.S. fishermen gained knowledge about how to deliver fish at sea to floating processors and Soviet technical knowledge about how to handle and process the low-val-

ued fish in sufficient volumes to be profitable. The Soviets retained access to the fisheries that they had opened up to use, all intended to provide needed protein for the Soviet-planned food system. A side benefit was that the Soviets also needed a source of hard currency (such as U.S. dollars) since Soviet currency was weak and inconveritible.

The joint venture posed quirky problems as well as opportunity for American partners. The Soviet arm of MRC wanted to avoid the reach of both the Soviet Minister of Fisheries and the Bank for Foreign Trade because both bureaucracies set up roadblocks to simple transactions and demanded side payments. So a barter system was developed wherein American hake was traded for Soviet king crab. Later, herring roe, pink salmon, pollock, mackerel, and yellowfin sole were taken in trade for hake. Crab and salmon were marketed into the American wholesale chains, pollock was sold to the Japanese, and mackerel and sole were sent to Egypt and West African markets. The barter system was denominated in “hake units” so that each ton of hake delivered to the Soviet floating processors converted for payment into a certain number of tons of the other Soviet-caught products delivered through MRC.⁹ Rates of exchange for these trades were determined administratively by the Soviets, and they were quite favorable to the American partners. The imagination and entrepreneurship on the part of all participants in the joint venture was an important factor that allowed the mutually agreeable arrangement to persist in the face of administrative constraints and other transaction costs.¹⁰

REALIGNMENT OF TALFFS INTO JV OPERATIONS

As the provisions of the FCMA began to be implemented on the West Coast, fish previously caught exclusively by foreign fleets under poorly enforced treaty agreements instead began to be allocated off more precisely measured and enforced biologically determined TACs. The priority allocation process gave U.S. participants an advantage with any fish they had capacity to catch and process, followed by the next tranche of the surplus to joint ventures with U.S. catcher vessels and foreign processors, and lastly to foreign fleets under the TALFFs. In the early 1980s, the joint venture system was growing, but total allocations of pollock were still dominated by direct foreign fishing allowances to Japan and the Soviet Union via TALFFs.¹¹ In 1979, Brezhnev invaded Afghanistan, and as political punishment, the United States removed the Soviet Union from accessing any TALFF other than through joint ventures. This was a stroke of good luck for Ameri-

⁹ For example, a ton of king crab traded for 26.5 tons of hake.

¹⁰ MRC soon moved toward a comprehensive joint venture model in which ownership was evenly divided between U.S. interests and the Soviet Ministry of Fisheries. Subsequent operations in Alaska involved leasing Soviet floating processing capacity in order to process multiple species of groundfish products that were then marketed into U.S. and international markets.

¹¹ For example, for BSAI pollock, foreign-directed catch via TALFFs remained close to 1 million metric tons during the 1977–84 period. During that same interval, joint venture pollock catches rose steadily to 237,000 tons.

can interests in MRC because they were allowed to continue their grandfathered arrangement with the Soviets via the JV. This made suddenly available another 400,000 tons of fish that Soviets had been catching and that subsequently was effectively only available through the MRC joint venture. MRC was an immediate beneficiary, increasing its take to over 100,000 tons of whiting off Oregon and Washington and 260,000 tons of cod and flatfish in Alaska (Fisher 1991).

The early MRC joint venture experience provided an important demonstration effect quickly picked up by U.S. fishermen. Trawl vessels from Washington, Oregon, and California on the Pacific Coast began to imagine opportunities for similar joint ventures in the larger and much richer Alaskan BSAI fisheries. U.S. processors were wary of the risks associated with building isolated shore-based plants in Alaska and hence did not commit to building processing capacity for the rich but comparatively low-valued pollock and flatfish fisheries of the Bering Sea. As a result of this vacuum in American onshore processing capacity in the BSAI area, there was a boom in new joint ventures, with domestic catcher vessels delivering cod ends to Japanese and Korean floating motherships and factory trawlers. This resulted in a corresponding expansion of building larger trawlers that could harvest hake off the Pacific Coast first and then head into Alaska for pollock in winter.

The MRC hake joint venture fishery was an important conduit of experience in two ways. First, the Soviet fishermen taught American fishermen how to tow in the midwater for hake, offload cod ends, time harvest so fish condition was optimal for processing, and match harvesting throughput with processing capacity.¹² The second manner in which the joint ventures were conduits of information occurred because a number of the players and companies involved in the hake fishery also fished in BSAI and GAO fisheries. As a result, much of the know how that was originally captured off the Pacific Coast states in the hake fishery migrated to the Alaskan pollock fishery, as it also became the new focus of joint ventures after the Soviets' TALFF was removed. In fact, there was a network of fishermen, vessels, and fishing corporations whose reach extended from Pacific Coast fisheries to Alaska fisheries. Individuals involved had home bases in Oregon, Washington, and Alaska, but Seattle was an important center of activities, capital, and entrepreneurship. Many of the principals in this frontier fishery were involved not only in fishing and management but also in formulating new regulations, consulting, and lobbying on behalf of opportunities opened up by the new institutions. In hindsight, the industry played a critical role in guiding and modifying the pace of Americanization by lobbying for changes in the FCMA as domestic capacity grew.

DEVELOPMENT OF THE BSAI AND GOA POLLOCK JOINT VENTURES

The BSAI pollock, flatfish, and sole fisheries at the time the FMCA was passed were almost completely dominated by foreign fleets that had the capacity to catch and process large volumes of relatively low-valued fish in rough conditions. In 1976, approximately 71 percent of the groundfish catch in the BSAI was taken by the Japanese, with another 21 percent by the Soviets and 7 percent by the Koreans. American fishermen and entrepreneurs (mostly from Seattle) were not involved in the large industrial-scale pollock fishery, but they were involved in a small number of other valuable fisheries. The most important of these was the Alaskan king crab fishery. After a modest start after World War II, abundance exploded and the king crab fishery boomed in a most dramatic fashion in the 1970s. Many of the crab fishermen were second- and third-generation descendants of Norwegian immigrants. These fishermen were mostly located in Seattle, with significant business interests in West Coast fishing, shipyards, outfitting companies, and import and export companies. The king crab fisheries' growth was highly lucrative for much of the 1970s. Crew made \$100,000 per season, and vessels landed as much as 1 million pounds from 10 days of effort. Investors lined up to purchase new and powerful steel-hulled vessels designed and built in Seattle with know-how transferred from Norwegian ship builders and often with funding from Norwegian banks.¹³ Fishermen paid off vessels in a single season of fishing, and there were anecdotes of tips of \$100 left for lunches in Dutch Harbor restaurants.

Alas, the good times were too good to persist. In 1981, the Bering Sea king crab fishery entered a precipitous and calamitous fall for reasons that are still debated. Within a year or two, investors that had entered late were bankrupt, the banks were out for millions of dollars in loans, and there was a huge amount of excess fishing capital in the steel-hulled crabbing vessels mothballed at the docks in Seattle.¹⁴ When the crab fishery crashed, a number of crab vessel owners began to convert their crabbers into trawlers in order to participate via joint ventures in the Americanization of the fishery underway

¹² Processors of high-volume, low-value fish like hake and pollock are best operated continuously without production breaks due to waiting for harvest deliveries. When fish lines are shut down, they need to be cleaned and sterilized before restarting. Hence, coordination between harvesting and processing units is important.

¹³ Investors queued up to have vessels built, and during the waiting period, some sold their "position" in line to others for \$100,000.

¹⁴ During 1930s, Japan and the Soviet Republic took a combined 9–14 million kilograms of crab per year from the Southeastern Bering Sea—around Bristol Bay. The Japanese used tangle gear. U.S. crab fishermen built first pots out of surplus Army cots. After World War II, in 1946, U.S. fishermen began to crab. By 1960s, only pots were allowed by regulations and only males retained. During 1970, the crab fishery was the most valuable in Alaska, with strong prices and profitability limited only by what could be caught. Originally, the crab fishery started out with wooden vessels—55 footers. In 1969, the first order for a steel-hulled 94-foot crabber was placed in Seattle. Seattle shipyards began building 94 to 120 footers, and fishermen were paying \$100,000 for a spot in the queue to build a new boat. One Dutch Harbor plant did 1 million pounds per day—a single vessel brought 1 million pounds in 10 days. The boom in catch and profits served as impetus for steel vessel construction. The all-time record Bristol Bay catch of 59 million kilograms was made in 1980. Then, in 1981, there was an abrupt collapse. Thereafter, bankrupt vessels lined wharves of Ballard after meteoric rise.

under the FCMA.¹⁵ Simultaneously, an organization of crabbers converted into trawlers called the Highliners' Association organized to lobby for modifications of the FCMA to encourage opportunities for the newly idled capacity. Their specific aim was to lobby Congress to institute a number of carrot and stick policies that would encourage Japan and other nations using TALFFs to buy more U.S.-caught fish via joint ventures. In 1980, an amendment to the original FCMA was passed, the American Fisheries Promotion Act (AFPA).¹⁶

AMERICAN FISHERIES PROMOTION ACT (AFPA) OF 1980

The AFPA imposed significant changes on the original plan to gradually replace foreign fleets. The AFPA was influenced by an industry-funded study by economists that concluded that foreign fleets enjoyed a number of economic advantages over U.S. fleets and that these advantages were hindering the pace of Americanization. Among the advantages detailed in the study were high non-trade barriers and tariffs on competitive products, subsidized costs of capital, low wages, fewer regulations, and institution-mandated markets. The study advocated compensating and countervailing policies to benefit U.S. fishermen in order to accelerate the transition. A number of these carrot and stick policies were subsequently embodied in the American Fisheries Promotion Act.

Priority Access to TALFFs

The AFPA amendment gave priority TALFF access to foreign firms that helped develop U.S. fisheries. It envisioned mechanisms to assist U.S. fisheries development with joint ventures, transfer of technology or know-how, financing catching capacity, and market access. It explicitly called for U.S. officials to consider the degree to which foreign countries restricted access to their markets to U.S. exporters in determining which countries received TALFFs and how much. The dominant foreign player by this time was Japan, which had a history of tariffs and nontrade barriers to imports. By tying TALFFs to foreign purchase of U.S.-caught fish, the AFPA amendment created new markets for the nascent U.S. industry. In the 1982 season, Japan agreed to purchase 200,000 tons of pollock from American catcher vessels, delivered to Japanese floating processors. This was the beginning of the BSAI pollock joint ventures, whereby American catcher vessels delivered to foreign floating processors under second-tier priority. Pollock JVs grew from a negligible amount in 1980 to a peak in 1987 of over 1 million metric tons delivered by more than 100 catcher vessels operating within the corporate frameworks of some 28 companies (NMFS 2002).

Fisheries Loan Program

The AFPA also authorized the Fisheries Obligation Guarantee program (FOG), which guaranteed low-interest loans for the purchase

and construction of U.S. catcher processors and mothership floating processors. The intent of this program was to subsidize construction and conversion of vessels and guarantee loans that might otherwise be considered too risky by conventional lenders. In the subsequent buildup of the U.S. at-sea fleet, these FOG loans and others from Norway, Japan, and Korea financed a new American-controlled floating pollock-processing sector in the BSAI and GOA fisheries.

Accelerated Phase Out of TALFFs

The AFPA of 1980 also contained another important provision for speeding up the transition, with a new and explicit phase out pace of TALFFs. This altered the previous policy under the FCMA that allowed foreign fleets access to any and all U.S. EEZ fish for which no domestic capacity existed. The new Act called for steady reduction of TALFF using the so-called "phase out fishing level," essentially a staged and explicit reduction in TALFFs, less rigidly tied to whether there was adequate U.S. capacity. Critically, the Act also mandated a complete phase out of TALFFs by 1990, conditional only on the proviso that the United States had sufficient capacity to harvest 50 percent of the TALFF. This phase out was a dramatic boost to the pace of Americanization, and it kicked off another boom in shipbuilding and expansion in the Bering Sea, this time with large domestic catcher processor vessels designed to operate at sea.

Observer Coverage and Cost Recovery

A final provision of the AFPA was the beefing up of the observer program coupled with cost recovery mechanisms. Prior to the AFPA, the existing observer program covered only 17 percent of foreign fishing in the Alaska region. There was much discussion of evidence that catches of TALFF fish were being underestimated and concealed and that incidental catch of allowed and prohibited bycatch species was misreported by foreign fleets. As a result, the AFPA required 100 percent coverage of all vessels fishing foreign allocations. This was funded by fees levied on the foreign fleets. In addition, foreign vessels paid a number of other fees, including a permit fee and a surcharge fee. These were nominal fees, however, not intended to extract rent but to avoid having U.S. citizens subsidize foreign fishing.

TRANSITION OUT OF JVs: DEVELOPMENT OF DOMESTIC BERING SEA POLLOCK FISHERY

A direct result of the intended accelerated squeeze on allocations to foreign fleets was the creation of opportunities for U.S. fishermen and investors to step into the vacuum about to be left as a result of the exit of foreign floating processors. In 1984, an American partner in the original MRC and a Korean counterpart invested in the first domestic catcher-processor designed to fit the first-tier preference for U.S. EEZ-caught and -processed pollock. The *Arctic Storm* was financed by a Norwegian Bank, the Christiana Bank, and designed by Norwegian shipyards. The ship was retrofitted in Seattle at a cost of \$25 million and started fishing in the 1986 season.

¹⁵ The most foresighted vessel owners had built their crab vessels with ramps and space to install trawl drums and bigger shafts to upgrade engine size. When they fished crab, they simply paneled over the ramp; when the crab fishery crashed, it was easy to convert to stern trawlers.

¹⁶ Also called the "fish and chips" amendment, in which fish would be allocated to foreigners for chips or special considerations such as market access.

TABLE I.4. FOREIGN CATCH OF WALLEYE POLLOCK WITHIN 200-MILE EXCLUSIVE ECONOMIC ZONE OF UNITED STATES, BY COUNTRY AND QUANTITIES, 1980–85

Country	Catch (1,000 tons)					
	1980	1981	1982	1983	1984	1985
Japan	870.9	855.2	835.4	732.1	723.5	635.5
Korea	141.0	154.6	196.2	217.1	218.4	174.7
Poland	59.2	93.9	0	0	55.0	32.0
Germany	6.0	10.3	16.1	23.6	24.4	0
U.S.S.R.	39.2	0	0	0	11.8	1.5
Taiwan, China	5.0	3.4	4.2	0	0	0
TOTAL	1,119.1	1,117.3	1,051.9	972.8	1,033.2	843.7

Source: NMFS. Fisheries Statistics of United States.

The AFPA's accelerated phase out of TALFFs for pollock over the 1980s (table I.4) basically forced foreign-owned and -operated fleets to reconfigure their operations and businesses under short-horizon joint ventures with U.S. partners.

Simultaneously, in anticipation of the elimination of TALFFs in 1990, significant new domestic floating processing capacity was built, much of it financed by foreign interests in Norway and Japan.¹⁷ The reports of the observer program show that in 1989, the last year of the joint venture program, there were a significant number of joint ventures pursuing not only pollock but also flatfish in the BSAI region. For example, there were surimi joint ventures with Japan (13 floating processors), Poland (7), and Korea (4) converting pollock into surimi and another 7 vessels from Japan and Korea processing yellowfin sole and flatfish into surimi. In addition, other vessels were catching yellowfin sole and other flatfish and processing them into head and gut and fillet frozen blocks. These flatfish fisheries involved a large number of JVs with several countries, including Japan (37 vessels), Poland (15), Korea (49), China (8), and the Soviet Republic (45). This second group of vessels was in the process of opening up what would become the BSAI "head and gut" fleet of groundfish trawlers.

U.S. vessel registry rules at that time allowed foreigners to own U.S.-built vessels or to reflag foreign-built and -owned vessels if subsidiaries were formed with U.S. CEOs and boards of directorships. Processing vessels were not considered "fishing" vessels and hence did not have to be U.S. flagged to operate. But the explosive expansion of the at-sea pollock and groundfish fleets in foreign shipyards by foreign investors led many to question whether the industry was actually being Americanized as intended by Congress. In 1987, the Commercial Fishing Vessel Anti-reflagging Act was passed to restrict the manner in which noncitizens could participate

in the ownership, construction, and operation of vessels in the U.S. EEZ (Walsh and Weinstein 1988). This Act restricted fishery participation to U.S.-flagged vessels that had fishing "endorsements" or permission to fish in U.S. waters. The Act expanded the definition of "participation" to include floating processors, eliminating the eligibility of foreign-flagged motherships and catcher-processors that had been allowed prior to the Act. The Act also tightened requirements for fishing endorsements by requiring that they could only be attached to vessels for which U.S. ownership was at least 50 percent. Because of the ongoing and explosive growth of the fleet under the joint venture program, Congress allowed some exemptions and loopholes for vessels under construction, thus grandfathering in a number of vessels.¹⁸

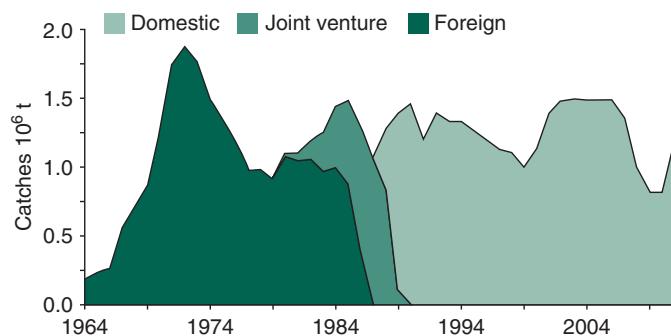
MATURATION OF THE AMERICANIZED BSAI POLLOCK FISHERY

As the 1980s came to an end, an offshore sector ostensibly of Americanized vessels had completely replaced the foreign fleets fishing TALFFs, as provided for by the AFPA (figure I.2). This transition was aided by the use of joint ventures, which combined new U.S. catcher vessel capacity with old foreign-owned floating processing capacity. The joint venture period was shorter than originally planned because of new provisions embodied in the AFPA in 1980. Most importantly, the accelerated removal of TALFFs resulted in a boom of construction of domestic floating

¹⁷ A principal at the time noted that an investor "could get into a factory trawler with nothing down"—indicating that the capital was freely available for investments that were understood to be potentially very lucrative.

¹⁸ Noncitizens could hold nonvoting shares up to 100 percent. In addition, they could also secure interest in a vessel via loans and preferred mortgage instruments. A preferred ship mortgage is guaranteed by the vessel; hence holders of mortgages in Norway and Japan were able to exercise considerable control over highly mortgaged vessels.

FIGURE I.2. POLLOCK CATCH DISTRIBUTION: DOMESTIC, JOINT VENTURE, AND TALFF



Source: Criddle, 2012.

processor and catcher-processor capacity, financed and owned in complicated interlocking financial arrangements with Norwegian, Japanese, and Korean firms. In 1990, the last year of the TALFF allocations, there were 50 factory trawlers operating in the BSAI pollock fishery (NMFS 2002).

INSHORE/OFFSHORE DISPUTES

Simultaneously with the Seattle-based and foreign-funded offshore sector buildup, the onshore sector, led by Japanese surimi interests that were being excluded from TALFF access, was also developing and expanding. In 1985, the Japanese began building two shoreside processing plants in Dutch Harbor, Alaska. These began production at scale a few years later and by the early 1990s became the nexus of Alaska's shoreside processing industry that, along with the offshore industry, processed pollock formerly caught and processed by floating plants in the BSAI. By the early 1990s, Japanese firms owned and controlled 85 percent of the onshore pollock-processing sector. These plants took delivery of fish caught by a fleet of more than 100 U.S. catcher vessels that steamed for 24 to 36 hours to deliver fish shoreside. Onshore plants converted pollock exclusively into surimi for the markets served by the Japanese conglomerate owners. In contrast, catcher processors at sea processed pollock into a number of products, including surimi, fillets, and frozen roundfish in the tradition of the early Soviet joint ventures.

In hindsight, it is easy to see that the massive, purposeful, and relatively unfettered race to build the domestic pollock fishery resulted in overcapacity. In 1989, for example, the offshore fleet alone harvested most of the GAO allocation of pollock, forcing an early season closure and leaving the newly built nearshore sector without fish to process. This led to the first of a number of years of conflict between the two sectors—the floating offshore sector (operated mainly by Seattle residents in complex interlocking corporations with Japanese, Korean, and Norwegian interests) and the onshore sector (dominated by two Japanese plants and one American- and Norwegian-owned plant).

In 1992, after much contentious debate and disagreement among the stakeholders and between the North Pacific Council and the National Marine Fisheries Service, the so-called Inshore/Offshore I amendment was approved that established a split of the

Bering Sea TAC of 65 percent to the offshore sector and 35 percent to the inshore sector, after reserving 7.5 percent for native Alaska communities.¹⁹ The Alaska-oriented Council was interested in shifting TAC onshore, in the belief that those fish benefited Alaskans more than fish harvested and processed at sea. Legally, however, Bering Sea fish were not Alaska residents' fish but rather EEZ fish belonging to U.S. citizens at large. Hence, a rather intense and protracted battle over allocation unfolded repeatedly over the decade of the 1990s. This pitted the at-sea sector, composed mainly of an American-controlled fleet, against the shoreside sector, composed predominately of Japanese surimi producers.

In 1995, the TAC split came up for consideration for the second time (called Inshore/Offshore II) and the Council retained the prior split to an approximation. There followed in 1998 the most contentious dispute in what has been called Inshore/Offshore III. At the same time the Council was debating Inshore/Offshore III, Congress was debating increasing the stringency of the Anti-reflagging Act. Specifically, there was pressure from Alaska's senator to strip the fishing endorsements of numerous factory trawlers that had been built or refitted in foreign shipyards and further limit foreign ownership from 49 to 25 percent. The convergence of two issues, the original dispute over allocation of the TAC and the drive to limit foreign ownership, resulted in the American Fisheries Act (AFA), passed at the end of 1998.

THE AMERICAN FISHERIES ACT OF 1998

The AFA brought to an end a decade of bitter battles between representatives of the two sectors that had been built up to replace foreign presences in the BSAI. Ironically, neither sector was fully Americanized as the TALFF era came to a close in 1990. The inshore sector had been built in response to the special considerations given to nations willing to trade technical know how and access to markets to retain access to the rich Bering Sea waters. The inshore sector was mostly owned by large Japanese conglomerates, except for a smaller American-owned company. Their willingness to reveal surimi processing technology and techniques, coupled with their purchase of the surimi, satisfied the terms of the AFPA. The Japanese inshore sector (which also included floating motherships) conformed to the AFPA ownership requirements by setting up holding companies, subsidiaries, and nonvoting share control (Criddle 2012). The offshore sector included motherships controlled by Japanese interests and served by catcher vessels owned by American citizens, as well as domestically owned catcher processors, many built in Norwegian shipyards at the peak of the boom period and grandfathered in under original rules.

The AFA was a complex piece of legislation designed to achieve multiple goals, including completing the Americanization of the pollock fishery, reducing incentives to race for fish, reducing excess capacity in the offshore sector that threatened the inshore sector, and resolving the high-stakes allocation dispute. It settled permanently the inshore/offshore allocation dispute,

¹⁹ The portion allocated to native communities was the so-called Community Development Quota, designed to both transfer income to disadvantaged native communities and provide fishing-based employment.

reducing the share to the offshore sector. In exchange for the reduction in share, the offshore sector was granted security of access by being given a sector-level allocation, with further permission to establish a harvester cooperative.²⁰ Offshore catcher processor representatives argued that they could not absorb the share reduction without being able to manage their internal race to fish incentives. The AFA also funded a \$90 million loan to purchase 9 of the 29 factory trawlers that were mostly Norwegian-owned reflagged vessels built in foreign shipyards and to further force the Norwegian company American Seafoods to divest its operations to U.S. interests. Their catch histories were transferred to the inshore sector and paid back with a landings tax on inshore pollock landed.

POST-AFA BSAI POLLOCK FISHERY

The arc of the transformation of the Bering Sea pollock fishery from virtually completely foreign exploited to one that is now mostly domestically owned and controlled is a lesson in how institutions matter to economic outcomes. Prior to the 1970s, the rich waters of the Bering Sea were mostly open access, inaccessible, and underutilized until Japan and the Soviet Republic began to build distant water fleets to exploit global fish stocks. And Japan and the Soviet Republic's move to exploit distant waters was itself the result of cataclysmic internal institutional changes brought about by World War II: Japan by the post-war rebuilding plan directed by the Supreme Command of Allied Powers and the Soviet Republic by the Soviet revolution that installed a planned economy with top-down direction by bureaucracies. Both institutions committed to using the ocean's wealth to feed growing populations, and both built fleets with an impetus that embodied centralized investment and top-down government directive.

The impetus behind the Americanization of the BSAI pollock fishery was the extension of jurisdiction in 1976. The extension of jurisdiction was of enormous importance to all fishing and fish-consuming nations. Within a short period, historical arrangements were thrown into disarray, and countries that had dominated global harvests suddenly saw their access begin to shrink. The responses by coastal nation states, with laws and new legislation, changed institutions again, and with these changes, the economic incentives faced by individual fishermen. In the United States, the important FCMA laid the groundwork for the mosaic of regulations that would guide use of newly captured resources within its EEZs.

The FCMA was founded on three major pillars. First, it mandated that U.S. fisheries within the newly claimed EEZs would be managed for the benefit of U.S. citizens. Second, TACs were set that not only adhered to scientific understanding but that explicitly

limited the amounts allowed taken by foreign entities. Third, a prioritization of the TAC was made among prospective claimants that gave incentives to foreign and domestic participants to build domestic capacity. This prioritization gave rise to joint ventures, under which domestic catcher vessels replaced the foreign catcher vessel fleets that had formerly been part of the Japanese- and Soviet-integrated operations in the 1960s. Joint venture formation and operation was left to the market and to individual entrepreneurship. In the pollock fishery, joint ventures gave American trawler owners (many idled by the crab fishery collapse) a market for fish. They gave foreign floating processors access to fish they had formerly caught themselves and a transition period that eased the exit forced by the extension of jurisdiction.

The evolution of the FCMA was influenced heavily from the bottom up by entrepreneurial and self-interested American fishermen who lobbied for provisions that would aid the building of domestic capacity. Two important amendments strengthened the original Act during the transition period, the American Fisheries Promotion Act and the Anti-reflagging Act. The former amendment accelerated the transition out of TALFF-based foreign fishing quotas, thereby giving rise to the need to replace foreign floating processing capacity with domestic capacity. The latter amendment accelerated the assumption of ownership by domestic entities by restricting foreign financial and corporate control over vessel and processing ownership.

The most recent and most important phase of the pollock fishery transformation has been the phase following passage of the American Fisheries Act in 1998. As the JV period came to an end in 1989, foreign entities were finally fully excluded from the operational aspects of the harvesting sector and processing at sea. But within the fishery, domestic capacity has exploded, and there was substantial overcapacity. As a result, while control had shifted to domestic interests, rents were low because of race to fish incentives and there was considerable wasted capital in both the offshore and inshore sectors. The AFA changed incentives dramatically by, first, fixing the shares allocated to each sector for a reasonable period and, second, allowing both sectors to form harvester cooperatives.²¹

The results of the AFA period have been dramatic. Overcapacity was almost immediately reduced, seasons were lengthened, fishing was slowed, bycatch was reduced, utilization was increased, and new products were developed to take advantage of the elimination of the race to fish (Wilen and Richardson 2008).²² This period has

²¹ Each of the offshore and inshore sectors is allocated an undifferentiated share of the biologically determined TAC. The harvester cooperatives then determine how the aggregate allocations will be operationally utilized and how they will be split among members of each cooperative. The cooperatives manage internal affairs by delegating various decisions to managers or boards of members, backed up legally with civil contracts among members. These contracts specify internally agreed-upon allocation rules and sanctions for deviating from group-determined norms, including quota holdings for both target and bycatch species. In essence, the harvester cooperatives implement self-organized internal IQ systems in each sector via legally binding civil contracts.

²² In the offshore sector, substantial savings were achieved as a first step by retiring the least-efficient vessels and reallocating their historical shares among remaining active vessels. The coop currently utilizes 14 vessels out of the 20 that

²⁰ To bring the story full circle, the harvester coop developed in the Bering Sea pollock fishery included a number of companies that were involved in the offshore hake fishery in the lower states off Oregon and Washington, a fishery that established its own harvester cooperative a few years before the AFA. Recall that the first joint ventures were developed in that fishery, with the knowledge transferred subsequently to joint venture development in the BSAI pollock fishery.

been enormously profitable, generating new wealth for participants on the order of several billion dollars. Coupled with the new incentives that have impacted profitability of both sectors has been the gradual increase in allocation to the so-called Community Development Quota (CDQ) program. The CDQ program currently takes 10 percent of the pollock TAC and allocates it to consortia of native Alaska communities along the western slope.²³ These communities are poor, isolated, and underdeveloped; the CDQ program gives them a formal financial and legal stake in the Bering Sea pollock fisheries as well as other designated CDQ fisheries. As wealth has emerged with the end of overcapacity and race to fish conditions, a significant portion of that has been captured by the part of the quota dedicated to addressing social and economic conditions of native Alaskans.²⁴

TRANSITION IN THE BSAI POLLOCK FISHERY: ASSESSMENTS AND LESSONS

The BSAI pollock fishery is today an exceptional example of a well-managed and profitable fishery. It maintains sustainable yields of over 1 million metric tons, and it generates hundreds of millions of dollars in profits annually. Much, although not all, of the wealth and economic returns now accrue to U.S. citizens, including important shares to native Alaskans. The current fishery is in the later stages of a long transition from open access and foreign-dominated to U.S.-managed and domestically controlled. The transition period utilized a number of mechanisms to facilitate and accelerate the transition, implemented with new national legislation and aimed to change economic incentives and provide carrots and sticks to various players. Individual entrepreneurs played dual roles of not only forming the evolving national legislation but also responding to changed incentives by investing, taking risks, and exploiting new opportunities.

What general lessons can be drawn from the pollock case? It is appropriate to acknowledge from the outset that there were important supporting factors that aided the rapid and orderly transition from foreign to domestic domination within a fairly short time. First, there was an eagerness for opportunity and

were originally granted membership rights. The rents generated by the remaining operational fleet have been derived from multiple margins but largely by increasing yield (from 19 percent to over 33 percent of raw weight), shifting to higher-valued products (for example, deep skin fillets instead of surimi), slowing catch rates to smooth and optimize throughput, and more efficient production of byproducts (roe, fish meal, and fish oil).

²³ There are six CDQ entities representing 65 separate communities.

²⁴ CDQ communities have adopted a number of financial arrangements to best utilize their shares of the CDQ allocations. Some have simply leased their quota to the firm offering the highest bid, whereas others have leased quota to firms willing to provide various side benefits. These include employment opportunities for unemployed community members, scholarships for schooling and training, and investments in community infrastructure. A number of CDQ communities have also bought into the offshore sector so that they are co-owners of original coop companies. The flow of revenues generated from CDQ allocations and arrangements is currently over \$200 million annually.

entrepreneurship among a number of “first-movers” in the industry. West Coast vessels were comparatively small and underpowered to profitably fish low-valued but high-volume species like hake, compared with industrial scale foreign fleets that fished far from home. As foreign allocations began (by legislative design) to be reduced, American entrepreneurs and Soviet counterparts found mutually beneficial arrangements in joint ventures as transitional institutional mechanisms. The MRC venture was quickly successful in transferring Soviet knowledge of midwater trawling, cod-end transfer, and onboard processing to Americans as well as providing a ready market for American-caught fish. Joint venture partners exhibited a willingness to adapt in order to facilitate contractual arrangements that were hemmed in by idiosyncratic restrictions and constraints.

A second factor that enhanced the transition was the interconnectedness and geographic mobility of the West Coast domestic fleet. Fishermen with home bases in Seattle steamed southward to fish hake off the coasts of California and Oregon for Soviet floating processors and then northward to fish pollock off Alaskan coasts for Japanese and Korean surimi processors. They brought knowledge gained in the hake fishery about joint venture operations, mother-ship-catcher vessel coordination, onboard processing, new product developments, and Soviet bloc fish markets. This knowledge was instrumental in transferring the first experiences in hake on the West Coast into the development of the BSAI pollock fishery in Alaska, given the similarities in species, catching and processing technology, and markets.

Third, there was a significant amount of domestic harvesting capacity suitable to begin replacing the flotillas of distant-water integrated catcher and processing operations that had emerged under open access. In particular, and fortuitously, the collapse of the king crab fishery left many catcher vessels mothballed, bankrupt, and otherwise idle. There was thus a ready-made fleet of new American-owned Bering Sea-worthy catcher vessels, ready to find opportunity in the newly developing domestic offshore pollock fishery. The conversion of the pollock fishery to a domestic fishery made use of the redundant crabbers with minimal outfitting. But the use of this redundant capital to replace foreign capacity did not happen spontaneously and without nudging; instead, industry representatives made the case to Congress to alter existing legislation to provide opportunities to put the idle capacity back to work. This materialized in the American Fisheries Promotion Act that was so important in accelerating the transition.

Fourth, there was a huge amount of new investment capital available to entrepreneurs willing to invest in newly developing and transforming fisheries. This money was available in part through the Fisheries Obligation Loan Guarantee that was part of the AFPA. But the capital was also available because of long-standing connections between Norwegians in Seattle and Norwegians in Norway. One of the largest lenders was Norway’s Christiana Bank, which had a reported portfolio of \$435 million wrapped up in new factory trawlers and catcher vessels readying themselves for the turnover to U.S. fishermen in the late 1980s. A principal remarked with amazement that one could invest in a (\$30-million) catcher-processor to harvest pollock with nothing down. But similar investment funding was also available because of the reliable institutions in the United States, institutions that enabled, with low transactions

costs, credit to be obtained, collateral to be pledged, and enforcement of contractual arrangements under default.

A final important set of supports was provided by the enabling legislation that paved the way for an orderly replacement of foreign vessels. The FCMA initially laid the foundation by committing the use of BSAI fisheries within the EEZ expressly for the benefit of U.S. citizens and communities. This established the principle that would guide further amendments that enacted those precepts. The Act next required scientific determination of TACs, a management mechanism to allocate those, and observer and enforcement resources to back up regulations. But the FCMA was also readily and quickly modified as the need arose, mostly by the AFPA, which made room for mothballed crabbers and later for new catcher processors and motherships in the pollock transition. The enabling legislation was thus flexible, responsive, and creative in turning events into opportunities for domestication at more rapid rates.

Lastly, the very nature of the harvesting and processing operation that evolved in the open access period for pollock is somewhat unique, with floating processors and fleets of catcher vessels delivering to floating motherships. The at-sea processing nature of the fishery's operations made possible splitting the functions of harvesting and processing between foreign and domestic interests. This allowed a simple and easy transition, whereby foreign-owned integrated operations were split into separate processing and harvesting operations, joined by joint venture agreements, which were simply new individual arms-length ex-vessel markets.

In reviewing the entire history of the Bering Sea pollock fishery, perhaps the most important lesson is that sustained profitability has only emerged recently, after the passage of the all-important American Fisheries Act in 1998. Before 1998, the provisions of the Fishery Conservation and Management Act of 1976, supplemented by the American Fisheries Promotion Act and Anti-Reflagging Act of 1987, achieved an orderly and reasonably rapid domestication of both harvesting and processing functions. But, especially after Americanization, the fishery was locked in a high-stakes race to fish among remaining American interests because open-access incentives were still in operation. This manifested itself in short seasons, allocation disputes, habitat destruction, bycatch, low-valued final products, incomplete utilization, and geographically concentrated fishing. The AFA radically changed the playing field, resolving the conflict between inshore and offshore sectors by guaranteeing each sector a fixed share of the allocation. This meant that although individual members of each sector still had insecure access to their sector shares, they were at least protected from share erosion at the sector level.

More importantly, as part of the AFA, legislation encouraged each sector to manage its share cooperatively. Funds and mechanisms were provided to buy out excess capacity, and legislation was provided to facilitate the formation of sector-level cooperative decentralized management. It is these last steps that have been the impetus for wealth generation that has emerged over the past 15 years in the pollock fishery. The race to fish has mostly ended, harvesting is coordinated over time and space to maximize value of output, and the security of access has given stakeholders the incentives to pursue value, cost reduction, operational efficiencies, and new markets.

If there is an overarching lesson for developing countries, it is that domestication is neither necessary nor sufficient to guarantee that fisheries resources can return significant rents to coastal nation stakeholders. In the pollock fishery, domestication occurred reasonably quickly. But profitability did not occur until much later in the process, after the incentive problems associated with insecure access rights and the race to fish were eliminated.

REFERENCES

- Alverson, Dayton Lee. 2008. *Race to the Sea: Autobiography of a Marine Biologist*. Seattle: University of Washington Press.
- Bailey, K. M. 2011. *Billion Dollar Fish: The Untold Story of Alaskan Pollock*. Chicago: University of Chicago Press.
- Bakkala, R., W. Hirschberger, and K. King. 1979. "The Groundfish Resources of the Eastern Bering Sea and Aleutian Islands Regions." *Marine Fisheries Review* 41 (11): 1-24.
- Berger, J., J. Smoker, and K. King. 1986. *Foreign and Joint Venture Catches and Allocations in the Pacific Northwest and Alaska Fishing Area under the Magnuson Fishery Conservation and Management Act, 1977-84*. Seattle: National Oceanic and Atmospheric Association and Northwest Fishery Science Center.
- Berger, J., and H. Weikhart. 1989. *Summary of Observer Sampling of Foreign and Joint Venture Fisheries in the Northeast Pacific Ocean and Eastern Bering Sea, 1988*. Seattle: National Oceanic and Atmospheric Association and Northwest Fishery Science Center.
- Criddle, K. R. 2012. "Adaption and Maladaption: Factors that Influence Resilience in Four Alaskan Fisheries Governed by Durable Entitlements." *ICES J. Marine Science* 69 (7): 1168-79.
- Criddle, K., and S. Macinko. 2000. "A Requiem for the IFQ in U.S. Fisheries?" *Marine Policy* 24: 461-69.
- Finlay, Carmen. <http://carmelfinley.wordpress.com>.
- Barry Fisher. 1992. "Oregon's Whiting Fishery: A Case Study in Cooperative Development" in *Pacific Whiting: Harvesting, Processing, Marketing, and Quality Assurance*, edited by Gilbert Sylvia and Michael T. Morrissey. Corvallis, Oregon: Oregon Sea Grant.
- Guttormsen, M., R. Narita, and J. Berger. 1990. "Summary of U.S. Observer Sampling of Foreign and Joint Venture Fisheries in the Northeast Pacific Ocean and Eastern Bering Sea." 1989. NOAA Technical Memorandum NMFS FI/NWC-189.
- Herrick S. F., I. Strand, D. Squires, M. Miller, D. Lipton, J. Walden, and S. Freese. 1994. "Application of Benefit-Cost Analysis to Fisheries Allocation Decisions: The Case of Alaska Walleye Pollock and Pacific Cod." *North American Journal of Fisheries Management* 14: 726-41.
- Herrfurth, G. 1987. Walleye Pollock and Its Utilization and Trade. *Marine Fisheries Review* 49 (1): 61-68.
- Kaczynski, V. 2012. *Alaskan Pollock: Case Study Report. Integration of the Distant Water Interests with the Coastal State's Economy: The Case of the Alaska Pollock Fishery in U.S. Waters*. MRAg draft report.
- Miller, M., L. Nelson, R. French, and S. Hoag. 1976. "U.S. Observers Board Japanese Trawl Vessels in the Bering Sea." *Marine Fisheries Review* 38 (4): 1-10.
- Murai, S., H. Gangmark, and R. French. 1981. "All-Nation Removals of Groundfish, Herring and Shrimp from the Eastern Bering Sea and Northeast Pacific Ocean, 1964-80." NOAA Technical Memorandum NMFS F/NWC-14.
- North Pacific Management Council. 1991. "Fishery Management Plan for the Bering Sea/Aleutian Island Groundfish." National Oceanic and Atmospheric Association, Anchorage, Alaska.
- National Marine Fisheries Service. 2002. *Final Environmental Impact Statement for the American Fisheries Act*.

- Nelson, R. E. 1985. "Historical Review of the Coastal Pacific Whiting, *Merluccius productus*, Fishery." *Marine Fisheries Review* 47 (2): 39–41.
- Philbin, Calvin. 1980. Three Different Delivery Modes for Fresh-Caught Pacific Whiting. *Marine Fisheries Review* 30–36.
- Stanley, S. 1982. "Mare Clausum: The American Fisheries Promotion Act of 1980." *Syracuse Journal of International Law and Commerce* 9 (2): 222–26.
- Sylvia, G., Mann H. Munro, and C. Pugmire. 2008. "Achievements of the Pacific Whiting Conservation Cooperative: Rational Collaboration in a Sea of Irrational Competition." In *Case Studies in Fisheries Self-Governance: FAO Fisheries Technical Paper 504*, edited by R. Townsend, R. Shotton, and H. Uchida, 425–40. Rome: Food and Agriculture Organization.
- United Nations. 1982. Text of the Convention on the Law of the Sea.
- Vaisman, A. 2001. *Trawling in the Mist: Industrial Fisheries in the Russian Part of the Bering Sea*. Cambridge: TRAFFIC Europe.
- Walsh, J. P., and J. Weinstein. 1988. "Foreign Investment in the U.S. Fishery Industry after the Anti-reflagging Act of 1987." *The International Lawyer* 22 (4): 1207–15.
- Wilcox, J. E., and E. J. Richardson. 2008. "Rent Generation in the Alaskan Pollock Conservation cooperative." In *Case Studies in Fisheries Self-Governance: FAO Fisheries Technical Paper 504*, edited by R. Townsend, R. Shotton, and H. Uchida, 361–369. Rome: Food and Agriculture Organization.
- Zimmerman, M., C. B. Dew, and B. Malley. "History of the Alaska Red King Crab *Paralithodes camtschaticus*: Bottom Trawl Surveys, 1940–61." *Marine Fisheries Review* 71 (1): 1–22.

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