STIMSON

RESOURCES & CLIMATE

REPORT

Shining a Light: The Need for Transparency across Distant Water Fishing

Environmental Security Program

Table of Contents

Executive Summary

Commercial fishing is big business, with a complex global seafood supply chain and over 56 million people working on vessels to support it. In the past several decades distant water fishing (DWF) has expanded its size and reach across the ocean and around the world. Despite its importance to international trade and economics, the industry largely remains a mystery. It is shrouded in an opaque operating system that limits information about where vessels operate, who owns them, the amount of fish that is caught, how fish is shipped and transshipped to market, the human labor practices onboard, and the access arrangements to other nations' waters. This lack of transparency is accompanied by a dearth of research and data regarding the scale of the industry, the motivations of its proprietors, and the impact these fishing practices are having on coastal countries and marine fisheries. The clandestine nature of the industry has led to illicit activities and increased illegal, unreported, and unregulated (IUU) fishing, all of which threaten the long-term sustainability of global fisheries.

This report identifies the top DWF fleets in the world, where they operate, their motivations and economic impact, and their connections to IUU fishing and illicit activity. Specifically, the Stimson research team analyzed automatic identification system (AIS) data to determine the top ten DWF fleets and the top 20 countries where they operated from 2015 to 2017. The report further illuminates the top five DWF fleets, which account for nearly 90 percent of DWF efforts. China and Taiwan represented nearly 60 percent of all global DWF effort in other countries' waters from 2015 to 2017, with Japan, South Korea, and Spain each representing about 10 percent of the DWF fishing effort. These vessels primarily fish in three regions: the Pacific, East Africa, and West Africa, with Kiribati, Seychelles, and Guinea-Bissau receiving the highest numbers of DWF vessels in their exclusive economic zones (EEZ) within each region, respectively.

The report finds that DWF fleets are driven by three primary factors: economics, the degree of governance and enforcement capacity, and political influence. Economic incentives in the form of subsidies, the market value of the fish type, and the proximity of various fisheries to markets all drive the actions of DWF fleets. In addition, DWF vessels are more likely to engage in coastal countries where governance enforcement capacity is low, increasing the risk that a DWF vessel will engage in IUU fishing in a developing coastal nation's EEZ. Finally, quid pro quo deals and a lack of transparency regarding access agreement between coastal nations and DWF fleets has led to accusations of corruption.

Overall this incentive structure paints a picture of exploitation of coastal nations' resources, with these countries experiencing negligible short-term gains at the cost of long-term marine destruction. Evidence from the two case studies in this report – Seychelles and Mauritius – support this view, that a lack of capacity, IUU fishing, and the perception of corruption lead to overexploitation of fisheries.

Ultimately, this report argues the current fishing industry is unsustainable. The challenges that DWF fleets pose to coastal countries' resources and the fishing industry, particularly the expanding Chinese fleet, will persist unless there is a significant global shift towards sustained fisheries management. This challenge is rooted in the low level of transparency that persists across the industry, including intentionally ambiguous reporting by DWF fleets – little to no insight into vessel ownership, the conditions aboard such ships, or access agreements – and the significant gap in understanding the movement and extent of DWF fleets and support vessels due to AIS and Vessel Monitoring System (VMS) technology not being mandated abroad these vessels. The international community, DWF states, coastal nations, and the industry itself must improve transparency and accountability for DWF fleets while taking the necessary steps to safeguard global fisheries for future generations. Without such improvements, over-utilization of fishery resources will continue unabated, with devastating consequences for the security of our oceans.

Recommendations

Mandate AIS and VMS and Engage the Maritime Insurance Industry

DWF fleets that engage in IUU fishing exploit an opaque regulatory system that fosters secrecy and severely lacks transparency. To improve transparency and tracking of IUU vessels, the United Nation's International Maritime Organization (IMO) and Food and Agriculture Organization (FAO) Joint Working Group on IUU Fishing should work together to develop a legal framework to combat IUU fishing. This legal framework should mandate that AIS be turned on at all times for fishing ships and support vessels that assist in transshipment. Furthermore, fishing and coastal nations must mandate VMS aboard fishing vessels, and share that data publicly to engender trust in the industry. The maritime insurance industry can also serve as an important lever by stipulating that all vessels must always have AIS and VMS on in order to acquire insurance.

Require Standardized and Publicly Available Fisheries and Landing Data and Enforcement Tools

Fisheries landing and catch data collected at the national level, should be standardized and shared among coastal states, DWF fishing nations, and relevant regional bodies, including RFMOs to minimize misreporting of catch. AIS and VMS data should also be standardized and made public. In addition, observer coverage should be expanded and supported by mandated electronic monitoring systems to limit the potential for corruption and abuse aboard vessels. Recent technological advances have transformed the capacity to review and utilize this data in a timely manner to support fisheries management and enforcement strategies.

Demand Seafood Traceability

Tracking all seafood across the supply chain is essential to combat IUU fishing and seafood fraud, and help sustainably manage fisheries. Major seafood importing countries should mandate traceability systems for all fish species as a requirement for market access. Furthermore, information should be standardized and made public for catch verification. Requiring seafood to be traced from point of harvest through to the marketplace, including transshipment and processing, will deter seafood fraud and help combat IUU fishing. The European Union's existing IUU Fishing Regulation and the U.S. Seafood Import Monitoring Program, although different in their implementation, both mandate seafood traceability programs and should be replicated and required in additional seafood markets.

Ensure Access Agreements and Company Information is Public

Coastal countries and DWF nations should make access agreements publicly available to help dispel concerns about corrupt practices that plague the industry. Moreover, to increase transparency, coastal states should make foreign vessel registries, the accompanying vessel ownership and company information publicly available as a requirement to gain access to coastal country waters. The Fisheries Transparency Initiative – a global initiative which seeks to improve fisheries transparency at the nation level – provides a solid foundation for countries to improve the transparency of their fishing industry. However, the Fisheries Transparency Initiative is a new program with voluntary membership, and as such it should be closely monitored to assess its impact to improve transparency in the DWF industry. Finally, improving transparency across the industry will help address labor abuses aboard DWF vessels, as they often spend extended periods of time at sea without visiting port.

Expand the Mandate and Capacity of Regional Fisheries Management Organizations (RFMOs)

RFMOs have limited authority and audit capacity to ensure their members are compliant with fishery management regimes and that the data they collect is accurate. RFMO member states determine the management strategies and ultimately are guided by a desire to access fishery resources. As such, RFMO secretariats and sub-committees have very little power to ensure that stocks are not being overfished. Given this, RFMOs such as the Indian Ocean Tuna Commission should have increased authority and audit capacity to ensure that fishing countries are compliant with data reporting standards and catch documentation to assist in verification of catches. In the event that vessels are not compliant or are found to be engaged in IUU fishing, RFMOs should have the power to penalize the offending flag states.

Reinvest Revenues in Management and Enforcement

Coastal countries targeted by DWF fleets often lack capacity to monitor and protect themselves against IUU fishing, which creates a cycle where countries are robbed of potential revenue that could instead be dedicated to fisheries management. Coastal nations should reinvest at least half of the revenue derived from access agreements with foreign vessels into fisheries management, enforcement, and prosecution, to help tackle IUU fishing and sustainably manage fisheries over the long term. This includes dedicating sufficient resources to ensure there are trained personnel who can monitor and review DWF vessels operating in the waters of coastal countries, as well as increasing observer coverage on board vessels. Elevating the status of fisheries enforcement and monitoring officers and providing professional opportunities for growth will help retain qualified personnel.

Accede to and Implement the Port States Measures Agreement

Coastal countries and DWF nations should accede to the Port States Measures Agreement (PSMA) and professionalize fisheries monitoring and enforcement capacity where fish are landed. Funds from access agreements, development assistance, and international governmental organizations should be used to implement the PSMA. This will help standardize and professionalize fisheries monitoring and enforcement through the agreement's capacity-building assistance for developing countries. Accession to PSMA should also be a requirement for all flag states and coastal counties exporting seafood to other foreign markets.

Improve Accountability of Flag States

DWF countries have an obligation to ensure that their flagged vessels are not engaging in illicit practices such as labor abuses and IUU fishing. The top five fleets display varying levels of commitment to these tenants. The European Union's existing IUU Fishing Regulation provides an important framework in helping to improve countries' commitment to combatting IUU fishing. Upon receiving yellow cards from the European Union, two of the top DWF fleets – Taiwan and South Korea – made improvements to their fisheries regulations and other measures to ensure that fish originating from these countries were not IUU caught. Other DWF actors should seek to build similar mechanisms to incentivize greater transparency throughout the industry. Similarly, the European Union should consider evaluating China's status, as China is the world's top producer of seafood as evidence suggests that some of their vessels are engaging in IUU fishing around the world.

End Fisheries Subsidies that Enhance Vessel Capacity

Subsidies to DWF fleets play a critical role in supporting the industry, distorting economic incentives while allowing fleets to stay at sea longer. DWF states should level the playing field by ending harmful economic subsidies to their fleets that artificially increase the value of fishing, incentivize overfishing, and undermine long term fishery health. Fishery subsidies that enhance the fishing capacity of DWF vessels, such as vessel modernization, tax incentives and rebates, and fuel subsidies, should be ended.

Elevate Ocean Management and IUU Fishing to the Green Belt and Road

China's foreign policy, including its continued support for its DWF industry, is inextricably tied to the Belt and Road Initiative (BRI). In response to criticisms that the BRI and its vast infrastructure projects do not have sufficient environmental safeguards, China has been promoting the Green Belt and Road, or "high quality development", an approach which seeks to align the BRI to the UN's Sustainable Development Goals.[1] The second Belt and Road Forum, held in April 2019, signaled this new direction by introducing more targeted financing, contingent on the environmental and social health of the projects. However, the Green Belt and Road pivot has tended to focus on energy, climate change, and green finance. As the top DWF nation, China has an opportunity to demonstrate global leadership in the fight against IUU fishing and promote transparency across the seafood supply chain. By adding ocean management and sustainable fishing to the Green Belt and Road Initiative, China can play a leading role in providing more transparency across their industry.

Glossary of Terms

TERM	DEFINITION
Automatic Identification System (AIS)	AIS is an automatic tracking system that uses vessel transponders to track vessel movements. It is required by the International Maritime Organization on ships over 300 gross tons and cargo vessels over 500 gross tons. However, it is only required to be turned on when entering port, meaning vessels can turn them off and on at will when at sea.
Bilateral Access Agreement	An agreement between a coastal country and a foreign government to acquire a license to fish within a coastal countries exclusive economic zone.
Charter Agreement	A lease agreement between a foreign vessel and a company based in the coastal country. The coastal country company rents the foreign vessel, including renting its crew to carry out fishing operations in the coastal country's exclusive economic zone.
Distant Water Fishing (DWF)	The practice of commercial fishing vessels operating outside the territorial waters of their countries of origin, usually extending their range of action to faraway places.
Flags of Convenience	The practice of registering a vessel under the flag of a country other than that of the vessel's owner in order to avoid financial charges or restrictive regulations in the owner's country.
Illegal, Unreported, and Unregulated Fishing (IUU Fishing)	Describes the breadth of illicit capture fishing activities conducted by fishers. Illegal fishing refers to fishing activity done in contravention of fisheries management measures and relevant laws. Unreported fishing refers to fishing activities that are not reported or have been misreported to authorities. Unregulated fishing refers to fishing activities that occur in areas outside of fisheries management regimes, such as the high seas.
Indian Ocean Tuna Commission (IOTC)	Established in 1996, the Indian Ocean Tuna Commission is an intergovernmental organization that co-ordinates the regulation and management of tuna in the Indian Ocean.
Joint Venture Agreements	A partnership agreement set between the coastal country company and the foreign company.
Longliners	A method of fishing whereby baited hooks are attached to a longline behind the vessel.
Agreement on the Port State Measures Agreement (PSMA)	An agreement to prevent, deter, and eliminate illegal, unreported, and unregulated fishing.

TERM	DEFINITION
Purse Seiners	A method of fishing that employs a fishing net, called a seine, that hangs vertically in the water with its bottom edge held down by weights and its top edge buoyed by floats.
Regional Fisheries Management Organizations (RFMOs)	An international body made up of countries that share an interest in managing and conserving fish stocks in a particular region. These include coastal states, whose waters are home to at least part of an identified fish stock, and DWF fleet states, whose fleets travel to areas where a fish stock is found.
Sustainable Fisheries Partnership Agreements (SFPA)	An agreement between the European Union and a non-EU country, where the EU gives financial and technical support in exchange for fishing rights.
Squid Jigger	A method of fishing that employs baited hooks fastened together with radiating points for catching squid.
Top 5 DWF Fleets	China, Taiwan, Japan, South Korea, and Spain.
Top 10 DWF Fleets	China, Taiwan, Japan, South Korea, Spain, United States of America, Vanuatu, France, Russia, and Italy.
Top 20 Coastal Countries	Kiribati, Solomon Islands, Vanuatu, Micronesia, Papua New Guinea, Marshall Islands, Seychelles, Madagascar, Mauritius, Guinea-Bissau, Mauritania, Angola, Tuvalu, Sierra Leone, Cook Islands, Mozambique, Tokelau, Republic of the Congo, Guinea, and the Falkland Islands.
Trawler	A method of fishing whereby a fishing net is pulled/trawled along the seabed.
United Nations Convention for the Law of the Sea (UNCLOS)	An international agreement which defines the responsibilities of states with respect to their use of the world's oceans, including the management of marine natural resources.
Vessel Monitoring Systems (VMS)	A tool that track the activity of vessels on the water. VMS is often employed by fisheries management authorities to ensure that vessels are not engaging in IUU fishing.

Introduction

Distant water fishing (DWF) fleets have roamed the ocean for centuries. Yet in recent years, globalization and innovation have enabled these fleets to become more efficient in their operations. Industry improvements – including refrigerated vessels, at-sea processors, and transshipment – have allowed DWF vessels to remain at sea for longer periods of time, helping them to catch more fish farther from home. Moreover, these improvements complicate the supply chain, as fish are increasingly handled by more operators, including transshipment vessels, processors, and suppliers. This increasing supply chain complexity, along with the lack of publicly available information about DWF fleets, from access agreements and vessel ownership to vessel operations and catch and landing data, makes it exceedingly difficult to develop an accurate picture of DWF activity.

However, incremental changes are transforming the monitoring and enforcement of the DWF industry. Technological improvements such as vessel tracking systems and other monitoring capabilities have helped to enhance oversight of DWF fleets. Recent policy initiatives to track seafood across the supply chain, such as the European Union's Illegal, Unreported, and Unregulated (IUU) Fishing Regulation and the U.S. Government's Seafood Import Monitoring Program, as well as the implementation of international treaties such as the Port State Measures Agreement (PSMA), provide the foundation for limiting illegally caught fish from entering markets. These efforts have the potential to increase the transparency of the operations of DWF fleets over time. Despite these improvements, a lack of transparency across the industry persists and significant gaps in understanding DWF fleets remain. Research continues to reveal that some foreign vessels show a disregard for management regimes – both on the high seas and in other countries' waters.

Some DWF vessels engage in IUU fishing, register with different country than where they are from (known as flying flags-of-convenience), work under front companies, utilize forced labor, and even traffic in illicit commodities. Criminal DWF fleets working in foreign exclusive economic zones (EEZs) pose a critical threat to local economies as they strip jobs away from domestic fishers and undermine the food security of communities. Moreover, fleets that engage in IUU fishing jeopardize fisheries management and threaten marine ecosystems. In addition, experts argue that labor abuses aboard DWF vessels exist due to the long periods of time the vessels spend at sea without visiting port. These practices undermine a fair, rules-based playing field for compliant DWF vessels.

This report identifies the top DWF fleets in the world, where they operate, and their impact and motivations for engaging in illicit activity. Specifically, the Stimson research team analyzed automatic identification system (AIS) data to identify the top ten DWF fleets and the top 20 countries where they operate. This analysis served as the foundation for the project's qualitative research and was supplemented by over 50 interviews with government officials, non-governmental organizations, and the private sector representatives across the globe. Furthermore, to better understand the challenges posed by DWF fleets, the Stimson Center conducted field research in Mozambique and Seychelles, meeting with governmental officials, non-governmental representatives, and businesspeople across the fishing industry. The team witnessed first-hand the complexities of the industry and the impact of DWF fleets on coastal counties. The research team also gathered anecdotal evidence of government corruption related to interactions between DWF fleets and the coastal countries.

With these findings, this report identifies recommendations designed to support greater transparency in the DWF industry. Moreover, the report identifies areas for improved compliance of national and regional fisheries management regulations by DWFs globally. By highlighting specific actions that coastal countries and DWF countries responsible for their fleets can take to inspire greater accountability in fisheries management regimes, this report is intended to help actors deter IUU fishing and other illicit practices carried out by some DWF fleets.

Overview of the Project Goals and Methodology

The composition of DWF fleets has drastically shifted in the last 30 years – when the most comprehensive analysis of this industry was last conducted.[2] Recognizing the changing landscape of fleets, this report provides an updated qualitative assessment of the DWF vessels operating globally. The report identifies the top ten DWF fleets and the coastal states targeted by these vessels. It describes the scale of fishing activity and size of the fleets, including the recent growth of some fleets, such as the Chinese fleet, and the shrinkage of other fleets, such as the Spanish fleet. This information provides an important foundation to guide the core of the project: to understand the motivations of the newly emerging fleets, as well as to understand the implications of their activities today.

The proliferation of technologies such as AIS and vessel monitoring systems (VMS), and the increasingly public nature of this data provide an improved understanding of global fishing activities. Public platforms such as Global Fishing Watch have tapped into this vast repository of data and are now able to use algorithms to identify when and where a fishing vessel may be fishing, what type of fishing gear is likely being used, and even to estimate fishing effort.[3] With these new research methods, fisheries experts and management and enforcement officials can better understand fishing activities on the water, including the extent of industrial fishing and the economic incentives behind such practices.[4]

Partnering with Global Fishing Watch, the Stimson Center used AIS data from 2016 to 2017 to identify the top ten fleets globally and the top 20 coastal states where the fleets operate. To narrow the scope of the project, DWF is defined as fishing activity that occurs by a flag-state vessel in a non-neighboring country's EEZ. The research revealed that the top ten DWF fleets are starkly divided: The fishing activities of the top five fleets accounted for 89 percent of the top ten fleet's fishing activities, which is represented in Figure 2. Given these stark differences in the level of fishing effort, Stimson decided to focus its research and analysis on the top five fleets globally to determine the motivations and activities of the fishing fleets. The top 20 coastal countries were divided among four regions: Pacific, East Africa, West Africa, and South America. The four regions and the coastal countries within each provided the basis for research and analysis on DWF activities, particularly IUU fishing.

This data was supplemented by a broad review of current activities of DWF vessels, including a review of existing fisheries management and enforcement strategies employed by the coastal countries, historic and current financial and political support, and oversight of DWF fleets by their national governments. Stimson conducted interviews with experts focused on fisheries management in some of the top coastal countries and regions, as well as experts focused on the DWF fleets themselves. Field research focused on East Africa due to the variety of DWF fleets operating in the region. Mozambique and Seychelles were specifically selected to provide a comparative regional analysis given that each country has vastly different fisheries management regimes, monitoring and enforcement capacities, and political motivations and challenges. The two countries also provide important case studies in the use and proliferation of charter agreements and joint-ventures. These interviews informed the research and analysis, and ultimately helped to shape the report's policy recommendations. A complete anonymized accounting of the interviews are found in the Appendix.

It is important to note the limitations to this report's analysis. The main source of data is AIS, which is only required on vessels over 300 gross tons and can be turned off at a moment's notice.[5] As such, AIS does not fully capture the activities of all DWF fishing vessels on the water. Some vessels – known as dark targets – purposefully do not transmit AIS signals in order to hide their activities from authorities.[6] Additionally, in some areas of the world, particularly in Southeast Asia, there are

often so many vessels transmitting AIS signals that the area becomes too crowded to accurately assess fishing activity in the waters.[7]

Recognizing these challenges, Stimson and Global Fishing Watch identified four fleets potentially missing from our list of top ten DWF fleets: Vietnam, Indonesia, Philippines, and Thailand. The team analyzed Indonesian VMS data and available literature, including Regional Fisheries Management Organization (RFMO) registries, IUU vessel lists, and news reporting in these countries to assess whether they should be included in the top ten list. However, while Stimson determined that there was much anecdotal evidence to suggest these four countries have vessels that operate in other countries' waters, the overall evidence was not sufficient enough to include them in the top ten of DWF fleets. Consequently, Indonesia, Vietnam, Philippines, and Thailand were not included within the top ten DWF fleets in this report. In addition to AIS and VMS coverage challenges, research focused on flagged vessels to determine their countries of origin, rather than vessel ownership. Reviewing existing research and news reporting, Stimson's research and analysis have indicated that many vessels from the top fishing countries identified in this report have additional vessels operating under flags-of-convenience or utilizing structures like joint ventures and charter agreements to access other countries' waters. However, due to the lack of transparency surrounding these arrangements, these vessels are not captured in this report.

What is Distant Water Fishing?

Communities have long travelled vast distances of the ocean in search of important commodities such spices, minerals, and fish. Centuries before the concept of EEZs, fishing vessels benefited from the vast wealth of the global ocean. However, the introduction of relatively recent technological advances such as steel hulls, diesel-fuel engines, refrigeration, and the introduction of support vessels altered the entire landscape of the industry, allowing vessels to access any part of the ocean for extended periods of time.[8]

Following the Second World War, countries began to push the boundaries of the previous principles of freedom of the seas. In the 1950s, the United States extended its jurisdiction over all resources on its continental shelf, and a number of countries extended their three mile territorial sea claims to 12 miles.[9] Meanwhile, DWF fleets vessels became more prevalent – and contentious battles between fishing countries and coastal states ensued, even precipitating nearly two decades of confrontations between Iceland and the United Kingdom from the 1950s to 1970s.[10] As a result of these developments, a global debate emerged about countries' rights and jurisdictions over the ocean, which ultimately led to the creation of the United Nations Convention on the Law of the Sea (UNCLOS), which entered into force in 1994. Among the many issues addressed in UNCLOS, it stipulated that coastal countries are solely responsible for the management of their natural resources within their 200-mile EEZ, including fisheries.[11] Furthermore, under Article 62 of UNCLOS, coastal countries can determine their domestic fishing capacity, and any untapped and excess capacity may be sold to other countries.[12] These rules governing the activities of foreign vessels are key as fishing countries and private companies can negotiate and purchase access to another country's coastal waters.

What types of agreements determine access to coastal countries' waters for a DWF fleet?

There are four main categories of agreements governing access to another country's waters: *bilateral access agreements, private company agreements, charter agreements, and joint-venture agreements*.[13] With a bilateral access agreement, the coastal country negotiates directly with a foreign government to grant access to their waters. The agreement will often set the number and type of allowable foreign vessels into the coastal country's waters. The license will also set out terms such as the price – sometimes a flat fee and/or a fee determined by the amount of catch – the target species, and the time period, as well as often setting quotas on the quantity of fish allowed to be captured. In the event that a foreign country has not set a bilateral agreement with a coastal country for access to its waters, a private company can negotiate directly to obtain access to fisheries of the coastal country. Private company agreements follow a similar pattern: they set out a specific timeframe in which a vessel is allowed to fish, the species of fish, and often times include a quota. In both of these cases the foreign vessel will retain the flag of its country of origin.

In addition to bilateral access agreements and private company agreements, foreign vessels may also utilize charter agreements and joint venture agreements to access another country's fishery resources. A charter agreement is a lease agreement set between a foreign vessel and a company based in the coastal country. The coastal country company essentially rents the foreign vessel, including renting its crew to carry out fishing operations. Often the

flag of the foreign vessel remains despite being rented by the coastal country company. A joint venture agreement differs slightly in that there is a partnership agreement set between the coastal country company and the foreign company – often with the coastal country company owning at least 51 percent of the venture. In both cases, the expectation is that there will be significant knowledge transfer from the foreign company to the coastal country company, especially since both charter and joint venture agreements often require a proportion of the crew to be from the coastal country.

In addition to the four primary ways in which foreign vessels can gain legal access to coastal countries' waters, the use of shell companies is also prevalent in the industry. In coastal countries where foreign fishing may be banned entirely, such as Ghana, there is evidence that foreign companies will work with locals to set up a front company, which hides the true beneficial owner behind the fishing operations. With hidden beneficial owners, it is difficult to sanction the true owners of DWF vessels, and instead captains and local companies are held responsible, which does not effectively target the entire network that supports these illicit activities.

Many experts argue that the revenue from access agreements with foreign vessels is low and often not well distributed to fisheries ministries and local communities, remaining in the capital and leaving the local "fishers both without fish and without the dollars."[14] In East Africa, some countries along the coast are beginning to take steps and shift policies in an attempt to capture more revenue from foreign vessels accessing their waters or to encourage the development of a domestic, industrial fishing industry. Mozambique increased license fees nearly 100 times more than they were previously priced in an attempt to encourage joint venture partnerships with local companies.[15] Tanzania banned foreign fish imports with the intent to boost local businesses,[16] while Kenya banned most foreign vessels from its waters and opted to develop its domestic fishing industry and facilities to support it.[17]

Subsidies: An Economic Tool that Enhances Fishing Capacity

While access agreements determine the ways in which foreign vessels are allowed to fish in other countries waters, subsidies play a critical role in the DWF industry, distorting the true costs of operating a fishing vessel. In general, there are three types of subsidies that DWF vessels may receive: subsidies that enhance the level of fishing effort, including fuel and vessel modernization and construction; subsidies that contribute to improved management of fisheries; and subsidies that improve services infrastructure such as ports and harbors.[18] Experts have argued that fishing capacity-enhancing subsidies contribute to overfishing, particularly in coastal countries that have low capacity to monitor and enforcement fisheries management regimes.[19] The most recent estimate of the global fishing industry found that Asian governments subsidize their fleets the most at 43 percent.[20] Complicating this further is the fact that the Chinese Bureau of Fisheries recently shifted the way it reports subsidies statistics, such that the statistics are now lumped together in broad terms, making it difficult to determine what types of subsidies Chinese DWF vessels may be receiving from the government.[21] Moreover, recent research found that some high seas fishing would be unprofitable if it were not for fishing subsidies that distort the true operating costs for the DWF industry.[22] These vessels are likely contributing to overcapacity, leading to declining fishery resources, which globally are over 90 percent fully fished or overexploited.[23] This link has implications for the DWF fleets operating in other countries' EEZs, where subsidies also likely contribute to overfishing in those waters, especially given the low level of monitoring and enforcement of some coastal countries.

When subsidies and unreported fishing are combined, studies also show a curious trend in which seemingly unprofitable companies are reapplying for licenses each year.[24] The combination of subsidies and unreported fishing seems to enhance the profitability of these companies. In general, the foreign vessels in this study are likely operating legally with licenses provided by the host governments. But some may also be engaged in unreported fishing. In countries with weak governance and low capacity to monitor fishing activities, the least compliant operators will take advantage of such weaknesses. For example, in Somalia, only in late 2018 did the national government begin licensing foreign vessels. However, in conversations with regional and national experts on fisheries crime in Somalia, all of the individuals fully and openly acknowledged that vessels operated in Somali waters for years prior to these authorizations – even though AIS showed no vessels operating there.

The Role of Transshipment in the DWF Industry

While subsidies and access agreements help determine where DWF vessels may fish, understanding where DWF vessels may offload catch is also important. Some DWF vessels may not offload catch in the coastal country in which they operate. Vessels, particularly longliners that primarily target tuna, utilize support vessels to get their fish to market. The practice of transshipment, the use of support vessels to offload or "transship" catch from a fishing vessel, is critically important to the economic viability of the DWF industry. Transshipment involves a refrigerated cargo vessel, known colloquially as a reefer, rendezvousing with a fishing vessel to offload catch.[25]

While this process helps sustain fishing operations at sea for longer periods of time, it presents a number of complications. Transshipment vessels are difficult to monitor outside of port, which is why transshipment is often banned on the water. However, vessels like tuna longliners often can acquire exemptions from transshipment bans, and utilize reefer vessels to offload their catches at sea. While observers exist for transshipment encounters, often the observer coverage is low. The low level of monitoring creates significant challenges to traceability of seafood as illegally caught fish can be laundered with legally caught fish at this stage. Furthermore, transshipment allows fishing vessels and their crews to stay at sea for longer periods of time, sometimes up to a year. Research has linked the practice of remaining at sea for extended periods of time without visiting port to labor abuses.[26]

AIS analysis of the vessels in the top five DWF fleets operating in non-neighboring EEZs revealed that most vessels were only engaged in a small proportion of transshipment activities. According to AIS analysis, South Korea likely engaged in the most transshipment activity, with nearly 20 percent of the fishing activity in coastal countries' waters potentially transshipped. This was followed by stark drop off for the other four fleets, as described in Table 1. These findings raise concerns about how DWF catch is being landed, and whether DWF vessels landing catch at port or transshipment events by turning off their AIS to avoid detection.

TABLE 1: PROPORTION OF FISHING ACTIVITY FROM THE TOP FIVE DWF FLEETS POTENTIALLY TRANSSHIPPED

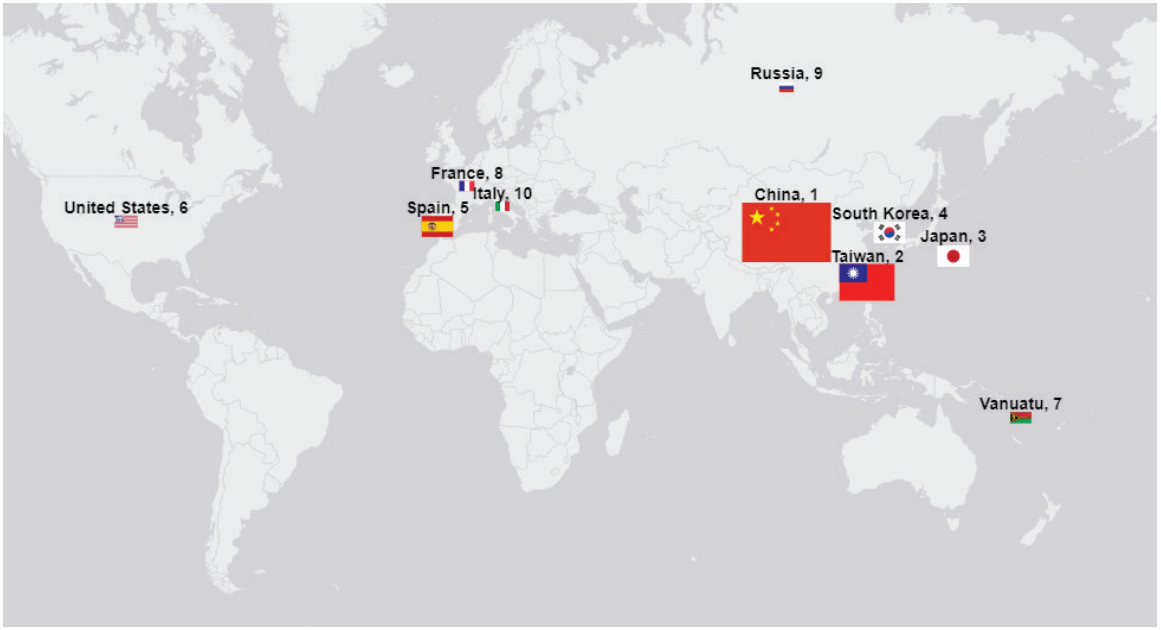
Data based on AIS Activity from 2016 to 2017

DWF FISHING COUNTRY	PROPORTION OF FISHING ACTIVITY POTENTIALLY TRANSSHIPPED
South Korea	19.45%
Japan	9.96%
Taiwan	3.82%
China	2.91%
Spain	0.30%

Which Fleets are the Most Prolific?

Up until the 1990s, the DWF industry was dominated by three major fleets: The Soviet Union, Japan, and Spain.[27] Following the collapse of the Soviet Union in 1989 and shifting political and economic priorities, new fishing fleets soon emerged as global DWF powerhouses. As Russia and European countries shuttered or downgraded operations, Chinese and Taiwanese fleets grew and are now the leading fleets globally. Stimson's research and analysis confirmed this shift and identified the top 10 DWF fleets between 2016 and 2017 as follows.

FIGURE 1: TOP TEN DISTANT WATER FISHING FLEETS BASED ON AIS DATA FROM GLOBAL FISHING WATCH, 2016-2017



As Figure 2 indicates, China and Taiwan represented nearly 60 percent of all global DWF effort in other countries' waters from 2015 to 2017. Japan, South Korea, and Spain each represented about 10 percent of the DWF fishing effort in other countries' waters. From 2016 to 2017, the top five fishing fleets represented 89 percent of the DWF fleets' operations, indicating a need to focus research efforts on these fleets. The remaining sections of this report focus on understanding the motivations and activities of the top five DWF fleets.i It places their operations in the context of the four major regions they target (the Pacific, West Africa, East Africa, and South America). [ii] Therefore, the report provides an in-depth look into the phenomenon in two countries: Mozambique and Seychelles.

i. Stimson narrowed the scope of distant water fishing to exclude neighboring EEZs as we wanted to highlight and understand why vessels who operate far from home.
ii. China, South Korea, and Taiwan all operate in South America, but their fishing effort is not high enough meet the threshold for top 20 coastal countries where fishing occurs.

FIGURE 2: PROPORTION OF FISHING EFFORT BY THE TOP TEN DWF FLEETS BASED ON AIS DATA FROM GLOBAL FISHING WATCH, 2016-2017.

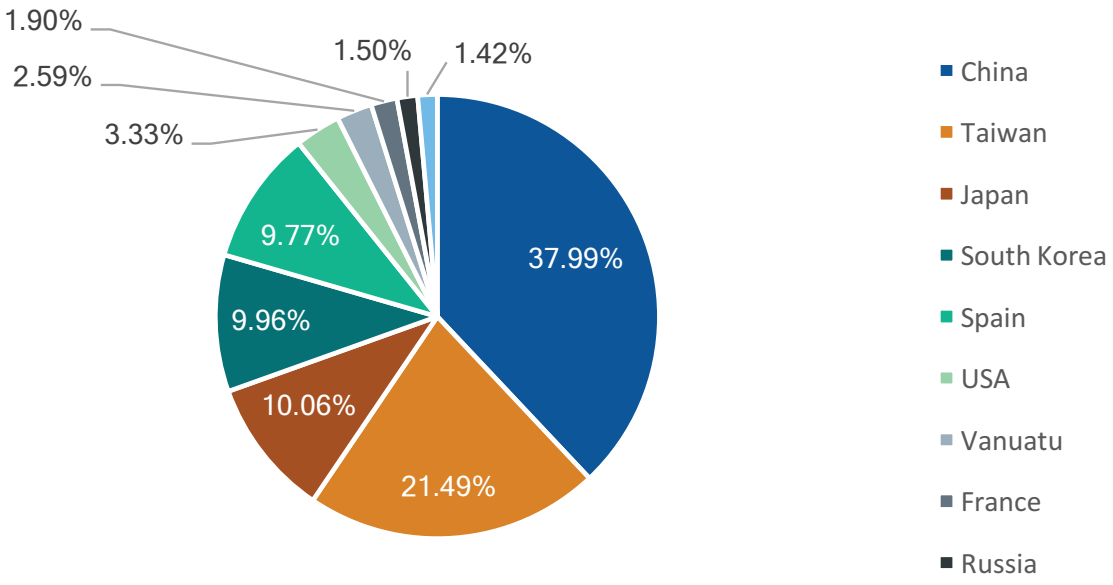
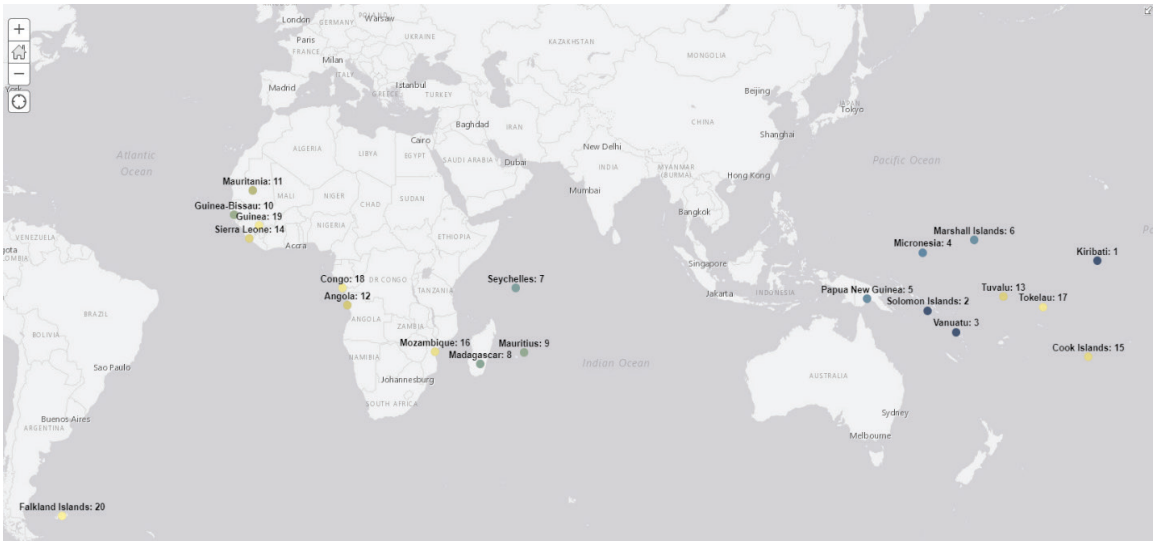


FIGURE 3: TOP TWENTY COASTAL COUNTRIES TARGETED BY DISTANT WATER FISHING FLEETS BASED ON AIS DATA FROM GLOBAL FISHING WATCH, 2016-2017.

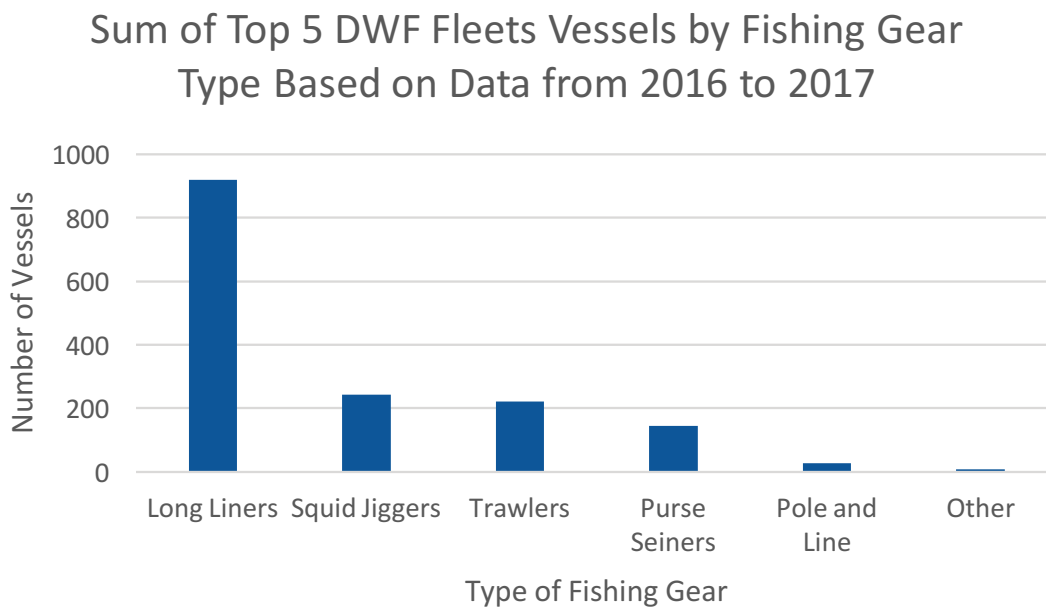
Not pictured is the Falkland Islands.

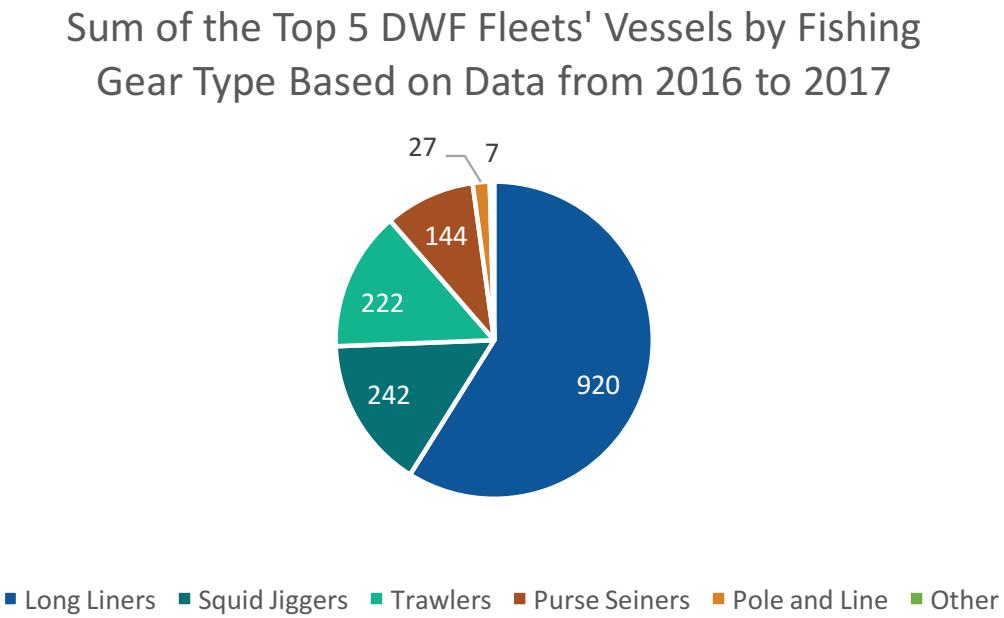


Understanding the Activities of the Top Five Fleets

The top five fleets' activities targeted four main regions of the ocean: the Pacific, West Africa, East Africa, and South America – and primarily used four types of fishing gear: longlines, squid jigging, trawling, and purse seining. These vessels are significant in size, usually ranging from 20 to 90 meters in length, and sometimes even longer. At first glance, these regions and vessels do not appear to have much in common. However, the types of fishing gear employed often helps determine where in the world the fleets may operate, and provides important insight into their similarities. Over two-thirds of the DWF vessels were either longliners or purse seiners – fishing vessels that target tuna and tuna-like species (Figure 4). Tuna are valuable species, with a single bluefin tuna having the potential to be sold at market for upwards of USD $3 million.[28]

FIGURE 4: AGGREGATE OF TOP FIVE DWF FLEETS' VESSELS BY GEAR TYPE, 2016-2017





Many longliner vessels do not visit and offload catch at ports in the countries in which they fish, and instead utilize carrier vessels to support their operations through resupplies, refueling, and transshipment. This is largely due to the fact that their fishing operations would be economically infeasible if they did offload their catch at port, given the fact that they tend to fish far away from port.[29]

Given the potential for IUU-caught fish to be laundered with legal catches, many countries and regional organizations have taken steps to ban transshipment. Furthermore, port infrastructure and access to facilities pose additional challenges for longline vessels since ports frequently are not set up to support offloading from these vessels. For example, Port Victoria in Seychelles is not configured to handle the longline fleet, so the vessels therefore rely on transshipment vessels to bring the catch to market.[30] Furthermore, in the Western Indian Ocean, about 90 percent of the catch by longliners is transshipped, while the remaining catch is often landed in Mauritius or Cape Town.[31]

In sum, transshipment presents a clear challenge for the transparency of the DWF industry, as it provides the opportunity to launder IUU caught fish into the seafood supply chain. In addition to complicating the traceability of seafood, transshipment also allows fishing vessels to stay at sea for longer periods of time – enabling a practice that many experts link to forced labor and other illicit activities.[32] Finally, transshipment denies coastal countries a valuable source of revenue, often costing them three times the added value of the captured fish.[33]

The remaining fishing activities of the top five fleets were those carried out by trawlers and squid jiggers. Trawlers from China, Spain, and South Korea plied the western coast of Africa, with the top five coastal countries they targeted being Guinea Bissau, Mauritania, Angola, The Republic of Congo, and Sierra Leone. Trawlers have indiscriminate impact on the local ecosystems, damaging the seafloor as they capture anything in their path, including bycatch while destroying important habitats such as seagrasses and coral reefs.[34] This, in turn, reduces catches for local communities, increasing the price of fish and jeopardizing the economic livelihoods of fishers.[35] One expert from the World Bank emphasized this worrying trend, highlighting one example in Gabon, where Chinese trawlers are targeting small, pelagic species to be processed into fish meal that is then fed to tilapia farmed in China. The farmed tilapia is then exported back to Gabon for sale.[36] The price differential is stark as the Chinese, farm raised tilapia is three to four times less than domestically caught fish, ultimately crushing the local industry in a place where fish makes up a significant portion of the diet.[37]

The final tranche of fishing activity was carried out by squid jiggers that primarily targeted South America, including the Falkland Islands, Argentina, Peru, Uruguay, and Chile, as well as a portion of fishing effort expended in the waters of the Republic of the Congo. South America is home to one of the world's richest squid fisheries, however inadequate data hampers effective management of the resource.[38] Moreover, in recent years, the media has covered the arrival of foreign vessels in the South Atlantic waters, some of which resulted in tense encounters with law enforcement.[39] In Argentina, the Argentine Naval Prefecture has interdicted foreign vessels believed to be engaged in IUU fishing, and recently, media coverage has indicated that the Argentine fishing industry has rallied against granting Chinese DWF vessels access to Argentine waters.[40] In fact, from 2016 to 2017, Chinese-flagged vessels were the primary DWF fleet operating in the Argentine EEZ, while in neighboring Falkland Islands their presence was limited to three vessels and instead nearly 75 Taiwanese vessels and nearly 40 South Korean vessels represented over 97 percent of all fishing effort.[41]

Ports Utilized by the DWF Fleets

Across the world, DWF fleets utilize a variety of ports to offload fish or to resupply their vessels during their journey at sea. The ports most utilized by the top DWF fleets are:

- Dakar in Senegal
- Conakry in Guinea
- Majuro in Marshall Islands
- Suva in Fiji
- Nouadhibou in Mauritania

Two of the top ports visited by DWF fleets from 2016 to 2017 were located in West Africa. This may mean two things: either the ports of Dakar and Conakry are essential in maritime trade and resupply point for DWF vessels, or some of the fishing activities of these fleets are not visible on AIS. Of the top ten DWF fleets Stimson analyzed, only two fleets fished in the Senegalese EEZ. In the two-year period analyzed, two Italian vessels were active in Senegalese waters for a total of 47 days and 33 Spanish vessels were active for a total of 1,851 days. Putting this activity in context, the 20th most fished coastal country, the Falkland Islands, experienced over 3,700 days of fishing activity by top DWF fleets in the study – which indicates that Senegal is not experiencing a high level of fishing activity from DWF fleets in comparison to other coastal countries. However, given the variation of vessels visiting the port, this more likely supports the understanding of the Port of Dakar's historic importance and strategic placement as the most western port in Africa. Conversely, only one fleet frequented the port of Conakry in Guinea: China. Between 2016 and 2017, Guinea was ranked as the 19th most fished EEZ by DWF fleets in the time period of this study – experiencing a total of 4,107 days of fishing activity by DWF vessels. Of this number, 37 Chinese-flagged vessels represented over three-quarters of the fishing days in Guinean waters, indicating the importance of the Guinean port to the Chinese fleet's operations.

Senegalese navy officer conducts routine inspection of a fishing vessel operating in Senegal's EEZ. Source: Wikimedia Commons.

These ports broadly support the DWF industry, including resupplying, refueling, offloading catch, and activities critical to the operations of a DWF vessel. However, DWF vessels do not always land catch at port and instead rely on transshipment vessels to carry the catch to market. The ports most frequented by transshipment vessels after a potential transshipment from a DWF vessel are:[iii]

- Port Louis in Mauritius
- Busan in South Korea
- Papeete in French Polynesia
- Singapore
- Cape Town in South Africa

Critically, eight out of ten ports indicated above are party to the Port State Measures Agreement (PSMA), which indicates a level of commitment to ensure that IUU caught fish do not enter the supply chain. However, the difference between these top ports indicates a need to conduct an evaluation of the capacity gaps at each port, particularly the ability to validate the landings from vessels.

As outlined above, a number of critical features of the DWF industry – the use of transshipment, the abuse of subsidies, the types of access agreements, and the ports used by DWF fleets – provide important context for understanding the motivations of DWF fleets and implications for why a fleet operates where it does, which is the remaining focus of this report.

What Motivates the DWF Fleets Operations?

Overall, Stimson's interviews and research uncovered three main motivations for DWF operations to travel and fish in various regions of the world. In order of importance, the number one driver is economics, the second is the degree of governance and capacity for enforcement, and the third is political influence.

iii. For a potential transshipment encounter to be counted, DWF vessels had to conduct at least 24 hours of fishing within a foreign EEZ to be considered.

Economics

AIS data, qualitative analysis, and interviews confirmed the common belief among fisheries experts that DWF fleets are driven to certain areas of the ocean based on economic incentives. In this view, the primary economic drivers are fish type, access to the fishery, and proximity of the fishery to relevant markets. As one interviewee succinctly articulated, fishing fleets are primarily driven by where the fish are, as well as how easily and cheaply they can get the fish to market.[42] Moreover, many of the top DWF fleets' countries have exhausted their domestic fisheries. For example, China's fisheries have nearly collapsed, and in Europe, 87 percent of the Mediterranean's 47 fish stocks are overfished.[43] As countries experience decreasing productivity at home, their demand for fish products continues to grow, creating additional economic incentives to fish further afield.

DWF vessels target areas based on the species of fish available to catch – more often fishing in areas where there are highly valued species, such as tuna or squid. Over two thirds of the top five DWF fleets target tuna, 15 percent target squid, and 14 percent utilize trawl fishing that primarily target pelagic and shrimp species. Meanwhile, these vessels must also consider the operational costs, including the cost of acquiring licenses and ease of accessing the market. A majority of the coastal countries targeted by DWF vessels are considered developing countries by the World Bank. Moreover, many have local, artisanal fleets and lack the domestic capacity to target valuable species at a commercial level. Therefore, these coastal countries often sell access to their fishery resources to DWF vessels.

In some countries, the revenue from access agreements significantly contributes to national budgets, particularly in the Pacific. In Kiribati, fisheries agreements accounted for 60 percent of the government's revenue;[44] while in the Federated States of Micronesia, fees from licenses represented 21 percent of the government's revenue in 2014.[45] This reveals that many governments are highly reliant on fisheries agreements with foreign vessels as a major source of revenue for their countries. While at first glance this may seem mutually beneficial, the fees from foreign fishing licenses are not well distributed across the national government or down to the local fishing communities. Experts interviewed argued that fees are often not well distributed to programs that support capacity building for fisheries management and enforcement.[46] Ensuring that revenues from access agreements are invested back into fisheries management and enforcement is critical for improving the capacity of coastal countries to monitor DWF vessels.

While the value of fish and the license fees play important roles in determining DWF destinations, accessibility to viable ports for offloading and processing catch, as well as resupplying, is also a critical determinate of where vessels travel. Some coastal countries have both the highly valued species targeted by DWF fleets and well-equipped ports that DWF vessels will visit to offload catch. This is the case in the ports of Majuro in Marshall Islands, Port Louis in Mauritius, Nouadhibou in Mauritania, Honiara in Solomon Islands, and Tarawa in Kiribati. Everything from processing facilities to appropriate dock infrastructure influences where a DWF vessel may visit and land its catch. Without such facilities, DWF vessels rely on refrigerated transshipment vessels to ensure their catch gets to market and they are properly resupplied while at sea.

For example, longliners require different port facilities than purse seine vessels.[iv] In Seychelles, DWF longliners operating there are unable to dock at Port Victoria to either offload or transship catch. Therefore, they either transship to reefers at sea, or visit other ports – like Port Louis in Mauritius – that are equipped to handle longliners. Coastal countries recognize the importance of developing domestic capacity at ports, including port infrastructure and a system of businesses that support the seafood industry. Representatives interviewed in coastal countries saw port development and modernization as a means to entice vessels away from other frequently used ports. However, development and modernization efforts generally do not directly address concerns relating to the lack of enforcement capacity.

iv. See Glossary for definitions of these types of vessels.

Governance and Enforcement Capacity

While economic forces and business calculations are critical considerations that influence the operations of DWF vessels, fisheries governance and enforcement also play important roles. The DWF vessels most likely to engage in IUU fishing are attracted to countries lacking robust fisheries management regimes. Those countries often also lack the capacity to effectively monitor, enforce, and prosecute perpetrators that violate existing fisheries laws. Existing literature on the economics of crime confirms this analysis, and identifies three main factors that drive actors to participate in criminal activity: low monitoring and enforcement; low penalties for infractions; and high rewards associated with the crime.[47] Put simply, vessels engage in IUU fishing because it pays.[48] Ultimately, interviewees emphasized that a vessel engaging in IUU fishing will not likely leave a fishing ground unless there are no more fish, the vessel is interdicted by authorities, or the vessel can make more money elsewhere.

In many of these coastal countries, funding and support for fisheries management and enforcement is often a low priority, especially when financial resources are already constrained. Without the necessary resources – both in terms of qualified personnel and adequate financing – the management of fisheries becomes a significant challenge. In the coastal countries targeted by DWF fleets, there is often a lack of trained personnel, and retaining high-quality personnel is difficult due to low salaries. The lack of highly trained personnel and low retention rates are closely connected with a shortage of resources, stemming from a low prioritization of fisheries management and training.

In some coastal countries, fisheries ministries often lack the necessary management and enforcement tools to succeed. For example, in both Mozambique and Seychelles, while fisheries officials expressed pride in their mission to ensure the longevity of fisheries resources for their respective countries, their enthusiasm was dampened by the reality that the fisheries ministries have such limited budgets, preventing effective management of fish stocks. Even in Seychelles, a country where the fishing industry is one of the primary economic engines and is significantly supported by the government, interviewees articulated challenges with retaining high quality fisheries enforcement officers and technical advisors to develop and implement robust stock assessments.[49] In Mozambique, the combination of crippling government debt and the nascent nature of the recently created Ministry of Sea, Inland Waters, and Fisheries result in a politically weak and resource-strained institution, creating conditions that can be exploited by criminal DWF vessels.

Political Influence

Another important factor influencing DWF fleets' operations is political influence. The allocation of natural resources like fisheries is inherently political and selective – with government authorities providing access to the resource to some, but not all parties. In addition, increasing scarcity of fisheries resources has intensified the geopolitical importance of accessing the fisheries of coastal countries.

Within the context of declining global fish stocks, DWF nations are increasingly incentivized to access new fisheries at any cost. There are widespread accusations that these fleets acquire access to fishery resources by exploiting corrupt practices, institutions, and officials.[50] Moreover, there are real concerns that foreign access agreements can be influenced by quid pro quo, tacit agreements, and coercion where infrastructure or targeted development assistance may translate into access of natural resources or even further in some cases outright corruption.[51] Instances of such influence exist across the DWF industry – such as Chinese vessels acquiring exemptions for transshipment in Ghana in the early 2000s, or even tying access to fisheries with other assistance packages like infrastructure development in Mozambique.[52]

While there is no systematic evidence of corruption in the DWF industry, a lack of transparency surrounding the industry, including access agreements and beneficial ownership of joint-ventures and charter agreements, can breed a perception of corruption. Interviewees in Ghana succinctly expressed this sentiment, particularly in regard to the Chinese DWF fleet. With no transparency, those outside the process are left to assume the worst – that corrupt officials make poor decisions to the detriment of local industry.[53] Another common refrain shared by many interviewees was that even if the public is aware of the terms of the access agreement, they are not aware of the back-door deals or "the contents of the brown paper bag slipped under the negotiating table."[54]

When pressed to share information about foreign access agreements, coastal states, particularly those in the Pacific, argue that access agreements should not be made public as it will undermine their negotiating positions with DWF vessels and intrude on their sovereignty.[55] However, a lack of transparency in the industry breeds both the opportunity for, and a perception of, corruption. It provides the opportunity for corrupt officials to take advantage of the system, insulates bad actors from detection, perpetuates poor labor standards, and provides an opportunity for IUU caught fish to enter the supply chain. Steps to make access agreements, beneficial owners, and vessel activity more transparent are critical to creating greater accountability and sustainability in the use of increasingly dwindling fisheries resources. Efforts to encourage coastal and DWF countries to sign on to transparency endeavors like the Fisheries Transparency Initiative are crucial to address these concerns.

A Deeper Dive: The Top Five Fleets

While the motivations discussed in the previous section provide a broad explanation for why the top five DWF fleets operate where and how they do, there is a need to put these motivations in the context of the historic and current support and policies of the fleet's home governments. This analysis is important to understanding the level of oversight and accountability that each country provides their DWF fleet, and ultimately offers important context for the fleets' activities, from IUU fishing to the use of poor labor practices.

China

The Chinese DWF fleet is the largest, most prolific in the industry today, with vessels operating in every region of the world. Less than a third of the estimated 3,000 DWF vessels are captured in this project given that the parameters of this research focused on fishing in non-neighboring EEZs. The Chinese fleet's fishing activity dwarfed the activities of other DWF fleets, with Chinese vessels representing almost 40 percent of all top ten DWF fishing fleets' activities in other countries' EEZs. Not only was the Chinese DWF fleet large, but it contained a wide variety of vessels: longliners, trawlers, squid jiggers, purse seiners, pole and line, pot and traps, and more were utilized. Of the top five DWF fleets in the study, the Chinese vessels were among the least engaged in transshipment according to AIS data of likely transshipment encounters after fishing activity in the top 10 coastal countries, likely transshipping only three percent of Chinese fishing activity. However, it is probable that not all transshipment encounters were captured since it is easy for vessels to turn AIS off at any moment.

FIGURE 5: DISTANT WATER FLEET FROM CHINA

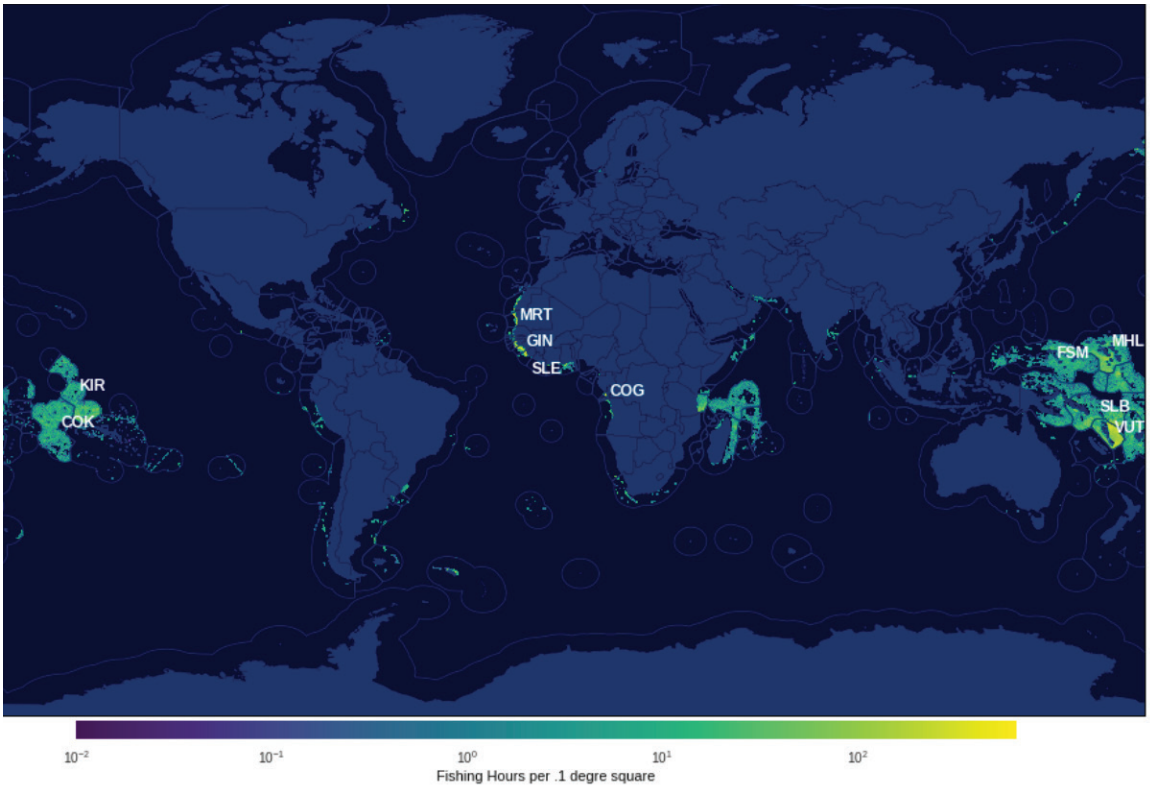
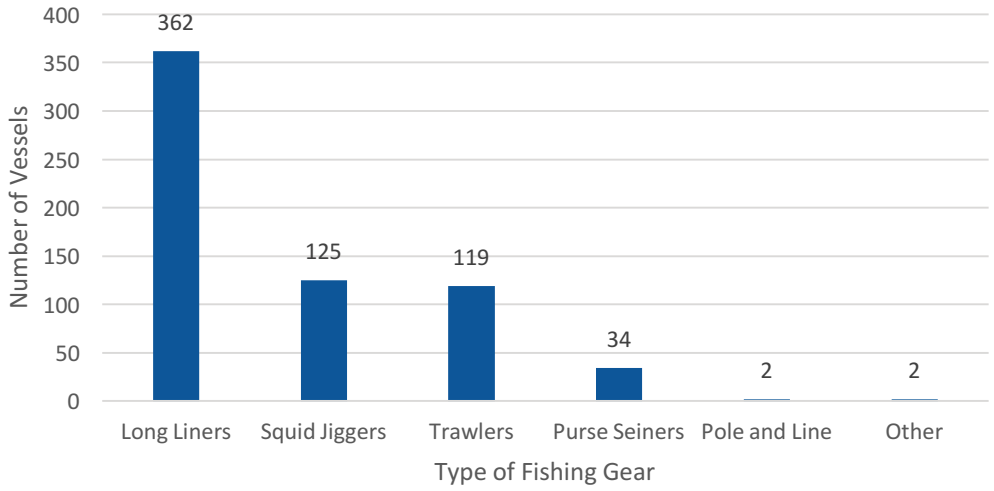


FIGURE 6: DISTRIBUTION OF CHINESE DWF VESSELS BASED ON AIS DATA



In 1986, China introduced the National Fisheries Law, which set the stage for China's burgeoning DWF fleet. The law outlined the need to incorporate fisheries into economic planning policies, encouraging the development of fishing capacity and production on a domestic and international scale.[56] Critically, the law also pushed for the creation of offshore fishing, announcing that the "state shall give support or preferential treatment in the form of funds, materials and technology, and in matters of taxation."[57] Most importantly, the National Fisheries Law provides context for the current state of Chinese fisheries because it led to overfishing and the collapse of domestic fisheries, affecting the livelihoods of fishers across the country. Coinciding with the National Fisheries Law was the closures of fishing grounds. These closures encouraged fishing beyond China's waters to quell food security concerns that resulted from dwindling domestic stocks as well as to provide employment opportunities for displaced fishers.[58]

At the beginning of the 21st Century, the "going out policy" encouraged a more strategic and holistic approach for China's DWF fleet, as the distant water fleet became closely affiliated with their growing global presence.[59] The 2010s continued to be marked by a desire to expand their global reach, an aspiration that the DWF fleet supported. Since then, vessels have continued to be upgraded and modernized with financial support through subsidies from the central and provincial governments. These subsidies have helped Chinese DWF fleets to be more productive in exchange for giving China eyes on waters in the far reaches of the world.[60]

Experts now see China's DWF fleet utilized in three ways. The first is to meet growing demands for seafood at home, with Beijing currently requiring its fleet to send an estimated 60-65 percent of its catch back to Chinese markets. The second is to assert territorial control over historical claims in the South China Sea, which is often done with the support of Chinese Coast Guard vessels.[61] The third is the connection between the expanding presence of China's DWF fleet and the government's economic interests abroad that are associated with the Belt and Road Initiative (BRI). The BRI is a multi-billion-dollar infrastructure and development initiative designed to connect China with key economic corridors in the rest of the world.

Most recently, the Chinese flagged fleet has come under greater scrutiny due to IUU fishing activities abroad. Interviewees expressed concerns about the low level of oversight imposed on the Chinese-flagged fleet in distant waters. Concerns included both apprehensions about Chinese companies operating front companies that distort benefits to the owner of the vessel, as well as worries about joint-venture and/or charter agreements that are predatory and not mutually beneficial for companies in coastal countries.[62] Recently, the Chinese government has instituted some policy changes in response to this heightened pressure after incidents of IUU fishing were chronicled. For example, last year, the central government proposed amendments to the key fisheries laws. The laws now include stricter regulations on the use of flags of convenience by Chinese companies.[63] Additionally, the Ministry of Agriculture, which houses the

Bureau of Fisheries, made public statements that it would deny black listed vessels, vessels that are known to engage in IUU fishing, from accessing ports in China, effectively complying with some certain components of the PSMA.[64] Despite these acts of compliance, China has yet to sign onto the PSMA and concerns about IUU fishing of their fleet in other countries' waters continues to be prevalent.

Beijing publicly stated that it plans to cap the number of DWF vessels at 3,000 vessels by 2020.[65] However, experts believe otherwise since Beijing and the provincial governments continue to subsidize their fleet's operations, including funding for vessel modernization such as upgrades to increase hold capacity and engine capacity.[66] These subsidies are a significant threat to the sustainability of ocean resources because they make DWF fishing economically viable when otherwise they would not be.[67] Moreover, in conversations with Chinese academics specializing in fisheries, who often have close relationships with the government, many expressed skepticism about the need to address the unreported component of IUU fishing. These experts argued that the government sees illegal fishing as a serious problem that needs to be addressed, but that other components of IUU fishing are more pressing concerns.[68] This sentiment provides important context for the activities of Chinese DWF fleets abroad and the oftentimes low level of oversight by the flag state, the People's Republic of China.

Taiwan

The second largest DWF fleet globally is the Taiwanese fleet. From 2016 to 2017, there were 414 Taiwanese flagged vessels fishing in non-neighboring EEZs, which represented over 20 percent of the top ten DWF fishing fleets' fishing activities during that period. In fact, three-quarters of the Taiwanese vessels in the study were longliners targeting tuna fisheries in the Pacific and Indian Oceans. In fact, Taiwan's DWF fleet supplies an estimated 50 percent of the sashimi grade tuna globally.[69] Their vessels often utilize transshipment vessels to bring their catch to market and to facilitate longer periods at sea. Based on AIS data of likely transshipment encounters after fishing activity in the top 10 coastal countries, Taiwanese vessels likely transshipped less than four percent of their fishing activity to reefer vessels.[70]

FIGURE 7: DISTANT WATER FLEET FROM TAIWAN

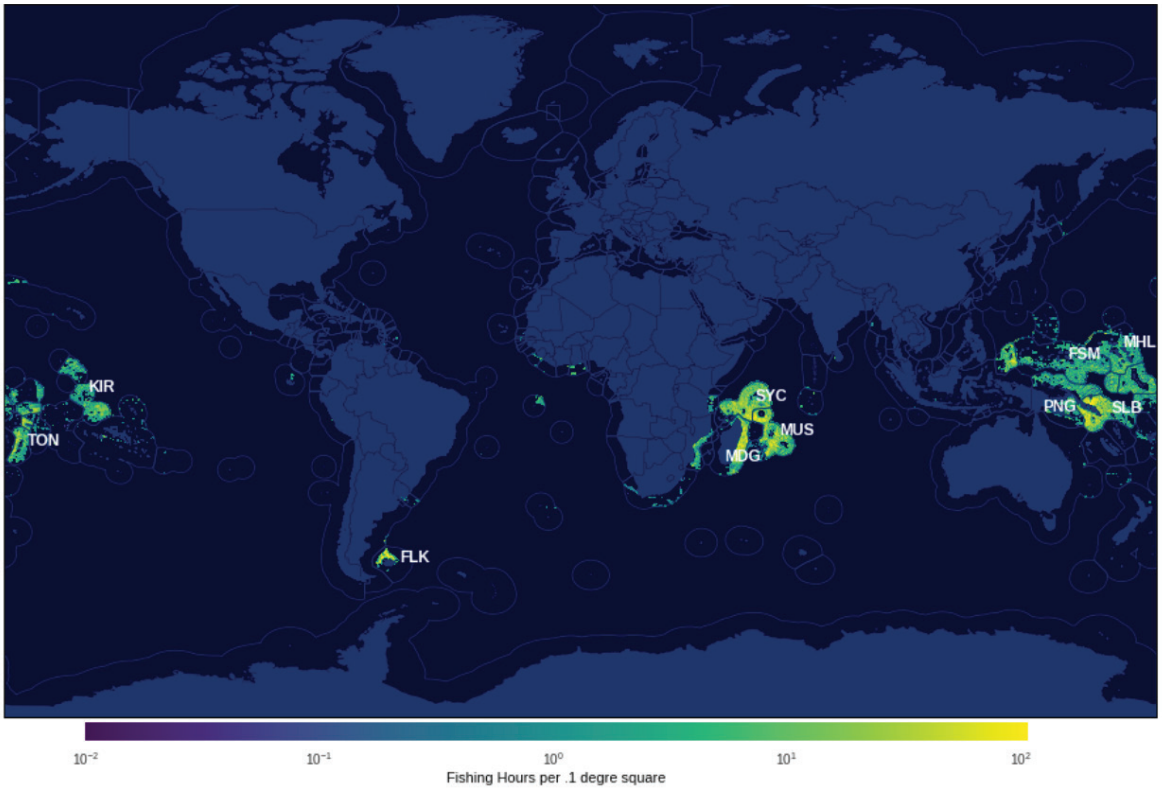
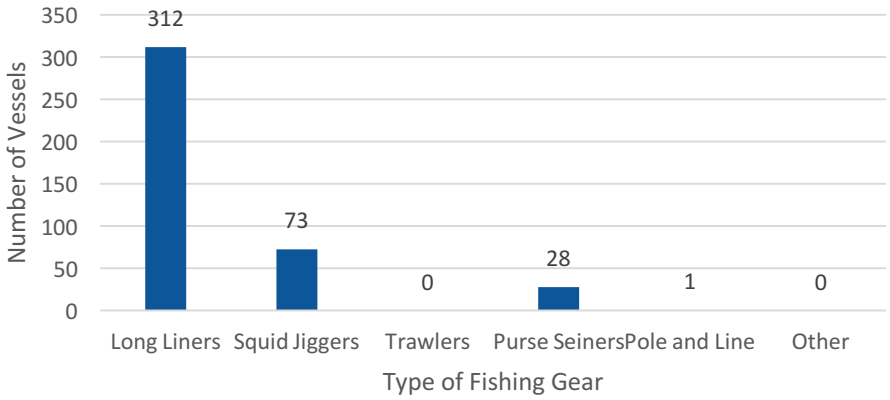


FIGURE 8: DISTRIBUTION OF TAIWANESE DWF VESSELS BASED ON AIS DATA



The Taiwanese fleet first developed in the 1950s and 1960s in response to overfishing and collapsing fish stocks in their waters, coupled with concerns about economic security for Taiwanese fishers.[71] The shift coincided with the government policy, "Every Fisher Has His Boat", in which the government significantly subsidized the DWF fleet by encouraging citizens to purchase vessels in order to become a part of their growing industry.[72] Government support for the DWF fleet continued through the 1980s and 1990s as subsidies to build small-scale vessels were replaced by subsidies for the construction of industrial, often longliner, vessels.[73] In the early 2000s, the Taiwanese fleet faced accusations of IUU fishing practices and was sanctioned by the Regional Fisheries Management Organizations (RFMOs), which manage specific species of fish or geographic areas of the ocean, and the International Commission for the Conservation of Atlantic Tunas (ICCAT).[74] Many saw this as an opportunity for significant reform and improvement of oversight for the fleet's operations. However, Taiwan's fishing fleet has recently come under additional scrutiny for poor labor practices and IUU concerns.

In 2015, the European Union issued Taiwan a "yellow card" as part of the European Commission's IUU Fishing Regulation, which is designed to prevent IUU-caught fish from entering the European market.[75] In giving out a "yellow card", the European Commission provided Taiwan with a warning: either address IUU fishing concerns or risk receiving a "red card" and have all seafood products denied entry to the European market. In response, Taiwan underwent significant changes to its fisheries management laws. In 2017, Taiwan renewed its Act for Distant Water Fisheries, mandating tougher regulations for fishing activities of Taiwanese vessels abroad.[76] The law comprehensively addressed many fundamental concerns about the DWF fleet, including requiring all vessels to have either an active VMS on board or an electronic-log system to help monitor the vessels' activities.[77] Some experts expressed concerns about the level of political will necessary to implement the Act, given competing priorities of addressing food security to fulfill demand for seafood at home and addressing job security for fishers.[78] Despite those worries about implementation, Taiwan's "yellow card" was lifted in July 2019 and a joint task force between the European Commission and the Taiwanese government was created, indicating progress in the fight against IUU fishing.[79] However, concerns about labor abuses aboard Taiwanese vessels remain significant, with migrants being lost at sea,[80] fishermen enduring slave-like conditions aboard vessels,[81] and vessels continuing to utilize flags-of-convenience despite effectively being operated by Taiwanese captains and businesses.[82]

Even as Taiwan makes strides in addressing the major concerns associated with its fishing fleet abroad, its complicated international status makes it difficult to maneuver in many international bodies. Globally, this can limit Taiwan's position in the fisheries space. In particular, within the RFMOs, Taiwan typically enjoys access as a "fishing entity," but has minimal or no decision-making power.[83] As the second largest and most significant DWF fleet globally, Taiwan's complicated status prevents meaningful engagement and opportunities to

encourage greater accountability in the realm of fisheries management.

Despite these challenges, Taiwan still has access to rich tuna fisheries globally. Improvements can be made to ensure that the fleet is more compliant with relevant international, regional, and the domestic fishing laws. In particular, over 300 of the Taiwanese vessels in this study are longliners, who often transship their catch to carrier vessels at sea rather than offloading it at port. Transshipment represents a major challenge to oversight and accountability in this stage of the supply chain. Improving transparency would be a significant step forward to managing the issues related to the Taiwanese fleet.

Japan

From 2016 to 2017, Japan operated the third largest DWF fleet globally, with 162 fishing vessels active in waters from Southern and Eastern Africa to the Pacific. Nearly the entire fleet was made up of vessels specializing in tuna, such as longliners, purse seiners, or pole and lines, ergo they primarily targeted tuna species. Based on AIS data of likely transshipment encounters after fishing activity in the top 10 coastal countries, as much as 10 percent of Japanese fishing activity was likely transshipped, making the fleet the second largest to likely engage in transshipment of the top five fleets in the study.

FIGURE 9: DISTANT WATER FLEET FROM JAPAN

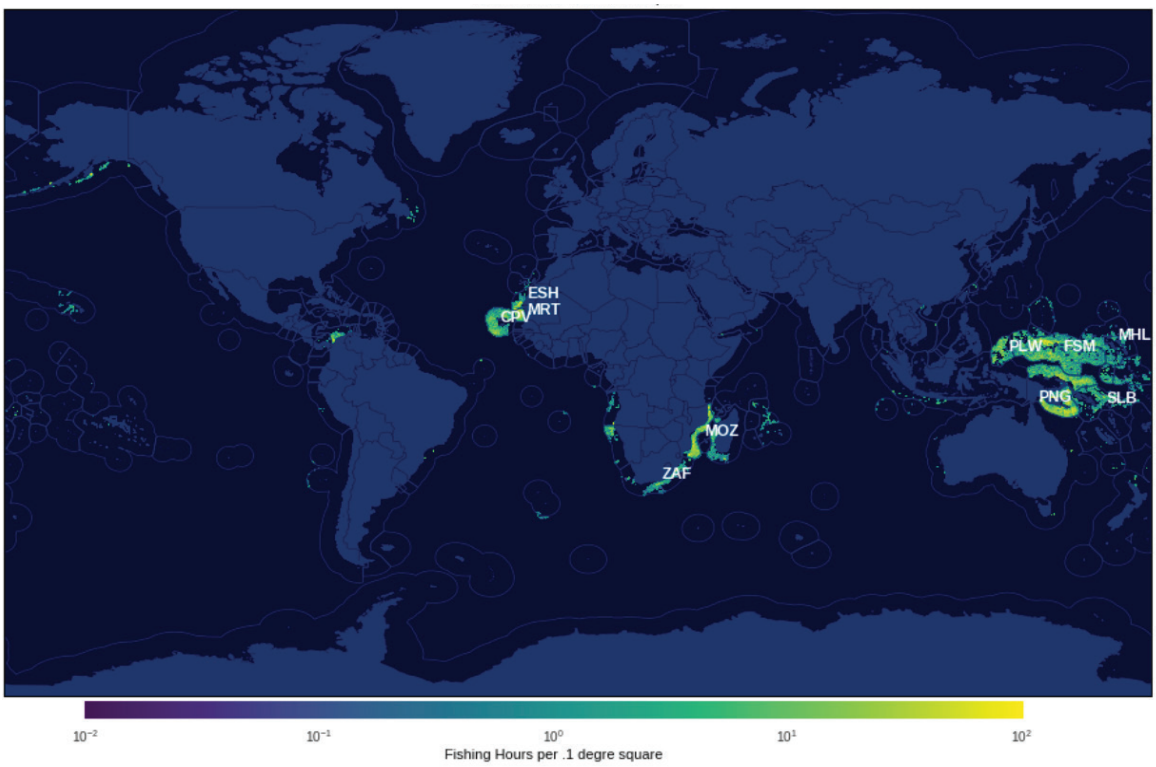
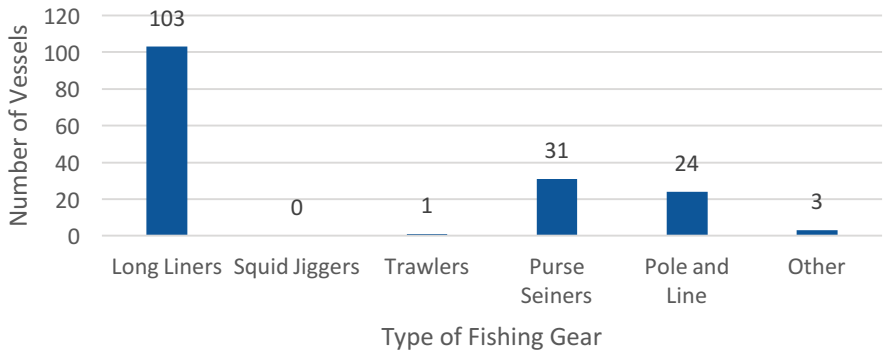


FIGURE 10: DISTRIBUTION OF JAPANESE DWF VESSELS BASED ON AIS DATA



In the early 1930s, it was estimated that Japan had one of the largest DWF fleets in the world, operating long distances from home and supported by the government. At the end of World War II, the Japanese fishing industry (including its DWF fleet) was seen as an important kick-starter for the economy, and as a useful means of addressing food security concerns, leading to further expansion of the fleet.[84] Similar to the other top fleets operational in the 1980s, the Japanese fleet witnessed a downturn with the introduction of EEZs under UNCLOS, coupled with the realization that the global fishing industry was overdrawing its resources.[85] [86]

In more recent years, the fleet has further waned in size, despite Japan continuing to have one of the highest demands for fish in the world. In December 2018, the Japanese National Diet (Parliament) approved major changes to the Fisheries Act, an act that had not been amended in over 70 years. The new changes significantly de-emphasized the World War II era's focus on fisheries exploitation and shifted focus to better fisheries management and sustainable use.

The fleet is governed by the Ministry of Agriculture, Forestry, and Fisheries (MAFF), with oversite provided by the fisheries agency. Japanese vessels are still required to obtain a license from the central government, and each vessel is required to operate using VMS.[87] However, the Japanese fleet still receives subsidies in support of their operations, predominately in the form of insurance and the development of services infrastructure.[88]

In addition to the support provided to its own fleet, Japan also provides assistance to fishing industries in many countries, including helping to develop local fishing ports, supporting capacity-building efforts, and even serving as a donor to the Pacific Islands Forum Fisheries Agency.[89] This practice is similar to that of the European Union's Sustainable Fisheries Partnership Agreements (SFPAs), which stipulate that funding and capacity building be dedicated to improvements in the fishing industry. While in Maputo, Mozambique, Stimson researchers saw the many items that the Japanese development agency funded to support the fishing sector and the local port. While the Japanese provide assistance for capacity development and clearly state that subsidies should not encourage overcapacity and overfishing, their fishing agreements with coastal countries lack transparency, an important step in indicating the country's serious commitment to the long-term health of fisheries globally. Overall, though Japan's fishing agreements lack transparency and their fleet receives subsidies, the sentiment around the Japanese fleet is that it is generally more compliant in comparison to Chinese DWF vessels.

South Korea

South Korea operated the fourth largest DWF fleet based on AIS analysis from 2016 to 2017. The 198 South Korean flagged vessels were active across the world, including in the Pacific, off the coast of Argentina near the Falklands, and in East Africa.[v] The longliner vessels operated in the waters off the

v. Though South Korea has more vessels than Japan, it is ranked at number four because our analysis is based on fishing activity and not number of vessels. South Korea has a different composition of vessels in its fleet, particularly with the squid jiggers.

coast of East Africa, while the squid jiggers focused their efforts in South America where the squid fishery is richer. The South Korean fleet seemed to engage the most in transshipment of the top five fleets in the study. Based on AIS data of likely transshipment encounters after fishing activity in the top 10 coastal countries targeted by the South Korean fleet, South Korean vessels transshipped nearly 20 percent of their fishing activity.[90]

FIGURE 11: DISTANT WATER FLEET FROM SOUTH KOREA

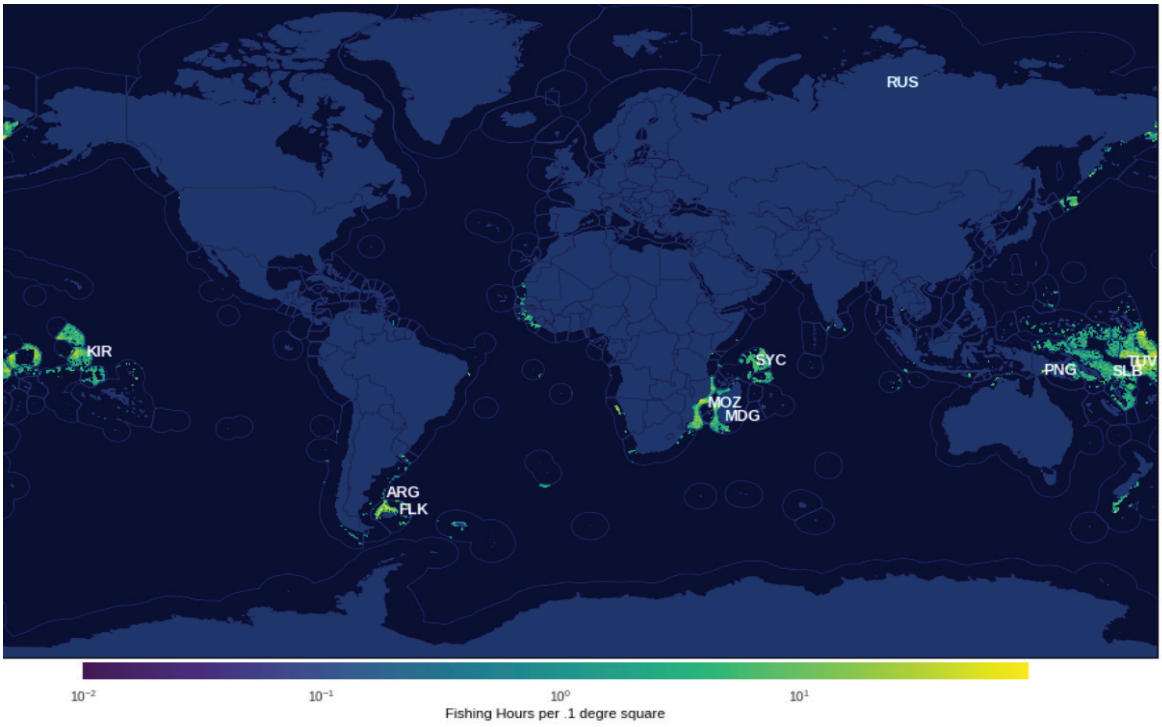
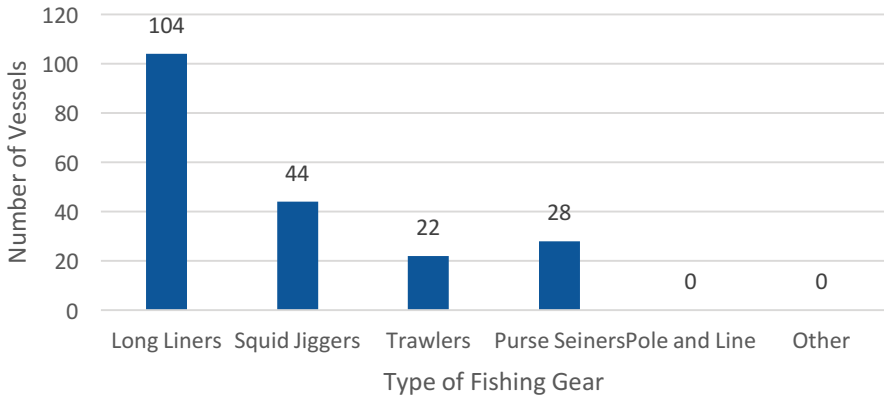


FIGURE 12: DISTRIBUTION OF SOUTH KOREAN DWF VESSELS BASED ON AIS DATA



The South Korean fleet has been active since the 1960s when the government first introduced a 5-year plan that explicitly outlined the desire to expand the DWF fishery.[91] This plan pushed South Korean vessels far and wide, with DWF catches peaking in the late 1980s and early 1990s. In just thirty years, the catches from the South Korean DWF fleet grew from 656 tonnes in 1962 to over 1 million tonnes in 1992.[92] Today, the number of vessels in the fleet has shrunk, but the capacity and power of the vessels has slightly expanded.[93]

Similar to other top countries supporting large DWF fleets, the South Korean government provides subsidies for its fleet, often in the form of insurance- and service-based subsidies related to marketing and management. Few of these subsidies are used to enhance the capacity of fishing vessels.[94] The management of fisheries is overseen by the Ministry of Oceans and Fisheries, which oversees the Distant Water Fisheries Development Act, among many other relevant fisheries laws. In 2013, the European Commission handed the South Korean government a "yellow card", which required that significant improvements be made to address IUU fishing concerns or risk the banning of South Korean exports to the European Union. To address the concerns that prompted the "yellow card", the Distant Water Fisheries Development Act was amended.[95] Those amendments stipulated that a DWF vessel must have VMS on board, obtain permission to fish in foreign country waters, and must report to the ministry about joint ventures, among other things.[96]

Despite these efforts to improve the industry, recent reporting has highlighted challenges to the South Korean fleet's compliance with international fisheries and labor laws, including utilizing unfair labor practices and engaging in IUU fishing.[97] Reports of labor abuses on board South Korean vessels continue.[98] Experts often link labor abuses with longer periods of time spent at sea without visits to port, which are also facilitated by support vessels that transship catch and provide resupplies.[99] Most importantly, of the top fleets analyzed in this research, the South Korean fleet engaged most frequently in transshipment of its catches as compared to the other top ten fishing fleets. While transshipment facilitates easier and quicker movement of catches to market, it also provides opportunities to launder IUU caught fish with legally caught fish, and it extends the time that vessels can spend at sea. Improving oversight and transparency of these transshipment events is an important step forward for the South Korean fleet, as it would improve their level of compliance and aid international efforts to combat IUU fishing and labor abuse in the fishing industry.

Spain

Spain operated the fifth largest DWF fleet from 2016 to 2017, with its operations primarily focused on fisheries in West and East Africa.[100] The fleet contains a significant number of trawlers, which specialize in fishing for pelagic species and other fin fishes. The fleet is regulated by two entities: the European Union and the Kingdom of Spain. According to publicly available data from the Spanish Ministry of Agriculture, Fish, and Environment, the Spanish DWF fleet included 64 flagged vessels operating in foreign country waters, 61 trawlers, and 3 longliners in 2017.[101] Based on AIS analysis of likely transshipment encounters after fishing in the fleet's top 10 coastal countries, the Spanish fleet engaged in the least transshipment – less than one percent of all fishing activity.

FIGURE 13: DISTANT WATER FLEET FROM SPAIN

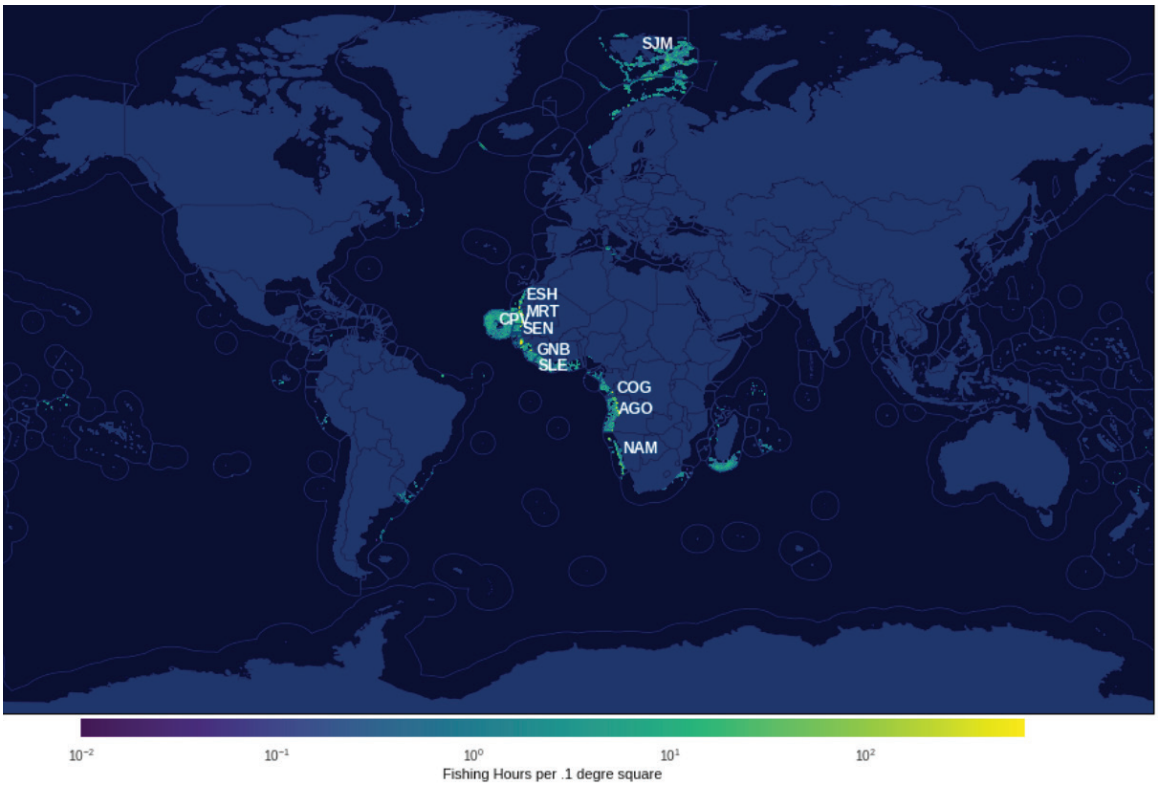
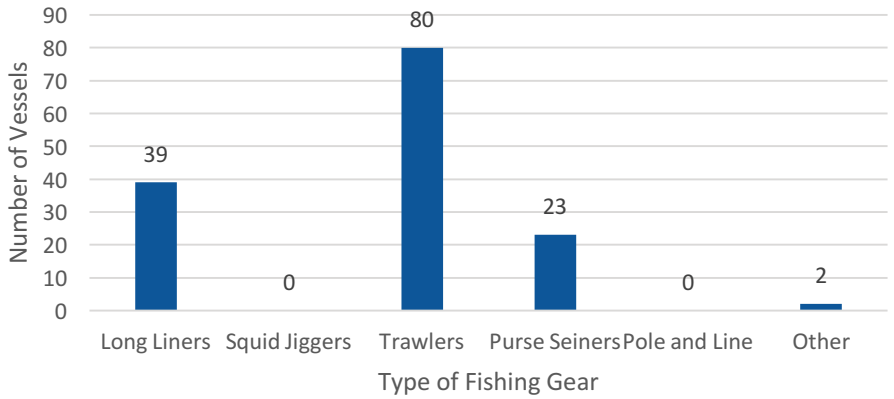


FIGURE 14: DISTRIBUTION OF SPANISH DWF VESSELS BASED ON AIS DATA



The Spanish fleet has fished distant waters for centuries, often in pursuit of economic and food security. An estimated 87 percent of the Mediterranean's fish stocks are overfished, pushing vessels further afield. Despite the reduced fish stocks, the fleet has been reduced in the last 20 years due to stricter controls and oversight stipulated by the European Commission across the European member states. However, Spain still operates the largest DWF fleet out of the European Union member states in terms of fishing capacity, representing nearly 24 percent of the overall European fleet.[102] Collectively, the European DWF fleet represents 18 percent of the gross tonnage

for all European vessels, including small and large scale ones.[103] According to OECD statistics on government support to fisheries, Spain's DWF fleet receives very few subsidies, unlike the four other top DWF fleets.[104] However, this may change as the European Union considers renewing subsidies to the DWF fleet during the upcoming negotiations for the 2020 budget.

The Spanish fleet usually acquires access to coastal countries' waters through the EU's bilateral agreements or SFPAs.[vi] These agreements posted on the European Commission's website are transparent and outline the access rights, funding structures, allowable catch, and other terms. According to the online and publicly available SFPAs, the Spanish fleet had active vessels in the waters of in a handful of African nations from 2016 to 2017, including Cape Verde,[105] Guinea-Bissau,[106] Mauritania,[107] and Senegal.[108] However, according to AIS data, vessels were also active in Angolan, Congolese, Western Saharan, Namibian, and Sierra Leonean waters. Taking a closer look at Guinea-Bissau, according to publicly available information, the SFPA outlines opportunities for 14 purse seiners and longliners and 9 pole and line vessels fishing for shrimp and fish/cephalopods at 2,500 and 2,900 gross tonnage, respectively. Ultimately, from 2016 to 2017, there were only a handful of purse seiners and longliners, and instead far more trawlers operating in Guinea-Bissau's EEZ.

In cases such as the one described, each flag state within the EU is responsible and accountable to its flag state duties. While the vessels themselves are held to high standards of compliance to international labor and fisheries laws and behaviors abroad, some interviewees suggested that complying with the laws hinders fishing competition. It is recognized that certain international fleets using the same waters are known to engage in IUU fishing and labor abuses. It's also common knowledge that these fleets take advantage of weak governance structures and enforcement of coastal states by engaging in illegal business practices such as bribing officials or submitting fraudulent catch documentation. The Spanish fleet, and more broadly the European fleet, have argued that the playing field is not level and they are hamstrung to stay competitive.[109]

In addition to the Spanish-flagged fleet, Spanish companies also participate in joint-ventures and charter agreements. For example, in Seychelles the domestic tuna fishing fleet is jointly owned by Spanish and French companies, with Seychellois partners. During Stimson's field research in the Seychelles, experts admitted that even if these agreements indicate Seychellois majority ownership, they would not be surprised if the distribution of benefits were entirely different, with European partners receiving grater benefits than the Seychellois partners.

In 2020, the European Union will pass a new budget. In the runup to the budget negotiations, the European Commission put forward a fisheries funding proposal that recommended similar funding levels. The priorities remain at the levels of previous fisheries budgets, which limited subsidies to the DWF fleet. However, in April 2019, the European Parliament countered this proposal and requested additional funding to subsidize vessel construction and modernization of the European fleet. The current debate moves to a trialogue between the European Council, the European Parliament, and the European Commission, who will negotiate a budget deal that will guide the future of their fishing operations. Experts have argued that the proposal to dedicate funding to vessel modernization and construction runs counter to EU priorities and undermines negotiations in other areas, including at the World Trade Organization in Geneva, where fisheries subsidies are at the top of the priority list.

vi. It is important to note that the member states in the European Union are also free to directly negotiate with coastal countries for access to their waters.

Case Studies: Mozambique and Seychelles

The following case studies are based on interviews with dozens of experts in government, the NGO community, and private sector in Mozambique and Seychelles. The interviews were conducted in person during April 2019 in the capitals of each country: Maputo and Victoria. Mozambique and Seychelles were selected due to the diversity of flagged fleets operating in the region, which included China, Taiwan, Japan, and South Korea. Additionally, the case studies provide important insight into the implications of DWF fleets that can be applied more broadly for coastal countries targeted by these fleets. In fact, the field work in Seychelles and Mozambique confirmed two main assumptions about DWF motivations: Profitability is central to the decision-making process for DWF vessels; and some of the least compliant DWF vessels are attracted to coastal countries that have low capacities to monitor and enforce their fisheries management regimes. Moreover, in conversations with experts on the ground in each country, one sentiment was consistently shared: fisheries resources are being overexploited both by domestic and foreign fishermen, often to the detriment of local communities and economies, and the capacity to address these concerns needs to increase if valuable fisheries are to enjoy long-term sustainability.

Distant Water Fishing in Mozambique

The Republic of Mozambique lies in southeastern Africa, bordering Tanzania to the north and South Africa to the south. The country's coastline is significant: at 2,700 kilometers, Mozambique's coast is the third longest in Africa. Its fisheries resources are rich – with species ranging from pelagic and demersal fish, as well as shrimp, crustaceans, and tuna. Fishing activities represent three percent of the national GDP;[110] an estimated 350,000 artisanal fishers represent 85 percent of the fishing effort in the country, while the remaining 15 percent of fishing effort is captured by the semi-industrial and industrial fishing fleet.[111] Though a small proportion of the fishing activities, the semi-industrial and industrial fishing sectors represent nearly 60 percent of the country's catch value.[112] From 2016 to 2017, vessels from Japan, Taiwan, South Korea, China, Portugal, Spain, and Russia operated in Mozambican waters. A majority of the vessels were longliners from Japan, South Korea, and Taiwan, while the remaining were a few trawlers from China, and just two from Portugal and Russia.

In early 2019, the Mozambican government released its "Sea Policy and Strategy," which outlined major policy goals and challenges facing the maritime space in the country. Among the many issues discussed in the report were fisheries. The report outlined that the primary concerns currently facing Mozambican fisheries are the lack of technical knowledge and capacity to monitor and enforce fisheries management, particularly due to concerns about overfishing.[113] While identifying some structural weaknesses that allow IUU fishing to persist, the document lacks specificity and does not indicate a clear path forward to tackle the challenges. In reality, the capacity at all levels of the government to monitor and enforce fisheries regulations is weak. In private interviews with government officials, private sector representatives, and non-government organizations, the sentiment was clear: the government lacks capacity and political will to effectively manage and enforce the fisheries regulations that are currently in place. However, as detailed below, recent policy shifts have exacerbated these challenges.

A Desire for Local Investment: A Shifting Policy and a Global Trend?

Until recently, foreign vessels targeting tuna each typically paid an access fee to fish in Mozambican waters – often around USD $32,000 per vessel for a year of access. Foreign vessels have also historically gained access by developing a bilateral fisheries agreement, as was common with the European fleet. These two types of agreements set clearly defined access rights to a fishery, within a specific time frame (often one year). These agreements

typically lack transparency, with the exception of the European SFPAs, which are publicly available online. Foreign vessels from China, Taiwan, Japan, South Korea, and the European Union utilized these agreements until 2018, when the Mozambican government shifted its policy on access rights for foreign fleets. The Republic of Mozambique significantly increased the price of traditional access agreements – from USD $35,000 to USD $200,000.[114] Under the previous rate, about 30 to 50 foreign vessels frequented Mozambican waters.[115] With the newly increased rates, only two vessels have pursued agreements in 2019. Instead, foreign vessels are now encouraged to pursue charter agreements and joint-venture agreements with Mozambican counterparts. Joint-ventures and charter agreements existed prior to this new policy, but were not as widely used as traditional access agreements.

Tanzania and Kenya have recently taken a similar approach to Mozambique by increasing access fees to encourage joint ventures and charters, while also indicating that the government will invest in processing facilities and port infrastructure to ensure that their economies capture the most value from their fisheries.[116] This is critical as coastal countries often lose three times the added value of the catch when it does not land in the country.[117] Processing countries, like Seychelles and Mauritius, are then able to capture that added value. One sentiment shared by interviewees from some southern and eastern African countries is that these governments and industries want to see more of the economic benefits derived from their natural resources. As such, they have shifted policies that reflect this goal: increasing access fees and encouraging development of the domestic fishery sector including vessels, knowledge transfer, and processing facilities to rival others in the region.

A charter agreement occurs when a 100 percent Mozambican-owned company uses a foreign vessel to fish – essentially, renting a foreign vessel. A joint-venture agreement sets out a partnership between a Mozambican and foreign company – with at least 51 percent of the company required to be Mozambican-owned, and the remaining amount owned by a foreign entity. Officials in the government emphasized that this policy change was designed to encourage private investment and facilitate a transfer of knowledge and capital to Mozambicans to help develop their domestic fishing industry. Since the creation of this policy, government officials noted that about 10 Mozambican companies currently operate under charter agreements, while other foreign companies have pursued joint-venture agreements. While Stimson researchers were not able to acquire an official government estimate, upon visiting the Port of Maputo, Stimson viewed several vessels operating under the joint-venture system, including the majority of vessels from China, a few from South Korea, one from South Africa, one from the United States, and one from Spain.[118]

Previously, European Union vessels operated in Mozambican waters under a Sustainable Fisheries Partnership Agreement (SFPA), which was a bilateral fishing agreement negotiated between the EU and non-EU countries. Since 1987, the EU and Mozambique had bilateral fishing agreements, with the most recent agreement expiring in 2015. The recent agreement provided access to Mozambique's tuna fishery for Spanish, French, Italian, Portuguese, and British vessels in exchange for nearly EUR 1 million in financial contributions, and yearly fees paid by the vessels.[119] When the agreement expired in 2015, it was not renewed. Mozambicans cited concerns about underreporting and misreporting of EU vessel catches, as well as general concerns that Mozambique does not see commensurate financial benefit. Meanwhile the Europeans have argued that the fees are comparable to those in the other nearby regions, and that concerns about misreporting of catches were unfounded.

Low Trust in Government and the Perception of Corruption in the DWF Industry

Though the shift to increase access agreement fees is recent, many of the people interviewed expressed skepticism in the implementation of the policy and if it would have any real impact supporting the development of the domestic fishing industry. One fisheries official remarked that although the government has put in place all the right policies and legislation that are intended to benefit the local economy, foreign companies and countries always find loopholes to take advantage of the agreements.[120]

Many interviewees openly expressed the pitfalls and emerging concerns associated with the joint-venture partnerships that have emerged in the last year. They questioned if there has been or will be any real transfer of knowledge and tangible gains for

the domestic fishing industry. One expert argued that the structure of these agreements is inherently flawed, with the Mozambican partners always at a disadvantage. They argued that Mozambican companies, due to their lack of expertise in fisheries, are often unaware of their rights and obligations and are therefore unable to ensure due diligence and compliance by the chartered or joint-venture vessels, and so it is likely that catch is unreported or underreported.[121]

Another common theme in many of the conversations Stimson researchers had while in Maputo was that decision-making on national policy in the fishing industry is influenced by political calculations.. Interviewees expressed that political decisions drive the access agreements, with little to no concern for the environment or conservation of fisheries resources. Often competing interests and deals with foreign countries supersede environmental and conservation priorities. One interviewee even expressed that civil servants feel pressured to allow agreements with foreign companies to go through and that there is little room to negotiate for a better deal given this pressure from above.[122]

Further exemplifying this, a high-ranking official in the Ministry of Sea, Inland Waters, and Fisheries recently receiving threats from foreign fishing companies. In one instance, an individual associated with a Chinese fishing company threatened the government official that if the Ministry were to revoke the company's license for IUU fishing violations, they would bring harm upon the government official's children.[123] In spite of this threat, the government official emphasized that they still felt empowered to do their job and would carry out the impending reprimand on the non-compliant vessels. Even as this official stated their intention to follow through, the perception of a quid pro quo with the Chinese government, Chinese operators, and high-ranking Mozambican officials was evident throughout Stimson's time spent in Maputo.

Corruption quickly emerged as a common theme in interviews with private sector, non-governmental, and even governmental interviewees. In one meeting with a private sector representative, as the individual discussed the allocation of access agreements, joint-ventures, and charters to foreign companies, they pointed to the "white elephant" in the window known as the Maputo–Katembe bridge, which was built by the Chinese. The individual remarked: "There's no free lunches. They're taking our natural resources."[124] The individual also went on to express that it is widely believed – in and outside of government – that the recently arrived Chinese vessels were given access in return for the infrastructure projects across the country. Moreover, the recently arrived vessels are seen as not complying with fisheries regulations, and that the vessels will be here for a few years, capture everything that they need and collapse the stocks in the process.[125] This opinion was in stark contrast to the perceptions of other non-Chinese foreign entities utilizing the joint venture system: European and Japanese joint ventures have operated in Mozambique for decades and are invested in the long-term viability of the fishery, whereas the Chinese are invested in the short term, with little concern for long-term effects on the health of the fishery and the impact it may have on Mozambican communities. The overwhelming sentiment shared within government, the nongovernmental community, and among business people is that capacity and political will hamper real progress to address IUU concerns carried out by domestic and foreign vessels alike.

Political Will and Low Capacity: Pitfalls to Mozambique's Fisheries

Stimson's interviews with government, non-governmental, and private experts highlighted a widespread belief that foreign fleets – including those that operate under traditional access agreements or through charter and joint-venture partnerships – are engaging in some level of IUU fishing. Government officials recognize that enforcement capacity is weak, with no patrol vessels capable of monitoring offshore waters. They further concede that some foreign-flagged vessels are more compliant than others. Historically, the Japanese and European fleets were seen as less likely to engage in IUU fishing, while Chinese and Taiwanese vessels were engaged in more illicit fishing practices. Given the recent policy change that increased the price of licenses for foreign vessels, many experts noted that in the last 18 months, Chinese vessels

– many of which are operating under Mozambican flags – have arrived in the country. Individuals expressed concerns regarding these vessels, ranging from fears that the foreign vessels are illegally fishing within the three nautical mile zone excluded for artisanal fishers, to claims of trafficking illicit goods, to general concerns about IUU fishing by these fleets.[126]

To the frustration of many interviewees in the private sector and NGO community, the Ministry of Fisheries is aware of these problems – but has not responded forcefully yet. As one former government official articulated, "We are making laws, we're making laws, but we're not caring about compliance."[127] In conversations with government officials, they acknowledge that some of these problems may occur, but then push back on the assumption that they can immediately address the problem, often citing capacity and political will as barriers.

Increasing compliance and enforcement is central to improving fisheries management in Mozambique. In the past decade, the government displayed strong commitment to addressing these challenges: acceding to the Port State Measures Agreement, engaging regionally in the development of the Monitoring Control Surveillance (MCS) Center coordinated by Southern African Development Community (SADC) and a member of the Fish-I Taskforce; working bilaterally and multilaterally with neighbors to conduct joint patrols; and passing strong fisheries management rules. However, political will to continue to address these issues shows signs of wavering. Previously, the Ministry of Fisheries operated a re-purposed fishing vessel as a patrol boat, but funding constraints and shifting political priorities have left the vessel to rust away in the Port of Maputo.

Another challenge is the lack of engagement from the Ministry of Defense, which has more assets but a weaker mandate to conduct anti-IUU patrols. Improving transparency in the industry, including making access agreements publicly available and requiring VMS be turned on at all times, complemented with increased capacity to monitor and take action against perpetrators, is critical to ensuring the longevity of Mozambique's fisheries.

Joint venture Chinese vessels in Mozambique. Source: Stimson Center.

Distant Water Fishing in Seychelles

While Mozambique revealed capacity challenges and distrust in government institutions tasked with implementing strong fisheries management, research and interviews in Seychelles exposed a heavy reliance on the fisheries industry in the economy – often to the concern of interviewees. Furthermore, capacity challenges, including difficulties retaining high quality fisheries officials, were prevalent despite the high prioritization of fisheries in the government.

The Republic of Seychelles is an island country 300 miles off the east coast of Africa. Situated within the rich tuna fishery of the Indian Ocean, the country has significantly developed its fisheries sector as an important component of its national economy. It is estimated that the fisheries sector represents anywhere from 8 to 20 percent of national GDP and employs nearly 17 percent of total population.[128]Many experts in Seychelles estimate that the actual figures are likely much higher; the government is currently in the process of analyzing

Industrial tuna vessels in Seychelles. Source: Stimson Center.

these figures for publication at the end of 2019.[vii] Further exemplifying the centrality of the fishing industry in Seychelles, fisheries products make up an estimated 90 percent of total exports from the country, as the capital Victoria is home to the world's largest tuna canning facility, which processes 80 percent of all tuna caught in the Indian Ocean.[129]

The Seychelles Fishing Authority is responsible for fisheries management in conjunction with the Seychelles Coast Guard. Working bilaterally with foreign fishing vessels, the government negotiates access rights to the waters, often with no quotas associated with the agreements, and uses flat license fees and fines when there are infractions.[130] From 2016 to 2017, AIS data showed that longline vessels and purse seiners from Taiwan, China, and South Korea operated in Seychelles, with a smaller number of vessels flagged from France, Italy, and Spain. Consisting of purse seiners, the European fleets operates under a structured SFPA agreement between the EU and Seychelles. In many ways, the incentives driving foreign fishing to Seychelles are similar to Mozambique: vessels are attracted to specific fish species. However, other factors come into play for Seychelles, including access to the processing factory and efficient turnaround times for vessels that visit port to resupply or offload catch.

Interviewees in Seychelles generally viewed the European fleet as highly compliant and likely not engaged in IUU fishing given its historical activity, as well as the high degree of observer coverage on board the European vessels.[131] Furthermore, most interviewees expressed positive sentiment towards the European bilateral agreements as they are transparent and directly contribute to capacity building in the fisheries industry. Conversely, interviewees shared a more skeptical sentiment towards Asian fleets operating in the waters. As the Asian vessels are long-liners, they do not visit Port Victoria to offload their catch and instead transship to support vessels.[132] From 2016 to 2017, there were 149 longline vessels operating in Seychellois waters, which represented nearly 93 percent of all fishing activity in Seychelles by foreign vessels captured by AIS.[133]

These transshipment instances are supposed to be monitored and reviewed by relevant authorities, which would include the Indian Ocean Tuna Commission (IOTC), Seychelles Fishing Authority, and the authority where the transshipment vessels land their catch. However, many interviewees expressed skepticism about the oversight of these vessels. Currently, the observer coverage of vessels in the Indian Ocean is at 5 percent, which raises questions about compliance and oversight of these vessels. In conversations with officials from the IOTC and fisheries experts in Seychelles, the IOTC has little authority to ensure compliance of the vessels operating in the Indian Ocean. In particular, interviewees expressed concerns about misreporting of yellowfin tuna since it was assigned by the IOTC as an over-exploited fishery in the region.[134] Interviewees argued that the quota placed further onus on the fisheries officers in Port Victoria, who are already struggling to meet basic requirements of their jobs, and ultimately expressed concerns about whether or not the quota will be effective.

While many foreign vessels are active in Seychelles, there are a significant number of joint-venture and charter vessels, too. Interviewees indicated that there are 44 licensed purse seiners operating in

vii. The Republic of Seychelles is currently conducting a new assessment of the contributions of the fisheries sector to the economy. Many of the experts we spoke with in Victoria estimated that the contributions are much higher than this estimate given that important components of the value chain, including those who directly and indirectly support the industry were not often incorporated in previous estimates.

Seychellois – 28 of which are French and Spanish, 13 of which are Seychelles-flagged joint ventures with a European company, and 3 that are Mauritian-flagged but joint ventures with a European company. In discussing the practice of joint-ventures and charters, many experts remarked that while on paper these vessels must be split 51 percent Seychellois and 49 percent foreign-owned, in reality joint ventures may not actually be as beneficial to local fishers in developing the industry - a view shared by interviewees in Mozambique as well. However, in stark contrast to joint-ventures and charters executed in Mozambique, many Seychellois interviewees expressed a more positive view that these foreign companies did not seem to engage in IUU fishing practices, and invested in the longevity of their business operations in the country.

Long-Term Sustainability and Capacity Challenges

At a local level, experts voiced concerns about the extensive fleet of foreign vessels operating in Seychellois waters and the impact on local communities and the country. Interviewees expressed worries about the overreliance on the fisheries sector in the country, and believed that without proper management, there may be significant overexploitation that could ultimately lead to the collapse of some critical stocks. These concerns are not entirely unfounded as the IOTC imposed a quota limit on yellowfin, the first time it is ever implemented a limit of this kind. Given these concerns, interviewees expressed a need to enact strict quota limits on fish stocks. A shift to this management strategy would need to be complemented by robust capacity building in order to ensure that there is significant enforcement at ports when vessels offload catch, as well as improved measures to monitor transshipment activity at sea. However, the difficulty in retaining highly qualified and trained professionals is an additional barrier to improving fisheries management and enforcement in the country.[135]

In addition, there is a growing sentiment in the region to develop domestic port capacity, thereby encouraging foreign vessels to land and process catch and increase national revenue.[136] However, concerns about increasing competition in the region, overexploitation of fisheries resources, and the continued reliance on fisheries as a main source of economic growth present a clear challenge for Seychelles moving forward. The potential to innovate and reshape the national economy exists given that the Government of Seychelles received USD $15 million in "blue bonds" coordinated by the World Bank and the Global Environmental Facility. The USD $15 million will be invested in projects that support the "marine protected areas, improved governance of priority fisheries and the development of the Seychelles' blue economy."[137] However, in meetings with representatives in the government and non-governmental community, dispersal of the bonds to viable projects has been slow-moving.[138] And even while there is the potential for diversified investment in the blue economy, the government plans to pursue an extension of Port Victoria to accommodate long line vessels.[139]

At a regional level, interviewees expressed frustrations with the IOTC, which is hampered by debates between coastal countries and fishing countries over quota allocations, thus preventing a discussion on management strategies. Furthermore, the IOTC Secretariat lacks authority to ensure compliance and impose sanctions – as is the case with any RFMO. Often the data submitted to the compliance committee by IOTC member states is incomplete and not up to the standards set by the RFMO.140 The Secretariat staff are aware of compliance issues with member states, but do not have the mandate to increase accountability and can only provide guidance. Expanding the mandate and the authority of the IOTC, as well as other RFMOs, is critically needed in order to ensure the health of fisheries globally. Given that the IOTC is located in Seychelles and the country enjoys one of the world's richest tuna fisheries, there is also a need (and an opportunity) to capitalize on the overlapping priority of sustaining the fishery in the long run. As the fishing industry is one of most significant contributors to the Seychellois economy and the migratory patterns are interconnected – with overfishing in one country's waters having spillover effects in another country – it is within the economic interests of the Seychelles to strive for more robust accountability in the region.

Conclusion: The Need for Improved Transparency in the DWF Industry

DWF fleets are prolific, operating across the globe in other countries' waters. Their operations are largely opaque as they fish far from shore, often with little oversight from their home countries or accountability in the regions where they fish. From 2016 to 2017, the top ten fleets represented 278,519 fishing days carried out by nearly 1,800 vessels. However given the limitations of AIS data, it is likely that the true figure is much higher. The top five DWF fleets during the research period were China, Taiwan, Japan, South Korea, and Spain. The majority of the DWF fleets operated in the Pacific, as well as in East and West Africa. These vessels utilized a wide variety of ports across the globe, and commonly engaged in transshipment after fishing in another coastal countries' EEZ.

Stimson's research and analysis found that DWF vessels are primarily motivated by the economic promise of potential profits to be earned from the fishery resources that coastal countries sell to DWF vessels. In addition to this business calculation, DWF vessels are attracted to coastal countries' which exhibit weak fisheries management and enforcement capacity – revealing that the weaker capacity in a coastal country to monitor DWF vessels, the more likely DWF vessels are to engage in IUU fishing and other illicit activities.

DWF vessels operate where public and private entities can exert political influence. Access by DWF nations to key government ministries in coastal nations is not uncommon. Some flag state countries assist their DWF fleets by supporting non fishery-related infrastructure projects or economic development in coastal countries. In addition, nations see value in expanding DWF fleets as a sign of geopolitical strength. Concerns about corruption and quid pro quos plague interactions between coastal countries and DWF fleets. Whether perceived or real, greater transparency is needed to build trust in the government and the industry. Overall, political influence and bargaining often push resource management to the periphery, with fishery resources viewed as a means of generating revenue, often to the detriment of the long-term health and sustainability of the resources themselves.

Access agreements incentivize coastal countries, a majority of which are considered least developed countries by the United Nations, to prioritize short-term revenue opportunities. However, the funds generated from these agreements are not consistently reinvested into coastal communities and the local fishery sector, nor are they reinvested in fisheries management, enforcement, or local training. As a result, DWF vessels land catch in other countries' ports, further depriving costal nations of additional income. In the future, coastal countries should consider rebalancing their approach to foreign vessels in their waters, requiring increased transparency and accountability of these fleets throughout their operations as a requirement for access agreements. This should be accompanied by significant investment in fisheries management and enforcement regimes within coastal countries to ensure the long-term health of fishery resources.

DWF and the challenges it poses to coastal countries' marine resources and the fishing industry will persist unless there is significant shift towards improved fisheries management, accountability of flag-state responsibilities and overall transparency throughout the seafood industry and supply chain. These challenges are rooted in the low level of transparency that persists across the industry, and particularly the Chinese DWF fleet, including intentionally ambiguous subsidy reporting by DWF fleets; little to no insight into vessel ownership, human labor on ships, or access agreements; and the significant gap in truly understanding the movement and extent of DWF and support vessels due to a lack of mandates for AIS and VMS. Without such improvements, over-utilization of fishery resources will continue unabated.

About the Authors

Sally Yozell

Sally Yozell is a Senior Fellow and Director of the Environmental Security program at the Stimson Center where her research examines environmental threats that undermine global security. Her work focuses on ocean security, climate security and wildlife protection. Yozell and her team conduct research and explore the links between environmental crime and security and develop global security strategies to address to illegal, unreported, and unregulated fishing, thwart illicit networks and increase transparency along the seafood supply chain. She also devises resiliency strategies to address climate and ocean risk and performs an advisory role for the Our Ocean Conferences.

Prior to joining Stimson Yozell served as a Senior Advisor to the U.S Secretary of State where she advanced U.S. policies in the international arena related to ocean, climate, and wildlife protection. She also served as the Deputy Assistant Secretary at the National Oceanic and Atmospheric Administration; was a Regional Director for Marine Conservation at The Nature Conservancy; a Vice President at Battelle Memorial Institute; and worked for in the U.S. Senate. She holds an MPA in Public Administration from Harvard University and a BA in Political Science from the University of Vermont.

Amanda Shaver

Amanda Shaver is a Research Associate with the Environmental Security program at the Stimson Center. Her primary research areas for the program include the geopolitical impacts and security threats of resource scarcity issues due to illegal, unreported, and unregulated fishing and distant water fishing fleets. She received a Master of Arts in International Affairs with concentrations in security and development studies from The George Washington University. Shaver also holds a B.A. in International Affairs and Economics with magna cum laude honors from George Washington.

About Stimson

The Stimson Center is a nonpartisan policy research center working to protect people, preserve the planet, and promote security & prosperity. Stimson's award-winning research serves as a roadmap to address borderless threats through concerted action. Our formula is simple: we gather the brightest people to think beyond soundbites, create solutions, and make those solutions reality. We follow the credo of one of history's leading statesmen, Henry L. Stimson, in taking "pragmatic steps toward ideal objectives." We are practical in our approach and independent in our analysis. Our innovative ideas change the world.

About the Environmental Security Program

The Environmental Security program explores the suite of environmental threats, both human and natural, that have the potential to undermine national, regional, or global security. The increasingly complex and transnational drivers of environmental challenges compromise ecological, economic, and food security – and ultimately can foster destabilization and geopolitical tension. Through its engagement with unconventional stakeholders, the Environmental Security program works to identify the roots of these threats to peace and stability and put forward innovative solutions.

Acknowledgements

The authors would like to thank Oceans 5 for their generous financial support. Special thanks to Global Fishing Watch for their technical support. Further thanks to the Stimson editing team: Jack Stuart, Alex Hopkins, and James Siebens.

Appendix

INTERVIEWEE	AFFILIATION	TYPE OF INTERVIEW	DATE
Interviewee 1	University of Washington	In person	January 2019
Interviewee 2	Intergovernmental Organization	In person	February 2019
Interviewee 3	Non-Governmental Organization based in U.S.	In person	February 2019
Interviewee 4	U.S. Department of State	Via telephone	February 2019
Interviewee 5	Non-Governmental Organization based in U.S.	Via telephone	March 2019
Interviewee 6	Non-Governmental Organization based in Norway	Via telephone	March 2019
Interviewee 7	University of British Columbia	Via telephone	March 2019
Interviewee 8	Non-Governmental Organization based in U.S.	Via telephone	March 2019
Interviewee 9	International Organization based in Seychelles	Via telephone	March 2019
Interviewee 10	Non-Governmental Organization based in U.S.	Via telephone	March 2019
Interviewee 11	Non-Governmental Organization based in U.S.	In person	March 2019
Interviewee 12	U.S. Department of State	Via telephone	March 2019
Interviewee 13	Non-Governmental Organization based in U.S.	In person	March 2019
Interviewee 14	Nanyang Technological University	Via telephone	March 2019
Interviewee 15	Non-Governmental Organization based in U.S.	In person	March 2019
Interviewee 16	U.S. Department of State	Via telephone	April 2019
Interviewee 17	Non-Governmental Organization based in Madagascar	Via telephone	April 2019

INTERVIEWEE	AFFILIATION	TYPE OF INTERVIEW	DATE
Interviewee 18	Intergovernmental Organization	In person	April 2019
Interviewee 19	Government of Seychelles	In person	April 2019
Interviewee 20	Government of Seychelles	In person	April 2019
Interviewee 21	Government of Seychelles	In person	April 2019
Interviewee 22	Private Fishing Business based in Seychelles	In person	April 2019
Interviewee 23	Private Fishing Business based in Seychelles	In person	April 2019
Interviewee 24	Non-Governmental Organization based in Seychelles	In person	April 2019
Interviewee 25	Private Fishing Business in Seychelles	In person	April 2019
Interviewee 26	Non-Governmental Organization based in Seychelles	In person	April 2019
Interviewee 27	Non-Governmental Organization based in Seychelles	In person	April 2019
Interviewee 28	Non-Governmental Organization based in Seychelles	In person	April 2019
Interviewee 29	Government of Seychelles	In person	April 2019
Interviewee 30	Government of Seychelles	In person	April 2019
Interviewee 31	Fishing Port of Maputo	In person	April 2019
Interviewee 32	Non-Governmental Organization based in Mozambique	In person	April 2019
Interviewee 33	Non-Governmental Organization based in Mozambique	In person	April 2019
Interviewee 34	Norwegian Ministry of Foreign Affairs	In person	April 2019
Interviewee 35	Norwegian Ministry of Foreign Affairs	In person	April 2019
Interviewee 36	Government of Mozambique	In person	April 2019

INTERVIEWEE	AFFILIATION	TYPE OF INTERVIEW	DATE
Interviewee 37	Government of Mozambique	In person	April 2019
Interviewee 38	Government of Mozambique	In person	April 2019
Interviewee 39	Non-Governmental Organization based in Mozambique	In person	April 2019
Interviewee 40	Government of Mozambique	In person	April 2019
Interviewee 41	Private Fishing Business in Mozambique	In person	April 2019
Interviewee 42	Government of Mozambique	In person	April 2019
Interviewee 43	U.S. Department of State	In person	April 2019
Interviewee 44	Private Fishing Business in Mozambique	In person	April 2019
Interviewee 45	Government of Mozambique	In person	April 2019
Interviewee 46	Intergovernmental Organization	Via telephone	April 2019
Interviewee 47	Government of Somalia	In person	April 2019
Interviewee 48	Non-Governmental Organization based in Norway	In person	April 2019
Interviewee 49	Government of Kenya	In person	April 2019
Interviewee 50	Non-Governmental Organization based in Ghana	Via telephone	May 2019
Interviewee 51	Non-Governmental Organization based in South Korea	Via email	July 2019
Interviewee 52	Non-Governmental Organization based in Ghana	Via telephone	July 2019
Interviewee 53	European Commission	Via telephone	August 2019
Interviewee 54	European Commission	Via telephone	August 2019

Endnotes

1 China Dialogue. "'Green Belt and Road' in the spotlight." April 24, 2019, accessed August 23. https://www.chinadialogue.net/article/show/single/en/11212--Green-Belt-and-Road-in-the-spotlight

2 Bonfil, Ramón, Gordon Munro, Ussif Rashid Sumaila, Hreidar Valtysson, Miriam Wright, Tony Pitcher, David Preikshot, Nigel Haggan, and Daniel Pauly. "Distant Water Fleets: An Ecological, Economic and Social Assessment," Fisheries Centre Research Reports, University of British Columbia. Vol. 6, No. 6. 1998.

3 Global Fishing Watch. "AIS and the Challenges of Tracking Vessels at Sea." Global Fishing Watch. Global Fishing Watch, January 5, 2018, accessed August 9 . https://globalfishingwatch.org/data/ais-and-the-challenges-of-tracking-vessels-at-sea/.

4 Sala, Enric et al., "The Economics of Fishing the High Seas," Science Advances. Vol 4, No. 6. 2018.

5 IMO, "Automatic Identification Systems (AIS)" International Maritime Organization, 2019, accessed July 2. http://www.imo.org/en/OurWork/Safety/Navigation/Pages/AIS.aspx.

6 Global Fishing Watch. "AIS and the Challenges of Tracking Vessels at Sea." Global Fishing Watch. Global Fishing Watch, January 5, 2018, accessed July 1. https://globalfishingwatch.org/data/ais-and-the-challenges-of-tracking-vessels-at-sea/.

7 Ibid.

8 William Warner, "Distant Water: The Fate of the North Atlantic Fisherman," Little Brown Books: 1977, viii.

9 UN Division for Ocean Affairs and the Law of the Sea. "The United Nations Convention on the Law of the Sea (A Historical Perspective)." United Nations. Accessed September 1, 2019. https://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm

10 Nelsson, Richard. "Iceland v Britain: the Cod Wars Begin - Archive, September 1958." The Guardian, September 7, 2018, accessed August 11 . https://www.theguardian.com/business/from-the-archive-blog/2018/sep/07/first-cod-war-iceland-britain-fish-1958.

11 UNCLOS, "Agreement Relating to the Implementation of Part XI of the Convention: Article 56," United Nations Convention on the Law of the Seas, 1982, accessed August 12. https://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm

12 UNCLOS, "Agreement Relating to the Implementation of Part XI of the Convention: Article 62," United Nations Convention on the Law of the Seas, 1982, accessed August 12. https://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm

13 Food and Agriculture Organization of the United Nations (UNFAO), "Joint ventures in fishery development in the CECAF area" (Rome: United Nations, 1975), accessed July 29. http://www.fao.org/3/h0222e/h0222e01.htm#TopOfPage

14 Interview with expert from University of British Columbia via telephone in March 2019.

15 Interviews with government officials in-person in Maputo, Mozambique in April 2019.

16 Stop Illegal Fishing. "Tanzania to Ban Foreign Fish Imports in a Bid to Boost Local Industry." Stop Illegal Fishing, February 12, 2019, accessed July 29. https://stopillegalfishing.com/press-links/tanzania-to-ban-foreign-fish-imports-in-a-bid-to-boost-local-industry/.

17 Marete, Gitonga. "Kenya Bans Foreign Trawlers to Boost Local Sector." The East African, December 20, 2017, accessed July 27. https://www.theeastafrican.co.ke/business/Kenya-bans-foreign-trawlers-to-boost-local-sector-/2560-4236820-dvuuvkz/index.html.

Mwanza, Kevin. "New Kenyan Coastguard to Stop Foreigners Stealing 'Our Fish'." Reuters, November 20, 2018, accessed August 13 . https://www.reuters.com/article/us-kenya-fisheries-coastguard/new-kenyan-coastguard-to-stop-foreigners-stealing-our-fish-idUSKCN1NP27Y.

18 Sumaila, Rashid & Lam, Vicky & Le Manach, Frédéric & Swartz, Wilf & Pauly, Daniel. "Global fisheries subsidies: An updated estimate," Marine Policy. Vol. 10. 2016.

19 "Scientist Sees Harmful Fisheries Subsidies Taking Toll on Global Fish Stocks." The Pew Charitable Trusts, July 19, 2018, accessed July 27. https://www.pewtrusts.org/en/research-and-analysis/articles/2018/07/19/scientist-sees-harmful-fisheries-subsidies-taking-toll-on-global-fish-stocks.

20 Sumaila, Rashid & Lam, Vicky & Le Manach, Frédéric & Swartz, Wilf & Pauly, Daniel. "Global fisheries subsidies: An updated estimate," Marine Policy. Vol. 10. 2016.

21 Interview with expert from University of Washington, in-person in Washington, DC, January 2019.

22 Sala, Enric et al., "The Economics of Fishing the High Seas," Science Advances Vol 4. No. 6. 2018.

23 FAO, "The State of World Fisheries and Aquiculture," Food and Agriculture Organization of the United Nations, 2018.

24 Virdin, John. "Is Foreign Trawling Benefiting West Africa?" Chinadialogue Ocean, January 12, 2019, accessed July 23. https://chinadialogueocean.net/5984-is-foreign-trawling-benefiting-west-africa/.

25 Cutlip, Kimbra. "Rendezvous at Sea: What Is Transshipping?" Global Fishing Watch, August 23, 2016, accessed July 23. https://globalfishingwatch.org/fisheries/rendezvous-at-sea-what-is-transshipping/.

26 Gibbens, Sarah. "Slave Labor Is Used to Catch Fish. This Tech Aims to Stop It." National Geographic, June 13, 2019, accessed August 26. https://www.nationalgeographic.com/environment/2019/06/slave-labor-used-to-catch-fish-but-tech-may-help/.

27 Bonfil et al. "The Footprint of Distant Water Fleets on World Fisheries," WWF's Endangered Seas campaign, World Wildlife Foundation International, 1998, accessed August 11. https://s3-us-west-2.amazonaws.com/legacy.seaaroundus/doc/Researcher+Publications/dpauly/PDF/1998/Books+and+Chapters/ImpactDistantWaterFleets.pdf

28 Paris, Francesca. "Threatened Bluefin Tuna Sells For $3 Million In Tokyo Market." NPR, January 5, 2019, accessed August 15. https://www.npr.org/2019/01/05/682526465/threatened-bluefin-tuna-sells-for-5-000-per-pound-in-tokyo-market

Le Manach F, et al. "Artisanal fisheries in the world's second largest tuna fishing ground — Reconstruction of the Seychelles' marine fisheries catch, 1950–2010," Fisheries Centre Research Reports. Vol. 23. No. 2. 2015: 99.

29 FAO. "Global Study on Transshipment: Regulations, practices, monitoring and control," Food and Agricultural Organization of the United Nations. 2018, accessed July 25. http://www.fao.org/3/CA0464EN/ca0464en.pdf

30 Interview with government official in-person in Victoria, Seychelles in April 2019.

31 Interview with official at the World Bank, in-person, Washington, DC, February 2019.

32 Cutlip, Kimbra. "Rendezvous at Sea: What Is Transshipping?" Global Fishing Watch, August 23, 2016, accessed July 21. https://globalfishingwatch.org/fisheries/rendezvous-at-sea-what-is-transshipping/.

33 Interview with expert from University of British Columbia, via telephone, March 2019.

34 Stiles, Margot L., Julie Stockbridge, Michelle Lande, and Michael F Hirshfield. "Impacts of Bottom Trawling on Fisheries, Tourism, and the Marine Environment." Oceana, May 2010, accessed August 7. https://oceana.org/sites/default/files/reports/Trawling_BZ_10may10_toAudrey.pdf.

35 BBC. "How China's Trawlers Are Emptying Guinea's Oceans," BBC, July 8, 2016, accessed July 29. https://www.bbc.com/news/world-africa-36734578.

36 Interview with official at the World Bank, in-person, Washington, DC, February 2019.

37 Ibid

38 Juanico, Marcel. "Developments in South American Squid Fisheries," Marine Fisheries Review, NOAA ,July and August 1980, accessed July 21. https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/MFR/mfr427-8/mfr427-82.pdf.

Sustainable Fisheries Partnership. "Global Squid SR." Accessed September 11, 2019. https://www.sustainablefish.org/Programs/Improving-Wild-Fisheries/Seafood-Sectors-Supply-Chain-Roundtables/Squid/Global-Squid-SR.

39 Retana, Gustavo Arias. "Voracity of Chinese Fishing Vessels Threatens Latin American Seas," Diálogo: Digital Military Magazine, December 13, 2018, accessed August 3. https://dialogo-americas.com/en/articles/voracity-chinese-fishing-vessels-threaten-latin-american-seas.

40 Delgado, Juan. "Argentina Requests International Arrest Warrant for Chinese Vessel," Diálogo: Digital Military Magazine, April 12, 2019, accessed August 19. https://dialogo-americas.com/en/articles/argentina-requests-international-arrest-warrant-chinese-vessel.

Merco Press. "Argentine Fishing Industry against Granting Facilities to the Chinese Fleet in the South Atlantic," Merco Press: South Atlantic News Agency, July 6, 2019, accessed July 21. https://en.mercopress.com/2019/07/06/argentine-fishing-industry-against-granting-facilities-to-the-chinese-fleet-in-the-south-atlantic.

41 Global Fishing Watch Data provided to Stimson.

42 Interview with non-governmental organization official via telephone on March 2019.

43 European Commission. "Communication from the Commission to the European Parliament and the Council on the State of Play of the Common Fisheries Policy and Consultation on the Fishing Opportunities for 2019," European Union, November 6, 2018, accessed September 1. https://ec.europa.eu/fisheries/sites/fisheries/files/docs/com-2018-452_en.pdf.

44 Ministry of Fisheries and Marine Resources Development. "Kiribati National Fisheries Policy 2013-2025," Government of Kiribati, accessed August 29. https://bit.ly/2kDYA2J

45 FAO. "Fishery and Aquaculture Country Profile: The Federated States of Micronesia," accessed August 28. http://www.fao.org/fishery/facp/FSM/en

46 Interview with expert from University of British Columbia, via telephone, March 2019.

47 Ibid.

48 Ibid.

49 Interview with government official in-person in Victoria, Seychelles in April 2019.

50 Tsamenyi, Martin, and Quentin Hanich. "Australian National Centre for Ocean Resources & Security (ANCORS)," Accessed September 11, 2019. https://www.iucn.org/sites/dev/files/import/downloads/addressing_corruption_tsumenyi.pdf.

Standing, André. "Corruption and Industrial Fishing in Africa." CMI: Chr. Michelsen Institute, July 2008, accessed August 21. https://www.cmi.no/publications/3188-corruption-and-industrial-fishing-in-africa.

51 Ibid.

52 Ibid.

53 Interview with non-governmental organization representative based in Ghana, via telephone, July 2019.

54 Interview with official from the U.S. Department of State via telephone in April 2019.

55 Interview with official from the U.S. Department of State via telephone in April 2019.

56 Interview with expert from University of Washington, in-person in Washington, DC, January 2019.

57 People's Republic of China. "Fisheries Law of the People's Republic of China," Adopted on January 20, 1986, accessed September 2. http://www.china.org.cn/environment/2007-08/20/content_1034340.htm

58 Hongzhou, Zhang. ""China's Fishing Industry: Current Status, Government Policies, and Future Prospects," In China as a "Maritime Power", The CNA Corporation. Arlington, Virginia, 2015, accessed August 16. https://www.cna.org/cna_files/pdf/China-Fishing-Industry.pdf.

59 The Economist. "China's 'Going out' Strategy." The Economist, July 21, 2009, accessed July 11. https://www.economist.com/free-exchange/2009/07/21/chinas-going-out-strategy.

60 Interview with expert from University of Washington, in-person in Washington, DC, January 2019.

61 Agence France-Presse. "Vietnam says Chinese coastguard 'sank' fishing boat in disputed South China Sea," South China Morning Post, July 20, 2018, accessed August 5. https://scmp.com/news/asia/southeast-asia/article/1988945/vietnam-says-chinese-coastguard-sank-fishing-boat-disputed.

62 Interview with expert from Nanyang Technological University via telephone in March 2019.

Interview with expert from University of Washington, in-person in Washington, DC, January 2019.

63 Godfrey, Mark. "China to Revise Key Law on Distant-Water Fishing." SeafoodSource , July 2, 2019, accessed July 25. https://www.seafoodsource.com/news/supply-trade/china-to-revise-key-law-on-distant-water-fishing.

64 Ministry of Agriculture and Rural Affairs. "People's Republic of China. Multiple Ministries Jointly Implement Port State Measures to Crack Down on IUU Fishing Vessels," People Republic of China, January 10, 2019, accessed September 2. http://english.agri.gov.cn/news/dqnf/201901/t20190110_296194.htm

65 https://www.policyforum.net/fishing-for-sustainability/

66 https://stats.oecd.org/Index.aspx?DataSetCode=FISH_FSE

67 Enric Sala subsidies and high seas article

68 Hart, Melanie, Michael Conathan, Blaine Johnson, and Shiva Polefka. "Blue Future: Mapping Opportunities for U.S.-China Ocean Cooperation," Center for American Progress, May 21, 2018, accessed August 23. https://www.americanprogress.org/issues/green/reports/2018/05/21/451064/blue-future/

69 Sutton, Trevor and Avery Siciliano. "Making Reform a Priority for Taiwan's Fishing Fleet," Center for American Progress, January 8, 2018,accessed August 23. https://www.americanprogress.org/issues/security/reports/2018/01/08/444622/making-reform-priority-taiwans-fishing-fleet/

70 Stimson analaysis of GFW data on transshipment encounters

71 Kuo, Daniel, and Shawn Booth. " From Local to Global: a Catch Reconstruction of Taiwan's Fisheries from 1950-2007." Fisheries Centre Research Reports ,Sea Around Us Project, 2011, accessed August 6. http://www.seaaroundus.org/doc/publications/chapters/2011/Kuo-and-Booth-Taiwan.pdf.

Hsu, Kimberly, and Matthew Southerland. Taiwan's Global Fisheries Modestly Advance its "International Space," US-China Economic and Security Commission Review (27 July, 2015), accessed July 31. https://www.uscc.gov/sites/default/files/Research/Taiwan Fisheries.pdf

72 Kuo, Daniel, and Shawn Booth. " From Local to Global: a Catch Reconstruction of Taiwan's Fisheries from 1950-2007." Fisheries Centre Research Reports ,Sea Around Us Project, 2011, accessed August 6. http://www.seaaroundus.org/doc/publications/chapters/2011/Kuo-and-Booth-Taiwan.pdf.

73 Chang, Shui-Kai, Kun-Yu Liu, and Yann-Huei Song. "Distant water fisheries development and vessel monitoring system implementation in Taiwan—History and driving forces," Marine Policy, Vol. 24. No. 3. 2010: 541-548.

74 Ibid.

75 Holland, Jason. "Taiwan's IUU Yellow Card Rescinded by EU Following Reforms." SeafoodSource, June 28, 2019, accessed July 5. https://www.seafoodsource.com/news/environment-sustainability/taiwans-iuu-yellow-card-rescinded-by-eu-following-reforms.

76 Hsiao, Alison. "Legislature Passes Act on Illegal Fishing." Taipei Times, July 6, 2016, accessed August 13. http://www.taipeitimes.com/News/front/archives/2016/07/06/2003650445.

Fisheries Agency. "Act for Distant Water Fisheries-Fisheries Agency," Council of Agriculture, Taiwan, July 20, 2106, accessed September 11. https://www.fa.gov.tw/en/LegalsActs/content.aspx?id=5&chk=ba23e604-1d7f-40fd-8a8b-8d125f16001d.

77 Holland, Jason. "Taiwan's IUU Yellow Card Rescinded by EU Following Reforms." SeafoodSource, June 28, 2019, accessed July 5. https://www.seafoodsource.com/news/environment-sustainability/taiwans-iuu-yellow-card-rescinded-by-eu-following-reforms.

78 Sutton, Trevor and Avery Siciliano. "Making Reform a Priority for Taiwan's Fishing Fleet," Center for American Progress, January 8, 2018,accessed August 23. https://www.americanprogress.org/issues/security/reports/2018/01/08/444622/making-reform-priority-taiwans-fishing-fleet/

79 CNA. "Government, EU Establish Illegal Fishing Task Force," Taipei Times, July 5, 2019, accessed August 23. http://www.taipeitimes.com/News/front/archives/2019/07/05/2003718149.

80 Aspinwall, Nick. "Taiwan's High Seas Fishing Vessels Lost 13 Migrant Fishermen in February." The News Lens International Edition, March 8, 2019, accessed July 17. https://international.thenewslens.com/feature/highseas/114623.

81 Aspinwall, Nick. "The High Seas Danger to Workers in Taiwan's Fishing Fleet." The Interpreter. Lowy Institute , May 2, 2019, accessed July 17. https://www.lowyinstitute.org/the-interpreter/high-seas-danger-workers-taiwan-s-fishing-fleet.

82 European Commission. "Commission Decision of October 1 on notifying a third country of the possibility of being identified as a non-cooperating third country in fighting illegal, unreported, and unregulated fishing." Official Journal of the European Union, October 10, 2015, accessed August 2. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D1002%2802%29&from=EN.

83 Gullet, Warwick. "Fishing Industry - Taiwan." University of Wollongong, Department of Law, Humanities, and Arts. Semantic Scholar, 2009, accessed July 5. https://pdfs.semanticscholar.org/bb06/62e7aa5d34bebabb1cf6b6a53bec5d87942b.pdf.

84 Bestor, Victoria Lyon, and Theodore C Bestor. "Japan and the Sea." Education About ASIA Vol. 19. No. 2. 2014, accessed August 22. https://scholar.harvard.edu/files/bestor/files/bestor_2014_eaa.pdf.

Ministry of Agriculture, Forestry and Fisheries. "White Paper: FY2017 Trends in Fisheries." Accessed September 2. http://www.maff.go.jp/e/data/publish/attach/pdf/index-94.pdf.

85 Bestor, Victoria Lyon, and Theodore C Bestor. "Japan and the Sea." Education About ASIA Vol. 19. No. 2. 2014, accessed August 22. https://scholar.harvard.edu/files/bestor/files/bestor_2014_eaa.pdf.

Toshio, Katsukawa. "Building a Future for Japan's Fisheries Industry." nippon.com, February 14, 2019, accessed July 9. https://www.nippon.com/en/in-depth/d00455/building-a-future-for-japan's-fisheries-industry.html.

86 Yagi, Nobuyuki, and Kasumigaseki Chiyoda-ku. "Draft Country Note on Fisheries Management Systems - Japan," Fisheries Agency, Japan (2003), accessed August 9. http://www.oecd.org/greengrowth/fisheries/34429748.pdf.

87 Vallerani, Matilde, Carmen-Paz Martí, and Priit Ojamaa. "Research for PECH Committee - Fisheries in Japan: study." Policy Department for Structural and Cohesion Policies, European Parliament, 2013, accessed July 2. http://www.europarl.europa.eu/RegData/etudes/STUD/2017/601995/IPOL_STU(2017)601995_EN.pdf.

88 European Commission. "Study on the subsidies to the fisheries, aquaculture, and marketing and processing subsectors in major fishing nations beyond the EU." EU Publications, 2016, accessed July 17. https://publications.europa.eu/en/publication-detail/-/publication/45f78bf8-d24b-11e6-ad7c-01aa75ed71a1.

89 FFA. "Japan sets the example for distant water fishing nations in Pacific: FFA." Pacific Islands Forum Fisheries Agency (FFA), accessed August 10. https://www.ffa.int/node/850.

Japan Times. "Taro Kono announces Japan aid for development of fishing facilities on remote Indonesian islands." The Japan Times, June 6, 2018, accessed August 25. https://www.japantimes.co.jp/news/2018/06/26/national/politics-diplomacy/taro-kono-announces-japan-aid-development-fishing-facilities-remote-indonesian-islands/#.XW3Gpi2ZMWo.

90 Stimson analaysis of GFW data on transshipment encounters

91 Shon, Soohyun, Sarah Harper, and Dirk Zeller. "Reconstruction of Marine Fisheries Catches for the Republic of Korea (South Korea) from 1950-2010." Fisheries Centre, University of British Columbia, Sea Around Us, 2014, accessed July 16. http://www.seaaroundus.org/doc/publications/wp/2014/Shon-et-al-South-Korea.pdf.

92 Ibid.

93 European Commission. "Study on the subsidies to the fisheries, aquaculture, and marketing and processing subsectors in major fishing nations beyond the EU." EU Publications, 2016, accessed July 17. https://publications.europa.eu/en/publication-detail/-/publication/45f78bf8-d24b-11e6-ad7c-01aa75ed71a1.

94 OECD. Fisheries Support Estimate (2019), dristibuted by OECD Stat Technology https://stats.oecd.org/Index.aspx?DataSetCode=FISH_FSE.

95 EJF. "Bold Action Taken by Korea to Combat Illegal, Unreported and Unregulated (IUU) Fishing Shows EU IUU Regulation is Working." Environmental Justice Foundation, January 28, 2015, accessed July 24. https://ejfoundation.org/news-media/2015/bold-action-taken-by-korea-to-combat-illegal-unreported-and-unregulated-iuu-fishing-shows-eu-iuu-regulation-is-working.

96 Government of South Korea. "Enforcement Decree of the Distant Water Fisheries Development Act." Accessed August 22. https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=47560&type=part&key=28.

97 Greenpeace. "South Korean Distant Water Fisheries." April 2013, August 24. http://img.scoop.co.nz/media/pdfs/1305/South_Korean_Distant_Water_Fisheries.pdf.

98 EJF. "Blood and Water: Human Rights Abuse in the Global Seafood Industry." Environmental Justice Foundation, 2019, accessed August 24. https://ejfoundation.org//resources/downloads/Blood-water-06-2019-final.pdf.

SeaFish. "Focus on Ethical Issues in Seafood: South Korea Profile." SeaFish, September 2015, accessed July 16. https://www.seafish.org/media/publications/SouthKoreaEthicsProfile_201509.pdf.

99 Morris, James X. "Labor Exploitation, Illegal Fishing Continue to Plague Asian Seas." The Diplomat, June 14, 2019, accessed July 16. https://thediplomat.com/2019/06/labor-exploitation-illegal-fishing-continue-to-plague-asian-seas/.

100 Data compiled from Global Fishing Watch, www.globalfishingwatch.org.

101 Ministry of Agriculture and Fisheries. "Fishery Statistics." Government of Spain. 2016.

102 Dobarro, Laura. "Spain Stands out across the EU on the Fight against Illegal Fishing, a Study of IIDMA on Fisheries Policy Finds." IIDMA, May 24, 2018, accessed August 3. http://iidma.org/index.php/en/spain-stands-out-across-the-eu-on-the-fight-against-illegal-fishing-a-study-of-iidma-on-fisheries-policy-finds/.

103 EU Fisheries. "The EU fishing fleet: facts & figures." EU Fisheries, September 2014, accessed July 11. https://ec.europa.eu/fisheries/sites/fisheries/files/docs/2014-1-eu-fishing-fleet-facts-figures_en.pdf.

104 OECD. Fisheries Support Estimate (2019), distributed by OECD Stat Technology https://stats.oecd.org/Index.aspx?DataSetCode=FISH_FSE

105 "Cape Verde,", European Commission (December 15, 2014), accessed August 1. https://ec.europa.eu/fisheries/cfp/international/agreements/cape_verde.

106 "Guinea-Bissau,", European Commission (December 10, 2014) accessed August 1. https://ec.europa.eu/fisheries/cfp/international/agreements/guinea_bissau

107 "Mauritania,", European Commission (December 1, 2015), accessed August 1. https://ec.europa.eu/fisheries/cfp/international/agreements/mauritania

108 "Senegal,", European Commission (October 23, 2014), accessed August 1. https://ec.europa.eu/fisheries/cfp/international/agreements/senegal

109 Interview with government official, European Commission, Directorate-General for Maritime Affairs and Fisheries, via telephone, August 2019.

110 "Sea Policy and Strategy," Republic of Mozambique. Copy on hand with authors.

111 World Bank. "Fisheries Governance and Shared Growth in Mozambique." World Bank: Communities, Livelihoods, and Fisheries, 2019. http://documents.worldbank.org/curated/en/403651525888008345/pdf/126083-WP-PUBLIC-SwioFish-Brochure-Eng-KJ-Mar6-ENGLISH.pdf.

112 UNCTAD. "Mozambique." In United Nations Conference on Trade and Development, Fishery Exports and the Economic Development of LDCs: Bangladesh, Cambodia, the Comoros, Mozambique, Myanmar and Uganda, 2017, accessed August 22. https://unctad.org/en/PublicationChapters/aldc2017d2_ch07_en.pdf.

113 "Sea Policy and Strategy," Republic of Mozambique, 33. Copy on hand with authors.

114 Interview with government official, Ministry of Sea, Inland Waters, and Fisheries of the Republic of Mozambique, in-person, Maputo, Mozambique April 2019.

115 UNFAO. "Information on fisheries Management in the Republic of Mozambique", FAO, (April 2004), accessed July 3. http://www.fao.org/fi/oldsite/FCP/en/MOZ/body.htm

116 Interview with government official, Kenya Fisheries Service of the Republic of Kenya, in-person, Victoria, Seychelles, April 2019.

117 Interview with expert from University of British Columbia, via telephone, March 2019.

118 Interview with officials, Fishing Port of Maputo, in-person, Maputo, Mozambique, April 2019.

119 "Mozambique,", European Commission (January 23, 2014), accessed July 11. https://ec.europa.eu/fisheries/cfp/international/agreements/mozambique

120 Interview with government official, Ministry of Sea, Inland Waters, and Fisheries of the Republic of Mozambique, in-person, Maputo, Mozambique, April 2019.

121 Interview with government official, Ministry of Sea, Inland Waters, and Fisheries of the Republic of Mozambique, in-person, Maputo, Mozambique, April 2019.

122 Interview with government official, Ministry of Sea, Inland Waters, and Fisheries of the Republic of Mozambique, in-person, Maputo, Mozambique, April 2019.

123 Interview with government official, Ministry of Sea, Inland Waters, and Fisheries of the Republic of Mozambique, in-person, Maputo, Mozambique, April 2019.

124 Interview with private sector professional, in-person, Maputo, Mozambique, April 2019.

125 Interview with private sector professional, in-person, Maputo, Mozambique, April 2019.

126 Interview with non-governmental organization representatives, in-person, Maputo, Mozambique, April 2019.

127 Interview with non-governmental organization representatives, in-person, Maputo, Mozambique, April 2019.

128 World Bank. "International Bank for Reconstruction and Development Project Appraisal Document on a Proposed Loan in the Amount of US $5 Million a Proposed Guarantee in the Amount of UP to EUR 5 Million (or US$ Equivalent) a Proposed Grant From the Global Environment Facility Trust Fund in the Amount of US $5.29 MILLION and a proposed Load from the Global Environment Facility Trust Fund in the Amount of US$5 Million to the Republic of the Seychelles for a Third South West Indian Ocean Fisheries governance and Shared Growth Project (SWIOFISH3)." World Bank, September 8, 2017, accessed August 7. http://documents.worldbank.org/curated/en/394051505478217219/pdf/SEYCHELLES-PAD-09122017.pdf.

129 Manach et al. "Artisanal Fisheries in the World's Second Largest Tuna Fishing Ground-Reconstruction of the Seychelles' Marine Fisheries Data, 1950-2010." Sea Around Us, Fisheries Centre, University of British Columbia, 2015, accessed July 16. http://www.seaaroundus.org/doc/publications/chapters/2015/Le-Manach-et-al-Seychelles.pdf.

130 Interview with government officials, Department of Blue Economy of the Republic of Seychelles, in-person, Victoria, Seychelles, April 2019.

131 Interview with government officials, Department of Blue Economy of the Republic of Seychelles, in-person, Victoria, Seychelles, April 2019.

132 In Seychelles, transshipment is allowed at sea.

133 Data compiled from Global Fishing Watch, www.globalfishingwatch.org.

134 Interview with non-government organization representative, in-person, Victoria, Seychelles, April 2019.

135 Interview with non-government organization representative, in-person, Victoria, Seychelles, April 2019.

Interview with consultant to the World Bank, in-person, Victoria, Seychelles, April 2019

136 Interview with consultant to the World Bank, in-person, Victoria, Seychelles, April 2019.

137 "Seychelles launches World's First Sovereign Blue Bond." The World Bank, October 29, 2018, accessed July 24. https://www.worldbank.org/en/news/press-release/2018/10/29/seychelles-launches-worlds-first-sovereign-blue-bond.

138 Interview with non-government organization representative, in-person, Victoria, Seychelles, April 2019.

Interview with consultant to the World Bank, in-person, Victoria, Seychelles, April 2019.

139 Interview with government officials, Department of Blue Economy of the Republic of Seychelles, in-person, Victoria, Seychelles, April 2019.

140 Interview with official, Indian Ocean Tuna Commission, in-person, Victoria, Seychelles, April 2019.