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Report

Western Africa's missing fish

The impacts of illegal, unreported and unregulated fishing and under-reporting catches by foreign fleets

Alfonso Daniels, Miren Gutiérrez, Gonzalo Fanjul, Arantxa Guereña, Ishbel Matheson and Kevin Watkins

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Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ

Tel. +44 (0) 20 7922 0300
Fax. +44 (0) 20 7922 0399
E-mail: info@odi.org.uk

www.odi.org
www.odi.org/facebook
www.odi.org/twitter

Cover photo: A U.S. Coast Guard member and a Ghanaian navy sailor inspect a fishing vessel suspected of illegal fishing, 2014. Credit: US Navy

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Abstract

Overfishing in the world's oceans is at the centre of a crisis of sustainability. Nowhere is that crisis more visible than in western Africa. Current rates of extraction are driving several species towards extinction while jeopardising the livelihoods of artisanal fishing communities across a broad group of countries, including Senegal, Ghana, Sierra Leone, Liberia and Mauritania.

Illegal, unreported and unregulated (IUU) fishing is at the heart of the problem. Drawing on a unique satellite tracking database, this report presents new evidence of the scale and pattern of IUU fishing. It focuses on 'reefers' – large-scale commercial vessels receiving and freezing fish at sea and at port – and the use of containers. We provide evidence of practices that compromise the effectiveness of multilateral governance rules aimed at curtailing IUU fishing and promoting sustainable, legal practices. Proposals set out in the report identify pathways for countries in sub-Saharan Africa to greater transparency and sustainable management of fisheries which avoids the irreversible depletion and possible extinction of species, as well as the preservation of the marine ecosystem where the fishing activities take place for countries in sub-Saharan Africa.

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Abbreviations

AIS	Automatic identification system
EEZ	Exclusive Economic Zone
EJF	Environmental Justice Foundation
FAO	Food and Agriculture Organization of the United Nations
FOC	Flag of Convenience
HSVAR	High Seas Fishing Vessel Authorisation Record
ICCAT	International Commission for the Conservation of Atlantic Tunas
IMO	International Maritime Organization
IUU	Illegal, unreported and unregulated
OECD	Organisation for Economic Cooperation and Development
PSMA	Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing
RFMO	Regional fisheries management organisations
ROP	Regional Observer Programme
SIF	Stop Illegal Fishing
UNCLOS	UN Convention on the Law of the Sea
UNODC	United Nations Office for Drugs and Crime
UVI	Unique vessel identifier
WWF	World Wide Fund for Nature

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1. Executive summary

Overfishing in the world's oceans has reached catastrophic levels. Many major fish stocks are in decline. Some species are being pushed towards extinction. Illegal, unreported and unregulated (IUU) fishing is heavily implicated in overfishing. As much as one fifth of the world's fisheries catch may originate from IUU activity, linking consumers in Europe, the United States and Asia with a practice that is fuelling a global tragedy of the commons – a tragedy that is leading to the overexploitation of a common resource.

Western Africa is at the epicentre of the tragedy. The region's coastal waters include some of the world's most abundant fishing grounds that act as a magnet for commercial vessels that supply Europe and rapidly growing markets in Asia. The profits generated are substantial. However, as highlighted by the former UN Secretary-General Kofi Annan in the 2014 Africa Progress Panel report *Grain, fish, money* (Africa Progress Panel, 2014), the overexploitation of West Africa's fishery resources has produced devastating social, economic and human consequences. The livelihoods of artisanal fishing people are being destroyed, a vital source of protein is being lost, and opportunities for the development of regional production and trade are disappearing. IUU fishing is heavily implicated.

Recent years have seen a renewal of international efforts to combat overfishing and IUU activities. Strengthened regulatory frameworks have been put in place for monitoring and reporting through Port State Measures.[1] Legislation and voluntary codes of conduct in importing countries are creating strengthened incentives for compliance with sustainable fishery practices. These moves are encouraging – but they are failing to tackle IUU fishing practices. Far too many governments in Europe and in emerging markets subscribe to encouraging principles at international meetings, but fail to enact the policies at home.

This report identifies two practices at the heart of the disjuncture between sustainable fishing principles and real world practices.

The first practice involves reefer vessels and transhipments: this entails catch being loaded directly from fishing boats onto these large freezing and processing ships at sea. Reefer activity accounts for around 16% of western African fish exports.

Using a unique data system, we track reefers operating in western African coastal waters. The FishSpektrum Krakken® UVI database – a fishing and fish carrier vessel identifier resource – is the world's largest fishing vessel tracking resource. In 2013, 35 fishing reefers visiting western African waters were identified. Most were operating under flags of convenience (FOC),[2] with Vanuatu the preferred registration site.

Tracking signals from some of the 35 vessels point to suspicious activity. The signals were consistent with widespread and systematic transhipment operations. Some of this activity occurs in the Exclusive Economic Zones (EEZs) of two countries – Senegal and Côte d'Ivoire – where transhipment is prohibited by law.[3] In other cases, the transhipment activity appears to be unauthorised or inadequately monitored. We provided detailed tracking evidence for four named vessels. While there is no suggestion on our part that the vessels in question were carrying out IUU activities, in each case there are questions to be answered.

The second practice identified in the report relates to the mode of transportation for exports. We estimate that around 84% of the fish exported from western Africa leaves the region in large refrigerated containers. This is part of a global pattern that has seen containers account for a large and rising share of fisheries trade. From a governance perspective, the concern is that containers are subject to less stringent reporting requirements.

1. Port State Measures (PSM) are requirements established or interventions undertaken by port states which a foreign fishing vessel must comply with or be subject to as a condition for use of ports within the port state. National PSM would typically include requirements related to prior notification of port entry, use of designated ports, restrictions on port entry and landing/transhipment of fish, restrictions on supplies and services, documentation requirements and port inspections, as well as related measures, such as IUU vessel listing, trade-related measures and sanctions.

2. A 'flag of convenience' refers to a vessel being registered in a different country to that of the ship's owners. Many shipping companies prefer to fly FOC so their ships are registered in countries with less stringent enforcement regulations.

3. An exclusive economic zone (EEZ) is a sea zone prescribed by the United Nations Convention on the Law of the Sea whereby a country has special rights regarding the exploration and use of marine resources, stretching from the baseline (normally the low-water line along the coast as marked on large-scale charts officially recognised by the coastal state) out to 200 nautical miles from its coast.

While compliance with EU regulations requires fishing vessels and reefers to provide port authorities with reasonable advance notice of an intention to unload a catch, containers do not have to give as much notice, which may weaken the effectiveness of port monitoring. Moreover, it is difficult under current EU rules to establish the scale and legality of catches originating in western African waters, because containers are exempt from regulations which provide for inspection of landings at EU ports.

The consequences are not theoretical, but real. The European Commission's Directorate-General for Maritime Affairs and Fisheries confirmed to the report authors that, between 2012 and 2014, only 135 fish container consignments, originating from all over the world, were blocked because of IUU concerns. This represents a tiny fraction of the fish entering the EU from abroad.

Ending IUU fishing and developing strong national and regional fishery sectors would generate multiple benefits for development. Those benefits would not occur automatically. Governments in the region need to do far more to develop processing sectors equipped to add value to the fish caught in their waters, and to support regional trade. However, with the right policies in place we estimate that more than 300,000 new jobs could be created, with artisanal fishers linked to consumers through a vibrant trading network. Further development benefits would derive from increased export revenue. Sustainable management of fisheries resources would also strengthen food security, expanding supplies of protein.

We set out a range of practical policies for unlocking these benefits. Some of these policies require multilateral action at a global level:

- **Establishing a global database and tracking system.** A global, centralised IUU vessel database should be created under the auspices of the UN Food and Agriculture Organization (FAO) and the International Maritime Organization (IMO), with full accessibility for national authorities. All fishing vessels should also be required to carry a unique ID registration number, making it harder to evade detection. The vessel tracking information we provide in this report illustrates the possibilities. The development of a global tracking system could be financed through a levy on commercial fishery fleets.
- **Closing the IUU container loophole.** Container ships carrying fish should be subject to the same scrutiny and reporting requirements as reefers and fishing vessels.
- **Banning blacklisted IUU vessels.** Vessels blacklisted for IUU practices, together with their owners and operators, should be prohibited from operating and registering new vessels. Legal authorities should act swiftly to bar blacklisted vessels and operators from the EEZs in which IUU activities occurred, and impose punitive fines that generate powerful deterrent effects. In the event that local action is not taken, legal authorities in the jurisdiction of registration and/or substantive ownership should take action. Interpol should be given broad powers to prosecute and investigate IUU activities and publish an IUU blacklist.
- **Establishing IUU fishing as a transnational crime.** This approach, championed by Norway, would bring IUU activities under the remit of Interpol, giving the security agency the resources and powers necessary to investigate and prosecute these cases.

The effectiveness of any global governance regime on fisheries for western Africa will ultimately depend on two critical regional factors: leadership by African governments and capacity development. Among the priorities are:

- **Improving transparency.** African governments and their trading partners should disclose in full the terms of fisheries agreements, including information on quotas and prices as well as any agreed licence and charter agreements. Additionally, declared catches should be regularly compared with data reported to the FAO and other agencies.
- **Prohibiting transhipments at sea.** Western African countries should ban transhipments at sea following the practice of Senegal and Côte d'Ivoire within their EEZs. Special derogations could be provided for ports that cannot accommodate large reefers, with transhipments allowed under closely monitored conditions near port facilities.
- **Enhancing port measures.** All countries in western Africa and elsewhere should immediately ratify the legally binding Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing (PSMA), aimed at strengthening the controls in ports where the fisheries catches are landed and reported, and denying access to any vessels suspected of IUU activity. The treaty was approved by the FAO in 2009 and came into force on 5 June 2016, but to date Gabon, Guinea-Bissau and South Africa are the only countries in the region to have ratified this agreement. Globally, although the EU and the United States have ratified the agreement, major fishing nations like China and Russia have yet to do so.
- **Building regional capacity action.** The international community should scale up aid and technical support for western African countries. The World Bank, the African Development Bank and the FAO should cooperate in supporting the development of capacity to draw on global satellite and terrestrial tracking systems. Aid donors in the EU and emerging markets – including China – with large regional fleets should provide support for the purchase and operation of an expanded coastguard fleet to protect EEZs. Joint patrolling schemes could also be established, with an initial

focus on the two main 'transhipment hubs' in western Africa: around Guinea and Guinea-Bissau, including Cape Verde, Senegal and the Gambia, and another one in the Gulf of Guinea, including Ghana, Togo, Benin and Nigeria, as identified by the UN Office for Drugs and Crime (UNODC). Additionally, western African navies need to work more closely together to monitor and protect their coastal waters, especially in inshore territorial waters crucial to the communities that depend on coastal fisheries.

- **Strengthening regulation**. Working in concert with Interpol, the African Union should develop an IUU blacklist for the whole continent. All governments in the region should carefully review licensing arrangements involving vessels registered under flags of convenience, which are in some cases the equivalent of havens for tax avoidance. Consideration should be given to the imposition of a flag of convenience tax in fisheries agreements, with the revenues used to strengthen IUU monitoring capabilities.

2. Illegal, unreported and unregulated (IUU) fishing: western African crisis

In Africa's coastal waters, IUU fishing has reached epidemic proportions. This plunder destroys entire coastal communities when they lose the opportunities to catch, process and trade. Commercial trawlers that operate under flags of convenience, and unload in ports that do not record their catch, are engaging in organised theft disguised as commerce.

Kofi Annan, former UN Secretary General and Chair of the Africa Progress Panel[4]

There is a crisis of global governance playing out on the world's oceans. One of the most visible symptoms of that crisis is the depletion of fish stocks. According to the UN Food and Agriculture Organization (FAO), almost two thirds of stocks for which information is available are fully exploited. Another 28% are over-exploited: that is, fish are being caught at a rate that exceeds regeneration potential (FAO, 2014b). According to one estimate, the amount of fish in the oceans has been halved over the past 50 years, with some species – such as tuna and mackerel – falling by three quarters (WWF, 2015).

At the heart of the crisis is some simple arithmetic. It has been estimated that the capacity of the world's fishing fleet is two and a half times larger than the sustainable extraction level for fish stocks. The resulting crisis in fisheries is a living example of a modern-day 'crisis of the commons' – in other words, the tendency to undermine long-term collective interests through short-term overexploitation of shared resources. Tackling the crisis of the commons requires multilateral rules and institutions that are geared towards sustainable resource management. This is the core aim behind Goal 14 of the 2030 Sustainable Development Goals, which calls on states 'to conserve and sustainably use the oceans, seas and marine resources for sustainable development'.

Translating that commitment into practice will require a concerted drive to reverse and then stop IUU fishing. IUU fishing takes many forms. These range from catching fish without a licence to harvesting banned species, exceeding catch quotas and fishing out of season. Governments and the international community cannot sustainably manage scarce marine resources in the absence of timely, accurate and transparent information on the size of catches. Yet IUU fishing accounts for as much as one fifth of the global fisheries catch, worth $10 billion to $23.5 billion annually (Agnew, 2009). Put differently, between 11 million and 26 million tonnes of fish are extracted from the world's oceans without proper reporting.

IUU fishing has profoundly damaging consequences. It is contributing to the unsustainable exploitation of a vital marine asset, eroding the oceans' ecosystems and jeopardising future supplies of a vital global food security asset.

Nowhere are the costs of unsustainable resource management more visible – or more immediate – than in the world's poorest countries. IUU fishing is endemic in the coastal zones of many developing countries. Marine and coastal fish stocks provide millions of people in these countries with a source of protein, a livelihood and an income.

2.1 Western Africa at heart of IUU fishing

Western Africa is at the epicentre of IUU activity. With its coastline stretching from the Strait of Gibraltar to Cape Town in South Africa, this region has some of the most diverse and economically important fishery locations in the world. This includes the Canary Current and the Benguela

4. For Kofi Annan's launch remarks, see Africa Progress Panel (2014a).

Current marine ecosystems, which extend from north-west Africa to Guinea-Bissau and from western South Africa to Angola. These systems maintain some of the world's richest tuna fishing grounds.

Today, western Africa's coastal fishery resources are operating well beyond the brink of sustainable utilisation, in part because of IUU fishing. More than 50% of the fisheries resources in the stretch of coast ranging from Senegal to Nigeria alone have already been overfished (FAO, 2011). It has been estimated that IUU fishing accounts for between one third and half of the total regional catch (Africa Progress Panel, 2014).

Three types of IUU fishing are of special concern for western African coastal states: unlicensed foreign industrial vessels; fishing in prohibited areas, particularly close to shore, using illegal nets; and fishing by artisanal vessels, many of which are unlicensed and also fishing with illegal nets (MRAG, 2010: 2). Investigations by the Environmental Justice Foundation (EJF) provide a glimpse into the huge extent of the problem. Data from Guinea-Conakry's coastal waters found that 53 out of 104 identified vessels were either linked to, or engaged in, IUU fishing (EJF, 2009: 9). This report focuses on the activities of foreign fishing fleets and the way fish is transported out of the western African region.

Box 1: What is IUU fishing?

IUU fishing refers to any of the following activities:

- Fishing in waters under the jurisdiction of a state without permission or in violation of applicable laws
- Fishing conducted by vessels flying the flag of states that are parties to a relevant regional fisheries management organisation, but are operating in contravention of its conservation and management measures
- Fishing that has been unreported or misreported to the relevant national authority or regional authorities, in contravention of applicable laws
- Fishing conducted by vessels without nationality, flying the flag of a state not party to the regional organisation governing the relevant fishing area or species, or fishing on stocks with no applicable conservation or management measures in place.

Note: Authors' work, based on International MCS Network, 2014

IUU fishing has damaging economic consequences for the affected states. According to the Africa Progress Panel, West Africa (defined in the report as the region lying between Mauritania and Nigeria) is losing $1.3 billion annually to IUU fishing (Africa Progress Panel, 2014). If the whole of the western African coastline were taken into account those losses would be greatly magnified. As it is, IUU fishing led to:

- Senegal losing around $300 million in 2012 due to IUU fishing – equivalent to 2% of gross domestic product (GDP) (USAID, 2013);
- Guinea losing $110 million a year (MRAG, 2005);
- Sierra Leone losing $29 million annually due to IUU fishing – a figure that may appear modest, but which represents around a tenth of the country's education budget (MRAG, 2005: 6).

Similarly, the wider social, economic, environmental and human costs of IUU activity are increasingly evident. Overfishing by large industrial trawlers is contributing to the collapse of artisanal fishing – an activity that supports millions of people in coastal areas. The multiplier effects of lost revenues through the vast national and intra-regional trading networks linking consumers to artisanal fishers are enormous (Béné et al., 2007). Fisheries are estimated to employ, directly or indirectly, 600,000 people in Senegal (Africa Progress Panel, 2014) and more than 160,000 in the Democratic Republic of Congo – not including the thousands of jobs in fish processing plants in which most workers are women (FAO, 2014: 32). As artisanal fishing shrinks, it creates pressures to migrate from coastal communities. Meanwhile, a vital source of food is under threat. In countries like the Gambia, Sierra Leone and Ghana, fish provide more than 60% of the animal protein necessary for healthy growth, and in remote coastal communities almost all of these proteins come from fish.

As we show in this report, translating sustainable fishery principles into practice would generate wide-ranging benefits. Specifically, it has the potential to create more than 300,000 new jobs across the region, divided almost equally between fishers and processors, enabling some 90,000 women to enter the work force.

2.2 Weak governance, fragmented architecture and institutional loopholes

The geographic scope and scale of IUU fishing is symptomatic of the wider global governance failure that is eroding the integrity of oceanic ecosystems. The vast patchwork of treaties, conventions and voluntary arrangements now in place affords weak protection at best.

Globally, the UN Convention on the Law of the Sea (UNCLOS) governs the rights, obligations and dispute settlement procedures for the world's oceans. UNCLOS sets out the duty of countries to cooperate in the management of shared fisheries resources. It also recognises jurisdictional boundaries of individual states set 200 nautical miles off a state's coastline, known as Exclusive Economic Zones (EEZs). Most of the richest fisheries in the world are located in these zones, which cover some 38 million square nautical miles.

UNCLOS also underpins the activities of the UN agencies and bodies dealing with the oceans. Chiefly, this includes the FAO, which supports science and management of global fisheries and is a major source of statistical information; and the International Maritime Organization (IMO), which is largely responsible for maritime safety, liability and compensation.

Ocean governance to prevent IUU fishing is also managed at local, national and regional levels. Regional fisheries management organisations (RFMOs)[5] have been set up to manage stocks, including highly migratory species such as tuna that move across vast areas. Regional bodies include the International Commission for the Conservation of Atlantic Tunas (ICCAT) which is active in western Africa, and was set up to manage and aid in the conservation of tuna species.

Individual countries and regional groupings add to the patchwork of rules. For example, following a 2010 regulation, the European Union only allows imports of marine fisheries products certified as legal by the competent flag state or exporting state, bans 'non-cooperating' countries or IUU fishing vessels and sanctions EU operators fishing illegally anywhere in the world under any flag (European Council 2008). The UK provides detailed guidance for British businesses, including retailers and food suppliers, to help keep illegal fish products out of its food supply chain (BRC and EJF, 2015). Spain, which owns Europe's largest fishing fleet, recently passed a new fisheries law which imposes strong penalties against any citizen involved in IUU fishing (EJF, 2015). In 2008, the United States strengthened the Lacey Act, making it unlawful to land illegally caught fish in US ports.

Despite these arrangements, IUU fishing continues to flourish. While the evidence is inevitably partial (a consequence of the illegality of the activities), it points unequivocally towards extensive IUU activities. For example, the EU – the world's largest importer of fish products – may have imported €1.1 billion in illegal fish products every year (European Parliament, 2014; Sustainable Earth, 2008). Another top importer, the United States, may have imported in 2011 between $1.7 billion (Gravitz, 2014) and $2.1 billion of illegal wild-caught seafood – or up to 32% of total seafood imports (Pramoda et al., 2014). Recent years have seen renewed momentum behind efforts to strengthen the governance of fishing and combat IUU practices. There has been an emphasis on improved monitoring and reporting on catches through Port State Measures. Retailers and processors have adopted a wide range of voluntary sustainable seafood standards, including a requirement that vessels have operational Automatic Identification Systems (AIS) and IMO registration.

However, the current arrangements are unfit for the purpose of promoting sustainable management. The rules, institutions and enforcement mechanisms now in place are circumvented with near total impunity. Extensive use of untracked vessels, port states failing to fulfil their responsibilities, flag states ignoring their obligations and the absence of effective sanctions to penalise bad practice all contribute to this situation.

Why is the battery of governance arrangements so ineffective? Technology provides part of the explanation. It is increasingly possible for fishing vessels to use a wide range of devices – such as sonar devices, airborne optical lasers and remote sensing technologies – to identify fish stocks.

Loopholes built into the governance regime, weak compliance and limited enforcement are also problems. Widespread use of flags of convenience (FOCs) from states – such as Liberia, the Bahamas and Panama – that are unable or unwilling to enforce existing regulations weakens the rule of law. FOC registration is cheap and very easy to obtain. Vessels sighted at sea engaged in IUU activities can quickly change their name and registration – a practice known as flag-hopping – to avoid being identified in a port, making it extremely difficult to track down the actual owners.

Approximately 15% of the world's large-scale fishing fleet is flying FOCs or listed as flag unknown (Gianni and Simpson, 2005). The largest ownership and management of FOC vessels is the European Union, of which Spanish vessels account for half, followed by Taiwan, Honduras and Panama (Couper et al., 2015). One widespread practice in western Africa involves companies setting up joint ventures with local partners. This allows foreign vessels to be re-flagged as western African vessels and to benefit from special authorisations reserved to the national fleet. One example comes from Namibia (see Box 2).

Effective monitoring at ports could limit the scope for IUU activities – but progress in this area has been modest. In 2009, the FAO approved the Port State Measures Agreement (PSMA) aimed at denying port entry and services to any vessel suspected of engaging in IUU fishing. The agreement allows for dockside inspections and seizure of illegal catch. This came into force on 5 June 2016, as this report was being finalised, after 30 governments ratified it. However, of these, Gabon, Guinea-Bissau and South Africa are the only countries in the region included in this agreement, so it is likely to have limited impact in western African waters unless more countries agree to be bound by it. Fish transhipment is another means

5. RFMOs are international organisations formed by countries with fishing interests in an area. Some of them manage all the fish stocks found in a specific area, while others focus on particular highly migratory species, notably tuna, throughout vast geographical areas. These organisations are open both to countries in the region ('coastal states') and countries with interests in the fisheries concerned. While some RFMOs have a purely advisory role, most have management powers to set catch and fishing effort limits, technical measures and control obligations.

Box 2: Namibia 'joint ventures'

Around 10 Namibian–Spanish joint ventures operated in 2011 from the massive Walvis Bay, where the processing factories were so 'high-tech' that this port was known as the 'Wall Street' of fish (García Rey and Grobler, 2011). One operator – the China Fishery Group, a subsidiary of the multinational Pacific Andes* – was reported to have overpaid a new Namibian quota holder to use its fishing quota for the year, going above the price paid by competitors. The company then covered the extra costs by cutting salaries, prompting Namibian trade unions to denounce it for alleged poor labour conditions (Agritrade, 2013; Shinovene, 2012).

*Note: * Pacific Andes Food Ltd is one of the largest providers of frozen fish and fish products in the world. Its business includes the whole chain from fishing, sea-based processing, transportation, land-based processing and distribution.*

of concealing IUU activities. While fish transhipments at sea are a common and largely legal practice[6], abuse is widespread. Vessels often transfer part or all of their catch to refrigerated cargo ships with freezer capacity known as reefers, which in turn freeze and transport the fish to port. When the transfers occur on an unreported basis, catch numbers can be understated and IUU fish mixed with legal catches, so any controls at port may come too late (EJF, 2013c).

The registration of fishing vessels is critical for any governance regimes aimed at tackling IUU fishing. It is striking, however, that there is no global register of high seas fishing vessels. To make matters worse, unlike merchant ships, these vessels are not required to carry a unique identification number, making it hard to track them (GOC, 2013). Efforts to close the registration deficit have met with limited success (see Box 3).

Some states in western Africa have attempted to legislate against transhipment. Senegal and Côte d'Ivoire ban transhipments at sea altogether. Some monitoring organisations – for example, ICCAT – also operate

Box 3: Gaps in fishing information and registration (data as of 20 July 2015)

Many of the vessels engaged in IUU activities are unregistered. Efforts to develop a global registration regime have met with limited success.

In 1993, the FAO created a High Seas Fishing Vessel Authorisation Record (HSVAR), requiring states to provide information about their vessels authorised to fish on the high seas. Fifty-eight nations are party to the agreement and 44 nations have (at least once) provided a listing of authorised vessels. Honduras and Sierra Leone have not accepted the agreement. However, they have both voluntarily provided information in the past, according to information provided by the Fisheries and Aquaculture Department of FAO.

The Global Ocean Commission notes that, since 2013, the HSVAR has listed 2,452 vessels (out of 6,292) whose authorisation to fish had 'expired', suggesting that states have not provided up to date information.

The FAO maintains another vessel register, the Vessel Finder. However, as of 2015 it contained 238,689 fishing vessels – a fraction of the more than 4 million fishing vessels currently operating in the world, according to FAO's own estimates.

Interpol, the main international law enforcement agency dealing with IUU fishing, does not fare well either. It publishes Purple Notices (PNs) when seeking information on working methods, objects, devices and concealment methods used by criminals accused of involvement in IUU fishing. The first was published in September 2013 at the request of Norwegian authorities for a vessel named Snake. However, only nine PNs have been issued since then.

Some private projects have attempted to reduce the registration gap, so far unsuccessfully. The Global Fishing Watch initiative, for example, is the product of a technology partnership between SkyTruth, Oceana and Google designed to show all trackable fishing activity in the ocean. However, this interactive web tool is still in prototype stage, and only contained some 40,000 fishing vessels at the time of writing, severely limiting its usefulness to law enforcement officials.

The database used for this report put together by FishSpektrum is by far the most comprehensive, with more than 820,000 fishing units on it. The European Commission and others use it as a source for major studies. But it remains a privately held resource and, given the scale of the problem outlined in the following pages, there is an urgent need to develop more comprehensive and publicly available resources, in line with the latest technological advances.

6. Transhipment is the transfer of goods from one ship to another. Fish transhipments at sea involving reefer vessels are always to load fish onto a reefer, not to unload from the reefer. At anchor, reefers do not unload. Transferring fish at anchor, if the sea conditions are right, is the cheapest way to transfer fish, because ships do not have to call at port, be moored and pay the port fees. Fishing vessels (with fishing gear on board) do not usually call at port precisely to avoid paying the port fees, and prefer to transfer their catch at sea.

prohibitions in regional waters. However, the majority of countries in the region still authorise fish transhipments within their EEZs, citing as a rationale the inability of ports to accommodate large reefers. The United Nations Office for Drugs and Crime (UNODC) has identified two main 'transhipment hubs' in western Africa. One is located in the Eastern Central Atlantic around Guinea and Guinea-Bissau, including Cape Verde, Senegal and the Gambia. The other is found in the Gulf of Guinea, including Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, Gabon and São Tomé and Principe (UNODC, 2010). In Section 3, we draw on new data to document the activities of reefers operating in these hubs.

Efforts to enforce anti-IUU arrangements are often weakened by wider problems. While many countries in western Africa require observers to be present on board fishing vessels, in some cases these observers are paid by the vessel operators. The incentive to expose illegal trade is accordingly limited (EJF, 2012). Corruption is another barrier to effective action. One third of the countries in western Africa were in the bottom quarter of Transparency International's Corruption Perception Index for 2014. The consequences can be seen in the governance of the fisheries sector. In Senegal, for example, highly placed political figures have been investigated and, in some cases, prosecuted for selling illegal permits to foreign fleets for personal gain (Faye, 2011; Vidal, 2012). Meanwhile, African-flagged vessels, including Ghana's commercial tuna fleet, have been implicated in IUU activities. In 2014, the EU warned Ghana that further cases of IUU fishing would mean an end to Ghanaian fish exports (House of Ocean, 2014).

In the few cases where an IUU catch is discovered and the owners prosecuted, fines are often too small to have a deterrent effect. In 2011, according to the EJF, the Liberian Coastguard arrested the Korean-flagged Seta 70 at sea for fishing illegally in the area. The vessel, owned by Korean multinational Inter-Burgo Company Ltd, was fined $36 million and legal proceedings were initiated against the vessel's operators. However, the vessel ended up paying only $150,000 in an out-of-court settlement – a tiny fraction of the value of its IUU catch (EJF, 2012).

Western African officials openly admit that small fines are failing to deter vessels from continuing to engage in IUU fishing. For instance, Haidar El-Ali, Senegal's fisheries minister, last year said: 'Vessels we caught pay a fine and go, but they do it again. We must be able to keep them when we seize them, so there's a real punishment.' (Fessy, 2014)

Western Africa's IUU crisis also illustrates the debilitating effect of having a weak capacity for implementation. As with any governance regime, fisheries are only as effective as a state's capacity to monitor activities in its EEZ. Elsewhere in the world, governments have taken robust action: for example, Indonesia (Washington Post, 2016) and Argentina (CNN, 2016) have recently gone as far as to sink ships involved in IUU fishing in their waters. But most countries in western Africa lack the systems needed to monitor and track the activities of fishing vessels. These are countries with long coastlines and limited resources. Meanwhile, their marine ecosystems and abundant stocks of high-value fish act as a magnet for industrial fishing vessels.

The FishSpektrum database highlights the acute capacity constraints facing governments in western Africa. In 2013, the FishSpektrum data identified more than 600 fishing vessels off the coast of western African nations that were from China alone. Yet one of these nations – Sierra Leone – had only two coastguard boats available to monitor the activities of *all* fishing vessels in its waters (Naranjo, 2014). Whatever rules are put in place, these are likely to prove of limited effectiveness in the absence of a greatly strengthened regional capacity for monitoring.

Information gaps and asymmetry in access to information makes it difficult to establish the full extent of IUU fishing in western Africa. That is why investment in monitoring is so critical. Inconsistencies between trade data and fishery quotas suggest that current estimates may understate the scale of IUU activities, as illustrated by evidence relating to China's fleet (see Box 2.4).

Box 4: The numbers game and 'a sea of obscure agreements'

China's western African fleet has grown rapidly in recent years. In testimony to the US–China Economic and Security Review Commission, Mallory (2012) concluded that China now owns the largest distant-water fishing fleet in the world, with an estimated 1,900 vessels operating in 2010, followed by countries like Japan, Spain, South Korea, Russia and Taiwan, although no one knows the exact number.

While there is no clear-cut evidence that this fleet is more or less culpable of IUU activity than vessels from other countries, there are various concerns.

In June 2011, a deal was signed between the Mauritanian government and China's state fishing company Poly Hondone Pelagic Fishery Co., a subsidiary of the Poly Technologies group, one of the largest recent fisheries access agreements signed in the region. The 25-year deal involved an investment of $100 million, with the Chinese company promising to build a fish processing factory in Noadhibo and create 2,463 jobs in exchange for fishing rights, according to a copy of the document supplied to the authors. Under the agreement, Chinese vessels would be re-flagged to Mauritania.*

Details of the fishing agreement initially remained secret until it was leaked by a Mauritanian member of parliament, according to TransparentSea, which is an initiative to promote access to information and accountability in marine fisheries (TransparentSea, 2016). Concerns over a lack of transparency regarding the exact terms of the agreement and a lack of safeguards to protect the country's threatened deep-sea fishing resources caused a public outcry at the time and even prompted opposition law-makers to boycott the vote in parliament (Reuters, 2011).

Additionally, Poly Group's vessels include bottom trawlers which are industrial fishing vessels of a kind likely to be destructive, as their nets, pulled down by heavy weights, are dragged along the bottom of the sea bed, destroying coral, sponges and other plant and animal species.

More widely, the Mauritanian authorities confirmed to the report authors that 45 Poly Group vessels are part of this agreement, and are allowed to catch between 80,000 and 100,000 megatonnes (Mt) of fish annually. They insist that they were reflagged, meaning that any fish they caught would be considered Mauritanian. China's total declared catch in the whole of western Africa for 2013 was only 4,139 Mt, according to FAO Fishstat. This would mean that the Chinese fleet is mainly fishing in Mauritanian and western African waters under local flags. Mauritania on the other hand caught 277,624 Mt of fish in 2013, according to FAO Fishstat, despite barely having a functioning industrial fishing fleet.

This should not be a problem except that Chinese fisheries agreements with local governments remain largely secret, meaning that it is difficult to determine the real Chinese fishing capacity and actual catches in the region compared to other countries, and whether these are sustainable or hide illegal activities.

According to a report, prepared at the request of the European Parliament, by the European Commission's Directorate-General for Internal Policies, 'activities and catches of the Chinese distant-water fleets are almost completely undocumented and unreported, and often, may actually be illegal, thus spanning the entire gamut of IUU fishing' (Blomeyer et al, 2012).

Based on the review of several studies, Mallory (2012) concluded with reference to China that 'fisheries access agreements on the whole have led to unsustainable use of fisheries resources and have negatively impacted the socioeconomic development of host countries'. He shows that in Guinean waters, for example, more than half of IUU vessels identified were Chinese; in Liberia, 200 industrial vessels were observed operating despite the country having only granted 17 fishing licences; and in Liberia, Chinese vessels frequently violate the moratorium in the three-nautical-mile artisanal zone.

All this provides further proof of the urgent need to ensure that the agreements between Chinese and other major foreign operations with western African governments are transparent, ensuring the sustainability of the region's overexploited fisheries.

** The Mauritanian authorities told the report authors that just 1,663 jobs have been created to date due to some delays in the implementation of the agreement, while the total investment reached $105 million by the end of 2014.*

3. Navigating around the rules and why IUU fishing matters – reefers and containers in western Africa

The first step towards sustainable fishery resource management is information. The development of clear and enforceable rules on Port State Measures, vessel registration and flags of convenience is a necessary condition for effective governance – but it is not a sufficient condition. Governments in western Africa and other regions need credible data on catch volumes. In this section we identify two practices that are systematically weakening data availability, creating an enabling environment for IUU activities. There are concerns that the operations of reefers and the use of containers may be facilitating practices designed to evade reporting.

3.1 Reefers – tracking points to irregular activities

Reefers occupy a pivotal position in the global fisheries trade. These specialised refrigerating cargo ships can deep-freeze, process and store catch at minus 28°C, enabling them to travel long distances. They can go port-hopping, unloading or uploading fish in conventional terminal facilities, and can also 'comb' fishing grounds in search of vessels with full holds that prefer to 'tranship' – that is, transfer – the fish at sea.

The FishSpektrum tracking system

For this study we use a unique data source to examine reefer activity in western African waters. The analysis of the reefer vessels' activity is derived from the FishSpektrum Krakken® UVI database – a fishing and fish carrier vessel identifier database. All the data included in the Krakken® UVI database come from official public registries and reports. The version used for the purpose of this study (Krakken® V.7.1) accounts for some 1,582,000 historical references for more than 820,000 vessels, making it the world's largest existing fishing vessel database. It provides comprehensive characterisations of fishing vessels from around the world, with more than 100 specific information items per vessel, with historical data going back to 2009. Further technical details are provided in Annex 1.

The area covered by our data exercise extends from the Strait of Gibraltar to Cape Town. We look at fishing activity in the whole of western Africa, which includes countries' EEZs[7] as well as the open seas. Western African waters fall under the FAO's Eastern Central and South Eastern Atlantic regions. (See Figure 2 in the Annex for further details on the area covered.)

In 2013, according to FishSpektrum's database, 35 fishing reefers visited western African waters. They were flagged to the Netherlands, Netherlands Antilles, Belize, Panama, Malta, Kiribati, Japan, Spain, Vanuatu, Sierra Leone and Ghana, most of which are considered flags of convenience (FOCs).[8] Nine of the 35 reefers (all of the tuna reefers except one) were flagged in Vanuatu alone – a jurisdiction marked by limited capacity, a lack of

7. Atlantic, Eastern Central (Major Fishing Area 34): The waters bounded by a line running from a point of the high-water mark of North Africa at 5°36' west longitude; thence running in a southerly direction following the high-water mark along the coast of Africa to a point at Ponta do Padrão at 6°04'36" south latitude and 12°19'48" east longitude; thence along a rhumb line in a northwesterly direction to a point at 6°00' south latitude and 12°00' east longitude; thence due west along 6°00' south latitude to 20°00' west longitude; thence due north to the equator; thence due west to 30°00' west longitude; thence due north to 5°00' north latitude; thence due west to 40°00' west longitude, thence due north to 36°00' north latitude; thence due east to Point Marroqui at 5°36' west longitude and 36°00' north latitude; thence due south to the original point on the African coast.

8. Flags of convenience are registries that allow a ship to be registered in a sovereign state other than that of the ship's owners. Ships are registered under flags of convenience to reduce operating costs or to avoid the regulations of the owners' country. For example, 84% of the Netherlands Antilles' registry is foreign, including mainly ships from the Netherlands, Germany, Turkey and others; Belize's registry is 62% foreign, including mainly ships from China, Russia, Turkey and Latvia (The Basement Geographer, 2012).

transparency and failure to enforce minimum international social standards on its vessels (IFT, 2015). Vanuatu has also been accused of registering a large number of vessels allegedly involved in IUU fishing, and of resisting pressure from Australia, New Zealand and the Organisation for Economic Cooperation and Development (OECD) for tighter controls, and of accommodating owners seeking to avoid full disclosure (Van Fossen, 2012). Vanuatu's registry is made up of 94% foreign ships, mainly from Japan, Poland, Russia, Canada and Greece (Vanuatu Maritime Services Limited, 2016).

For the purposes of this study, we have classified the 35 reefers into four major groups (Table 1). These groups are as follows:

- **Tuna reefers**, registered with ICCAT and with observers on board. These are relatively small freezing and transporting vessels transporting high-value tuna and connecting western African fishing grounds with Asia. Most of them are flagged to Vanuatu.

Table 1: The 35 reefers operating in western Africa in 2013a

Type	Reefer name	Flag	Carrying capacity (Mt)	Trips outside western Africa
Tuna reefers Tuna long liners, ICCAT-listed, with observers on board	Chikuma	Vanuatu	3,009.78	3
	Futagami	Vanuatu	731.41	3
	Genta Maru	Vanuatu	2,983.33	1
	Harima 2	Vanuatu	1,734.62	1
	Haru	Vanuatu	1,731.41	2
	Ibuki	Vanuatu	3,009.78	1
	Meita Maru	Vanuatu	925	1
	Shin Fuji	Vanuatu	857.05	2
	Taisei Maru 15[9]	Vanuatu	4,060.90	0
	Taisei Maru 24	Japan	4,049.36	2
Shuttle reefers	Rangiroa	Belize	2,064.10	2
	Hai Feng 895	Panama	2,243.59	9
Inter-western African Reefers doing inter-African routes, linking western African ports[10]	Lucky Ever	Sierra Leone	1,877.88	0
	Normandic	Belize	2,452.02	0
	Volta Glory	Ghana	2,106.28	0
	Volta Victory	Ghana	2,801.28	0
	Meltemi (previously New Prosperity)	Kiribati	2,947.44	0
Others	China Frost	Panama	2,872.02	2
	Tokachi Frost	Belize	2,511.92	1
	Monte Laura	Panama	2,176.28	5
	Plate Reefer	Panama	1,017.95	1
	Dolly 798[11]	Philippines	2,148.72	0
	Izar Argia	Spain	2,467.95	2
	Reina Cristina	Panama	1,537.76	2
	(MFD 68) Sierra Medoc	Malta	3,004.17	2
	Astraea 102	Panama	1,458.33	2
	Paloma Reefer[12]	Malta	735.9	0
	Princesa Guasimara	Malta	769.23	1

9. In 2013, Taisei Maru 15 left Japan, crossed the Indian Ocean towards East Africa and entered western African waters on 18 December, not leaving the region for the remainder of that year.

10. No trips are registered here for these reefers as they were not observed leaving the region.

11. The Dolly 798 only travelled from Gibraltar to Papua New Guinea in 2013, crossing but without stopping anywhere in western Africa.

12. The Paloma Reefer started its activity in 2013 from the port of Las Palmas in Spain, but does not seem to do any transhipments in western African waters that year, focusing instead in the North Atlantic Ocean and the Mediterranean Sea.

Table 1: The 35 reefers operating in western Africa in 2013a (cont'd)				
Netherlands and Netherlands Antilles reefers	Nova Zeelandia[13]	Netherlands Antilles	2,386.73	2
	Sierra King	Netherlands	2,416.12	4
	Nova Florida[14]	Netherlands Antilles	2,797.76	1
	Cool Expreso	Netherlands	2,833.43	3
	Sierra Loba	Netherlands Antilles	2,976.92	2
	Pacific	Netherlands	3,004.62	2
	Sierra Leyre	Netherlands	4,719.49	2

Note: The amount of fish transported outside western Africa (calculated as the total capacity of reefers multiplied by the number of round trips they do outside the region) is: Tuna reefers – 33,152 Mt; Shuttle reefers – 24,321 Mt; Inter-western African reefers – 0 Mt; other reefers (including Netherlands reefers) – 84,999 Mt; making a total of 142,471 Mt.

- **Shuttle reefers** linking the ports of western Africa with the Spanish free port of Las Palmas, where fish are unloaded, containerised and transported to markets in Europe.
- **Inter-western African reefers** serving regional ports and not leaving regional waters.
- **Other reefers** that sail to wider regions, including ports and fishing grounds in the Pacific. Within this group, there is a strong presence of Dutch vessels.

The 35 reefers illustrate how deeply western Africa is now integrated into a global web of transactions. Among the countries and ports visited by the reefers were Las Palmas (Spain), New Orleans (US), Weymouth (UK), Tokyo (Japan), Malta Freeport, Seoul (South Korea), Singapore and Shanghai (China). However, it is the transhipment activities of some of the reefers within the EEZs – 200 miles off the western Africa coast – which give most cause for concern.

3.2 Transhipments – tracking points to suspicious activity

Fish transhipments can take place at sea, in port and in controlled harbours near to shore.

Transhipments at sea can make it harder for port authorities or the flag authorities to monitor how, by whom and where transferred fish were caught as both IUU and legal catches can be mixed. This is why such transhipments are subject to stringent national and global rules, and in some cases are banned outright. The International Commission for the Conservation of Atlantic Tunas Regional Observer Programme (ROP) for At-Sea Transhipments for example, requires that all transhipments of ICCAT species (tuna and tuna-like species) must take place in port unless they are monitored under a Regional Observer Programme Authorised Carrier Vessel (Interpol, 2014: 14). In western Africa, Senegal and Côte d'Ivoire have banned transhipments in their EEZs (EJF, 2013c).

Several importing countries have attempted to regulate fish transhipments. The EU's IUU Regulation restricts fish transhipments by vessels flagged to Member States. This is to ensure that the fish being loaded onto reefers can be tracked and the legality of the catch established. However, transhipments are allowed when a vessel is operating under the auspices of an RFMO,[15] which would mean having observers on board (European Commission, 2010). In western Africa, the only RFMO operating is ICCAT.[16]

FishSpektrum's database combined with the Automatic Identification System (AIS)[17] signals which FishSpektrum acquired for this report, make it possible to identify patterns consistent with transhipment activity at sea. One 'signal' for such patterns includes a vessel remaining in a fixed location for a period of time. Another is a tracking pattern indicating that a vessel is not travelling between ports at cruise speed but is operating – and potentially seeking out fish transhipment business – in a specified area. Reefers crossing an EEZ at cruise speed will show a straight trail, emitting signals regularly. By contrast, if a reefer is transhipping catch, the tracks will have an undulating, zigzagging or irregular shape, or be grouped in clusters. This behaviour could also be explained by other

13. The Nova Zeelandia behaves like an inter-western African reefer, operating mainly within these regional waters except for two trips to A Pobra do Caramiñal and Las Palmas in Spain.

14. The Nova Florida behaves like a shuttle reefer too for most of the year until October, when it leaves towards America crossing the Atlantic.

15. The EU market is still open to fish transhipped at sea by third-country vessels.

16. ICCAT is an intergovernmental fisheries organisation responsible for the conservation of tuna and tuna-like species in the Atlantic Ocean and its adjacent seas. ICCAT is one of the many regional fisheries management organisations (RFMOs), but is particularly relevant in this region.

17. The Automatic Identification System (AIS) is a tracking system employed by vessels for identifying and locating vessels by electronically exchanging data with other nearby ships, AIS terrestrial stations and satellites, to improve marine safety (Weather Dock, 2016).

activities such as repairs and the transfer of fuel, gear and other goods, though normally these would happen near ports and along the coastline, as opposed to the open sea. In any case, irregular tracking signals do provide prima facie evidence of possible transhipment activities.

The vast majority of the 35 reefers tracked in our exercise generate tracks consistent with possible transhipment in EEZs. This includes several vessels with tracks indicative of probable transhipment in Senegal's and Côte d'Ivoire's EEZs, which would be illegal. The Sierra Loba, Nova Florida and Nova Zeelandia, all carrying Netherlands Antilles flags – considered to be a FOC – and operated by Seatrade Reefer Chartering N.V., based in Willemstad Curaçao and with a branch office in Antwerp (Belgium), are three examples.

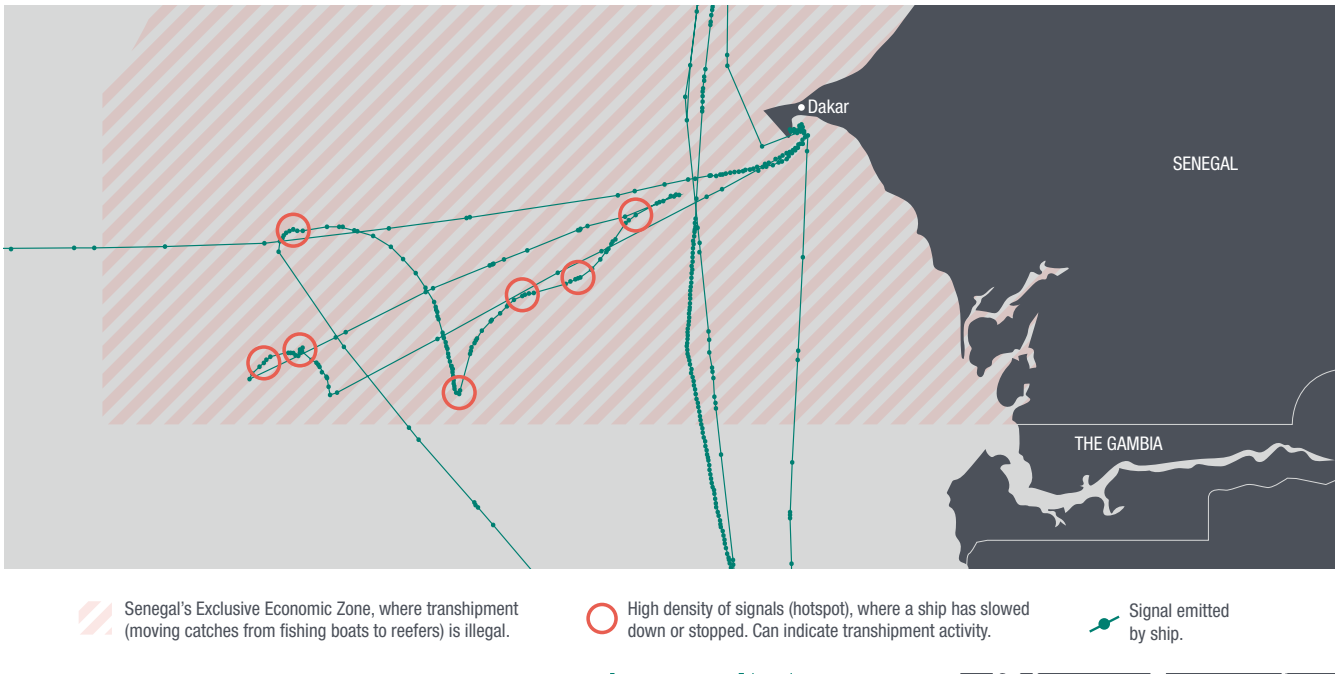
Sierra Loba. At the beginning of June 2013, the vessel generated an erratic trail consistent with transhipping in Côte d'Ivoire's EEZ. The activities occurred in an area located in the middle of the EEZ and close to Ghana's EEZ. Additionally, from 6 to 23 August the vessel remained in Senegal's EEZ, and from 18 to 22 August it generated tracks in an area some 124 nautical miles from the coast, tracing an erratic, J-shaped trail consistent with those of a reefer on the lookout for fishing vessels (Figure 1).

Nova Florida. The vessel generated trails consistent with transhipment in an area adjacent to Dakar, some 37 to 38 nautical miles from the coast, between 29 June and 6 July. The erratic trail of this reefer on 5 July is shown in Figure 2.
Nova Zeelandia. The vessel's tracks are consistent with transhipment activity in Senegal's EEZ in areas 62 nautical miles off Dakar (18 July), 73 nautical miles (21 July) and 87 nautical miles (23 July). Figure 3 shows tracking data consistent with transhipment activity (20 July).

These three cases are not in any sense statistically representative of the 35 reefers – but neither are they in any sense abnormal. Our data do not constitute evidence of transhipment linked to IUU fishing. However, the data do raise concerns, in part because authorities in western Africa are unable to monitor the vessels; and in part because the weaknesses in the wider governance regime for fisheries mean that vessels engaged in transhipment-related IUU are able to evade reporting systems. Detailed tracking of one particular vessel –Sierra King – illustrates how tracking patterns consistent with transhipment may undermine the regulatory approaches of importing countries, and the sustainable resource management efforts of governments in western Africa

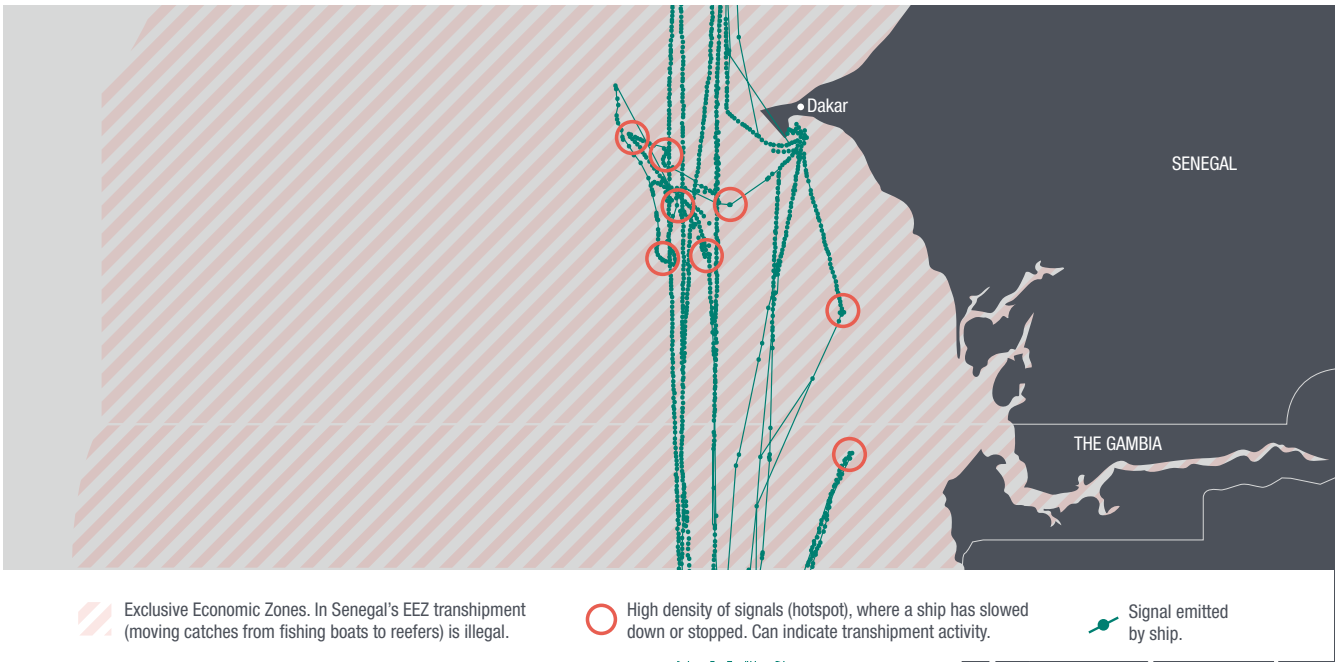
In response to our findings, Seatrade Reefer Chartering N.V., the company which owns Sierra King reefer and appears as the operator of Nova Florida, Sierra Loba and Nova Zeelandia, referred us to a company called Greensea Chartering. Greensea in turn confirmed that it operates all these vessels and is owned 50% by Seatrade. Greensea Chartering said that it was company policy not to share information except with relevant governments or regulatory bodies. However, its spokesperson did say 'the fact that a vessel has been tracked in an EEZ of a country does not mean that a transhipment operation took place. Ships often have to wait for next employment at strategic places'.

Figure 1: Sierra Loba's tracks, August 2013



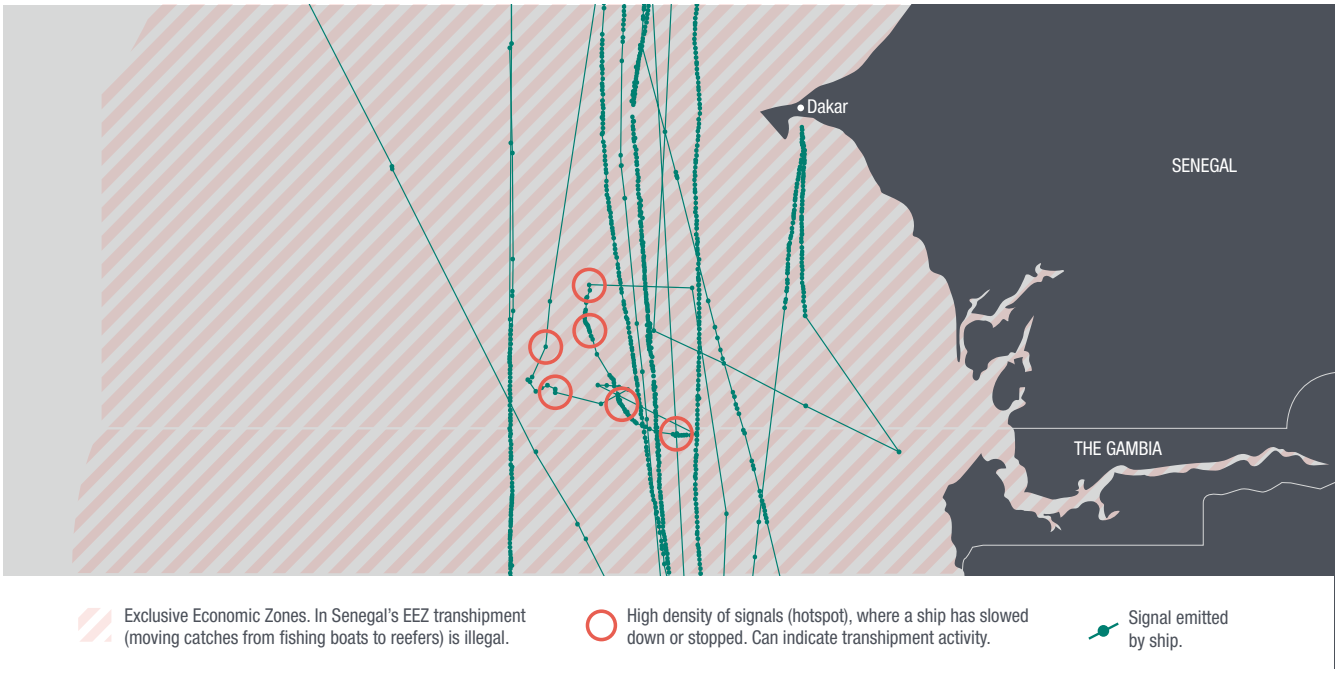
Source: ODI design based on CartoDB, using FishSpektrum data.

Figure 2: Nova Florida's tracks, 5 July 2013



Source: ODI design based on CartoDB, using FishSpektrum data.

Figure 3: Nova Zeelandia's tracks, July 2013



Source: ODI design based on CartoDB, using FishSpektrum data.

Indeed, our data does not establish either fish transhipments in banned areas or IUU fishing on the part of any of the 35 named reefers. The concern is that repeat patterns of irregular tracking data could point in that direction. Moreover, these patterns are consistent with a gathering body of evidence raising concerns over irregularities. To cite some of the more high-profile cases:

- The South Korean-owned, Sierra Leonean-flagged Lucky Ever was identified in a 2013 report by the Environmental Justice Foundation (EJF) as a vessel that is believed to have carried out a number of unauthorised transhipments. EJF also claimed that Lucky Ever was engaged in 'flag-hopping' – a practice consistent with circumventing control measures imposed by flag states aimed at curbing IUU fishing (FAO, 2014b).

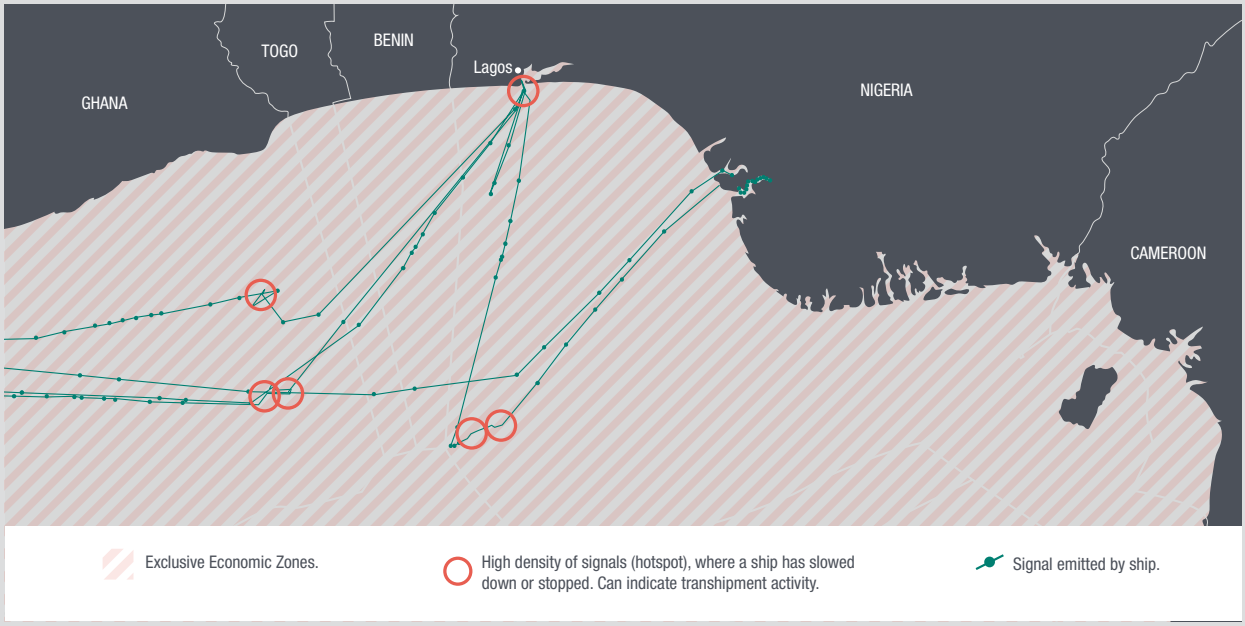
Box 5: Sierra King

Sierra King, a reefer operated by Holland Klipper Shipping Company B.V. and flagged in the Netherlands, generated several tracks during 2013 that may indicate transhipments in western African EEZs – a possible breach of EU regulations which restricts fish transhipments by vessels flagged to Member States. Given the capacity of the vessel – 2,416 Mt – any over-fishing activities would have consequences for sustainability.

In the course of 2013 Sierra King operated in several western African EEZs. Several irregular tracking patterns can be detected. For example, the vessel stayed in front of the port of Lagos, a major entry point for fish being imported into the country, for an entire day in August without calling into port. The vessel then sailed to the middle of the EEZ, stayed there and returned to Lagos, calling at port early on 16 August. It remained at port until 19 August when the vessel departed for the south-east edge of the EEZ, some 200 nautical miles from the coast, where it stayed until 22 August. These patterns are consistent with the movement of a reefer on the lookout for fishing vessels wishing to empty their holds (see figure below). The next day it called at the port of Warri, possibly to unload fish for the huge Nigerian domestic market (estimated at $1.75 billion annually) (Emejor, 2013).

Sierra King, a tuna reefer, is registered with ICCAT. This means that it should have an observer on board to monitor transhipments of tuna. However, a copy of ICCAT's 2013 observers' records obtained by the authors makes no mention of Sierra King, suggesting that that any transhipments that were made were not witnessed by authorised observers – a breach of EU regulations.

Tracks showing Sierra King staying for two days at the edge of Nigeria's EEZ before returning to port



Source: ODI design based on CartoDB, using FishSpektrum data.
Note: Although Sierra King appears in the FishSpektrum Krakken® UVI database to be operated by a company called Holland Klipper Shipping Company B.V., ICCAT Sierra King records show Holland Klipper Shipping Company B.V./ Seatrade Groningen B.V. as both owner and operator of this vessel, meaning that they are the same entity. Seatrade Groningen B.V. in turn is part of the Seatrade group which owns Seatrade Reefer Chartering N.V. see: http://www.iccat.int/en/VesselsRecordDet.asp?id=27470).

- The company Seatrade Reefer Chartering N.V., based in Willemstad, Curaçao, operates Nova Zeelandia and five other reefers in our list. Seatrade was named in an EJF report as the owner of a reefer called Nova Australia that was spotted apparently waiting to illegally tranship fish from two trawlers in Guinea's waters in 2006 (EJF, 2009).
- The China National Fisheries Corporation (CNFC), which operates Hai Feng 895, was identified in a report by EJF as the company operating several vessels with a similar name (Hai Feng 823, Hai Feng 829 and Hai Feng 830) illegally transhipping in 2009 (EJF, 2009). According to Greenpeace, CNFC also underdeclared gross tonnage for 44 of the 59 vessels it operates in three western African countries (Senegal, Guinea-Bissau and Guinea) in 2014, allowing them to evade licence fees, and also illegally giving these higher volume vessels access to prohibited areas (Greenpeace, 2015).
- In 2013, the organisation Stop Illegal Fishing (SIF) published a report about a tuna purse seiner[18] and two reefers, Volta Glory and its sister Volta Victory – both on our list of 35 reefers. Owned by the *Ghanaian* Panofi Company Limited, these vessels were 'found fishing without a license well within the Liberian EEZ as well as and illegally transhipping fish within Liberian waters' (SIF, 2013).
- The Panama-flagged Monte Laura, which is owned and operated by Gestra Corporation S.A. of Panama, is part of the Spanish Calvo Group.[19] In a report published in 2007 Greenpeace alleged that Calvo had sold illegal tuna (2007).[20] One of the Groups' sister vessels, Monte Cruz, another tuna reefer operated from Panama, was named in the Greenpeace report for carrying out transhipments inside the Western and Central Pacific Fisheries Commission region without proper authorisation.

Leaving aside the claims and counterclaims made with respect to individual cases, the weight of evidence points in a very clear direction. Transhipment has emerged as a vehicle for underreporting catch, circumventing rules and increasing profit at the expense of sustainability. Ocean governance reform efforts need to focus far more strongly on the regulation, or outright prohibition, of transhipment in waters where monitoring capacity is weak. Given the extent of transhipment practices in western Africa, there is an equally urgent case for governments in the region and aid donors to expand the size and efficiency of the coastguard fleet, and to share satellite tracking data.

3.3 Containers and the fish trade

It has been widely assumed that reefers account for most of the fisheries' catch transported out of western Africa waters. Closer analysis of our 35 reefers calls that assumption into question.

Drawing on the FishSpektrum dataset we have estimated the volume of fish taken out of western Africa's EEZ by reefers. Specifically, we identify that 27 reefers of the 35 we identified operating in the region in 2013 left western African waters that year. These reefers made a total of 61 trips in total outside the region. We downloaded information on the individual carrying capacity of each vessel, making the assumption that they were operating at 100% capacity – an assumption that pushes our estimate in the direction of likely overestimation. We then multiply capacity by number of trips to derive an overall volume. Using this method we estimate that reefers transported a total of 142,471 Mt of fish out of western Africa in 2013.[21]

Even with a discount applied to reflect a the presence of fish caught outside western African waters, this represents only around 16% of total net exports[22] reported in UN trade data which amounted to 893,187.57 Mt that year.[23]

Even allowing for the widely acknowledged shortcomings in official fish catch and trade data, this is an enormous gap. But if the fish is not leaving by reefers – how else is it being transported?

That question can be answered through simple deduction. Land transportation is not a credible route given the poor quality of transport infrastructure and the high costs that would be incurred. Air transport is a similarly implausible route for mass exports. So the fish almost certainly leaves by sea. Fishing trawlers are unlikely to account for more than a small share given the long journeys and the costs of transporting. All of this points towards the central role of refrigerated containers in accounting for the bulk of export trade. Based on the available data we estimate that most of the remaining 84% of the fish transported from western Africa is exported in

18. This type of vessel has a fishing seine that is drawn into the shape of a bag to enclose the catch.

19 The Calvo Group's report lists Gestra Corp. Inc., from Panama, as the company in charge of part of its fleet (see: http://grupocalvo.com/memoria/CALVO_report_2013_ing.pdf). ICCAT's records of Monte Laura show Gestra as the owner and include the Calvo email address in its references (see: www.iccat.int/en/VesselsRecordDet.asp?id=16219).

20. Greenpeace lists Calvo's Montes fleet, which includes, apart from Monte Laura, Monte Alegre, Monte Celo, Monte Claro, Monte Cruz, Monte Frisa, Monte Lape, Monte Lucía, Monte Rocío and Monte Sol, trawlers, fishing vessels and reefers based in Panama, Cape Verde, El Salvador and Seychelles. The only reefers in the list are Monte Laura and Monte Cruz.

21. Reefers transported a lot of fish within the region, as the reefers doing inter-African routes show. This was not taken into account, as we looked only into the fish transported out of the region.

22. Trade data are drawn from the UN ComTrade Database, using Harmonised System codes 0302, 0303 and 0304 which represent the bulk of the traded fish.

23. Overall, 5,244,866 Mt of fish were reportedly caught in western African waters in 2013, according to FAO Fishstat. Western African coastal countries caught 4,383,747 Mt with the remainder was caught by countries from outside the region.

containers. Containers play an increasingly important role in global transport systems (Economist, 2013). They now carry around 90% of non-bulk seagoing cargo (Ebeling, 2009). Container ships now rival crude oil tankers and bulk carriers as the largest commercial vessels in the ocean. Refrigerated containers can ship perishable cargo. While they cannot freeze fish, they can be powered to keep content frozen.

Container trade has grown in sub-Saharan Africa. In western Africa, there are major container hubs at Walvis Bay (Namibia), Cape Town (South Africa), Dakar (Senegal), Abidjan (Côte d'Ivoire), Lagos (Nigeria) and Tema (Ghana), to name some of the main ones. Just beyond western Africa is the Spanish free port of Las Palmas – a major hub for fish being transported from the region into Europe.

For this report we carried out an investigation into the transportation of fish from western Africa through the Spanish free port of Las Palmas – one of Europe's largest container hubs. Port authorities provided the authors with records of vessels transporting frozen fish from western Africa in 2013. In total, 349 trips were recorded from destinations including Angola, South Africa (Cape Town), Senegal, Nigeria, Mauritania, Morocco (Agadir), Western Sahara (Laayoune); and all but one (from Angola) involved containers. Total imports of western African fish carried by the containers amounted to 118,701 Mt.[24]

Similarly, data from the container port of Walvis Bay in Namibia, a regional hub for western African exports, underscores the deep integration of the region into global markets (Figure 3.5). Strikingly, however, almost two thirds of Walvis Bay exports went to Spain.[25]

Table 2: Las Palmas imports of frozen fish from western Africa

Countries	No. of trips	Amount (Mt)
South Africa (Cape Town)	23	500
Senegal (Dakar)	99	44,624
Mauritania (Nouadhibou)	108	39,839
Mauritania (Nouakchott)	23	1,783
Nigeria*	39	1,509
Western Sahara (Laayoune)	16	2,193
Morocco (Agadir)	41	28,253
TOTAL	349	118,701

*Note: * The ports were not specified in the records.*

Table 3: Containerised frozen fish cargo from Walvis Bay for 2014

Destination country	Amount of frozen fish (Mt)
Algeria	836
Australia	2,178
Bahamas	1
Belgium	704
Chile	44
China	242
France	4,246
Georgia	44
Germany	5,852
Greece	264
Indonesia	132
Italy	8,954
Japan	1,232
Jordan	44
Lebanon	44
Libya	484
Liechtenstein	88
Malaysia	220
Mauritius	242
Netherlands	5,170
Norway	44
Poland	462
Portugal	9,196
Russian Federation	242
Singapore	1,166
South Korea	1,210
Spain	91,498
Sweden	44
Switzerland	66
UAE	88
UK	4,972
Uruguay	176
USA	880
TOTAL	141,065

24. Data supplied by Las Palmas Port authorities (2013) to authors.

25. Officials at the Walvis Bay port authority told the report authors that figures for 2014 were similar to those for 2013, but were not available. Assuming similar exports to Spain, and given that the free port of Las Palmas did not register any imports from Walvis Bay in 2013, it would be reasonable to assume that most Walvis Bay exports to Spain went to ports other than Las Palmas, landing directly in mainland Spain where fish would be consumed, re-exported to third countries or processed.

3.4 Undermining global fisheries governance

The rise of containerised trade threatens to derail efforts to curtail IUU fisheries. This is for the very simple reason that containers face less stringent inspection and reporting regimes than reefers and fishing vessels. In essence, the fastest growing means of export and the largest share of western African exports are subject to the weakest reporting systems.

The governance threat is a problem for importers as well as exporters. Consider the case of the EU, which claims to be leading the fight against IUU fishing. The EU is by far the biggest seafood market in the world, and a key market for western African fish. In 2013, it imported more than $23 billion worth of frozen fish, representing 40% of the world total, according to UN ComTrade. Western African coastal states exported 274,000 Mt of fish to the EU that year, accounting for 44% of their total exports abroad.

The European Council Regulation on IUU fishing[26] came into force in January 2010, implementing the 2001 United Nations International Plan of Action on IUU Fishing. One of its aims was to prevent the importing of seafood products obtained through IUU fishing by requiring consignments of fish to be accompanied by a catch certificate validated by the fishing vessel's flag state. In theory, this makes eligibility for access conditional on exporters demonstrating that products have been certified as legal by the relevant flag state.

When flag states are unable to certify their products, the European Commission starts a process of cooperation and assistance with them to help improve their legal frameworks. The milestones of this process are the warnings. In the event of failed compliance, the Commission first issues a 'yellow card', meaning that trade with that country is at risk unless it tackles the concerns raised. Continued failure leads to a 'red card', a trade ban. In 2013, Ghana was issued a 'yellow card' for failing to act against IUU fishing. The warning was lifted in 2015 (European Commission, 2015b). In the case of Guinea, the EU imposed trade sanctions in November 2013 that are still in force

The EU Regulation contains wider mechanisms. These range from 'blacklisting' vessels engaged in IUU fishing to imposing sanctions on operators, banning imports and port access, and restricting seafood imports from 'uncooperative' third countries, which are those that the European Commission regards as not doing enough to combat this activity. Another provision allows for legal sanctions to be applied to EU nationals engaged in IUU fishing.

The problem is that requirements to inspect landings in EU ports under the IUU Regulation (European Parliament, 2014) only apply to fishing vessels and reefers. Container vessels are exempt. In fact, the EU Regulation explicitly excludes container vessels from the scope of the definition of fishing vessels. For the purposes of the Regulation fishing vessels are defined as:

> *any vessel of any size used or intended for use for the purposes of commercial exploitation of fishery resources, including support ships, fish processing vessels, vessels engaged in transhipment and carrier vessels equipped for the transportation of fishery products, except container vessels.*[27]

This restricted legal definition is poorly aligned with the realities of global fisheries trade in general – and with EU–western Africa fisheries trade in particular. According to the EU's own handbook on the application of its anti-IUU legislation, container ships do not have to abide by the same rule that applies to third-country vessels.[28]

Container vesselsare not compelled to provide the same information as fishing vessels and reefers to the competent port authorities. They are not subject to Article 6 of the IUU Regulation which rules that these third-country vessels must notify the competent authorities of an EU Member State whose (designated) port facilities they wish to use at least three working days prior to the estimated time of arrival, or entry into that port may be denied, to ensure the effectiveness of controls.

While it is true that EU regulations also state that *all* fish importers have to certify the legality of the catch, the certification scheme itself is flawed.[29] Specifically, it relies on paper copies of documents, severely compromising

26. Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and (EC) No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999.

27. Article 5(2) Council Regulation (EC) No 1005/2008 on IUU fishing, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008R1005&from=EN

28. See European Commission Directorate-General for Maritime Affairs And Fisheries (2008: 12): 'Are container vessels included in the scope of the definition of fishing vessels in Article 2(5)? No, container vessels fall outside the scope of fishing vessels and will therefore not have to give prior notification as indicated in Article 6. However, all marine fishery products must be accompanied by a catch certificate regardless of the mode of transportation to the EC (by any type of vessel, by airfreight, by surface transportation)'.

29. As a general rule, the importer is required to submit to the authorities of the importing Member State catch certificates three working days prior to the anticipated arrival of the consignment. The IUU Regulation foresees, irrespective of the means of transport, controls that are the responsibility of and conducted by Member States.

document security and traceability. Although control capacities have been improved, in many cases it is up to third countries' authorities to determine whether the fishing products covered by the catch certificate were actually caught legally and that no illegal transhipments occurred. Given the capacity constraints facing regulatory bodies in western Africa and other low-income regions, this offers the EU at best a limited mitigation of IUU import risk.

The EU also lacks the capacity to cross-check the authenticity of the certificates, and there is no centralised system allowing European countries to cross-check information and identify fraud. Fortunately, the EU recently recognised the need to tackle this issue. Its Commissioner for Maritime Affairs and Fisheries, Karmenu Vella, announced in a communication on the EU Regulation to Combat IUU fishing that the Commission aims to introduce a digital system by the end of 2016 (Hidas, 2015).

This lack of control mechanisms is reflected in reality. The European Commission's Directorate-General for Maritime Affairs and Fisheries confirmed to the report authors that only 26 fish container consignments[30] were blocked due to IUU fishing concerns in 2012, another 75 in 2013 and 33 in 2014, originating from all over the world, not just western Africa. In total, they amounted to only 8,000 Mt, a tiny fraction of the fish entering the EU from abroad.

Worryingly, the Commission does not know how many containers carrying fish arrive at EU ports. In January 2013 it admitted to the European Parliament that it 'does not have specific information as to the volume of fish transported by refrigerated shipping containers', something which has not since changed, as the Commission confirmed to us.

Asked about the volume of IUU fish entering the EU, the Commission's Directorate-General for Maritime Affairs and Fisheries told the report authors that, although it is impossible to provide precise figures,

> *past estimates concluded that 19% of the worldwide reported value of catches was IUU. Taking into consideration that the EU is the biggest seafood market and imports two thirds of its consumption, a substantial percentage of the IUU products could be destined [for] the EU.*

Further investigation is required to determine how much of the fish exported in containers is actually IUU catch. It could be that that licensed foreign vessels take more than they declare or catch fish in prohibited areas. However, what is clear is that transhipments, inadequate port controls, along with the looser regulation of container traffic, combine to make a system ripe for exploitation.

30. A 'consignment' means products that are either sent simultaneously from one exporter to one consignee or covered by a single transport document covering their shipment from the exporter to the consignee. In consequence, consignments can either cover one container or multiple containers.

4. IUU fishing and development in western Africa: impacts and opportunities

When the number of fishermen increases or decreases, a domino effect occurs. Fish processors and traders are obviously affected but so are boat builders, fuel providers, wood sellers and other less financially rewarding, often temporary and unrecorded, jobs which provide a real safety net for the poor.

FAO report on the contribution of fisheries to economies in West and Central Africa (FAO, 2006)

IUU fishing in western Africa confronts governments in the region, the EU and the wider international community with complex legal, technical and administrative challenges. For the people of the region the challenges are more immediate. In a region marked by high levels of poverty and inequality, IUU fishing has devastating human consequences. It undermines the livelihoods of vulnerable people, creates food insecurity and robs people and countries of the revenues they need to support inclusive economic growth.

This section will provide an overview of the impact of IUU fishing on livelihoods and food security, as well as its links to crime and other illegal activities. The reverse side of this impact is the huge scope for self-reliant development that could be unlocked if the losses associated with IUU fishing could be stemmed. We estimate that some 306,000 new jobs could be created in local fisheries and processing industries if the region developed the fishing resources on a sustainable basis – helping to reduce poverty, giving hope to the region's huge young population.

4.1 Fisheries: a lifeline for livelihoods

Western African countries lie at the very bottom of the development ladder. While the picture varies across countries, collectively they have high rates of child and maternal mortality, poor education opportunities and extremely high levels of inequality. Most have life expectancy levels 20 years lower than in Europe, reflecting the incidence of preventable diseases, poor nutrition levels and the alarming gaps between rural and urban sectors.

Fisheries occupy a pivotal role in the livelihoods of people across the region. According to the FAO, 10 million people are directly employed in the fisheries and aquaculture sector in the whole of sub-Saharan Africa, 70% of whom are in western and Central African countries (FAO, 2006). Recent estimates suggest that marine artisanal fisheries alone employ more than 32,000 workers in the Gambia, 45,000 in Côte d'Ivoire and almost 100,000 in Senegal, just to name a few western African countries (de Graaf and Garibaldi, 2014).

Women feature prominently in the work force. Around a quarter of the total labour force in fisheries is comprised of female workers, mostly employed in post-harvest jobs,[31] especially in fish processing activities (ibid.). Their income brings wide-ranging benefits to their families and communities, allowing them to provide much needed food, health and education for their children.

Fishery sectors account for a significant share of western Africa's national income. An analysis of nine western African countries showed that the average contribution of the fisheries and aquaculture sector was 4.1% of GDP, almost half of which was linked to the post-harvest industry (FAO, 2014). This figure does not include the value of processing activities, which would dramatically increase the total value of this sector.

31. Post-harvest refers to all fisheries activities taking place after actual fishing, including fish processing, transport and sale of fish.

Box 6: Why IUU fishing is a problem for global development objectives

In 2015 governments around the world adopted an ambitious set of Sustainable Development Goals aimed at eradicating extreme poverty and expanding opportunity. For western Africa, the fisheries sector has a crucial role to play in delivering on these goals:*

- providing income for millions of families, as well as food security through affordable, nutritious means (Goals 1 and 4)
- underpinning the education and health of children and their mothers through the livelihoods and the equitable promotion of hundreds of thousands of women (Goals 2, 3, 4 and 5)
- ensuring marine environmental sustainability by providing an alternative to depleting industrial practices (Goal 7)
- offering western African economies a chance for enhanced trade balances, progressive partnerships and alternative economic means (Goal 8).

How much of this can be sustained and increased in the coming years depends largely on the fight against IUU fishing.

For the first time ever, the global road map for development in the next 15 years includes a mandate to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development', with an explicit reference to the depletion of marine resources and the overexploitation of coasts around the world – something the region is far from being able to achieve at the moment.

** Extracted from WorldFish (2005).*

4.2 Impacts of IUU fishing on western African development

IUU fishing is having a huge impact on western African livelihoods and economies by directly contributing to the overexploitation of the region's fisheries resources, as seen earlier in the report.

First and foremost, IUU fishing threatens small-scale fisheries. This is one of the most important employment sectors in the region, accounting for up to a quarter of jobs in some countries. Artisanal fisheries, in fact, contribute more to African economies than industrial fisheries through a vast intra-regional trading network in which women play a central role – one that is now at risk (FAO, 2014a).

To make matters worse, those fishers who follow all regulatory requirements can also be affected by IUU fishers who poach local resources. They end up earning less money as a result of competition from lower-priced IUU products caught by fishermen who do not pay tax on profits or to gain access to fisheries resources. This, in turn, means that IUU fishers have lower costs and therefore can sell their products more cheaply than legal operators.

IUU fishing also threatens the food security of millions of people in the region. In Ghana, Nigeria and Senegal fish provides an estimated 45% of animal protein, and the kilos consumed per capita in these and other countries in the region is higher than the African average (FAO, 2016).

Artisanal and subsistence fishers are on the front line of the crisis associated with IUU fishing, along with millions of people living in small coastal communities. In Sierra Leone, the fisheries sector played a critical role in the post-conflict recovery of the country. In 2005, fisheries contributed as much as 9.4% to GDP and employed more than 240,000 people, many of them small-scale fishers and women. Almost two thirds of the animal protein consumed in the country comes from fish, which is available and affordable. Yet some estimates put the IUU catch in excess of 25% of total catches – an enormous diversion of opportunity and income from local fishers and processors (EJF, 2011).

As previously stated, weak governance, limited accountability and failures of transparency combined to create a fertile environment for IUU fishing. A report by the British consulting firm Marine Resources Assessment Group concluded that the lower rates of IUU fishing actually seemed to correlate with proxies of good governance, such as access to information, media censorship and levels of perceived corruption. This suggests that fighting this practice and enhancing development go hand in hand (MRAG, 2005; GOC, 2013).

Box 7: IUU Fishing and organised crime

IUU fishing is not just about the loss of biodiversity and a threat to livelihoods. There is a growing body of evidence pointing to IUU fishing as part of the wider web of organised cross-border crime, money laundering, tax avoidance and even financing for terrorist activity in western Africa (UNODC, 2011).

For instance, Interpol points out that many foreign vessels associated with human trafficking in western Africa also engage in IUU fishing (Interpol, 2014). It adds that the lack of capacity of regional governments to monitor illegal activity at sea, combined with a lack of awareness, make identifying and prosecuting human trafficking in the fishing industry an extremely difficult task. Even when intercepted, many human trafficking cases are treated as associated forms of crime, such as a breach of immigration laws.

The campaign group Environmental Justice Foundation (EJF) documented several cases of human trafficking and labour abuses aboard IUU fishing vessels in the region. The human rights abuses suffered include physical and emotional abuse, incarceration, forced labour without pay and inadequate living conditions (EJF, 2010).

Crucially, transhipments appear to make life for criminals easier. According to the Black Fish Project, 'transhipments between fishing vessels are a common method to traffic drugs, smuggle migrants and weapons' largely due to the lack of controls over this activity (Bondaroff and Teale, 2015).

Tax evasion is also rife. According to an OECD global report on this issue, tax crime in the fisheries sector globally includes 'fraud in respect of taxes on profit or earnings, customs duties, VAT and social security'. The report adds that the prevalence of offshore companies with little or no oversight, and flags of convenience which are commonly used by IUU operators, are a hallmark of a sector that benefits from global legal loopholes, contributing to the theft of regional resources.

All of this has huge development implications, hollowing already weak governance institutions and diverting finance from priority investments in jobs, health and education. The security challenges associated with IUU extend far beyond western African coastal waters.

Box 8: Conflicts between IUU fishers and local fishers

Direct conflict between IUU fishers and local fishermen is commonplace in western Africa. Kelleher and Rottingen (2002) reported that, in some western African countries, conflict broke out between industrial and artisanal fishermen especially where fishing grounds were narrow and close to the shore.

Ousman Drammeh (2000), has also described this tension:

> *The ever-increasing competition for fish in small scale fishing grounds has brought about conflicts amongst small-scale fishers and also conflicts between small-scale and large-scale (industrial) fishers. This competition has resulted in diminishing economic returns from fishing operations and a threat to the livelihood security of small-scale fishers and their families. Out of sheer desperation, many small-scale fishers have resorted to the use of explosives, poisons and highly destructive fishing gears, methods and techniques.*

According to Drammeh, a former Director of Fisheries in the Gambia, in the coastal waters of western Africa, 'industrial fishing vessels are habitually encroaching in small scale fishing grounds and they are on record for employing fishing gears, methods and techniques which are prohibited for use' (ibid.).

Conflicts between IUU industrial and artisanal or semi-artisanal fishers were particularly prevalent in shrimp fisheries around western Africa, including Guinea, Sierra Leone and Liberia, as well as in the inshore fisheries of Mauritania and Senegal.

According to the Marine Resources Assessment Group,

> *Conflicts may be direct (vessels running others down) or indirect (removing all available fish or shrimp), the former often leading to accidents, death and injury amongst artisanal and other local inshore fishers. These, in turn, will have economic and social consequences for fishers and their families, including lower catches through injury, loss of earnings (MRAG, 2005).*

The incidence of armed resistance to surveillance and enforcement operations appears to be on the increase too. The Gulf of Guinea – including Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, Gabon and São Tomé and Principe –is an area of intense fish transhipments. It was identified in a European Council report as being a 'hotspot for piracy and armed robbery at sea', to the extent that the European Council's Critical Maritime Routes in the Gulf of Guinea Programme developed an action plan to tackle 'priority threats' including armed robberies, hijackings and cargo theft (European Council, 2015).

4.3 Fisheries in western Africa: a lost opportunity

Foreign investment in fisheries can provide poor countries with much needed income. In western Africa, taxes, tariffs, export revenues and quota fees from fisheries could make a key difference to the region's development.

Currently, much of the benefit to Africa from fishery exports is generated through the sale of fishing rights to foreign operators. According to the FAO, the revenue from this source runs to around $400 million per year for the whole continent (FAO, 2014a:). The same estimate suggests that African states could, in theory, generate eight times more than this – some $3.3 billion – if national fleets harvested and exported the fish.

The nature of the agreements signed with certain foreign countries and companies gives rise to legal loopholes, such as the practice of linking payments to vessels rather than to the value of the catch (FAO, 2014a). Local processing could add greatly to the export value of fish, with significant employment gains.

Despite their pivotal role in development prospects for many countries, fisheries attract modest levels of aid. Total development assistance flows to the fishing sector (including policy development and management) in western Africa amounted to $71 million in 2013, four-fifths of which was concentrated in Angola ($40.4 million) and Mauritania ($15.2 million) (OECD.Stat, 2016).[32]

The contrast with expenditure on subsidies is striking. It is estimated that governments in the major fishery trading nations spend $27 billion in direct subsidies and tax exemptions every year, equivalent to 41% of the value of the global catch (Africa Progress Panel, 2014). These subsidies encourage overfishing. They also make it difficult for investors in western Africa to develop fleets equipped to compete against their rich foreign rivals, or to develop indigenous fleets even if they wanted to.

The African Union sought to address this by adopting an integrated maritime strategy two years ago. This aimed to ensure that only African-owned vessels would be able to trade within Africa's coastal waters. However, many experts doubt that such an ambitious scheme can be implemented in the near future since it would require the kind of resources which the region lacks.[33] Additionally, the African Union's limited supra-national powers pose a strong political barrier to the strategy becoming a reality.

As a result of all this, western African countries are failing to take full advantage of the opportunities underlying the fisheries sector, despite having the potential to build a sustainable indigenous industry based on a natural resource already present in the area.

Fishing has indeed been a powerful basis of some successful modern industrialisation experiences elsewhere, such as Japan. In his book describing the Japanese experience after the war, Roger D. Smith (2014) offers a picture that has a surprising resemblance to the modern needs of the western African region:

> *It was hoped that a strong fishing industry would allow the Japanese to provide for their own food requirements while relieving the United States of burdensome aid expenses and create the necessary impetus to rebuild essential economic sectors such as ironworks and shipbuilding. Furthermore, exports of surplus fish products could provide much needed hard currency and help build foreign exchange reserves.*

While Japan did not have to face the intensive depletion of natural resources that threatens western African countries, its experience is relevant for a region which is on the verge of a 'demographic dividend'. That is, one that could take advantage of the productive capacity of the additional labour supply provided by its booming young population (ILO, 2005: 53).

According to the UN Population Fund (UNFPA), one in three sub-Saharan Africans – including many in western Africa – are in the 10- to 24-year-old age range, the highest in the developing world (UNFPA, 2014). Yet, the region suffers from disturbingly high levels of underemployment and precariousness, something that the fisheries sector has the potential to reduce (ILO, 2005: 53).

4.4 Securing a sustainable fisheries premium

Uncertainties over the full extent of IUU fishing make it difficult to establish the social, economic and human costs incurred in western Africa However, it is possible, on the basis of indicative extrapolation, to estimate the potential benefits were the region to secure a greater share of the benefits of the export trade.[34]

For the purposes of this report, we develop a simple methodology to illustrate the scale of the opportunities facing countries across western Africa – and, by extension, the extent of current losses. Using FAO criteria and applying it to current trade flows, we estimate that 306,000 new jobs – divided almost equally between fishers and processors – would be created in western Africa if the region took control

32. In Côte d'Ivoire and Senegal, where fisheries employ tens of thousands of poor people, aid has reached a maximum $57 million and $19 million in the past decade, respectively, down 0.2% and 0.3% in the latest available year.

33. Institute for Security Studies: 'Taking Back the Seas: Prospects for Africa's blue economy'.

34. MRAG (2010) offers a case study on the economic impacts of illegal fishing activities in Cape Verde, the Gambia and Guinea, Mauritania, Senegal, Guinea-Bissau and Sierra Leone. According to their report, 'The combined value added lost to countries (removed through illegal fishing and not landed in-country) was $8 million for the industrial case studies and $74 million for the artisanal case studies … Their industrial case studies covered a relatively small, but highly valuable, set of fisheries. If other industrial fisheries are included, the total value added lost for industrial and artisanal fisheries combined could be close to $300 million.'

of the fishing resources now in the hands of foreign investors (see Table 2 in Annex).[35]

Additionally, our study reveals that:

- There would be a nearly 10% increase in the total local workforce of the western African fisheries sector.
- Around 90,000 more women would join the workforce, triggering a domino effect of social and economic benefits for their families and societies.

If just a fraction of the fish caught by foreign fleets were to be consumed in local households, the impact on local nutrition levels would be significant.

Box 9: Local case study – Sierra Leone's 'blackfaces'

Usmane Kpanabum is the head of the Bohoi people, a tiny fishing community located on the island of Sherbro on the southern coast of Sierra Leone. A few days prior to this photo being taken, he had clashed with a 'blackface', the term locals use to refer to a dozen massive South Korean trawlers which regularly approach the coast, destroying their artisanal fishing gear. They catch fish in the area, exhausting local fishing stocks to the point of forcing the local fishermen to go further out to sea to try to find fish, hugely increasing their costs.

He explains that these foreign vessels' activities are illegal since they regularly penetrate the five miles reserved for artisanal fishermen, and also because they catch juvenile fish and destroy the seabed, transhipping their catch onto reefers without previously declaring them to the local authorities.

Sierra Leone's Ministry of Fisheries and Marine Resources mandates that these vessels should carry observers on board. However, the observers are paid by the shipowners, meaning that they do not get paid if they produce a negative report. One of the observers, who refused to be named, confirmed this problem, adding that 'these vessels are particularly interested in capturing sea bass which can be found near the coast, they can only capture this fish illegally'.

Locals do not complain only about South Korean vessels. European, Russian and Japanese vessels all follow similar patterns, operating unheeded off Sierra Leone's coast thanks to the government's inability to police its waters and enforce anti-IUU legislation.

'I miss the time of civil war,' Kpanabum says. 'At least then the huge foreign fishing vessels fled from here and we had lots of fish.'

35. Briefly summarised, the methodology employed by the FAO (de Graaf and Garibaldi, 2014) involves estimating the number of jobs created per tonne of caught fish in different sectors and regions in Africa (see Table 1 in Annex). The resulting set of coefficients translates each tonne of fish caught in different sectors and regions in Africa into the number of workers employed in fishing and post-harvest activities. These coefficients, therefore, allow us to estimate the number of artisanal and industrial fisher and processing jobs that could be created were western African nations to take control of the fishing resources now being exploited by foreign nations.

5. Conclusions and recommendations

There are compelling reasons for governments to curtail IUU fishing. On any measure of impact, overfishing has reached catastrophic levels, and IUU activities are at the heart of the problem. Maintaining business as usual confronts the world with the prospect of losing a major source of protein, with loss of species and with a deteriorating ocean environment. Governments have endorsed many of the principles needed to underpin sustainable resource management. Unfortunately, most have failed to act on these principles. Far too often, the interests and the lobbying power of commercial fishery operations have been allowed to trump commitments to sustainable resource management, reinforcing a global tragedy of the commons.

Nowhere is that tragedy more visible than in western Africa. IUU fishing is destroying livelihoods, compromising food security and undermining prospects for transformative growth on a regional scale. Reversing the current cycle of destruction before fishery stocks – and the artisanal fishing sector – are pushed beyond the point of no return is a priority that demands the highest levels of national political leadership, backed by strengthened international cooperation.

The problems associated with tackling IUU fishing are well known. Navies and coastguards have been unable to protect long coastlines and large expanses of ocean against IUU encroachment. Strengthened Port States Measures, more stringent regulation of flags of convenience, and more effective enforcement of sustainability standards by importers could make a difference. However, failure to address the challenges posed by transhipping and the use of containers for export is eroding the credibility and effectiveness of multilateral rules.

The good news is that technologies now available can provide the data needed to enforce more effective governance. As we have shown in this report, satellite data and transponders make it possible to track fishing vessels and reefers, alerting authorities to irregular and suspicious activities – and to the presence of vessels in prohibited areas. However, data alone will not solve the IUU crisis. Even the best and most timely data will only deliver results if governments are willing and able enforce rules. In the case of western Africa, this will take a significant increase in naval and coastguard monitoring capacity.

Based on the evidence set out in this report, we propose eight measures that could make a difference. At the global level:

- **Establish a global database and tracking system.** A global centralised IUU vessel database should be created under FAO–IMO auspices, with full accessibility for national authorities. All fishing vessels should also be required to carry a unique ID registration number, making it harder to evade detection. The vessel tracking information that we provide in this report illustrates the possibilities. The development of a global tracking system could be financed through a levy on commercial fishery fleets. Automatic information-sharing systems should be put in place to identify vessels engaged in suspicious activity.
- **Prohibit transhipments at sea.** Western African countries should forbid transhipments at sea, following the practice of Senegal and Côte d'Ivoire. Special derogations could be provided for ports that cannot accommodate large reefers, with transhipments allowed under closely monitored conditions near port facilities. Vessels and operators that violate this ban should be added to a blacklist to prevent repeated offences and to deter non-compliance.
- **Close the IUU container loophole.** Container ships carrying fish should be subject to the same scrutiny and reporting requirements as reefers and fishing vessels. This means container ships should be required to inform port authorities of their intention to unload their catch several days ahead of their arrival (to ensure that monitoring arrangements can be put in place) and to fully disclose and document details of their catch. Port authorities should in turn use data tracking systems to verify catch details.
- Ban blacklisted IUU vessels. Vessels blacklisted for IUU practices, together with their owners and operators, should be prohibited from operating and registering new vessels. Legal authorities should act swiftly to bar blacklisted vessels and operators from the EEZs in which IUU activities have occurred, and impose punitive fines that generate powerful deterrent effects. In the event that local action is not taken, legal authorities in the jurisdiction of registration and/or substantive

ownership should take action. Interpol should be given broad powers to prosecute and investigate IUU activities and publish an IUU blacklist.
- **Establish IUU fishing as a transnational crime.** This approach, championed by Norway, would bring IUU activities under the remit of Interpol. This is particularly necessary since, as we showed earlier, IUU fishing is directly linked to other types of crime, such as drug trafficking, human trafficking and tax evasion.

At a regional level:

- **Improve transparency.** African governments and their trading partners should disclose in full the terms of fisheries agreements, including information on quotas and prices, as well as any agreed licence and charter agreements. Additionally, the FAO or another international independent body should regularly compare their declared catches with this information to prevent any instances of underreporting.
- **Enhance port measures.** Countries in western Africa should immediately ratify the legally binding Port State Measures to Prevent, Deter and Eliminate IUU Fishing Agreement (PSMA), to strengthen the controls in ports where the fisheries catches are landed and reported. The treaty was approved by the FAO in 2009 and came into force on 5 June 2016 after being ratified by 30 countries at the time of writing this report, but to date Gabon, Guinea-Bissau and South Africa are the only countries in the region to have ratified this agreement. Globally, although the EU and the United States have ratified this agreement, major fishing nations like China and Russia have failed to do so.
- **Build regional capacity action.** The international community should scale up aid and technical support for western African countries. The World Bank, the African Development Bank and the FAO should cooperate in supporting the development of capacity to draw on global satellite tracking systems. Aid donors in the EU and emerging markets – including China – with large regional fleets should provide support for the purchase and operation of an expanded coastguard fleet to protect EEZs. Joint patrolling schemes could also be established, with an initial focus on the two main 'transhipment hubs' in western Africa: around Guinea and Guinea-Bissau, including Cape Verde, Senegal and the Gambia, and another one in the Gulf of Guinea, including Ghana, Togo, Benin and Nigeria, as identified by UNODC. Additionally, western African navies need to work more closely together to monitor and protect their coastal waters, especially in inshore territorial waters crucial to coastal fisheries communities.
- Strengthen regulation. Working in concert with Interpol, the African Union should develop an IUU blacklist for the whole continent. All governments in the region should carefully review licensing arrangements involving vessels registered under flags of convenience, which are in some cases the equivalent of havens for tax avoidance. Consideration should be given to the imposition of a flag of convenience tax in fisheries agreements, with the revenues used to strengthen IUU monitoring capabilities.

Annex: Brief methodology

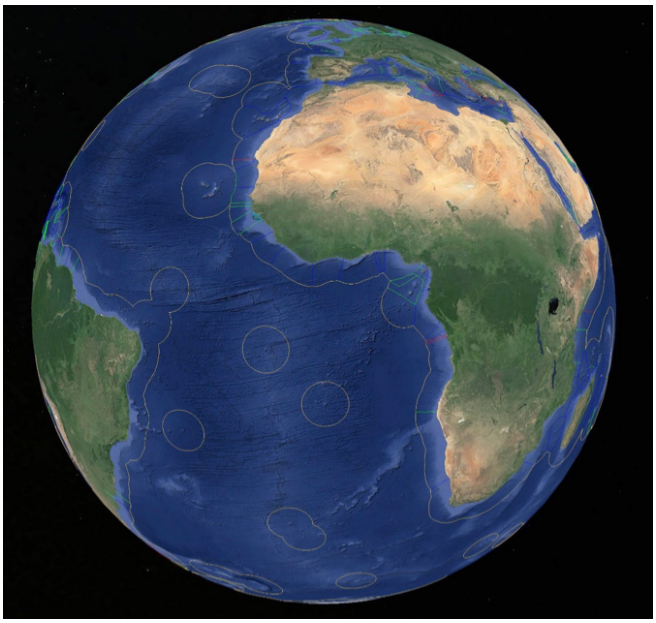
Trade data and geographical scope of the report

All data regarding trade flows to and from western Africa used in this report were extracted from the UN ComTrade Database, using Harmonised System codes 0302, 0303 and 0304 which represent the bulk of the traded fish.[36]

The study encompasses the region of western Africa, stretching from the Strait of Gibraltar to Cape Town, and including the following countries: Morocco, Western Sahara, Mauritania, Senegal, the Gambia, Cape Verde, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, São Tomé and Principe, Gabon, the Congo, the Democratic Republic of Congo, Angola, Namibia and South Africa.

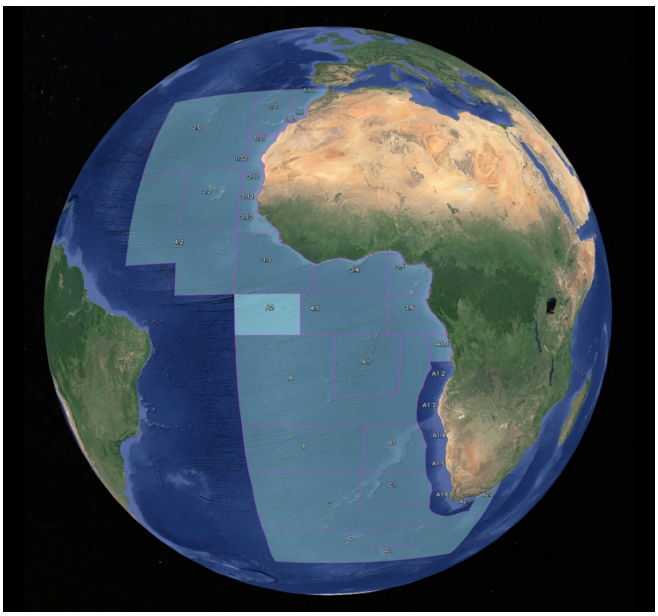
We look at fishing activity in the whole of western Africa, which includes countries' EEZs as well as the open seas, as shown in Figure 4 below. Western African waters fall under the FAO's Eastern Central and South Eastern Atlantic regions – fishing areas 34 and 47 respectively as shown in Figure 5 below.

Figure 4: Western African nations' Exclusive Economic Zones (EEZs)



Source: FishSpektrum, using Google Earth mapping

Figure 5: Eastern Central and South Eastern Atlantic regions



Source: FishSpektrum, using Google Earth mapping[37]

36. Live fish (HS code 0301) was not included in this study as it is negligible in trade to and from western Africa. The same goes for HS codes 0305 (dried fish), 0306 (crustaceans) and 0307 (molluscs).

37. **Atlantic, Eastern Central (Major Fishing Area 34)**: The waters bounded by a line running from a point of the high-water mark of North Africa at 5°36' west longitude; thence running in a southerly direction following the high-water mark along the coast of Africa to a point at Punta do Padrão at 6°04'36" south latitude and 12°19'48" east longitude; thence along a rhumb line in a northwesterly direction to a point at 6°00' south latitude and 12°00' east longitude; thence due west along 6°00' south latitude to 20°00' west longitude; thence due north to the Equator; thence due west to 30°00' west longitude; thence due north to 5°00' north latitude; thence due west to 40°00' west longitude, thence due north to 36°00' north latitude; thence due east to Point Marroqui at 5°36' west longitude and 36°00' north latitude; thence due south to the original point on the African coast.

Atlantic, South Eastern (Major Fishing Area 47): The Southeast Atlantic comprises all the marine waters, bounded by a line beginning at a point on the west coast of the African continent at 6°04'36" S latitude and 12°19'48" E longitude; thence running in a north westerly direction along a rhumb line to a point at the intersection of the meridian 12°00'E with the parallel 6°00'S; thence due west along this parallel to the meridian 20°00'W; thence due south along this meridian to the parallel 50°00'S, thence due east along this parallel to the meridian 30°00'E; thence due north along this meridian to the coast of the African continent; thence in a westerly and northerly direction along the coast of Africa to the original point of departure.

Information used for job analysis and development impacts

Table 4: Employees per tonne of fish caught in marine fisheries

Employees per tonne of fish caught in marine fisheries					
Marine fisheries group	Sub-sector	No. fishers per tonne		No. processors per tonne	
		Male	Female	Male	Female
Canary Current	Artisanal	0.22	0	0.02	0.09
	Industrial	0.05	0	0.06	0.12
Guinea Current	Artisanal	0.38	0	0.17	0.6
	Industrial	0.08	0	0.56	0.22
Benguela Current	Artisanal	0.66	0	0.26	0.2
	Industrial	0.29	0	0.02	0.04

de Graaf and Garibaldi (2014) 'The Value of African Fisheries'. FAO Fisheries and Aquaculture Circular. No. 1093

Western African countries included in each current		
Atlantic Eastern Central	Canary Current	Morocco, Mauritania, Senegal, the Gambia, Capo Verde, Guinea-Bissau
	Guinea Current	Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, Gabon, São Tomé and Principe, the Congo, Democratic Republic of Congo
Atlantic Southeast	Benguela Current	Angola, Namibia, South Africa

Source: (FAO, 2014a).

Table 5: Job creation estimates for western Africa

Estimates of job creation[38]							
Reported Catches non-Western African countries				Fisher jobs		Processor jobs	
Country	Fishing Area	Tonnes (FAO Fishstat data)	Subsector	Male	Female	Male	Female
France	Eastern Central	40.656,00	Artisanal	2439	0	386	1403
			Industrial	2114	0	5041	2765
	Southeast	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Greece	Eastern Central	905,00	Artisanal	54	0	9	31
			Industrial	47	0	112	62
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Latvia	Eastern Central	52.820,00	Artisanal	3169	0	502	1822
			Industrial	2747	0	6550	3592
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0

38. Should the region take control of the fishing resources now in the hands of foreign investors, it cannot be assumed that the fish would instead mostly be caught by artisanal fishers. This is unfeasible given that much of the catch is taken offshore by trawlers and could not be caught inshore by artisanal fishers. As such, we have adopted a general split of 20% artisanal/80% industrial, which may be achievable given that much of the current foreign fleet catches include some fishing close to shore.

Estimates of job creation (cont'd)

Reported Catches non-Western African countries				Fisher jobs		Processor jobs	
Country	Fishing Area	Tonnes (FAO Fishstat data)	Subsector	Male	Female	Male	Female
Lithuania	Eastern Central	61.880,00	Artisanal	3713	0	588	2135
			Industrial	3218	0	7673	4208
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Netherlands	Eastern Central	13.806,00	Artisanal	828	0	131	476
			Industrial	718	0	1712	939
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Netherlands Antilles	Eastern Central	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Poland	Eastern Central	54.138,00	Artisanal	3248	0	514	1868
			Industrial	2815	0	6713	3681
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Portugal	Eastern Central	6.027,00	Artisanal	362	0	57	208
			Industrial	313	0	747	410
	Southeast	593,00	Artisanal	36	0	6	20
			Industrial	31	0	74	40
Mixed Flag (France and Spain)	Eastern Central	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Spain	Eastern Central	144.595,00	Artisanal	8676	0	1374	4989
			Industrial	7519	0	17930	9832
	Southeast	28.639,00	Artisanal	1718	0	272	988
			Industrial	1489	0	3551	1947
UK	Eastern Central	32,00	Artisanal	2	0	0	1
			Industrial	2	0	4	2
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Belize	Eastern Central	17.000,00	Artisanal	1020	0	162	587
			Industrial	884	0	2108	1156
	Southeast	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0

Estimates of job creation (cont'd)

Reported Catches non-Western African countries				Fisher jobs		Processor jobs	
Country	Fishing Area	Tonnes (FAO Fishstat data)	Subsector	Male	Female	Male	Female
Republic of Korea	Eastern Central	36.258,00	Artisanal	2175	0	344	1251
			Industrial	1885	0	4496	2466
	Southeast	6.775,00	Artisanal	407	0	64	234
			Industrial	352	0	840	461
Russian Federation	Eastern Central	213.821,00	Artisanal	12829	0	2031	7377
			Industrial	11119	0	26514	14540
	Southeast	22.167,00	Artisanal	1330	0	211	765
			Industrial	1153	0	2749	1507
Saint Kitts and Nevis	Eastern Central	15.900,00	Artisanal	954	0	151	549
			Industrial	827	0	1972	1081
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Saint Vincent and the Grenadines	Eastern Central	37.784,00	Artisanal	2267	0	359	1304
			Industrial	1965	0	4685	2569
	Southeast	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Taiwan	Eastern Central	5.184,00	Artisanal	311	0	49	179
			Industrial	270	0	643	353
	Southeast	15.486,00	Artisanal	929	0	147	534
			Industrial	805	0	1920	1053
Ukraine	Eastern Central	22.562,00	Artisanal	1354	0	214	778
			Industrial	1173	0	2798	1534
	Southeast	0	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Vanuatu	Eastern Central	122,00	Artisanal	7	0	1	4
			Industrial	6	0	15	8
	Southeast	0,00	Artisanal	0	0	0	0
			Industrial	0	0	0	0
Total		878.035,00		98404	0	117294	90057
				98404		**207352**	
				305756			

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Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ
Tel +44 (0) 20 7922 0300
Fax +44 (0) 20 7922 0399

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