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## **Illicit trade in the marine resources of West Africa**

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### **Abstract**

The goals of this paper are threefold. First, it quantitatively and qualitatively determines the economic and social cost of illicit trade in marine resources of West Africa. Second, the paper discusses the channels and scale of illicit trade in fish and fish products. Third, the economic loss and impacts from illicit trade are determined and policy options for curbing this trade suggested. I found substantial effects of illicit trade in the marine resources of West Africa, in terms of economic impact (defined as the added value through the fish value chain generated from the revenues earned from fishing), income, jobs and tax revenue impacts. For instance, the region as a whole is estimated to be losing economic and income impacts of nearly US\$1,950 million and US\$593 million, per year, respectively.

**Keywords:** *Fisheries, West Africa, economic losses, illegal fishing, illicit trade.*

**JEL codes:** *Q.*

## 1. Introduction

It is common knowledge that Africa's coastal countries are some of the world's worst hit by illegal fishing (Sumaila *et al.*, 2006; Agnew *et al.*, 2009; Daniels *et al.*, 2016), implying that this is a big problem that the continent has to tackle if it is to protect the many benefits that flow from these resources. In the absence of effective national, regional and continental level institutions and international cooperation, Africa's marine resources are currently not benefitting the continent's population nearly as much as they could (e.g., Le Manach *et al.*, 2012).

The objective of this paper is to quantitatively and qualitatively determine the economic and social cost of illicit trade in marine resources of West Africa. More specifically, the paper discusses the channels and scale of illicit trade in fish and fish products, and the economic loss and impacts from illicit trade, and suggests policy options for curbing this trade.

The Global Agenda Council of the World Economic Forum defines illicit trade as trade that “involves money, goods or value gained from illegal and generally unethical activity. It encompasses a wide variety of illegal trading activities, including human trafficking, environmental crime, illegal trade in natural resources, various types of intellectual property infringements, trade in certain substances that cause health or safety risks, smuggling of excisable goods and trade in illegal drugs, as well as a variety of illicit financial flows.” For example, illicit trade in the arts involves people stealing, selling, forging and trading art work illegally.

For the purposes of this paper, I define illicit trade in West Africa's marine resources as trade that involves money, goods or value gained from illegal and unreported fishing of fish stocks of West Africa by foreign and domestic industrial fishing fleets, and by artisanal fishing vessels that catch fish for commercial purposes. I exclude unreported catches by the subsistence sector because they are not necessarily fishing illegally; in general, their catches do not fuel illicit trade because they are solely used for household consumption. In the case of the artisanal sector, part of their catch, i.e., the catches of highly valuable species such as tuna, are traded and sold in the market, and therefore are assumed to partly enter the illicit trade in marine resources. I would like to stress that not all unreported catches are assumed to be illegal; in many cases, catches are not reported because there are no officials to report to in many coastal communities in the region.

Daniels *et al.* (2016) identifies two potential channels through which illicit trade in fish takes place in West Africa. The first practice involves the use of reefers and transshipments, which involves offloading catches from fishing boats onto large freezer and processing ships at sea. Reefer activities account for about 16% of fish exported from West African waters and about 35 fishing reefers were seen in West

African waters in 2013 (Daniels *et al.*, 2016). Most of these were operating under flags of convenience (Miller and Sumaila, 2014).

The second practice relates to how fish is transported for exports. It is estimated that about 84% of fish exported out of West Africa are transported in large refrigerated containers (Daniels *et al.*, 2016). According to these authors, the concern with this mode of transportation is that containers are generally subjected to less stringent reporting requirements.

Examples of fish species that are targeted by both foreign and domestic industrial fishing vessels in West African waters are yellow croaker, shrimp, snapper, seabream, tuna and mackerel (Pauly & Zellers, 2016; Liddick, 2014; BBC story July 8, 2016<sup>1</sup>). These species and many others not in the table are caught in West African waters, often times illegally; processed aboard large foreign industrial vessels; and directly shipped overseas, thereby depriving local economies of food, revenue, income, jobs, and economic impacts (defined as the added value through the fish value chain generated from the revenues earned from fishing) (Kleinschmidt, 2006; FAO, 2007).

## **2. Quantifying the economic losses and impacts of illicit trade**

### *2.1. Economic losses*

I use three indicators to capture the economic losses to West African countries from illicit trade. The first is the quantity of unreported catches by industrial fishing fleets, both domestic and industrial plus a portion of the artisanal unreported catch. Due to the lack of data on how much of the artisanal catch actually enters illicit trade, I assumed a range of 30 - 50% of their catch enters the illicit trade market. The next indicator is the value of the unreported catches (i.e., gross revenues) and the third is the corresponding loss in net revenues or profits.

The quantity of reported and unreported catches is taken from Pauly and Zeller (2016), which summarizes the results of over a decade-long effort by over 400 collaborators from virtually all parts of the world (through the UBC *Sea Around Us*<sup>2</sup>) to estimate reported and unreported catches of marine fish globally. I combine these unreported catches for West African countries with another decade-long effort by the UBC *Fisheries Economics Research Unit*<sup>3</sup> and the *Sea Around Us* that compiled and estimated ex-vessel fish prices worldwide (Sumaila *et al.*, 2007, Swartz *et al.*, 2013; Tai *et al.*, 2017) to calculate the loss of gross revenues to the region.

<sup>1</sup> How China's trawlers are emptying Guinea's oceans <http://www.bbc.com/news/world-africa-36734578> (Accessed on June 17, 2016).

<sup>2</sup> The *Sea Around Us* is a research group at the University of British Columbia that studies the impacts of fishing on marine ecosystems (see [www.seaaroundus.org](http://www.seaaroundus.org)).

<sup>3</sup> The *Fisheries Economics Research Unit* is a research group at the University of British Columbia that studies ocean and fisheries economics, management and policy (see [www.feru.oceans.ubc.ca/](http://www.feru.oceans.ubc.ca/)).

Next, I use the global cost of fishing database, compiled by the *Fisheries Economics Research Unit* and the *Sea Around Us*, and reported in Lam *et al.* (2011) to compute the cost incurred to quantify the unreported catches of the industrial fishing fleet, which fuels illicit trade in the region's marine resources. Finally, the loss in profits is calculated by subtracting fishing cost from gross revenues to estimate the profits that coastal countries in West Africa lose because of illicit trade in marine resources.

## 2.2. Impact of the economic loss from illicit trade

To provide a broad picture of the economic effects of illicit trade in Africa's marine resources, I computed the potential (i) economic; (ii) income; and (iii) tax revenue losses as a results of this illicit activity. *Economic impacts*, as defined above, capture the added value through the fish value chain generated from the revenues earned from fishing. This includes the impact on economic activities such as boat building/maintenance, equipment supply and the restaurant sector (Pontecorvo *et al.*, 1980; Roy *et al.*, 2009). To calculate this impact, I multiplied the estimated gross revenue losses by the economic multiplier for each coastal country in West Africa reported in Dyck and Sumaila (2010).

Income impact is a measure of the amount of household income that is generated through the fish value chain when a given quantity of fish is caught and sold in the market. I computed the income impacts by multiplying the gross revenue losses by the income multipliers of the fisheries sector for West African countries, as reported in Dyck and Sumaila (2010).

The estimated *tax revenue impacts* of illicit trade in Africa's fishery resources is defined as the tax revenues that West African governments could have earned if illicit trade in the marine resources of the continent did not enter illicit trade. This is calculated by multiplying a tax rate by the economic impact calculated herein.

The equations below summarize how we computed the above indicators of the economic effects of illicit trade in the marine resources of Africa:

$$\text{Economic\_impact} = R * m \quad (1)$$

$$\text{Income\_impact} = R * w \quad (2)$$

$$\text{Tax\_impact} = R * t \quad (3)$$

Where,  $R, m, w$  and  $t$  represent the gross revenue, economic multiplier, income multiplier, and the tax rate, respectively.  $R$  is given in Table 1,  $m$  and  $w$  are taken from Dyck and Sumaila (2010), and a modest average tax rate on economic impacts of 3% is assumed. I also assumed that between 30% and 50% of artisanal catch is being traded illicitly.

### 3. The results

#### 3.1. Economic losses

I find that between 740 to 860 thousand tonnes of fish from West African waters are traded illegally each year, depending on whether we assume that 30% or 50% of artisanal catches are traded illegally. That gives us a range of gross revenue losses of US\$ 1.1 to US\$ 1.3 billion and net revenue losses of US\$ 400 to US\$ 460 million, per year. In Table 1, I present the mid-numbers for these ranges for each of the twelve West African countries included in our study.

I found that West Africa loses on average about 790 thousand tonnes of fish a year to illegal and unreported fishing by foreign and domestic industrial fishing vessels (Table 1). To put this into perspective, this is equivalent to losing nearly 800 thousand mature cows in weight annually – a huge amount of animal protein. Our study suggests that Nigeria and Senegal suffer the biggest losses in catch and that these illegal and unreported catches feed the illicit trade in West Africa's marine resources, resulting in estimated losses in gross and net revenues of about US\$1,160 and US\$450 million a year, respectively (Table 1).

**Table 1: Annual catch, gross and net revenues losses for each West African country**

Country	Catch loss (Thousand tonnes)	Gross revenue loss (million US\$)	Net revenue loss (million US\$)
Benin	48.7	71.4	5.7
Cape Verde	5.6	8.2	2.7
Côte d'Ivoire	22.3	32.7	9.1
Gambia	20.9	30.6	6.9
Ghana	96.7	141.8	46.1
Guinea	26.9	39.5	12.4
Guinea-Bissau	64.3	94.3	15.7
Liberia	13.9	20.4	5.0
Nigeria	187.7	275.2	182.8
Senegal	184.0	269.7	84.7
Sierra Leone	107.7	157.9	64.5
Togo	9.1	13.4	1.4
<b>West Africa</b>	<b>787.8</b>	<b>1,155.1</b>	<b>437.0</b>

*Source: Computed by Author*

#### 3.2. Economic impacts

Estimated annual losses are US\$ 1.7 to 2.0 billion of economic impact; US\$ 520

to US\$ 590 million seafood workers' income, and US\$ 50 to US\$ 60 million in estimated tax revenues. In Table 2, we present the mid-numbers for these ranges for each of the twelve West African countries included in our study.

The effects of illicit trade in the marine resources of West Africa, in terms of economic, income, jobs and tax revenue impacts, are substantial. The region as a whole is estimated to be losing economic and income impacts of nearly ~US\$2,000 and US\$590 million, respectively, per year, with Senegal suffering the biggest economic and income impacts. As to be expected, illicit trade ultimately impacts tax revenues, estimated to be about 60 million dollars per year on average across West Africa's coastal countries.

**Table 2: Annual economic impact, income impacts and tax revenue losses for West African countries**

Country	Economic impact (million US\$)	Income impact (million US\$)	Tax revenue impacts (million US\$)
Benin	90.9	18.9	2.7
Cape Verde	12.2	2.6	0.4
Côte d'Ivoire	42	8.8	1.3
Gambia	43.9	9.2	1.3
Ghana	202.1	42.4	6.1
Guinea	52.3	11	1.6
Guinea-Bissau	120.5	25.3	3.6
Liberia	26.4	5.6	0.8
Nigeria	67.1	11.8	2
Senegal	1,082.3	412.1	32.5
Sierra Leone	195.9	41.2	5.9
Togo	18.4	3.9	0.6
<b>West Africa</b>	<b>1,954.0</b>	<b>592.8</b>	<b>58.8</b>

*Source: Computed by Author*

#### 4. Policy options

To curb illicit trade in West Africa's marine resources, the region has to put in place policies and measures that will make illicit trade unprofitable by increasing the ability to detect, apprehend and punish illegal and illicit fishing activities in the region's waters. There should be enforced sanctions for all transgressions, ranging from warnings to fines and incarceration.

Below are suggested policies that could be implemented to help ensure that engaging in illicit trade in marine resources, in particular, and in all of West Africa's

natural resources, in general, is unprofitable, which is an important condition for eliminating this illicit and costly activity:

- Raise awareness among the public, policy makers, businesses, the judiciary, etc. about the negative economic, social and ecological effects of illegal, unreported fishing and illicit trade in West Africa's marine resources;
- Improve national and regional fisheries policies and legislation;
- Harmonize and enforce laws and codes of practice regarding illegal and illicit trade in fish and fish products across the region;
- Link up more to continental and global efforts and measures. Similarly, continental and global national policy makers need to include West Africa in their efforts because we essentially have one global ocean; to be successful all parts of it have to be managed at a sufficiently effective level;
- Enhance national, regional and international cooperation. Continental organisations such as ECOWAS, the AU, the AfDB, the ECA need to work more closely with national and regional institutions to explore and eliminate potential obstacles to co-operation;
- Pull together resources, both at regional and continental levels, to tackle illegal and unreported fishing, especially those that fuel illicit trade.

## **5. Conclusion**

It is clear that illicit trade in fish and fish products poses economic and social risks to people in West Africa. In the first place, illicit trade and financial flows divert money from the legitimate economy, imposing losses to law-abiding citizens and businesses and depriving countries of national revenues. Secondly, illicit trade in fish contributes to the depletion of the region's fish resources and in some cases destroys natural habitats. Furthermore, the social impacts of illicit trade in West Africa's marine resources is huge, resulting in food insecurity, loss of jobs, and loss of income to local fishers and economies. Hence, tackling illegal and illicit trade in Africa's fisheries is critical because, apart from draining West Africa of a host of economic benefits, it aggravates overfishing, which reduces fish stocks, reduces local catches, and degrades the marine ecosystem. Finally, it undermines fishing communities, who lose potential catches and the upstream and downstream economic activities that come with fishing, such as boat building and processing and trade in fish and fish products.

## About the author

**Dr. Rashid Sumaila** is Professor and Director of the Fisheries Economics and Management, the University of British Columbia. He specializes in bioeconomics, marine ecosystem valuation and the analysis of global issues such as fisheries subsidies, illegal fishing, climate change and oil spills. Sumaila is widely published, with over 225 articles in peer-reviewed journals, including *Science*, *Nature* and the *Journal of Environmental Economics & Management*. Sumaila has won a number of awards prestigious, e.g., the 2017 Volvo Environment Prize and the 2017 Benchley Oceans Award in Science. Sumaila was named a Hokkaido University Ambassador in 2016.

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