FEEDING A MONSTER:
How European aquaculture and animal feed industries are stealing food from West African communities
Thieboudienne, a traditional dish in Senegal, made from fish, rice and tomato sauce

Credit: Elodie Martial / Greenpeace
EXECUTIVE SUMMARY

Globally, one billion people rely on fish as their main source of animal protein, according to the United Nations (UN) World Health Organization (WHO). However, poor governance, illegal, undeclared and unregulated (IUU) fishing and overexploitation of fish stocks by industries like the global fishmeal and fish oil (FMFO) industry is leaving behind a trail of severe consequences for local populations, depriving them of one of their most important food sources and means of income in order to feed a broken food system. This report shows a clear example of exactly that.

Each year, over half a million tonnes of fish – which could feed over 33 million people in the region – are instead being extracted from the ocean along the coast of West Africa and converted to FMFO in order to feed farmed fish and livestock, mostly in Europe and Asia. Virtually all FMFO produced in West Africa is exported for the benefit of other sectors – such as aquaculture, agricultural farming, dietary supplements, cosmetics and pet care – in third countries, most of them outside the African continent, in contradiction with international commitments on sustainable development, poverty alleviation, food security and gender equality.

This practice is not only undermining food security in coastal communities of Mauritania, Senegal and The Gambia but is also depriving people living in the interior of Senegal and non-coastal countries such as Mali and Burkina Faso of one of their most essential sources of protein. According to the UN Food and Agriculture Organization (FAO), the main fish species the FMFO industry in West Africa uses – sardinella and bonga – are already overexploited, posing a serious threat to food security.

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security in the subregion. The FMFO industry thereby contributes to the exacerbation of social hardship and accelerates the depletion of fish resources, which threatens marine ecosystems and weakens the economies of several countries.

The bulk of the FMFO sourced from West Africa goes into feeding aquaculture, a voracious industry that is already providing over half of global fish consumption and is expected to grow further to reach 60% of total global fish consumption by 2030. Furthermore, resource-intensive fed aquaculture has far outpaced non-fed aquaculture, making up nearly 70% of all aquaculture production in 2018. The EU is a major market for West African fish oil. In 2019, more than 70% of the fish oil Mauritania exported was destined for the EU.

In West Africa, those who are most affected are women processors, who traditionally smoke, salt, dry and sell the fish to local markets, artisanal fishermen and the population of the subregion who depend on fish for their animal-protein intake, for instance, up to 70% of people in Senegal and over half The Gambia’s population. In The Gambia, the fisheries sector is a vital source of revenue for the country, and an estimated 200,000 people are indirectly dependent on fisheries and related activities. In Senegal, the fishing sector provides more than 600,000 jobs, although the number of people directly or indirectly deriving some income from fisheries could be as high as 825,000. The lack of small pelagic fish for local women to process for consumption has a severe impact on livelihoods and food security in the West African region.

Key findings

1. The fishmeal and fish oil industry is diverting a valuable food source to feed fish

Every year, over half a million tonnes of fresh fish that could be feeding millions of people in West Africa are being diverted to produce FMFO in order to feed animals in industrial aquaculture and farming, mostly in Europe and Asia. The Gambia, Mauritania and Senegal have a consumption level of 10kg of fish per person per year, which is higher than the rest of the continent (10kg per person per year – the lowest in the world). We calculated that this amount of fish, extracted by the FMFO industry, could potentially feed over 33 million people each year – more than the combined populations of The Gambia, Mauritania and Senegal.

In West Africa, those who are most affected are women processors, who traditionally smoke, salt, dry and sell the fish to local markets, artisanal fishermen and the population of the subregion who depend on fish for their animal-protein intake, for instance, up to 70% of people in Senegal and over half The Gambia’s population. In The Gambia, the fisheries sector is a vital source of revenue for the country, and an estimated 200,000 people are indirectly dependent on fisheries and related activities. In Senegal, the fishing sector provides more than 600,000 jobs, although the number of people directly or indirectly deriving some income from fisheries could be as high as 825,000. The lack of small pelagic fish for local women to process for consumption has a severe impact on livelihoods and food security in the West African region.

2. The fish species the FMFO industry uses in West Africa are in dire straits

The FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa, considers the stocks of sardine and bonga to be overexploited, posing a serious threat to food security in the subregion. Furthermore, in 2019 the FAO advised that a 50% reduction in fishing effort is required for all sardine species and has repeatedly called – along with local community organisations – for ‘strong and urgent action’. It is these same fish species – round and flat sardinella and bonga – that the FMFO industry prizes, and that are also fundamental to food security in the West African region.

3. West Africa has emerged as an FMFO supplier to the global market, especially supplying fish oil for the EU’s voracious aquaculture sector

Despite this, West African production of FMFO has grown more than ten-fold in the past decade – from around 13,000 tonnes in 2010 to over 170,000 tonnes in 2019. The EU is a major market for West African FMFO, particularly for fish oil, to feed its voracious aquaculture sector. Mauritania is the largest exporter of FMFO and the source of most EU imports; the country produces over 110,000 tonnes of fishmeal, 18% of which is exported to the EU, and close to 35,000 tonnes of fish oil, more than 70% of which is destined for the EU. In 2019, over 60% of the EU imports of fish oil from Mauritania went to France, while Spain was the main importer of fish oil from Senegal.

Most global FMFO from wild-caught fish is used in the production of carnivorous farmed fish, such as salmon and trout, while roughly one-third of fishmeal goes to the agricultural sector, a high proportion (23%) of which goes to feed pigs. As the demand for cheap salmon and meat increases, so does the demand for FMFO.

The information gathered in this report makes it possible to draw links between the consumption of farmed fish, seafood and animal feed in Europe on the one end, and extractive and unsustainable reduction fisheries in West Africa on the other. However, trade data discrepancies and a lack of transparency in supply chains make it difficult to build a complete picture and properly establish accountability.

Europe is home to several of the world’s largest aquaculture companies: Cargill Aqua Nutrition/EWOS, Skretting, Mowi and BioMar. Aquafeed is big business; in 2017, these four leading European aquafeed producers reportedly had combined sales of €3.3 billion. Furthermore, these four aquafeed producers have all been connected to West African FMFO suppliers in recent years, and are therefore complicit in the plundering of West African fish stocks in the midst of an alarming (and worsening) food-security situation in the region.
4. Retailers across Europe are sourcing farmed fish from companies involved in the trade of FMFO from West Africa.

Well-known retailers across Europe are sourcing farmed fish (such as salmon) from companies linked in a supply chain to the big four aquafeed companies – EWOS/Cargill, Biomar, Skretting and Mowi – which are involved in the trade of FMFO from West Africa. Although we cannot establish a direct chain of custody between the retailers and West African FMFO, the retailers’ connection with companies involved in the West African supply chain is problematic, and irrespective of whether there is a direct chain of custody, they should not source from those who source from West Africa.

Our investigations uncovered that some European retailers source from aquaculture and aquafeed producers who, in turn, source from reduction fisheries in West Africa, including:

**Germany:** Aldi Süd, Lidl, Kaufland, Rewe, Metro AG, Edeka.

However, Sainsbury’s, M&S and Mercadona have communicated that no FMFO from West Africa was used in their salmon/aquafeed products.

Additionally, the FMFO industry’s operations in the region have severe negative environmental, socio-economic, and human health consequences of the FMFO industry operations in the region. In Mauritania – the country with the largest number of FMFO factories – many complaints of chronic sickness and asthmatic disorders have been reported, as well as ecological damage to marine areas near the factories.

The Covid-19 crisis has only exacerbated the impacts of this broken food system. The pandemic has disproportionately affected artisanal fisherman and women-dominated fish-processing communities, which have been restricted in their business activities due to lockdowns. At the same time, governments have prioritised industrial exploitation over the livelihoods of local communities, and have given industrial FMFO producers free rein to continue production for export.

**UK:** Tesco, Sainsbury’s, M&S, Lidl, Aldi;

**France:** Carrefour, Auchan, E.Leclerc, Système U, Monoprix, Groupe Casino;

**Spain:** Mercadona, Lidl España;

As an urgent starting point, Changing Markets and Greenpeace Africa demand:

- West African governments phase out any fishmeal and fish oil production using fish fit for human consumption, based on its negative environmental, social and economic impacts.

Demands

The responsibility primarily lies with corporate stakeholders in Asia and Europe – and their respective political leaders – as well as with local governments, which need to regulate shortsighted benefit industries and prioritise local livelihoods and food security. In the short term, there is a need to rapidly phase out FMFO for aquaculture and other farmed animals, and prioritise wild-caught fish for local direct human consumption. In the long term, the world needs to work towards a return to food sovereignty, relocation of production, shorter supply chains and reliable local markets.

As an urgent starting point, Changing Markets and Greenpeace Africa demand:

- West African governments grant women fish processors and artisanal fishermen a legal and formal status, opening access to labour rights and benefits, such as social security and consultation rights in local fisheries management.

- Companies and end markets stop trading fishmeal and fish oil produced using fish fit for human consumption from the West African region.

- All states involved in fisheries in the region establish an effective regional management regime – particularly for the exploitation of shared stocks, such as small pelagic fish – as required under international law, relevant national laws, pan-African and regional fisheries policies, and other instruments. This management regime should comply with a precautionary and ecosystem-based approach, ensuring the total allowable catch is within safe biological limits.

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INTRODUCTION

Broken global food systems

Global supply chains allow wealthy countries to enjoy products from all over the world on the shelves of well-supplied supermarkets, regardless of the environmental and socio-economic costs in sourcing countries. Meanwhile, raw materials and food that should have been preserved for local populations are diverted to these wealthy countries paying higher prices, including through industries such as the fishmeal and fish oil (FMFO) sector, which convert these resources into feed for the agro-industrial and aquaculture sectors, or even for use in cosmetics, dietary supplements, mink farms and pet care products.

According to the recent “2020 - Global Report on Food Crises” from the United Nations’ World Food Programme there were 135 million people suffering acute food insecurity in the world in 2019, of which 73 million were in Africa. In the West Africa region, due to weather impacts and deficit in crop production, around 610,000 people in Mauritania and 767,000 people in Senegal were forecast to be in crisis or worse (CH Phase 3 or above) during the lean season in June–August 2020. Similar impact was expected in The Gambia, where almost one in three Gambians are vulnerable to food insecurity as noted by the Sustainable Development Goals (SDG) campaign in 2017.

However since then, the food insecurity numbers are likely to have worsened due to COVID restrictions. In this respect, the United Nations (UN) report on “The state of food security and nutrition in the world” stated in June 2020 that “there is no doubt the pandemic will expose more people to food insecurity and accelerate the projected increase in the number of hungry people”.

World Food Programme estimated this could potentially double the number of food insecure to 43 million in the West African region in that same year.

If the current trend continues, the number of undernourished people in the world is predicted to increase from almost 690 million in 2019 to over 840 million by 2030; although these figures do not yet account for the effects of the COVID-19 pandemic which could have resulted in an additional 83 to 132 million undernourished people in 2020.

In West Africa, where fish availability has been declining for a number of years due to poor governance as well as illegal, undeclared and unregulated (IUU) fishing, the socio-economic situation has worsened with the continuous operations of extractive industries such as the fishmeal and fish oil (FMFO) sector. The plunder of small pelagic fish by foreign industrial fleets has continued unabated, while local artisanal fishermen were, and in many ways still are, restricted in their daily work, leading to an increase in the price of fish on the local market. Similarly, most of the fishmeal factories in the region have remained in operation and continue to divert food from the local population who need it the most.

The fishmeal and fish oil industry as an example of a broken food system

A number of small pelagic fish species occur along the West African coast. While fisheries for some of these species, especially sardinella, have long been important as sources of food and employment in the region, the industrial exploitation of these stocks rapidly developed from the local population who need it the most.

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List of abbreviations

- CCS: Canary Current System
- EU: European Union
- FAO: Food and Agriculture Organization
- FMFO: Fishmeal and fish oil
- ITC: International Trade Center
- IUU: Illegal, undeclared and unregulated
- KMP: Koster Marine Proteins
- SPF: Small pelagic fish
- UN: United Nations
The primary species for the fishmeal and oil industry are round and flat sardinella and bonga which are essential to the livelihood of fishing communities, particularly in Senegal and The Gambia, as well as for maintaining food security in the region, in particular for the most vulnerable populations. These three species used for fishmeal and fish oil are over-exploited, posing “a serious threat to food security in the subregion”, according to the most recent stock assessment by the Food and Agriculture Organization (FAO) Working Group on Small Pelagics.27

The management of these fisheries is a complex matter, adding to the fact that there are no regional management institutions strong enough to prevent the ongoing overfishing situation. The demand for pelagic fish from the fishmeal factories has added enormous pressure to an already dramatic overfishing and food security crisis - a context threatening West African fish stocks in the long term, stealing food and jobs from local communities and for some, ending up in a dangerous voyage at sea to reach Europe as migrants.28

Hundreds of thousands of tonnes of fresh fish that could be feeding millions of people in West Africa are being diverted to produce fishmeal and fish oil in order to feed other animals in industrial aquaculture and farming, mostly in Europe and Asia. This industry thereby contributes to the exacerbation of social hardship and accelerates the depletion of fish resources, threatening marine biodiversity and weakening the economies of several countries.

The overexploitation of natural resources and the pollution generated by the FMFO factories have highlighted the weakness of a global economy which does not integrate environmental concerns. More generally, these environmental problems are driving social injustice since the damages are often unevenly distributed and the greatest burden borne by the least fortunate. In West Africa, those who are most affected are women processors who traditionally smoke, salt, dry and sell the fish to local markets, artisanal fishermen, and the population of the subregion who depend on fish for their animal protein intake, for instance up to 70% in Senegal, while in The Gambia it’s over half.29

The FMFO processing industry has commodified a staple food that forms part of the standard diet of the local population into an exportable product, and in doing so, prices-out local buyers from a significant portion of the fishery’s catch.

Virtually all fishmeal and fish oil produced is exported for the benefit of other sectors such as aquaculture, agricultural farming, dietary supplements, cosmetics and pet care products in countries abroad, most of them outside the African continent, in contradiction with internationally commitments on sustainable development, poverty alleviation, food security and gender equality. Unfortunately, local governments often lack economic might and political courage to sustain the local fishing sector and collectively manage the dwindling fishing resources in the long term, as opposed to granting fishing licenses and authorisations to foreign investors to increase their FMFO production capacity.

This report will examine:

1. The growing global aquaculture industry and its reliance on wild fish, as well as the status of fish resources.
2. The emergence of West Africa as a supplier of FMFO to the global market, as well as the industry’s negative impacts in the region.
3. The supply chain of FMFO from West Africa towards European companies and destination markets.

Aquaculture is often presented as the solution, not only to the ecological damage that unsustainable fishing practices are wreaking on our oceans but also as a rapidly scalable source of protein for communities vulnerable to food insecurity and malnutrition. The notion that farmed seafood can both feed the world’s poor and relieve pressure on wild-fish stocks is a seductive one. Yet in reality, the aquaculture industry continues to extract precious finite resources from the very oceans it claims to protect.

Every year, billions of edible fish caught in the wild are diverted from direct human consumption and used to feed the voracious aquaculture industry, through the production of fishmeal and fish oil (FMFO). Almost a fifth of the world’s total catch of wild fish is processed into FMFO, of which the vast majority is used in feed for aquaculture and agriculture. FMFO production hubs across the Global South, fish catches are turned into fishmeal at a rate of 4 to 5 tonnes of fish for 1 tonne of fishmeal and exported abroad.31

The types of fish turned into FMFO are mainly species lower down the marine food chain, including small pelagic42 forage fish (such as anchovy, sardine, herring, and mackerel) and also invertebrate species (such as krill). All of these species play an important role in the marine environment because the entire marine food web depends on them. Overfishing down food webs is unsustainable and can have large impacts on the ecosystem.43 Furthermore, these fish are also a major source of protein for millions of people living in coastal communities, especially in West Africa, where the FMFO industry’s demand for small fish competes with demand for direct human consumption. Today, almost 70% of landed forage fish are processed into FMFO, representing roughly half of the world’s total catch of wild marine fish.44

1.1. Aquaculture: The world’s fastest-growing food production sector

Demand for fish is growing rapidly and is outpacing demand for meat. Aquaculture currently accounts for roughly half of world fish consumption45 and is projected to grow rapidly, farmed species are expected to reach 60% of total global fish consumption by 2030.46

1.2. Fed aquaculture outpacing growth of non-fed aquaculture

Global aquaculture production reached an all-time high in 2018 with a total sale value of 263.6 billion USD; this was dominated by the farming of finfish, which accounted for 47% of total production.47 Not all aquaculture requires the input of food, for example, some species filter their food from surrounding waters (such as mussels and oysters). However, resource-intensive fed aquaculture has far outpaced non-fed aquaculture, making up nearly 70% of all aquaculture production in 2018.48

A paper published in the scientific journal Nature Sustainability noted in 2018: ‘As the fastest growing food sector in the world, fed aquaculture demand will eventually surpass ecological supply of forage fish, but when and how best to avoid this ecological boundary is unclear’.49

According to the UN, without significant changes, we are at risk of pushing more than half of our planet’s marine species to the brink of extinction by the year 2100.50 The collapse of fish stocks is already visible among some of the pelagic fish species, which are used to feed the global aquaculture sector – from crashing oil sardine stocks off the west coast of India51 to the decline of bonito in The Gambia. In Europe, Baltic cod stocks are on the

source: FAO, State of the World’s Fisheries and Aquaculture 2020 (p.72)

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Figure 1: Relative contribution of aquaculture and capture fisheries to fish available for human consumption

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<tr>
<th>Year</th>
<th>Capture</th>
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33 Pelagic fish are fish found near the ocean surface or in middle depths. They often move in large shoals, which greatly increases their detectability (see: https://www.sciencedirect.com/topics/earth-and-planetary-sciences/pelagic-fish).


the verge of the collapse, partly as a result of the overfishing of their key food source, sprat, to feed the Norwegian salmon industry.45

1.3. Case study: Expansion of salmon farming in Scotland and Norway

Salmon is a carnivorous fish and salmon farming is highly dependent on the use of FMFO. According to the European Market Observatory for Fisheries and Aquaculture products, 60% of fish oil used in aquaculture goes into salmon and trout (‘salmonid’) feed.46

The total global production of farmed Atlantic salmon is estimated to have increased by 7% in 2019, to around 2.6 million tonnes. The three major contributors to this expansion were Norway, Chile and Scotland. Norway registered a year-on-year increase of 6.5%, while the Chilean annual total was 10% more than in 2018. Scotland rebounded from a poor year in 2018 with 20% growth.47

A 2019 study by the UK-based campaign group Feedback found that the Scottish salmon farming industry currently uses roughly the same quantity of wild-caught fish to feed its salmon as the entire adult population of the UK purchases in one year. What is more, if the Scottish salmon industry wants to meet its expansion targets of doubling in size, it will need 310,000 tonnes more wild fish every year for feed alone.48

Norway is the primary exporter of salmon to the EU49 and has significant future growth ambitions for the sector.50 Intensive farming of Atlantic salmon accounts for more than 80% of total Norwegian aquaculture production51 and is hugely resource-intensive when it comes to feed, especially FMFO. While Norway produces large volumes of FMFO itself, it is also a major importer, predominantly from Denmark. Norway is also home to a number of large aquafeed companies which supply the salmon farming industry, including Skretting,Carlil Aqua Nutrition,EWOS and Mowi.52

The campaign group Feedback estimates that if we ate some of the wild fish – like herring, sardines and anchovies – directly instead of feeding them to farmed salmon, we could still access the same level of micronutrients while leaving 59% of the fish caught to feed that industry in the sea.53

5.3 https://feedbackglobal.org/campaigns/fishy-business/

The AQUACULTURE INDUSTRY AND ITS RELIANCE ON WILD FISH

In 2018, about 18 million tonnes of fish was reduced to FMFO54 which is mainly used as an ingredient in feeds for aquaculture and animal farming. Roughly one-third of fishmeal goes to the agricultural sector (5% to chickens, 23% to pigs), but aquaculture became the dominant user of ‘reduction fisheries’ (which supply fish for FMFO rather than for direct human consumption) in the early 2000s.55 In 2016, 69% of fishmeal and 75% of fish-oil production went to seafood farming.56 Global demand for FMFO is mainly driven by China’s huge aquaculture sector57 but export-oriented sectors – such as salmon farming in Norway and Scotland, and prawn farming in Asia – are also significant consumers.

1.4. Continued use of wild fish as feed in animal agriculture

198.124.132.232
In many countries, the rapid expansion of the aquaculture industry is leading to growth in demand for FMFO. One industry expert estimates that there will be an additional 500,000 MT of new fishmeal demand in the coming five years. In addition, as noted in a 2019 report by the FAO, in Peru, FMFO demand is growing whereas supply remains limited and highly variable. The same report notes: ‘The processing of SPF [small pelagic fish] for fishmeal, boosted by global market demand, is...showing a marked tendency to increase in the CCS [Canary Current System] off the coast of West Africa.’

Despite higher demand for FMFO for aquafeed, the sector has witnessed a long-term decline in the global supply of fishmeal since the mid-1990s. Supply will also continue to be influenced by the impacts of climate change as oceans warm and fish migratory patterns change, reducing their availability.

The declining trend of raw materials to sustain the FMFO sector was strongly evidenced by the Changing Markets Foundation investigation findings and media reports in India, Vietnam and The Gambia, where fishermen involved in the FMFO industry themselves acknowledge that key pelagic fish stocks are collapsing, and some recognise that they are likely to be the last generation involved in fisheries. Finite wild fish supplies combined with growing demand for FMFO carry the risk that demand will outstrip supply and – as is already being seen – lead to increased costs for local consumers.

Increased demand for FMFO is not just a function of increased production of farmed seafood; choices about the type of fish companies cultivate also matter, because the farming of more high-value carnivorous species (such as salmon) place upwards pressure on FMFO demand and prices.

1.5. Global fish resource and small pelagic fish status in West Africa

OVERVIEW

Based on FAO’s assessment in 2017, almost 60% of the world’s fisheries are fished at maximum sustainable levels and over 34% of the world’s fisheries are overfished. The percentage of stocks fished at biologically unsustainable levels increased from 10% in 1974 to over 34% in 2017, meanwhile underfished stocks have decreased continuously and now make up just over 6% of the world’s fisheries. The Eastern Central Atlantic has seen an overall increasing trend in catches, but with fluctuations since the mid-1970s, reaching a record high of 5 million tonnes in 2017.

SPECIES

The small pelagic fish species that comprise the main catches in the waters of Mauritania, Senegal and The Gambia are sardines (Sardina pilchardus), round sardinella (Sardinella aurita), flat sardinella (Sardinella maderensis), horse mackerel (Trachurus trachurus), cunene horse mackerel (Trachurus trecae), chub mackerel (Scmerub colias), anchovy (Engraulis encrasicolus) and bonga (Ethemala fimbriata). Of these species, it is primarily sardinella (both round and flat) and bonga that feed the fishmeal industry of the three countries.

CATCHES

According to the FAO, over the past 25 years, the total catches of small pelagic species off northwest Africa (Atlantic coast of Morocco to the southern border of Senegal) have, with relatively minor fluctuations, more than doubled, increasing from 1.2 million tonnes in 1994 to 2.7 million tonnes in 2017.

STOCK STRUCTURE

The structure and migration of round sardinella remain uncertain. The traditional view, and as reflected in the stock assessments of the FAO Working Group, is that a single stock migrates between the waters of southern Senegal (or even somewhat further south) and Morocco, being subject to fishing throughout its range. Under this scenario, overfishing in one zone would have an adverse impact throughout the region. This is the possibility illustrated by the map in figure 4. Another possibility has migrations of parts of the sardinella stock along portions of this path but with stock components undergoing lesser migrations, or even remaining relatively sedentary, for instance in northern Mauritania. If this were the case, overfishing in one zone would have less impact elsewhere.
As in previous years, the FAO Working Group on the Assessment of Small Pelagic Fish off Northwest Africa,\(^{71}\) considers the stocks of sardinella and bonga to be overexploited. It further estimates in its latest summary report of 2019 that a 50% reduction in fishing effort is required for all sardinella species. The working group also “stresses the urgency of taking strong action in the current situation” and that “urgent action is needed to rebuild the stocks of round sardinella (S. aurita) and bonga (E. fimbriata).”\(^{71}\)

The collection of accurate data for scientific assessments has long been a challenge in the region but the latest indicators, including a drop in daily catches from artisanal fleets in Senegal and Mauritania, as well as acoustic surveys in Mauritania show that the sardinella stock is at its lowest level in history,\(^{72}\) and that the fish-meal industry now increasingly relies on sardines.\(^{72}\)

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72 CFFA-CAPA: https://static1.squarespace.com/static/5d402069d36563000151fa5b/t/5f9839d6d5e814745ab81d61/1603811798845/Facts_Flyer_CF-FA_D8_Final.pdf

SECTION 2—THE Emergence Of West Africa As A Fishmeal And Fish Oil Supplier To The Global Market

2.1. Fishmeal and fish oil trade overview

Chronic overfishing of small pelagics is partly a consequence of the overcapacity of the artisanal fleets that contribute to the supply for the fishmeal factories. For instance, a new fisheries agreement was concluded between Mauritania and Senegal in December 2019, allowing 400 Senegalese canoes to catch approximately 50,000 tonnes of sardinella in southern Mauritanian waters. A condition of this agreement, however, is the obligation for Senegalese fishermen to land their catches in Mauritania, where it is processed in the FMFO factories. However, this is also compounded by poor governance from local governments granting licenses to foreign vessels without any transparency, together with the lack of regional fisheries management to address these issues effectively, as pointed out in a recent report released by Greenpeace. Seascik: as COVID-19 locks down West Africa, its waters remain open to plunder.

In a previous report, “A Waste of Fish: Food security under threat from the fishmeal and fish oil industry in West Africa”, Greenpeace International and Greenpeace Africa documented 50 fishmeal and fish oil factories in the region—the bulk of which operate in Mauritania but also in Senegal and The Gambia—out of which 40 were active in March 2019.

According to International Trade Center (ITC)’s Trade Map, based on UN Comtrade database, the production of fishmeal has expanded rapidly in the past few years, particularly in Mauritania which is the largest exporter of these three countries, with 110,423 tonnes of fishmeal primarily delivered to China, Turkey, the European Union (EU) and Vietnam in 2019. This is followed by Senegal with 11,251 tonnes of fishmeal exported mainly to Vietnam, Japan and to other African countries in the same year. Vietnam and Tunisia received the majority of the smaller fishmeal production from The Gambia with 3,674 tonnes in 2019.

Regarding fish oil, the EU was the first destination market for Mauritania and Senegal’s fish oil exports in 2019, as in previous years, with France totaling over 60% of the EU imports from Mauritania with 15,101t, followed by Denmark with 5,955t. Spain is the main importer of the smaller Senegalese fish oil fish production with 2,116t out of a total of 4,836t. Whereas FMFO production always implies more fishmeal than fish oil production out of the same fish material input, it is peculiar to note that The Gambia declares 3,934t of fish oil exports in 2019 (and only 3,674 t of fishmeal), out of which 4,909t were directed to Chile, a neighbouring country of the world’s biggest FMFO producer by far, Peru.

It is relevant to highlight that we have found systematic discrepancies between export figures declared by some of the selected West African countries, and the import figures declared by importer countries even when using the same database (TradeMap). For instance, Mauritania reported in the Trademap database that it exported 3,891 tonnes of fish oil in 2019 (most recent available year) to Norway under tradecodes 150410 and 150420. However, Norway’s import data for that same year (2019) showed 24,344 tonnes imported from Mauritania for tradecode 150420 alone, which is nearly as much as the total of Mauritania’s fish oil exports to the EU (24,458t).

This is only one of the most striking examples, but sometimes the higher volume declared is coming from the exporting country, when the receiving country’s import figures appear to be under-reported. Other national statistics data then also often indicate another different figure in any given year.

For the sake of consistency, this report primarily relies on figures declared by the export country, unless otherwise indicated for contextual purposes.

The fundamental conclusion stemming from these data discrepancies is that there is a critical need for more transparency and accountability in the supply chain and trade declarations of this industry.

In the first half of 2020, European countries received most of the Mauritanian fish oil, with a total of 20,609 tonnes, according to official data from the Mauritanian Government.

From January to June 2020, the Mauritanian fishmeal exports increased by 20% in comparison to the same period in 2019, when all other products declined mainly due to the impacts of Covid-19.
2.2. The negative impacts of the fishmeal and fish oil industry

In all three West African countries, beyond the documented environmental damage caused by some of these FMFO factories, there is also a severe socio-economic impact to consider as the small pelagic fish are no longer being processed by women for local consumption, whether it be in Mauritania or elsewhere in the sub-region.84

Mauritania has the greatest number of FMFO factories of the three West African countries reviewed, and faces significant environmental and social problems stemming from the industry. On top of the ecological damage caused to marine areas adjacent to these factories, a large number of complaints about chronic sickness and asthmatic disorders have been reported.85 A few years ago,86 the Mauritanian government pledged to phase out FMFO production from whole fish by 2020, however its production has instead increased.87

For more details on trade data please refer to the relevant tables in Appendix 1.

The lack of available catch data for the three main species used for the fishmeal and fish oil production (round and flat sardinella and bonga) makes it particularly difficult to assess the quantity of fish actually going into fishmeal production. However, considering the standard need of 4 to 5 tonnes of fish to produce 1 tonne of fishmeal production. That is even without taking into account the significant environmental and social problems stemming from the industry. On top of the ecological damage caused to marine areas adjacent to these factories, a large number of complaints about chronic sickness and asthmatic disorders have been reported. A few years ago, the Mauritanian government pledged to phase out FMFO production from whole fish by 2020, however its production has instead increased.88

84 https://www.qyresearch.com/about/company-introduction
86 http://cridem.org/C_Info.php?article=693730
In 2019, Greenpeace International’s “A Waste of Fish” report identified eight factories in Senegal, of which four were active, two were under construction and two were temporarily inactive. This over-investment in fishmeal factories for export has led to excess in industrial and artisanal fishing capacity and increased the pressure on already dwindling resources. These factories compete with fishmongers and women processors for access to the caught pelagic fish, leading to decreased availability of fish on the market, higher prices, and declining employment in artisanal processing, which is mainly undertaken by women. The scarcity of the fish resource and its negative impact on livelihoods are also reflected in the stories of migrant fishermen who have attempted to reach European shores in the hope of a better future.

While Senegal’s government has stated its commitment to develop and implement management plans taking into consideration artisanal fishing and the management of excess capacity, to date, there is no national management plan that is enforced for small pelagic fisheries while the capacity of the artisanal sector has continued to expand in a completely uncontrolled manner.

In parallel, there is increasing concern among local populations about the operations of the foreign-owned fishmeal plants and their environmental impact. For example, the fishmeal factory in Abene beach has faced significant local resistance. Reportedly, the plant emitted a stinking black smoke that seriously disrupted tourism and local residents have witnessed the dumping of toxic waste into the sea.

This year, fish is scarce, we can’t even find the raw material for our work. In addition to this scarcity and the difficulty of finding fish, the fishmeal factories are competing with us for the little fish that remains on the market. I think that this competition is unfair because these factories have more means than us. If the authorities do not react, we risk losing our work. From an environmental point of view, these factories pollute the environment by producing nauseating odors that have harmful consequences on the health of the population. From the point of view of food security, it is inconceivable that these factories process fish to feed other animals when the populations need it the most. I think that these factories do not have their place here because fish is becoming increasingly rare. I really ask the authorities to stop these factories because in addition to making us lose our jobs, they have harmful consequences on the environment and on our health.

Diaba Diop
President of REFEPAS (Senegal Artisanal Fishing Women Network)

I have a bruised heart, my right to a healthy environment scorched, trampled, my health and my economy threatened. Since 2016, the fishmeal and fish oil factory SEA PRODUCTION has been installed in the peaceful village of Keur Barka in the commune of NDEBENE GANDIOL. This factory, installed near homes (which is a flagrant violation of the Senegalese environmental code, because it is a class B installation) affects our health because of its olfactory nuisance. All the people suffering from respiratory diseases live with difficulty in the village, the health of pregnant women is also affected.

This factory harms our living environment, has a negative impact on the working time of the children of the elementary school, contributes to the plunder of our fishery resources and even penalizes the activity of the women fish processors.

I have participated in several activities to fight for the closure of the factory, marches, social mobilization, correspondence to the authorities in charge of fisheries… even bailiffs have had to note the nuisances of this factory. Unfortunately, our local and administrative authorities, in complicity with the fishmeal and fish oil factories prefer to feed other animals than to take care of the well-being of their populations.

This factory installed in nebulous conditions, in violation of the environmental code of Senegal must be relocated or even closed permanently for the preservation of the material, moral and sanitary interests of the populations.

Amadou KAMARA
Impacted citizen in Senegal
Small pelagic fish are very abundant in high productivity regions such as upwelling areas: Peruvian coast for anchovies, California coast for sardines or Menhaden, West Atlantic coast for sardine, forage fish for piscivorous marine species, staple food for the poorest coastal communities. After the drastic drop in yields of anchovy and sardine, the long-distance fleets, mainly from Asia, have fallen back on the sardinella of the West African coast, towards countries with weak legislation and authorities that are unaware of the strategic importance and the stakes of this resource. Many actions have been initiated in recent decades by professionals, scientists and civil society to slow down and even cancel the race of pelagic trawlers, especially Chinese through “mixed companies”, to empty our waters of their sardinella to supply foreign fishmeal factories and pirate factory ships in West Africa. In Mauritania, Senegal and the Gambia particularly, the proliferation of factories manufacturing fishmeal and fish oil is practically uncontrollable: no reliable data is collected on the activities of the factories, the rules of these countries requiring the use of waste as inputs are not respected, as is the defense of the interests of local populations. These practices to supply fishmeal to fish farming and animal breeding in Europe and Asia kill the fishmongering and traditional fish processing activities of African women, bring no added value to the economy of the countries and deprive their populations of a diet providing 50 to 70% of the proteins consumed: they also destroy an important social safety net and the factories cause severe damage to the health and well-being of coastal communities. The danger is there: in the cold season currently in Senegal, it is very difficult, if not impossible, to find sardinella at the usual landing points. The consequences on the food and nutritional security of populations are catastrophic as well as on the balance of the food chain at sea.

In The Gambia, the fisheries sector is a critical entry point for poverty alleviation. It provides a source of revenue and foreign exchange earnings for the country; but also contributes importantly to food and livelihood security, in particular for the disadvantaged. The sector is the third largest food provider after agriculture and livestock and plays a significant role from a nutritional standpoint, being the main supplier of animal protein in the diets of most Gambians. Fisheries and related activities (processing and marketing) represent the main source of income for coastal fishing communities, as well as an important complementary safety net for rural communities in inland. In The Gambia, the artisanal sub-sector employs between 25,000 and 30,000 people, while about 2,000 people work in the industrial sub-sector. The livelihoods of an estimated 200,000 people are indirectly dependent on fisheries and related activities. For women in particular, fish processing and marketing provide an important source of income and livelihood support: an estimated 80 percent of fish processors and 50 percent of small scale fish traders are women.

In The Gambia too, there have been demonstrations against the social and environmental impacts of this industry. All 3 factories of the country, located in San- yang, Gunjur and Kartong, have been facing continuous opposition from the local population over waste discharge issues and the broader impact on fish resources and livelihoods. Furthermore, there is a growing activist movement fighting the operations of these fishmeal factories.

During the first Covid-19 outbreak, and as a result of the outcry by local communities, the President of The Gambia ordered the closure of the three FMFO factories from 23 March 2020, although they quickly reopened in April 2020. This happened despite protests from local activists and while artisanal fishermen and women fish processors remained under lockdown restrictions.

In March 2021, the Golden Lead factory in Gunjur attempted to expand by grabbing land from women growing vegetables. This expansion would have affected 31 women depending on farming as their unique source of livelihood. However, a notice from The Gambia National Environment Agency dated 10th March 2021, has required the factory to “cease all ongoing extension work; and evacuate all equipment and personnel on site immediately.”

The same month, the Nessim fishmeal factory in Sanyang reportedly got burnt down by a mob of protesters following a crime that was not directly related to the factory’s business, although the frustration of the population led to this violent retaliation.

Fishmeal investment has caused so much damage on the people of The Gambia. Our environment, economy and social lives have all been affected by fishmeal investment. Our tourism industry is going down every day as tourists can not stay where it’s stinking while our women fish sellers are getting jobless everyday. Families continue to be divided and communities disintegrate. There is no benefit fishmeal brought to The Gambia.

Mustapha Manneh
Activist in The Gambia

96 https://thefishsite.com/articles/african-fishmeal-factories-under-fire
100 https://renysa.net/fishmeal-factories-threaten-environment
101 https://renysa.net/fishmeal-factories-turn-coastal-fishing-crisis
102 https://renysa.net/sanjang-youth-protest-against-expansion-of-fishmeal-factory
104 https://all Africa.com/stories/202103280826.html
107 https://www.mongabay.com/2021/04/a-fatal-stabbing-sends-a-gambian-fishing-village-into-turmoil-over-fishmeal/
108 https://thefishsite.com/articles/african-fishmeal-factories-under-fire
112 https://renysa.net/fishmeal-factories-threaten-environment
113 https://renysa.net/fishmeal-factories-turn-coastal-fishing-crisis
115 https://all Africa.com/stories/202103280826.html
117 https://www.mongabay.com/2021/04/a-fatal-stabbing-sends-a-gambian-fishing-village-into-turmoil-over-fishmeal/
The emergence of West Africa as a fishmeal and fish oil supplier to the global market

Feeding Aquaculture

Every year, small pelagic fish, are taken out of the ocean off the coast of West Africa, 500,000+ tonnes.

And ground down into fishmeal and fish oil by the reduction industries.

Industrial exploitation deprives people in West Africa.

1. Raw Materials: Sardinella and Bonga

2. Fishmeal and Fish Oil Factories

3. Feed Industry

4. Fish and Seafood Farms

5. Processors and Distributors

6. Retailers and Restaurants

Although we cannot establish a direct chain of custody between the actors and West African FMFD, the retailers’ connection with companies involved in the West African supply chain is problematic, and inseparable of whether there is a direct chain of custody, they should vet sources from those who source from West Africa.

The Gambia

Senegal

People depend on fish for a % of their animal protein intake

The Gambia - 50%

Senegal - 70%

Fish catches are turned into fishmeal at a rate of 4/5 KG of fish for 1 KG of fishmeal and exported abroad.

50 Factories in Mauritania, Senegal and The Gambia.

Important source of food and nutrition.

Takes away jobs from local fishing communities.

Trade

60% of fish oil exported to Europe.
The Covid-19 pandemic has made an already complex and unsustainable situation in West Africa more difficult for the impacted communities. As in many other countries around the world, Mauritania, Senegal, and The Gambia restricted non-essential business activities, in order to protect their population from the health risks associated with the virus.

The above restrictions have been particularly painful for the artisanal fishermen and women-dominated fish processing communities, who have seen significant cut backs in their allowed working hours, impacting their economic livelihoods.

While the small and artisanal players have faced limitations on their operations due to the Covid-19 restrictions in selected West African countries, many of the fishmeal and fish oil industrial players have managed to continue operating. This unfair and uncompetitive situation has been reported in Greenpeace’s report “Seasick as COVID-19 locks down West Africa, its waters remain open to plunder.” This report is based on observations of fishing vessels and FMFO factories in Senegal, The Gambia and Mauritania from March 2020 until end July 2020, a period in which COVID-19 pandemic lockdowns were introduced across West African countries.

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and trade is not publicly recorded at a company level. Shipments imported to Europe by sea may then be transported onward by another ship or by road or rail.

The FMFO sector lacks transparency, traceability and oversight, right the way through from the factories producing FMFO to the aquaculture and agriculture operations utilising it as feed to produce meat and fish for human consumption. This was illustrated, for example, in the recent investigation by Changing Markets, published in the report Fishing for Catastrophe. Their investigation found that three FMFO factories were operating in The Gambia despite the government and FAO holding no records, and were exporting without the required food safety certificates for export.

3.2. European companies driving the demand

The demand for fishmeal and fish oil is high; as a digestible protein it is used in feed for farmed fish and animals all over the world. Most global FMFO from wild-caught fish is used in the production of carnivorous farmed fish such as salmon and trout, while roughly one-third of fishmeal goes to the agricultural sector with a high proportion (23%) going to feed pigs. As the demand for cheap salmon and meat increases, so does the demand for fishmeal and fish oil.

According to the European Parliamentary Research Service, for pig production, in 2018, of the 348 million pigs in the EU almost three quarters were reared in six Member States: Spain (20.8 %), Germany (17.8 %), France (9.3 %), Denmark (8.5 %), the Netherlands (8.1 %) and Poland (7.4 %). The EU is currently the world’s top exporter of pig meat products and increased demand for EU pork pushed prices to a peak in early 2020. Some farmers manage the entire production process on their farms, while other farmers specialise in sows and sell piglets to the European market. The latter is a growing business in Denmark; in 2013 the country exported 9.7 million piglets and by 2018 this had risen to 16.4 million piglets. This is significant in the demand it places on FMFO production because many farmers use fishmeal for piglets while they are being weaned from the sow. In fact, according to Greenpeace investigations, the industry norm is that fishmeal is only used in feeding piglets until they weigh 35-40 kg.

In terms of aquafeed, Norway has been identified as Europe’s largest producer, contributing 45% of the region’s total aquafeed production (1.83 million MT), followed by Turkey. Both of these countries experienced strong growth in 2018, while Spanish production grew by a substantial 31% in the same period.

Europe is home to several of the world’s largest aquafeed companies: Cargill Aqua Nutrition/EWOS, Skretting, Mowi and BioMar. These companies have been highlighted in this report on the basis of their presence in Europe; however, like all major aquafeed producers, their supply chains are global.

Skretting and Cargill were established in the 19th century and have roots in the animal feed industry. It was only in the second half of the 20th century, when aquaculture started to take off, that these companies ventured into aquafeed and others entered the sector. BioMar in the 1960s and Marine Harvest (now Mowi) in 2012.

The industry generates high returns: In 2017, these four leading European aquafeed producers reportedly had combined sales of $3.3 billion, including Norway-based companies Cargill Aqua Nutrition/EWOS ($2.19 billion, estimated), Skretting ($1.72 billion) and Mowi ($371 million), and Denmark’s BioMar ($2.6 million).

According to Changing Market’s Fishing for Catastrophe report, these four aquafeed producers have all been connected to West African FMFO suppliers in recent years.

Global aquaculture supply chains are interwoven and highly complex. While the aquafeed sector itself is relatively small, the supply chain from fishery to fork can involve as many as eight different stages: fishery, FMFO plant, trader, aquafeed producer, aquaculture farms, seafood processor, distributor, retailer and many middlemen in between.

3.3. Supply chain links, trade and shipping routes between West Africa and European markets

Based on in-depth supply chain research in European countries, we attempted to untangle this knot using supply network. While incomplete, the information we gathered makes it possible to draw links between consumption of farmed fish and seafood as well as animal feed in Europe and extractive and unsustainable reduction fisheries in West Africa. In terms of methodology, this research was based on a combination of trade data (ITC’s Trade Map, based on UN Comtrade database), EU and national statistical data, shipping data, AIS ship tracking data, industry stakeholders’ interviews and enquiries, desktop and field investigations. The highlighted companies were given the opportunity to comment.

Fishmeal

The majority of fishmeal exported from West Africa to Europe is carried by container ship, with containers often transhipped between vessels in between their source and their destination countries. The southern Spanish port of Algeciras is the initial port of arrival of the majority of fishmeal coming from West Africa (for example, 74% of containerised shipments from Mauritania), however much of this is transhipped onwards to other parts of the world, most significantly to China but also countries including Turkey, Nigeria, the USA as well as various


116 Danish Agriculture and Food Council


119 Skretting (2017) We are proud of our long history in the aquafeed industry. Available at: https://www.skretting.com/en/about-us/history/


123 Mowi (2019) About - Mowi. Available at: https://mowi.com/about

124 Based on Cargill estimates of 2% of 2017 group sales, revenue of $109.7 billion, following IntraFish (2018)


The majority of the fish oil imported from Mauritania and Morocco was brought in by tankers, mainly to the port of Fécamp in Normandy. SeaSearcher records show Tank AS vessels Key Bay, Key Sund and Key Breeze stopping at various times at the port during 2019. In most cases these vessels stop in Morocco (Tan Tan and Agadir) between their departure from Mauritania and arrival to Fécamp, so it is unclear which country the deliveries of fish oil originate from, nor whether they are kept separate or combined. In January 2021, SeaSearcher shows Key North came directly to Fécamp from Nouadhibou in Mauritania, however the ship’s draught indicates that during its stop in Fécamp it was loading rather than discharging cargo, suggesting that it then carried fish oil from Fécamp as well as Mauritania onward to various ports in Norway.

Olvea is a supplier of vegetable and fish oils for animal feed and human consumption. Its headquarters and refinery are located in Fécamp, France, and the company also has a refinery in Agadir, Morocco (since 2003) and a storage plant in Nouadhibou, Mauritania (since 2012). Olvea’s facility in Nouadhibou, Wintersonat Mauritania, is the largest buyer of fish oil locally, buying, storing and exporting oil from the majority of surrounding processors. Olvea is also the only fish oil producer with a storage facility within the port of Fécamp, therefore the likely importer of fish oil shipped to that port. In addition to the shipments arriving at Fécamp by tanker, Olvea is also listed as receiving 72 tonnes of fish oil by container shipment from Mauritania in 2019, shipped by Mauritania Business SARL, to the nearby port of Le Havre. Olvea launched a partnership with IQI Petfood in 2019 and a 2021 industry certificate lists Olvea’s facilities in Fécamp as a sub-contracted site of Netherlands-based IQI.

DENMARK

In addition to imports, the EU is also a producer of FMFO itself, in the region of 450,000 to 500,000 tonnes of fishmeal and 150,000 to 200,000 tonnes of fish oil per year, representing around 10-15% of global production. Denmark (followed by Spain) is by far the largest producer, accounting for almost half of EU FMFO production.

128 Olvea (2019) OLVEA joins forces with IQI to become stronger together. www.olvea.com/2019/04/14/54837/
Trade Map data for 2019 indicates Denmark imported close to 115,000 tonnes and exported 145,000 tonnes of fish oil, and imported 83,291 tonnes of fishmeal, exporting 186,764 tonnes. Close to 80% of Denmarks fish oil exports go to Norway, along with almost 30% of its fishmeal. Greece and the UK also import significant volumes of fishmeal from Denmark.

Denmark is also importing from Mauritania and Senegal, with Trade Map’s export data for Mauritania recording 5,955 tonnes of fish oil to Denmark in 2019 and 1,902 tonnes of fishmeal the same year.

TripleNine Esbjerg (formerly TripleNine Polar Omega) is a Danish company based in Esbjerg. It specialises in purifying fish oil and fishmeal from the Atlantic, North Sea and Baltic Sea for use as fish feed, mainly exporting to Norway, but have also produced other animal feeds and fish oil for dietary supplements in the past. In 2013 TripleNine had a processing facility in Mauritania, TripleNine Mauritania SARL, however there is no recent reference to this facility nor does it appear on the current EU SANCO list of processing plants approved for export to the EU, and the company is now liquidated. It also has four sub-contracted storage facilities in other parts of Denmark, and one in Norway.

In 2016, according to import data from the EU, TripleNine imported fishmeal from both Senegal and Mauritania, however EU trade records indicate it has not done so since 2016 and in 2019 it seems from private investigation that it did not import any fishmeal from outside the EU. The company’s 2016 imports were 2 shipments of 773 tonnes of fishmeal from Senegal and 7 shipments of fishmeal amounting to 7,663 tonnes from Mauritania, although 3 shipments were denied entry by port authorities as they did not originate from EU-approved facilities.

Although it appears that TripleNine has not sourced from West Africa for some years, it is unclear whether this reflects a permanent company policy or simply shifting buying patterns. In recent communication with the company, it was stated they have chosen to focus on their own FMFO production rather than sourcing from other parts of the world, and that they were not importing FMFO from West Africa either directly or via third countries. Tank AS vessels regularly stop in Esbjerg, where TripleNine and ED&F Man both have facilities, on shipping routes that include Mauritania. Most recently Key Sun stopped in the port on 11 January 2021 after departing Nouadhibou on 31 December 2020 and stopping in Ghent, Belgium en route. The ship’s draught indicates that it was unloading in Esbjerg, although TripleNine denies to have been the recipient of any fish oil from West Africa from this shipment.

FF Skagen is based in the port of Skagen in North Denmark. The company’s website states that it is Denmark’s largest producer and trader of fishmeal, and the product is used in feed for dogs, horses, pigs, mink, chickens, fish and cats. Denmark is a major exporter of pig products; fishmeal is an important component of piglet feed as it promotes rapid weight gain, is high in protein and generally easy to come by at low cost, since it is produced in many parts of the developing world. FF Skagen supplies a range of FMFO products to pig feed producers, which then sell their products on to pig farms. Some of those feed producers claim that their feed contains only fishmeal from local sources, while others do not.
Danish Statistics further reveal that FF Skagen imported 2,041 tonnes of fishmeal from Senegal in 2017, and 1,087 tonnes of fish oil from the same country in 2019.

Meanwhile, information on FMFO shipments from Mauritania shows 1,209 tonnes of fishmeal and 546 tonnes of fish oil were shipped to FF Skagen from Alfa Services Ltd in Nouadhibou in 2019.

FF Skagen confirmed to Danwatch that it imported "a quite a volume" of fishmeal from Morocco and Mauritania between 2017 and 2019, but that most of the imports were certified and came from the fish filleting industry as byproducts. In 2020, the company was asked if they can guarantee that fishmeal from Mauritania does not end up in feed for pigs but declined to comment on this.

Norway is a major player in the FMFO industry, as a producer and trader - both imports and exports - of fishmeal and oil. Despite its own domestic fisheries and production of fish oil, Norway is by far the world’s biggest importer of fish oil (as well as being consistently the third biggest exporter) importing 219,095 tonnes in 2019. Peru and Denmark are its main sources, followed by Mauritania, the USA and Iceland. According to Trade Map data, Norway imported 24,344 tonnes of fish oil from Mauritania in 2019. Peru and Denmark are its main sources, followed by Mauritania, the USA and Iceland.

NMOW

Mowi is an aquafeed company with a highly integrated value chain, with operations across several different activities: FMFO production, aquafeed manufacturing, fish farming and seafood distribution. Analysis of Mowi’s (formerly Marine Harvest) annual reports shows that the company has been sourcing its fishmeal and fish oil from Mauritania and Morocco to varying degrees in recent years. Marine Harvest Integrated Annual Report 2017 indicates the company sourced fishmeal from Mauritania and Morocco, and fish oil from Morocco while the following integrated Annual Reports from Mowi show the company sourced 8,147 tonnes (22.6%) of its fish oil from Mauritania in 2018 and 10,759 (24.2%) tonnes in 2019.

Germany is Europe’s biggest importer of fishmeal, mainly on a logistical basis rather than for domestic use. Within Germany, Bremen is a hub of fishmeal trade, and most of the country’s imports go into aquaculture feed.

Köster Marine Proteins (KMP) has been the only FMFO trader in Bremen since taking over a competitor in 2017. It owns the Köster Terminal, with a storage capacity of over 50,000 tonnes, taking 77% of Germany’s total fishmeal imports in 2019 which are then re-sold and shipped onwards. KMP also bought out the Dutch fish oil trader and distributor Marvesa in 2017, establishing Köster Marine Oils (KMO) initially as a joint venture and now a wholly owned subsidiary. The company trades fish oil for aquafeed and human consumption, and primarily sources fish oil from Peru. However, Mauritanian shipping data reveals that Marvesa, by this time fully owned by KMP, imported 200 tonnes of fish oil from Mauritania in 2019, via the container ship Nordmaple, and landed in Antwerp, Belgium. Thus, parent company Fritz Köster Handelsgesellschaft is linked to recent imports of both fishmeal and fish oil from West Africa through its two subsidiaries.

Certification documents reveal that KMO has utilised two sub-contracted storage facilities in Ghent, Belgium: Sea Tank Terminal and Pantank Terminals.

Imports of FMFO could increase in the coming years, as Corprín Capital, main shareholder of Grupo Barna, has invested in a new FMFO factory in Cayar in Senegal.

The company Inproquisa trades in both products, fishmeal and fish oil, for animal feed and human consumption. Inproquisa is a Madrid-based company with presence in Italy, Greece, China, Peru and Chile.

Norwegian shipping data records 1,724 tonnes of fish oil exported from Mauritania to Belgium in 2019, and the vessel Key Sund regularly stops in Ghent on its voyages north from Mauritania, most recently on 10 January 2021 where it unloaded a significant quantity of its cargo.
Mauritania through 2019, coming from Nouadhibou and Nouakchott by container ships to Vigo. In response to recent inquiries, Inproquisa confirmed that they obtain FMFO containing Sardinella aurita from whole fish, citing Morocco as the source, and said they also purchase FMFO from South America, but would not provide further details of other sources. Spanish trade data also indicates Inproquisa may have received fish oil from Mauritania and Senegal between 2014 and 2020, however the database lists only the company location as Madrid. Trouw Nutrition (a partner company of Skretting Espana) is also based in Madrid and may account for some or all of those imports. Trade data indicates a 359 tonne shipment of fish oil from Senegal to a Madrid-based company in June 2019, and multiple shipments amounting to 2,775 tonnes of fishmeal from Mauritania to a Madrid-based company (or companies) in 2019 and 2020.

Industrias Arpo (formerly Industrias Afrex) is another Spanish FMFO company based in Mos, in the province of Pontevedra, near the port of Vigo in Galicia. Shipping data shows that in 2019, under its previous company name, it sourced 90 tonnes of fish oil from Sino Rim Proteinei in Mauritania. Industrias Arpo sells FMFO in various formulations for aquaculture and commercial livestock feed, and in response to a recent inquiry regarding FMFO for pet food use they offered two lines of fishmeal from South Africa and one line of fish oil from Mauritania. Their refinery in Mos suffered an explosion in December 2020.149 Spanish import data shows multiple shipments of fish oil from Senegal to a company in Pontevedra in 2019 and 2020, amounting to 1,378 tonnes. This may have been received by Industrias Arpo, or by Agripación de Fabricantes de Aceites Marinos, S.A (AFAMSA) another fish oil company located in the same industrial street in Pontevedra. Additionally, multiple shipments of fish oil, and one shipment of fishmeal, were also imported from Mauritania by a company in Pontevedra in 2019 and 2020.150

Skretting Espana is part of Nutreco, an animal feed company that comprises Norwegian-based Skretting, one of the world’s biggest aquafeed manufacturers, and Dutch-based Trouw Nutrition, focused on animal nutrition. Nutreco has production facilities in around 35 countries globally. Located in Burgos, Skretting Espana is listed in Mauritanian shipping records as the consignee for three containerised fishmeal shipments from Mauritania in 2019, amounting to 773 tonnes. Additionally, Spanish import data indicates that a company based in Burgos - likely Skretting Espana - imported fishmeal from Mauritania in 26 shipments of 8,126 tonnes through 2019 and 2020. Two shipments of fish oil were also imported in January 2019 and January 2020, amounting to 366 tonnes in total.

Greece is a significant importer of fishmeal and to a lesser extent fish oil, including from Mauritania, and is an end-user rather than a trader or re-exporter. The FMFO is predominantly utilised in seabass and seabream aquaculture, as Greece is the EU’s biggest producer of seabass mainly for export to Italy, Spain and France.151

Greece imported 95,453 tonnes of fishmeal in 2019, rising to 104,453 tonnes in 2020 with Denmark consistently its main source, providing around 30,000 tonnes per year in recent years. Other sources are more variable, with both Mauritania and Morocco featuring as significant, if not consistent, import sources. Trade Map records Mauritanian fishmeal exports to Greece of 9,249 tonnes in 2019.

Greece also imported 29,733 tonnes of fish oil in 2019, most of it from Europe (Norway, Denmark and Germany). Trade Map records Mauritanian fish oil exports to Greece of 1,210 tonnes in 2019.

For an overview of Mauritanian FMFO container shipping data to the EU in 2019, please refer to Appendix 2.

Our investigations uncovered that some European retailers source from aquaculture and aquafeed producers who, in turn, source from reduction fisheries in West Africa, including:

UK: Tesco, Sainsbury’s M&S Lidl Aldi;

France: Carrefour Auchan E.Leclerc Système U Monoprix Groupe Casino;

Spain: Mercadona Lidl España;

Germany: Aldi Süd Lidl Kaufland Rewe Metro AG Edeka.

However, Sainsbury’s, M&S and Mercadona have communicated that no FMFO from West Africa was used in their salmon/seafood products.


Trade relationships linking European retailers to reduction fisheries in West Africa

Although we cannot establish a direct chain of custody between the retailers and West African FMFO, Changing Markets has reported through publicly accessible sources, in-store visits, interviews, and investigations - supply chain relationships between the retailers mentioned. In this infographic, seafood processors/distributors, and packaged fish products that have been sourced indicated in companies involved in the trade of West African FMFO in recent years. The inaccuracy of these relationships is problematic, and irrespective of whether there is a direct chain of custody, they should not source from those who source from West Africa.
The pursuit of certification

The Food and Agriculture Organization of the United Nations (FAO) reports that sardinella and bonga fish stocks of West Africa are both currently over-exploited. This means that even at current levels of extraction, the fish stocks are not sustainable. Despite this, over the past years, certification bodies and FMFO/aquafeed companies have increasingly been turning their attention to West African pelagic fish, with a view to certifying the stocks as ‘sustainable’ for use for fishmeal and fish oil.

The MarinTrust Standard

Since opening for application in October 2009, MarinTrust has certified over 150 FMFO plants in more than 20 different countries; over 50% of the world’s combined production of marine ingredients is deemed to be MarinTrust compliant. The organisation has its sights set on expansion, and states that its ambition is for 75% of all marine ingredients to be MarinTrust certified by 2025 (including in assessment or in its Improver Program). MarinTrust claims to be ‘supported by NGOs’ and to offer a ‘robust, credible and accessible tool that ensures traceability and eliminates IUU [illegal, unreported, unregulated] fishing’. However, NGOs have repeatedly raised concerns about MarinTrust certification, and its claim to eliminate IUU fishing is not backed up by the evidence. As the main certification body for the FMFO sector, MarinTrust (known as IFFO Responsible Supply (IFFO RS)) is very close to IFFO, the trade organisation that represents the marine ingredients industry for over 55% of world production and 75% of the fishmeal and fish oil traded worldwide. IFFO was officially formed in 2001, but its origins as a trade association representing FMFO producers go back to 1959. Since then, it has become the preeminent trade body for the FMFO sector, systematically promoting FMFO in new markets and for new uses while using its influence and lobbying power to defend the industry from years of accusations of unsustainability. Reputation management takes up a significant part of its budget and, according to IFFO, is ‘likely to remain a major priority in the future’. Both IFFO and MarinTrust are industry-funded, the former through membership fees and the latter through certification fees. According to previous Changing Markets investigations, FMFO and aquafeed plants with links to highly unsustainable fishing practices are certified by MarinTrust, or members of IFFO although MarinTrust claims the certification is actually done by an independent certification body and only provided if in conformity with the FAO Code of Conduct for Responsible Fisheries.

159 https://www.marin-trust.com/marintrust-standard
160 “We will continue to work closely together with IFFO. We have an MOU and we do a lot with them, particularly around reputation. We are also both quite small and often share resources”… “It’s business as usual. Apart from the name, a new single logo, and a new website, everything remains the same, with the same standards. There’s still an MOU.” MarinTrust Executive Chair, Libby Woodhatch, in Seafood Source, 1 April 2020. Available at: https://www.seafoodsource.com/news/environment-sustainability/new-identity-for-marine-ingredients-certification-program-agenda-remains-unchanged
161 https://www.iffo.com/about-us
Everyday life in the fishing village of Fass Boye, Senegal

Credit: Elodie Martial / Greenpeace

CONCLUSION

In West Africa, over half a million tonnes of small pelagic fish are ground into fishmeal and fish oil every year, exported to third countries and processed as feed for farmed fish, pigs, chickens, minks and pets. The main species at stake (sardinella and bonga) are essential to the livelihoods of hundreds of thousands of people in coastal communities and to the food security of millions in the region, where they represent the main historical and most affordable source of animal protein. What is more, the resource has been overexploited for years and the scientists in charge of its assessment recommend a 50% reduction in fishing effort, calling again and again – along with local community organisations – for ‘strong and urgent action’. While artisanal catches are plummeting, fish prices are surging on the local markets, and economic migration is resulting in a heavy toll of lives lost at sea.

The Covid-19 crisis only exacerbates the impacts of this broken food system, and global calls to ‘build back better’ are clearly not reflected in the current situation of local communities in West Africa struggling more every day to earn a living. Fishing out overexploited resources otherwise critical for local populations, and grinding them to supply secondary products for industrial food industries in wealthier countries, is fundamentally wrong. While so many NGOs, local community groups, media, citizens and activists have been ringing the alarm bell for years, the FMFO industry is trying to greenwash its production to international customers, using its own certification standards. This exposure of West African populations to food insecurity poses a much deeper ethical problem than the dichotomy between poor and rich countries. In reality it is about a resource being overfished from the region and exported to feed animals in third countries which is completely unacceptable considering that coastal communities are deprived of their most essential source of protein. This economic model, based on the short-sighted extraction of resources to serve industrial food supply chains that have run out of control, poses a particular problem. It extends beyond a merely ‘poor versus rich’ narrative, to issues of justice, ethics, and fair trade.

Final consumers of products derived from the fishmeal and fish oil industry should also understand that they are part of the problem, and that, by paying more attention to their choices, they can help turn this broken food model around for the benefit of all.

Primary responsibility for this dramatic situation lies with corporate stakeholders in Asia and Europe, their respective political leaders – who are incentivising their fishing industries with unfair subsidies and concluding inequitable fishing agreements with developing countries – and local governments unable to regulate short-term benefit industries at the expense of local livelihoods and food sovereignty.

All the legal, binding and non-binding, national, regional and international instruments to fix the current state of play have been detailed in previous publications and by several NGOs. As an urgent starting point from a regional perspective, Changing Markets and Greenpeace Africa demand:

- West African governments phase out any fishmeal and fish oil production using fish fit for human consumption, based on its negative environmental, social and economic impacts.
- West African governments grant women fish processors and artisanal fishermen a legal and...
Companies and end markets stop trading fishmeal and fish oil produced using fish fit for human consumption from the West African region.

All states involved in fisheries in the region establish an effective regional management regime – particularly for the exploitation of shared stocks, such as small pelagic fish – as required under international law, relevant national laws, pan-African and regional fisheries policies, and other instruments. This management regime should comply with a precautionary and ecosystem-based approach, ensuring the total allowable catch is within safe biological limits.

Furthermore, we demand that all stakeholders involved in the global fishmeal and fish oil supply chain comply with the following:

Governments should support the phase-out of wild-caught fish for use in aquafeed and animal feed. They can start by immediately withdrawing subsidies and other public support measures for aquaculture that relies on wild-caught fish.

Governments and policy makers should implement stricter regulations on due diligence and transparency in aquafeed and animal feed supply chains.

Aquafeed companies should stop using wild-caught fish and switch to more sustainable alternatives, ensuring these alternatives do not give rise to other social and ecological problems. While some companies are taking action to reduce reliance on forage fish in their aquafeed, the use of fishmeal and fish oil needs to be phased out across the entire industry for transformational change to take place.

Companies should stop using fishmeal and fish oil to feed other animals, such as pigs, chickens, minks and pets.

Certification schemes should not certify reduction fisheries. Certifying reduction fisheries gives the false impression that exploiting wild-caught fish for use in fishmeal and fish oil can be sustainable.

Retailers should commit to avoiding seafood reliant on fishmeal and fish oil inputs from whole wild-caught fish. They should put in place a roadmap for eliminating the use of fishmeal and fish oil in products, and conduct regular audits to ensure implementation.

Retailers should provide full transparency about farmed seafood supply chains – the identity of suppliers, processors, aquafeed companies and fishmeal and fish oil producers, and the location of reduction fisheries.

Companies should stop using fishmeal and fish oil to feed other animals, such as pigs, chickens, minks and pets.

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APPENDIX 1: WEST AFRICAN FISHMEAL AND FISH OIL TRADE TABLES

MAURITANIA: FISHMEAL & FISH OIL EXPORTS

<table>
<thead>
<tr>
<th>Top 10 importers of Mauritanian fishmeal (in tonnes)</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
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<td>74,516</td>
<td>119,745</td>
<td>127,940</td>
<td>110,423</td>
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<td>22,333</td>
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<td>800</td>
<td>520</td>
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<td>362</td>
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<td>440</td>
<td>100</td>
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<td>4,196</td>
<td>1,582</td>
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Source: ITC Trade Map / UN Comtrade

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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>World</td>
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<td>19,993</td>
<td>34,482</td>
<td>40,430</td>
<td>34,335</td>
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<td>510</td>
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</table>

Source: ITC Trade Map / UN Comtrade
### Mauritanian Fishmeal and Fish Oil Supply Chain from West Africa to Europe

#### Top EU destinations of Mauritanian fishmeal (in tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
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<tbody>
<tr>
<td>World</td>
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<td>74,816</td>
<td>119,745</td>
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Source: ITC Trade Map / UN Comtrade

#### Top EU destinations of Mauritanian fish oil (in tonnes)

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<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
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<td>19,993</td>
<td>34,482</td>
<td>40,430</td>
<td>34,535</td>
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Source: ITC Trade Map / UN Comtrade

#### Mauritanian FMOF exports volume (in tonnes) - 1st Semester 2020

<table>
<thead>
<tr>
<th></th>
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<th>Asia</th>
<th>Europe</th>
<th>Russia</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishmeal</td>
<td>1,121</td>
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<td>Fish oil</td>
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<td>20,601.69</td>
<td>0</td>
<td>0</td>
<td>21,591.77</td>
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Source: Extracted from the Information and Analysis Bulletin of the Economic and Social Observatory of Fisheries in Mauritania (OESP) - 1st semester 2020

### Senegal: Fishmeal & Fish Oil Exports

#### Top 10 destinations of Senegal fishmeal (in tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
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</thead>
<tbody>
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<td>Brunei Darussalam</td>
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<td>EU</td>
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<td>1,959</td>
<td>1,836</td>
<td>1,365</td>
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</tbody>
</table>

Source: ITC Trade Map / UN Comtrade

#### Top 10 destinations of Senegal fish oil (in tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
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<tbody>
<tr>
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Source: ITC Trade Map / UN Comtrade
THE GAMBIA: FISHMEAL & FISH OIL EXPORTS

### Top destinations of The Gambia fishmeal (in tonnes)

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Source: ITC Trade Map / UN Comtrade

### Top 10 destinations of The Gambia fish oil (in tonnes)

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Source: ITC Trade Map / UN Comtrade

APPENDIX 2: CONTAINERISED EXPORTS OF FISHMEAL AND FISH OIL FROM MAURITANIA INTO THE EU IN 2019

<table>
<thead>
<tr>
<th>Country</th>
<th>Company</th>
<th>Product(s)</th>
<th>Shipments</th>
<th>Total weight (mt)</th>
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<td>FM</td>
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<td>SKRETTING ESPANA SA</td>
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<td>51</td>
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</table>

Source: Greenpeace investigation

Notes:
1. The majority of consignments list "unknown partner" so this is not a complete list of companies
2. This data covers only exports by container, therefore shipments by tanker (most fish oil) and cargo vessels (some fishmeal and fish oil) are not included.