



TRAFFIC

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CRACKING THE CODE

AN ANALYSIS OF CUSTOMS HS CODES USED IN THE TRADE
IN WILD ANIMALS AND PLANTS FROM AFRICA TO ASIA

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TRAFFIC

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DESIGN

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Dried fish maws for sale in Hong Kong SAR. Photo: Markus Bürgener

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ARCADIA

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EXECUTIVE SUMMARY

Understanding the trade in wildlife from Africa to Asia has critical conservation implications for many species. While there is often a strong focus on investigating the illegal trade in wildlife, the size and value of the reported legal trade in wildlife, fisheries, and wood commodities traded from Africa to Asia is also significant. It is crucial that wildlife trade is monitored to ensure it is conducted at levels which do not negatively impact wild populations of the species in trade. Ensuring sustainability of traded wildlife is essential to the conservation of the species in trade, the livelihoods of those who depend on collecting and trading them, and the economies of the countries to which this trade contributes.

Trade statistics can be used to help ensure wildlife commodities are sustainably managed and to detect potentially illegal trade. The main factor hindering the ability to monitor trade is a lack of accurate and sufficiently detailed data. For species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) international trade is regulated and monitored, which means that the volumes and patterns of reported trade can be assessed through the CITES Trade Database. However, for the large proportion of species internationally traded that are not CITES-listed, the UN Comtrade Database can offer crucial insights.

Four critical recommendations for future actions are:

- (1) Increase capacity building and awareness raising among governments about the UN Comtrade Database.
- (2) Investigate which species or genera would benefit most from the development of specific HS codes.
- (3) Encourage changes in national HS codes to better benefit trade monitoring for conservation purposes.
- (4) Encourage the uptake and use of new HS and national customs codes relevant to wildlife trade among trading bodies.

The UN Comtrade Database is a publicly available repository of global trade data which can provide an understanding of important trading routes and developing patterns of trade for a variety of plant and animal commodities.

The overall aim of this report is to explore the trade of wildlife, fisheries, and wood (timber and non-timber wood commodities) exported from Africa to Asia as reported in the UN Comtrade Database. This report highlights the value of this data repository as a means to investigate the international trade, as well as providing a valuable baseline for future work and to encourage those from governments, NGOs, academia, media and elsewhere to make use of this wealth of information.

There are limitations in using data from the UN Comtrade Database for fine-scale species level assessments, as there are many groups of species for which data does not exist or cannot be easily accessed. Therefore, UN Comtrade data are one of the only available data sources to monitor their trade. With careful planning of the analysis and consideration of the limitations of the data, there are still significant benefits to using the UN Comtrade Database. However, there are steps which can be taken to improve the utilization of UN Comtrade data for conservation.

INTRODUCTION

A remarkable diversity of wildlife, fisheries and forest commodities (hereafter referred to collectively as wildlife) are traded globally every year. The diversity of commodities ranges from bamboo for furniture construction to eels for human consumption and many more. In many cases, these commodities are traded legally and sustainably, however within this diverse trade there will also be some commodities which are traded illegally and/or at unsustainable levels.

Understanding this trade is vital for sustainable resource management and conservation, however in many cases it is challenging to obtain comprehensive data on the trade in wildlife. There are several different databases which do provide trade data, including the CITES Trade Database for the trade in CITES-listed species (CITES 2020, Outhwaite & Brown, 2018), and FishStatJ for fisheries data (FAO, 2020). Arguably the most comprehensive database for international trade is the United Nations (UN) Comtrade Database (UN, 2020).

The UN Comtrade Database is the biggest repository for trade data, containing more than three billion trade records, going back as far as 1962 (Comtrade Admin, 2020). These data are from international trade statistics voluntarily reported by 170 countries/territories to the UN Statistics Division, and include trade routes, quantities and value of goods. The UN Statistics Division process and harmonise these data into a standard format to be made publicly available through the UN Comtrade Database (Comtrade Admin, 2020). The richness of these open-source data can play an important role in monitoring the trade of a range of different wildlife species.

The Harmonised System (HS) is an international system for classifying goods: broad sections of commodities are divided into chapters, which are further divided into headings and subheadings (Figure 1), each identified with a numerical identifier which is up to 6

digits long. There are approximately 5,300 article descriptions which classify products for customs purposes (UN Trade Statistics, 2017). Some governments choose to use expanded custom code systems which have additional digits after the internationally recognised 6 digit system for more detailed national reporting, but this varies by country. The internationally recognised 6 digit HS code system is used widely by governments, international organisations and the private sector. They all use the HS system to monitor areas like taxes, trade policy as well as price monitoring and control of quotas (WCO, 2021b). Given the importance of the HS code system to national and international trade regulation, it is crucial that HS codes are kept up to date. Therefore, HS codes change over time in response to changes in trade patterns, with codes being added or removed, or headings becoming more or less specific. Governments can make requests directly to the World Customs Organisation (WCO) for amendments to HS codes. For example, work by Chinese Customs and the International Bamboo and Rattan Organisation led to the number of HS codes for bamboo and rattan being expanded from 10 in 2007 to 24 by 2018 (INBAR, 2020), governments may seek input from other parties including industry or NGOs for proposed changes.

Amendments developed by NGOs or industry on the other hand should first be suggested to the national Customs administration in the country of concern, or an intergovernmental organisation such as FAO, and in turn the request goes to the World Customs Organisation (WCO). In both cases the WCO secretariat would place the suggestion as an issue on the agenda of the HS Committee (WCO, 2020b). The HS System Committee looks at the policy, makes decisions about classification and prepares amendments to the HS code system. These amendments update the HS code system every five to six years (WCO, 2021b).

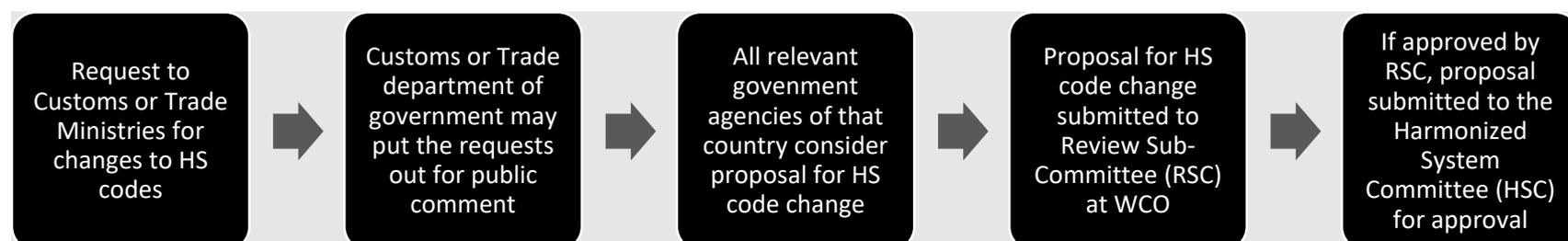


Figure 1: Process of amending a HS code adapted from (WCO, 2021a)

Data from the UN Comtrade Database can be a powerful tool for governments wanting to better manage wildlife commodities, and NGOs looking to better monitor wildlife trade. Data from the database could improve supply chain traceability, for example if the data show a European country (which has strict timber import regulations), is importing high volumes of wooden furniture from Asia of species which are not native to Asia, steps could be taken to determine the origin of the wood.

Additionally, it could be used to check wood is not being sourced from countries with trade export bans. Improved reporting of HS codes to the UN Comtrade Database could also improve transparency of trade. Greater transparency would benefit governments as improved national adherence to the HS code system could ensure governments are not missing revenue by misreporting. Better traceability could facilitate more sustainable management of wildlife commodities and benefit the conservation of species which may be threatened by unsustainable levels of trade.

The UN Comtrade Database is useful when looking at trade on the scale of Africa - a hugely diverse continent of 54 countries and one disputed territory (hereafter referred to as country/countries). Each country has different trading routes for the commodities harvested or produced within the country (Outhwaite & Brown, 2018). The diversity of natural resources in Africa range from high wood producing countries like the Democratic Republic of the Congo which are dominated by rainforest, to the productive fisheries of coastal countries like South Africa.

While many countries trade with Africa, Asia is a significant importer of the wildlife commodities exported from Africa and is therefore the focus of this report. The trade between Africa and Asia is dominated in value by fisheries and wood, with certain countries exporting very high values of these commodities, for example the Republic of the Congo reported wood exports of over USD173 million to mainland China in 2017 alone.

CAVEATS

Asia is not Africa's only trading partner and therefore this report should not be considered as an analysis of total exports from Africa. Summary graphs show the trade to Asia in the context of global trade, however discussions about commodities from Africa to areas outside Asia, e.g., Europe, are not included in this report. Further to this, for each country a case study for a single commodity is presented. These commodities have been chosen because they are

However, it is also important to investigate the relatively smaller exports of wildlife commodities. While lower in value or volume, these still highlight trade routes which have critical economic implications to those countries involved, and potential conservation implications. For example, one trade chain of conservation interest would be the trade in wild-caught freshwater ornamental fish from Africa to Asia, despite their relatively low economic value when compared to high value timber or marine fish (Brummett, 2008). Despite the relatively low value of this trade chain, it could be considered to be of conservation interest as there is a significant number of wild-caught ornamental fish in the aquarium trade sourced from lakes like Lake Tanganyika. Lakes like Lake Tanganyika contain a remarkable diversity of fish including cichlids which are popular in the aquarium trade (Lake Tanganyika alone has 300 species of cichlid many of which are endemic) (Kinyage & Lamtane, 2018). The trade in these wild caught ornamental fish may have benefits as alternative livelihood strategies, however case studies in other parts of the world highlight that overharvesting of fish from ecosystems like this can lead to significant species declines if not carefully monitored (Evers *et al.*, 2019). The UN Comtrade data could be one tool to provide important insights into broad trade patterns of the ornamental fish trade. In both cases, data in the UN Comtrade Database may be the only available source of open access data to monitor these commodities.

This report highlights how data from the UN Comtrade Database can be used for insights into the trade in wildlife and to encourage governments, NGOs, academia, media and others to use this data.

Case studies of trade for each country are given to demonstrate the diversity of wildlife being traded from Africa to Asia, as well as providing valuable baselines for future work by NGOs which want to use data from the COMTRADE Database to monitor wildlife trade. Recommendations for entities/stakeholders to make better use of the UN Comtrade system as well as recommendations to enhance the UN Comtrade system for wildlife trade monitoring are provided.

of high value or of particular conservation interest. However, these are just examples and there will be many other wildlife commodities traded which are not explored in this report.

In this analysis, HS codes describing the commodities are analysed as reported in the UN Comtrade Database. In some cases, countries may still be reporting using old HS codes and this can lead to

discrepancies in codes used by different countries. New codes may be underrepresented in this analysis as the HS code was not in existence for the full time period analysed, and/or there is a delay in countries reporting against this code.

In most cases, HS codes describe a commodity that could encompass a large number of species, meaning that unlike data

from the CITES Trade Database, in most cases it is not possible to investigate species-specific trade data from the UN Comtrade Database alone. However, as the majority of species (in particular timber and fish species) are not listed on CITES, data from the UN Comtrade Database are valuable in providing insights into the trade of species groups not documented elsewhere.

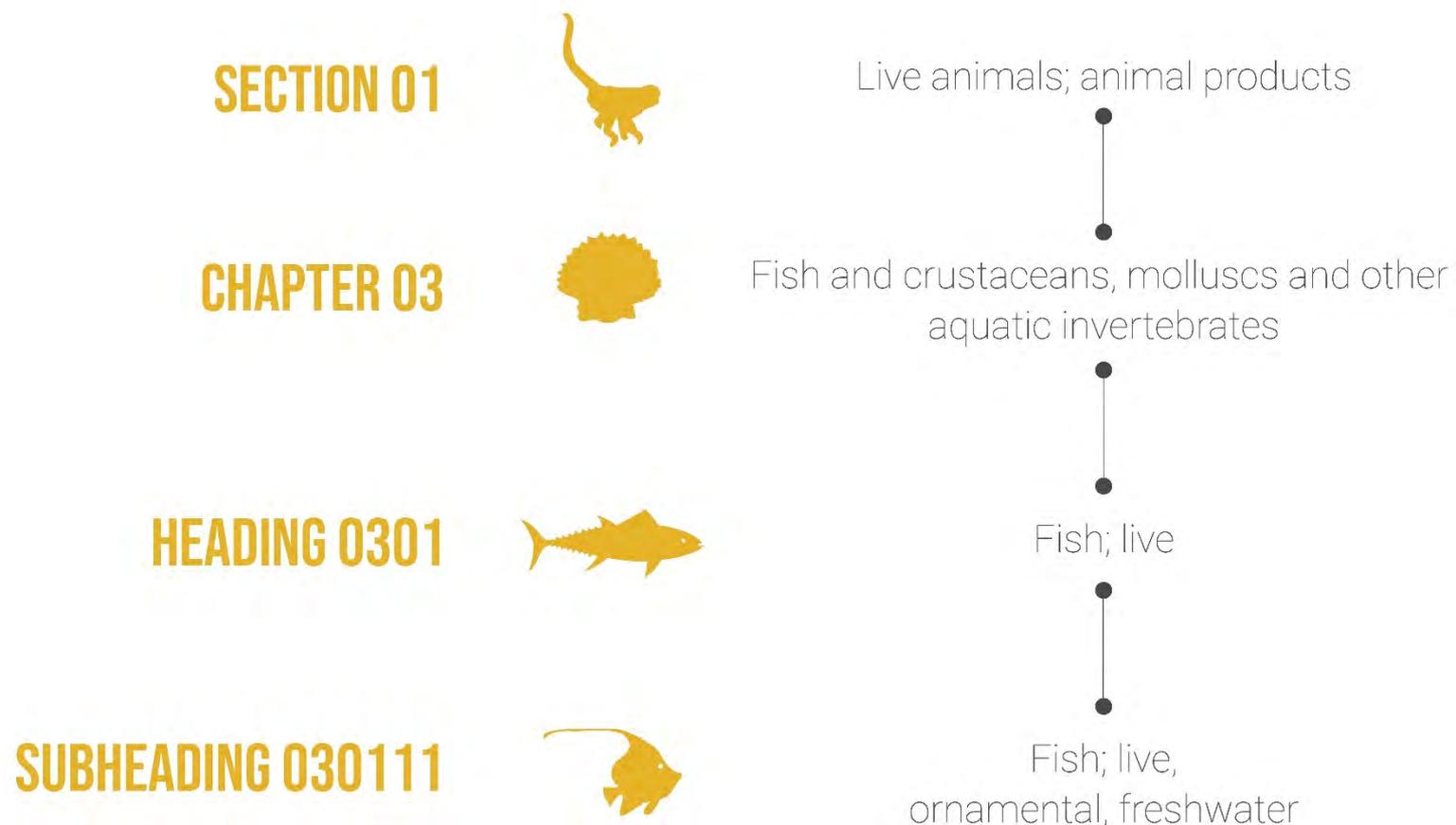


Figure 2: Example of the hierarchical structure of the Harmonized System.

Within a code there may be a huge diversity in the source from which the wildlife was harvested. For example, a code for reptile skins may include skins from animals harvested from the wild, bred in captivity, or collected from the wild as juveniles/eggs and raised in captivity. Similarly, a code for fish like trout could refer to farmed fish or fish which have been caught from the wild. It is not possible to know how these commodities were sourced, whether they are incorrectly reported or illegally traded from the UN Comtrade Database alone.

While the data are those reported in countries' official statistics and therefore inferred to be legally traded, it may be the case that wildlife commodities could have been harvested or traded illegally.

Commodities may also be purposefully mis-reported under an incorrect code to avoid regulation. For example, unprocessed timber may be reported incorrectly using a code describing it as processed, simply to avoid log export bans in some countries.

The study uses trade statistics reported by exporting countries: in some cases, reports have not been submitted by exporting countries, in other cases there may be errors in reported quantities or inconsistencies in the codes used. Investigating these errors is outside the scope of this study. Similarly, changes in trade over the time frame of this study may be due to changes in reporting methods, regulation or governance, in most cases these are not discussed in this study.

METHODS

This report used data from the UN Comtrade Database to understand the trade in wildlife from Africa to Asia. The global trade data in this repository are submitted by 170 countries/areas to the UN Statistics Division annually. The parameters used for this analysis were:

Timeframe: 2014–2018

Commodities: All data from the fisheries chapter and wood chapter were downloaded (HS codes starting 44 and 03 respectively) as well as all those traded under HS 1211 (which includes medicinal and aromatic plants) (see Appendix I). Since the chapter containing live animals (01) was dominated by commodities from domestic animals like beef and lamb, a selection of HS codes more likely to contain wildlife commodities was used (see Appendix II for full list). Therefore, in this report “animals” is used to refer to non-livestock animals as far as possible. Data were downloaded over the course of 2020.

In addition to the broad codes (Appendix I, II) more detailed codes (Appendix III) were used to look at particular commodities in trade.

In some cases where the specific species in trade could not be determined from data in the UN Comtrade Database due to a broad HS code, the CITES Trade Database was used to try and determine the species.

Importers: All countries and territories (hereafter referred to as countries) defined as South East or East Asia by the UN (UN Trade Statistics, 2020).

Exporters: All countries and territories (hereafter referred to as countries) designated as Africa by the UN (UN Trade Statistics, 2020).

Quantity: Value of trade as reported in US dollars (USD) was used for this analysis. Value rather than weight/volume was used as for many of these commodities there are significant gaps in the reported data for weight/volume. Additionally, in some cases the value of the product may be more consistent than the weight, for example commodities transported in water, the water may or may not be included in the reported weight.

Type of trade: Direct trade only (no trade reported as re-export).

ACRONYMS

CAR	Central African Republic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DRC	Democratic Republic of the Congo
EIA	Environmental Investigation Agency
EU	European Union
FAO	Food and Agriculture Organization
FLEGT	Forest Law Enforcement, Governance and Trade
FSC	Forest Stewardship Council
HS	Harmonised System
ICCAT	International Commission for the Conservation of Atlantic Tunas
IFEAT	International Federation of Essential Oils and Aroma Trades
INBAR	International Network of Bamboo and Rattan International
ITTO	The International Tropical Timber Organization
NDF	Non-Detriment Finding
NEPCon	Nature Economy and People Connected
NGO	Non-Governmental Organization
POC	Province of China
SAR	Special Administrative Region
SCRS	Standing Committee on Research and Statistics
UN	United Nations
USD	US dollars
VPA	Voluntary Partnership Agreement
WCO	World Customs Organisation
WWF	The World Wildlife Fund

FINDINGS

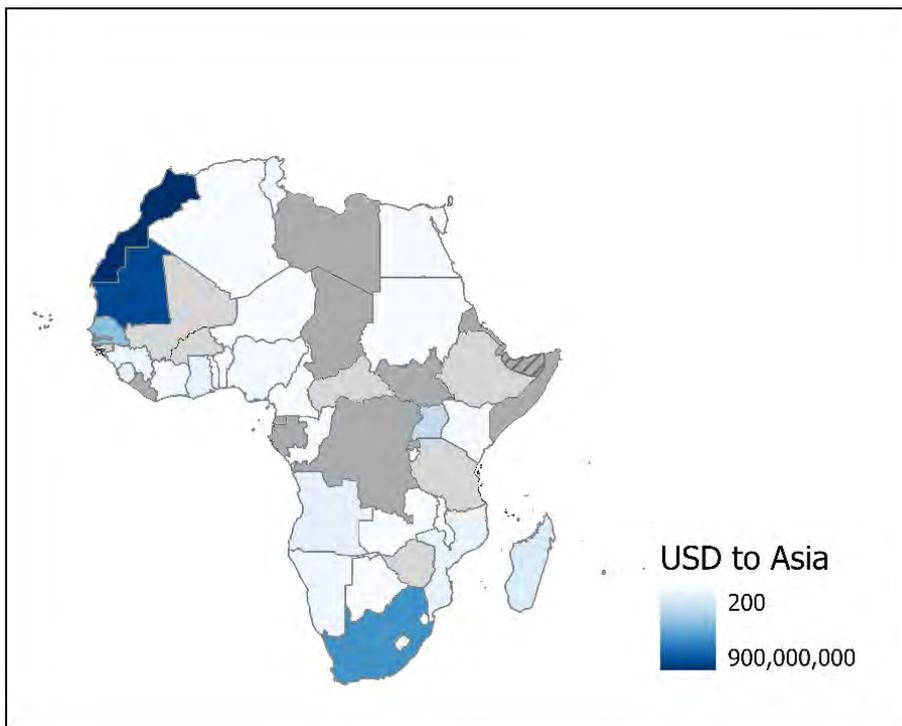
As an initial step in data analysis, the values of wildlife commodity exports (Figure 2), and the percentage of wildlife commodities reported to be destined for Asia were mapped (Figure 3). In these maps dark grey denotes countries which did not submit trade reports to UN Comtrade between 2014 and 2018. Light grey areas show countries which did submit trade reports between 2014 and 2018 but did not report exporting the commodities shown in the

maps below to Asia between these years, hatched areas show disputed territories, and values are rounded to one significant figure. The variation in trade patterns between different countries within Africa highlights how wildlife trade needs to be considered on a country-by-country basis.

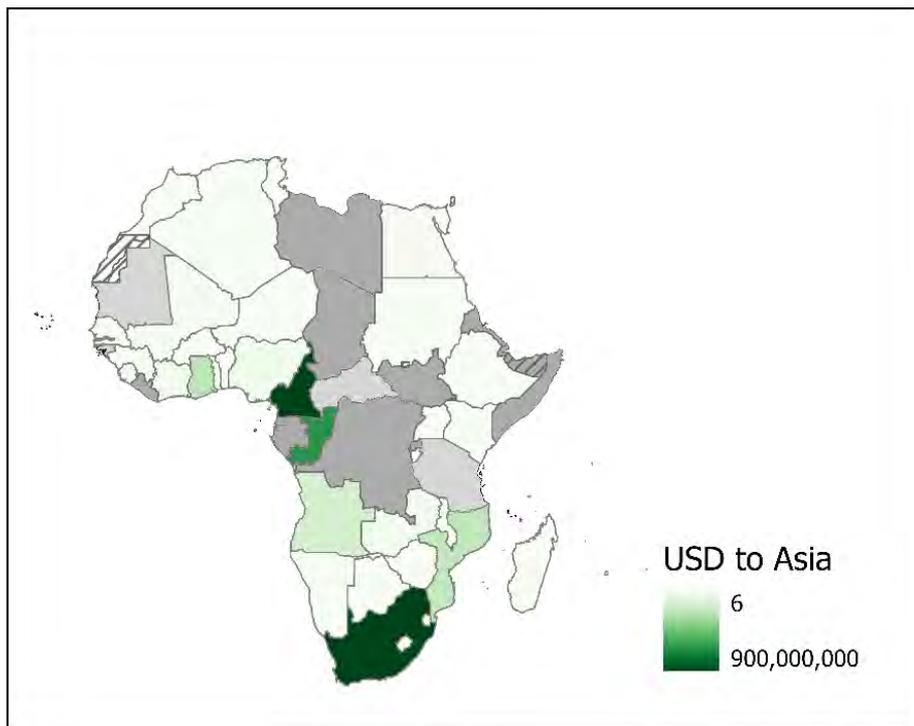


Marine products including sea cucumbers, fish maws, and shark fins for sale in Hong Kong SAR. Photo: M. Burgener / TRAFFIC

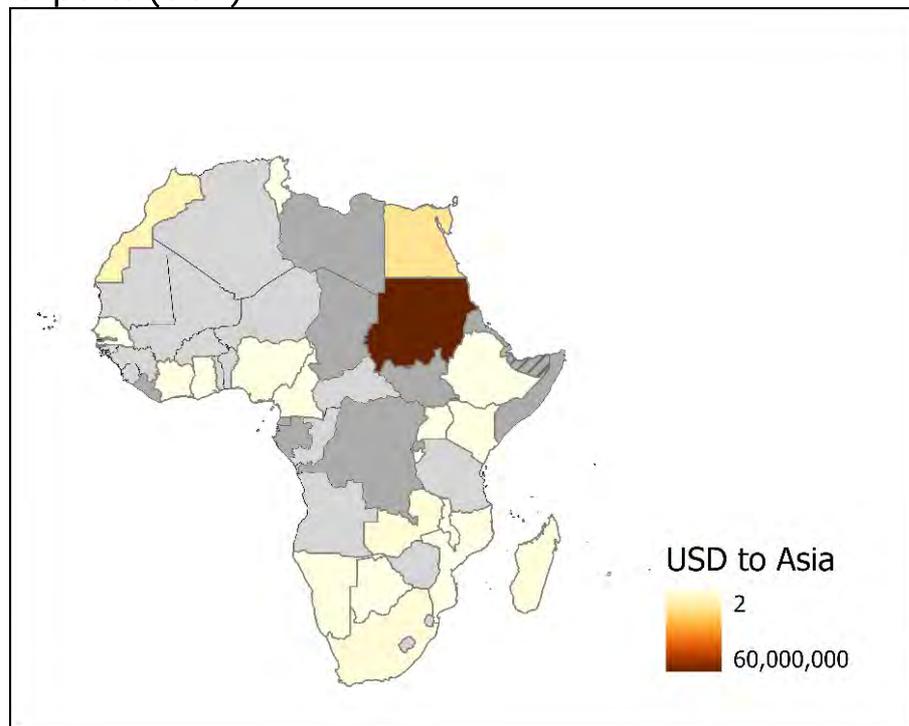
A Value of reported fisheries exports (USD)



B Value of reported wood exports (USD)



C Value of reported medicinal plant commodity exports (USD)



D Value of reported animal commodity exports (USD)

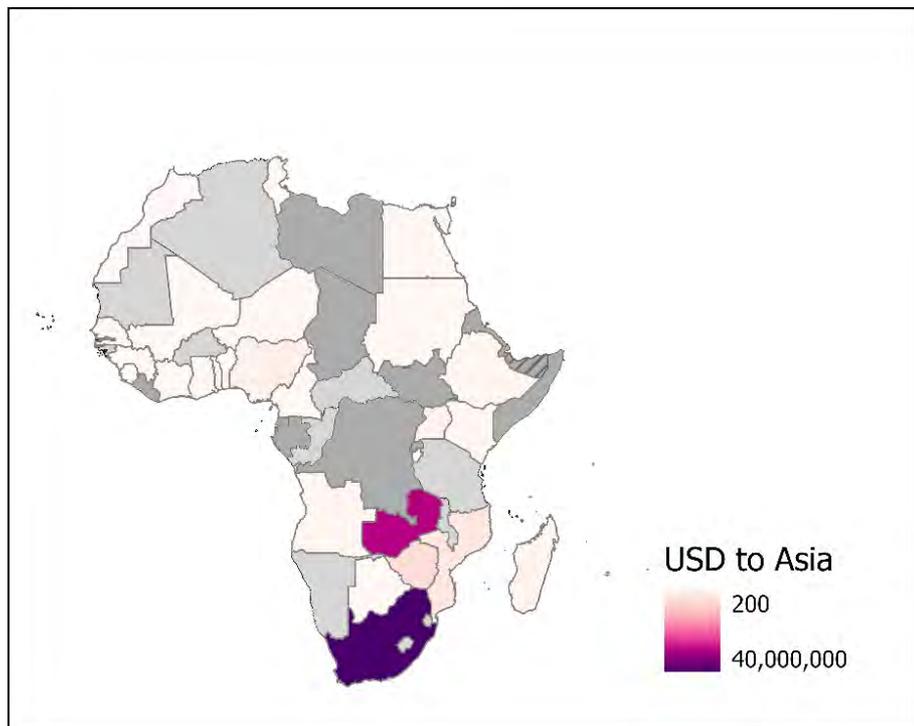
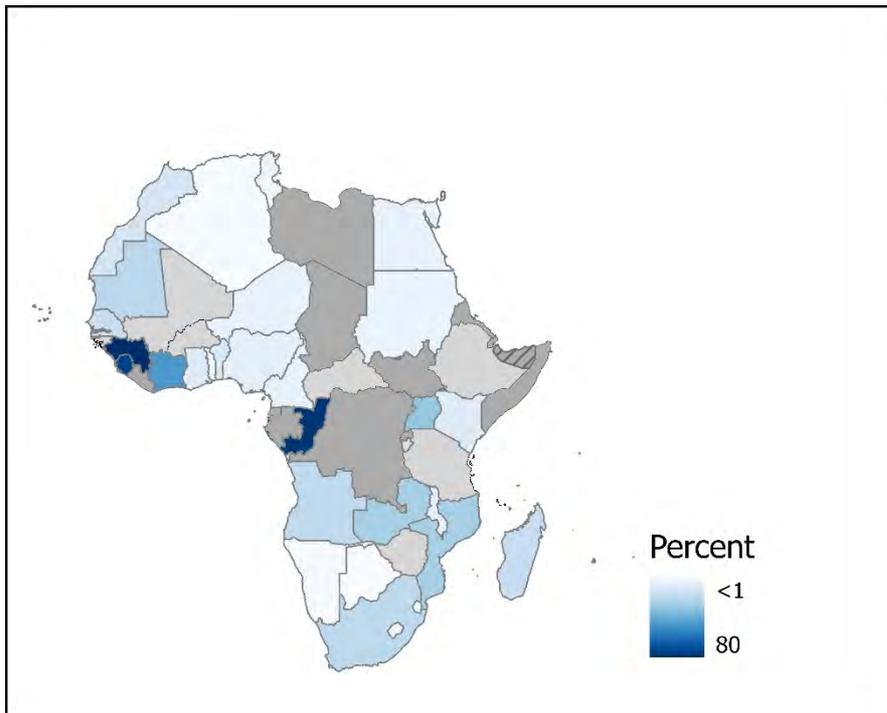
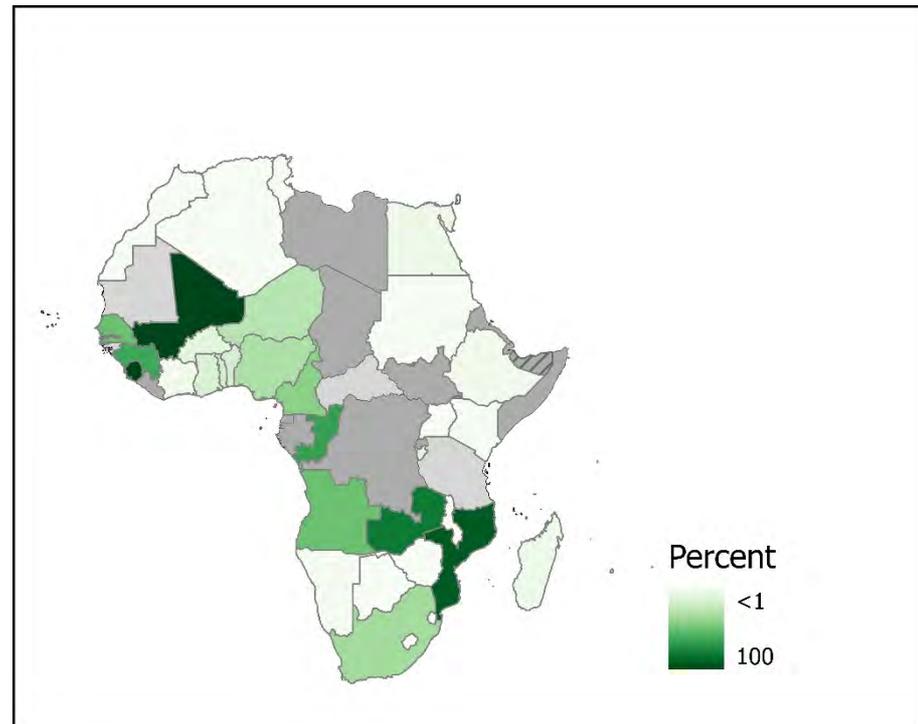


Figure 2: Maps showing the value of exports (USD) to Asia between 2014 and 2018, as reported by exporting African countries to the UN Comtrade Database. (A) Fisheries commodities, (B) Wood commodities, (C) Medicinal plant commodities, (D) Animal commodities.

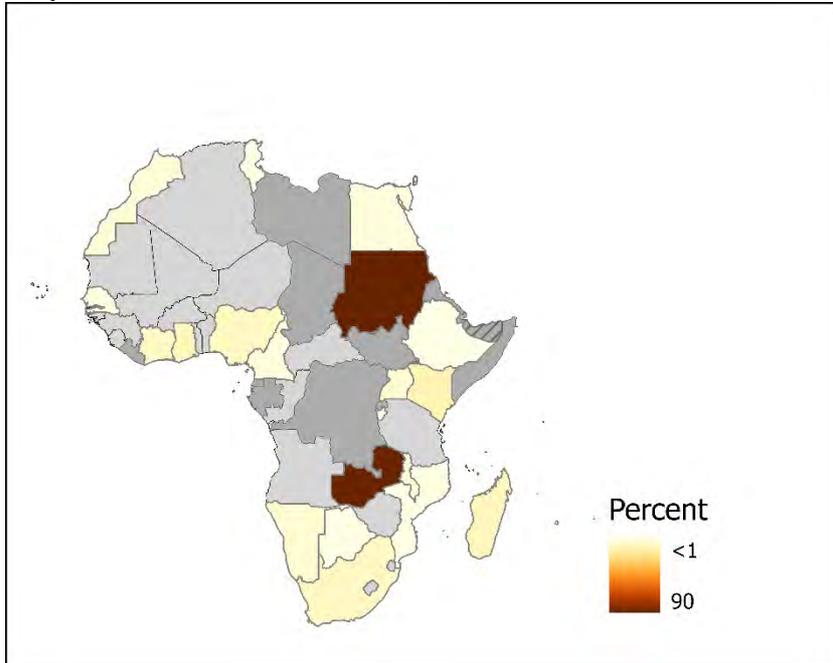
A) Percentage of fisheries exports destined for Asia



B) Percentage of wood exports destined for Asia



C) Percentage of medicinal plant commodity exports destined for Asia



D) Percentage of animal commodity exports destined for Asia

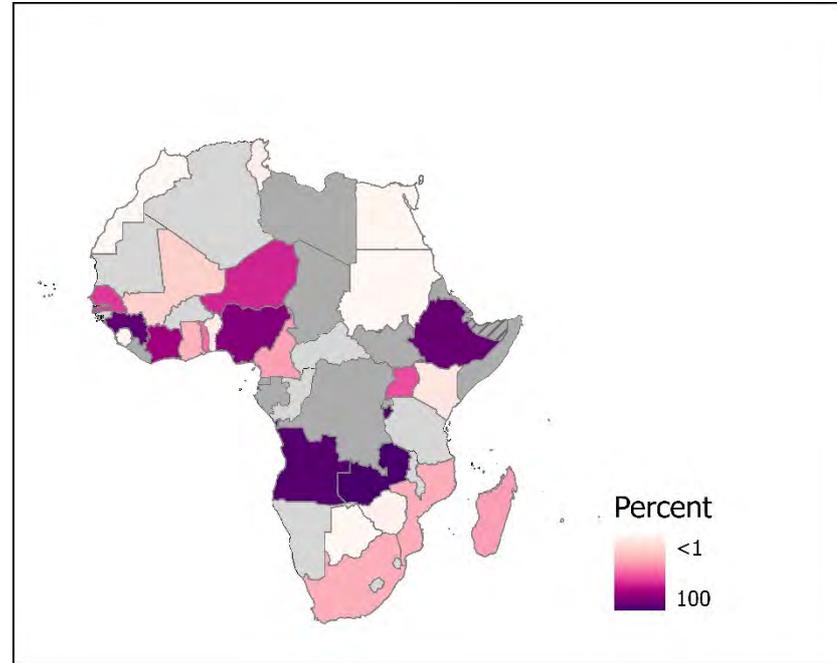


Figure 3: Percent of exports destined for Asia compared to the rest of the world (USD) between 2014 and 2018, as reported by exporting African countries to the UN Comtrade Database. (A) Fisheries commodities, (B) Wood commodities, (C) Medicinal plant commodities, (D) Animal commodities.

COUNTRY SUMMARIES – FOCUSING ON A SPECIFIC HS CODE

ALGERIA

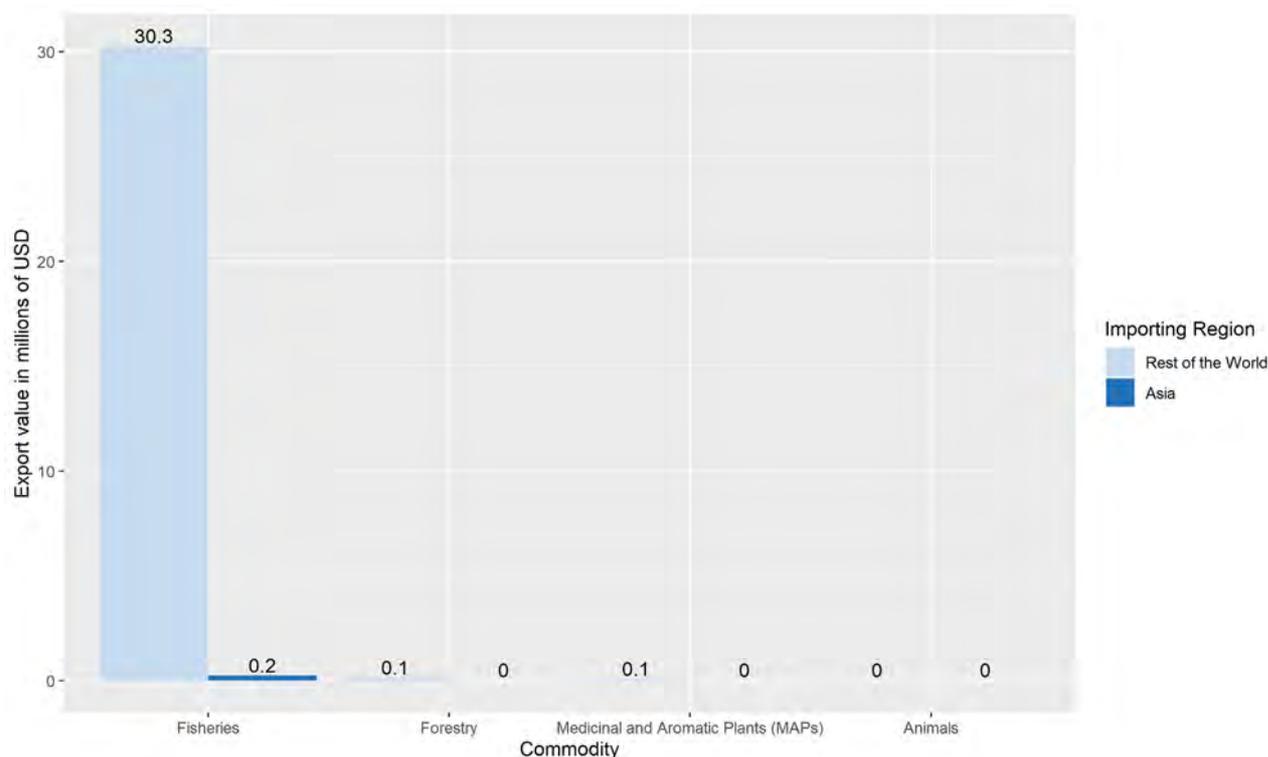
Fisheries dominate Algeria's most reported exports however, only a small percentage of these exports went to Asia. Algeria reported Viet Nam as the country in Asia it exported the greatest value of fisheries commodities to (HS 03), followed by Hong Kong Special Administrative Region (SAR).

One fisheries area Algeria is exploring is aquaculture. The Algerian fish farming industry is in its infancy and while still a relatively small exporter to Asia, Algeria's aquaculture capacity is increasing, presenting an opportunity for diversification of fisheries in wetland areas. An example of how Algeria is building aquaculture capacity is the collaboration with (and investment from) South Korea, which has allowed Algeria to farm the White-legged King Prawn *Litopenaeus vannamei* since 2016 (Zouakh & Meddour, 2017). There are concerns about the expansion of aquaculture in Algeria, as some imports from Algeria of fish and invertebrates have been infected with disease or parasites, which is concerning particularly as there is limited training available on fish pathology in Algeria (Zouakh & Meddour, 2017).

HS CODE IN FOCUS:

HS code: 03 (Fish and crustaceans, molluscs and other aquatic invertebrates)

Export value from Algeria to global markets: USD30,496,824



Algeria's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

ANGOLA

Angola reported high value exports of both wood and fishery commodities globally. Approximately half of the wood commodities and a quarter of fishery commodities were reported to be exported to Asia. Within the fisheries exports, Angola reported exporting the highest value of fresh or chilled rays or skates (HS 030282) of any African country to overseas markets: all of which was exported to South Korea.

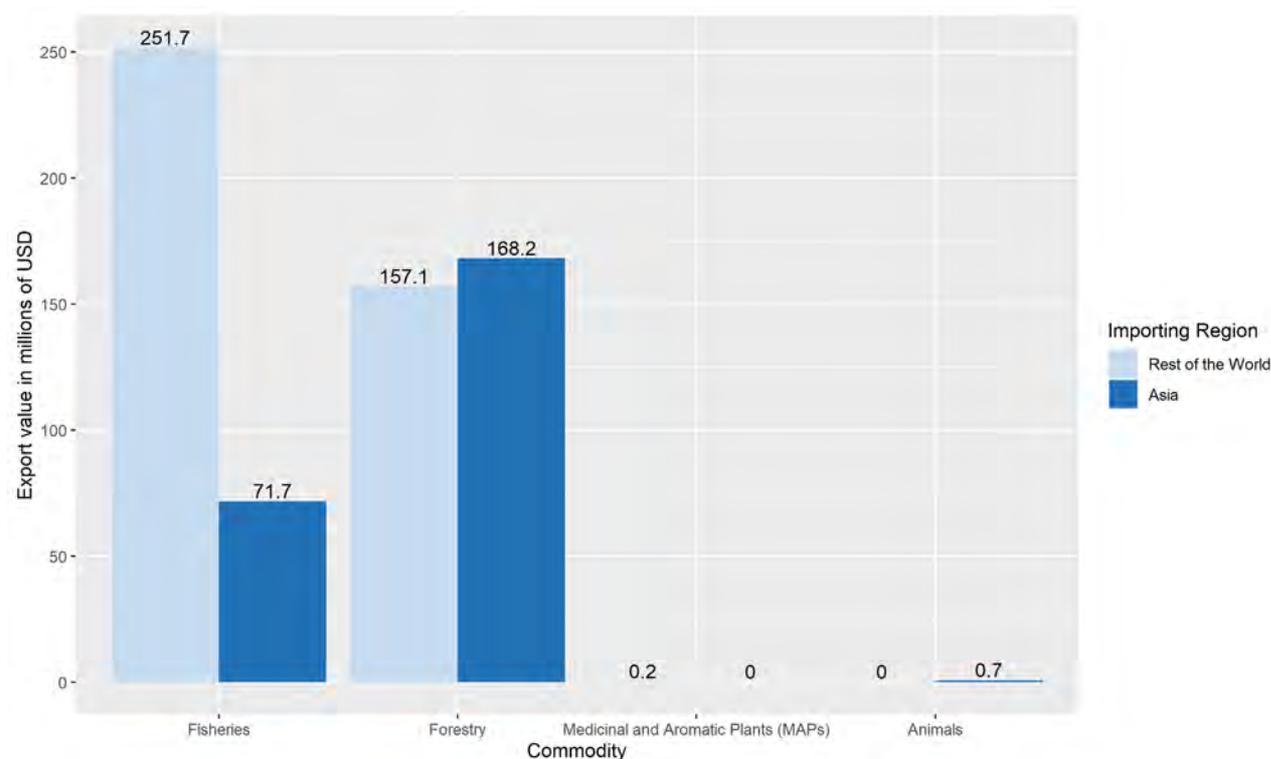
Angola saw an expansion of its artisanal fisheries sector following the post-colonial civil war (1975-2002), where displacement during and after the war led people to move from rural to coastal and urban areas (Sowman & Cardoso, 2010). Fisheries in Angola are reported to be vital resources ensuring food security and providing opportunities for coastal communities (Sowman & Cardoso, 2010).

Species-specific information is not available in the UN Comtrade Database to determine which species of rays and skates were exported from Angola to Asia in this analysis. Angola joined CITES in 2013 (CITES, 2013) but as not all skates and rays are listed in the CITES Appendices it is not possible to use the CITES Trade Database to determine which species are being exported (no exports from Angola of CITES-listed *Manta* spp. and *Mobula* spp. were reported during this time). There are few data on the state of Angolan fisheries (about rays, skates or any other species), however fishing declines have been highlighted in the wider Benguela area (FAO, 2013). Additionally, in the South-eastern Atlantic Ocean, deep-sea skates are taken as bycatch, but scant information is available on catch rates (Ebert, 2015).

HS CODE IN FOCUS:

HS code: 030282 (Fish; fresh or chilled, rays and skates (Rajidae), excluding fillets, liver, roes and other fish meat of heading 0304)

Export value from Angola to global markets: USD386,887



Angola's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

BENIN

Benin's reported exports were dominated by wood commodities; less than a quarter of which were reported to be exported to Asia. One HS code under which Benin reported high value exports was HS 440729 which includes sawn or chipped tropical wood. In Benin, export of all woody species in their unprocessed form has been illegal since 2005, therefore processing takes place in country (CITES, 2015). Benin's biggest reported importing partners in Asia were mainland China followed by Singapore.

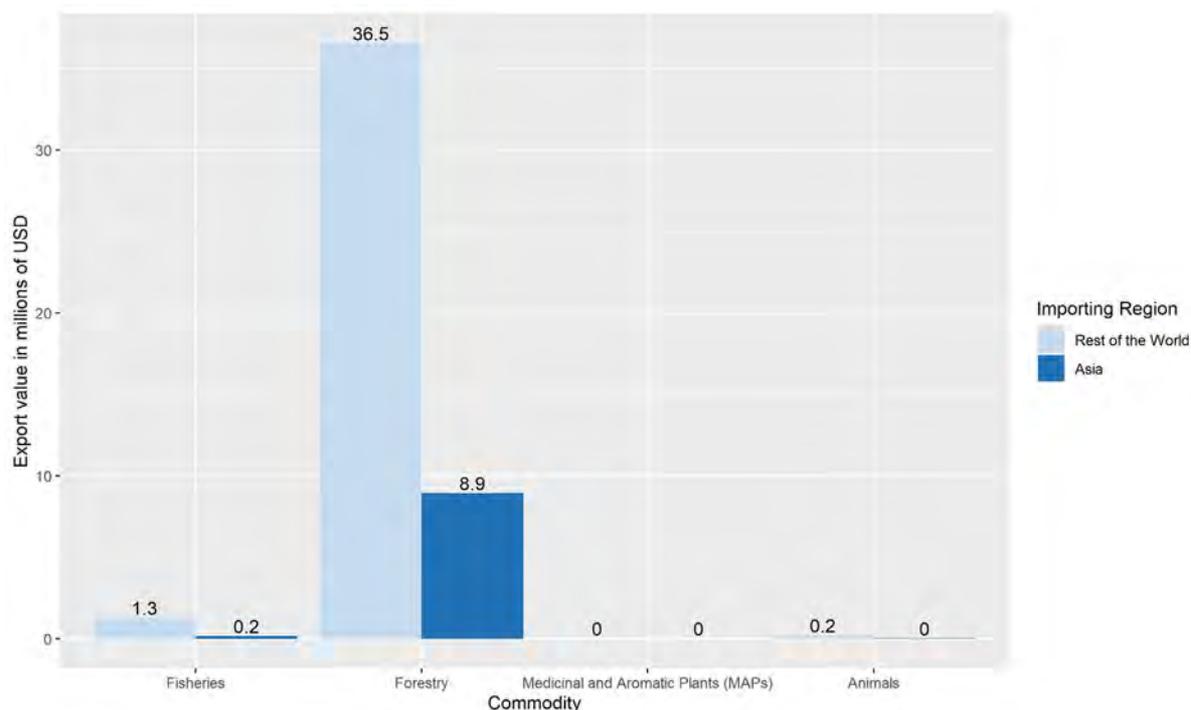
While it is not possible to know which species are traded under the subheading of tropical wood from UN Comtrade Database data, one tropical wood harvested in Benin is CITES-listed African Rosewood *Pterocarpus erinaceus*. According to the CITES Trade Database, mainland China (46,166 m³) and Viet Nam (1,220 m³) reported importing African Rosewood sawn wood and (despite the ban on exporting raw wood) logs from Benin between 2014 and 2018, but these exports were not reported by Benin. Therefore, it could be that African Rosewood was exported under this HS code, however without more information it would not be possible to determine if it was exported under this code or a different code.

Rosewood has been reported to follow a "boom and bust" pattern of exploitation in West Africa, with a rapid spike in exports of the commodity to Asia before the eventual exhaustion of the product (CITES, 2016b). Benin was one of the early countries to be caught in this boom and bust cycle (CITES, 2016b) with high reports of exports in 2014 (Sun, 2014). While Benin is still exporting African Rosewood there is evidence that Benin's stocks of African Rosewood are being over exploited (CITES, 2016a).

HS CODE IN FOCUS:

HS code: 440729 (Wood, tropical; as specified in Subheading Note 2 to this Chapter, n.e.c. in item no. 4407.2, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm)

Export value from Benin to global markets: USD9,661,854



Benin's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

BOTSWANA

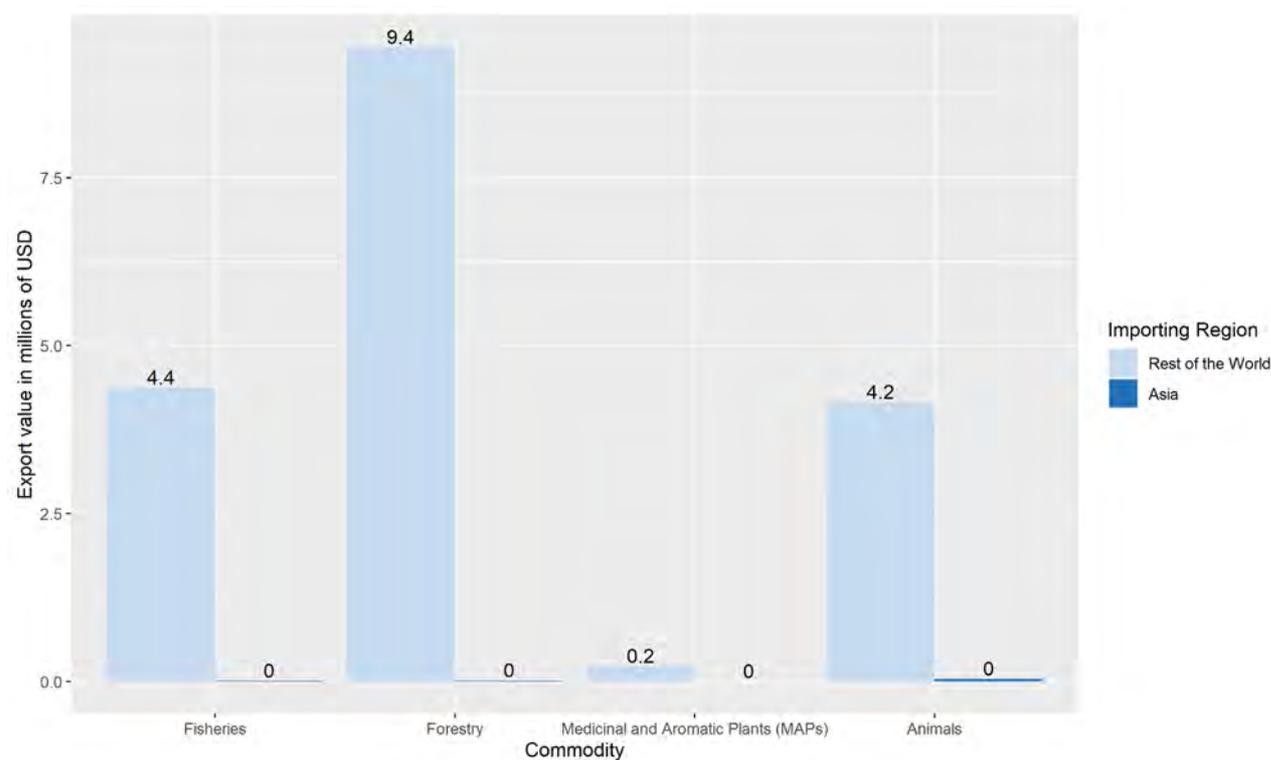
Wood commodities made up the majority of reported global exports from Botswana, followed by fisheries: just over four million dollars of global fisheries exports were reported between 2014 and 2018. However, Botswana reported very little trade to Asia across any of the commodities explored in this report. The biggest reported importing partner of fish, crustaceans, molluscs and other aquatic invertebrates in Asia was Hong Kong SAR.

Botswana is land-locked, the most important fishery stocks come from the Okavango Delta, plus some aquaculture with a focus on tilapia (FAO, 2018).

HS CODE IN FOCUS:

HS code: 03 (Fish and crustaceans, molluscs and other aquatic invertebrates)

Export value from Botswana to global markets: USD4,384,616



Botswana's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

BURKINA FASO

Burkina Faso's highest value commodity exports globally were of fisheries commodities, although very little was exported to Asia. A larger proportion of wood commodities was exported to Asia, including a small amount of tropical wood (HS 440349), all of which was reported to be exported to mainland China with a total value of USD35,268. Mainland China reported a significantly higher value of imports of tropical wood (HS code 440349) from Burkina Faso during the same time period (USD146,486).

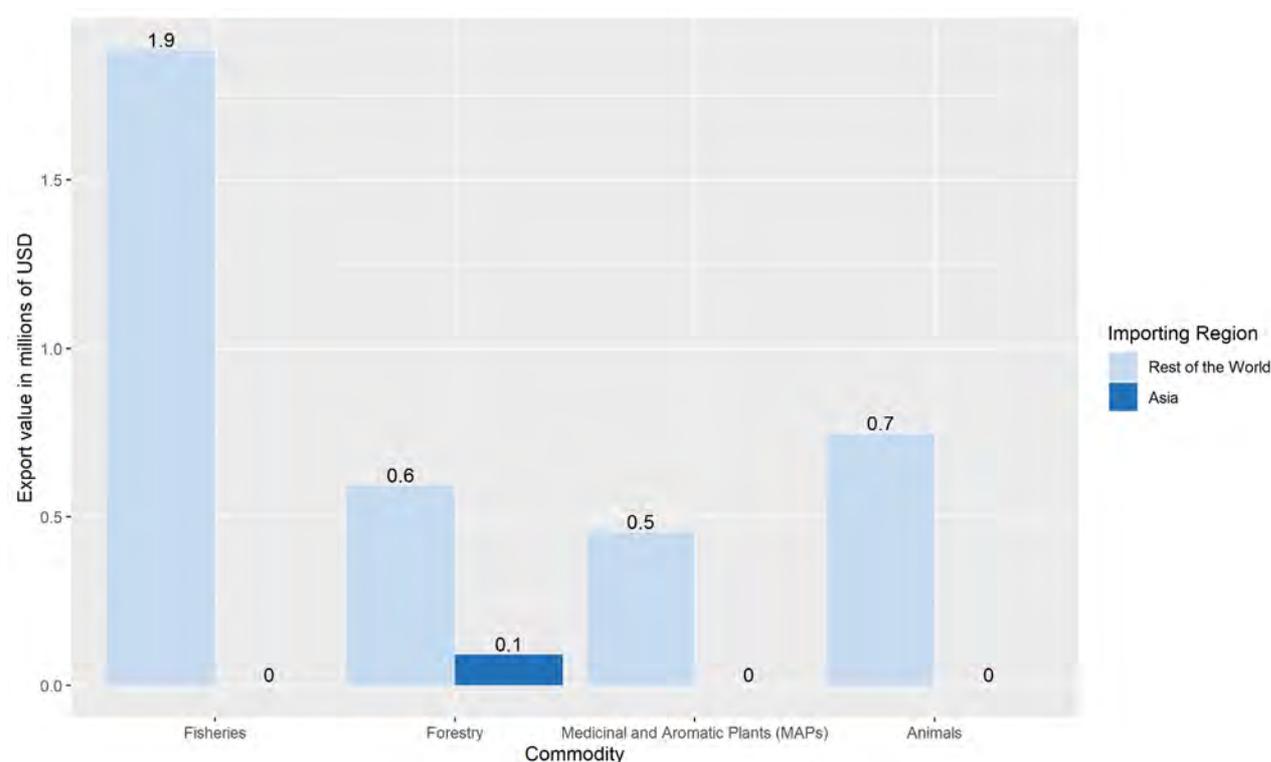
While it is not possible to determine which species of tropical wood may be included under HS 440349 alone, analysis of CITES data shows 204 m³ of African Rosewood *Pterocarpus erinaceus* was reported as imported by mainland China from Burkina Faso between 2017 and 2018. There are no available reports from Burkina Faso for these years, as these have not yet been submitted by Burkina Faso.

There is believed to be significant unregulated and illegal trade of wood between countries in West Africa (including Burkina Faso), making it difficult to know if the exports reported in data from the UN Comtrade Database reflect timber harvested in Burkina Faso, or re-exported wood originating from a different country in West Africa (Oy, 2016).

HS CODE IN FOCUS:

HS code: 440349 (Wood, tropical; as specified in Subheading Note 2 to this Chapter, other than dark red meranti, light red meranti and meranti bakau, in the rough, whether or not stripped of bark or sapwood, or roughly squared, untreated)

Export value from Burkina Faso to global markets: USD35,268

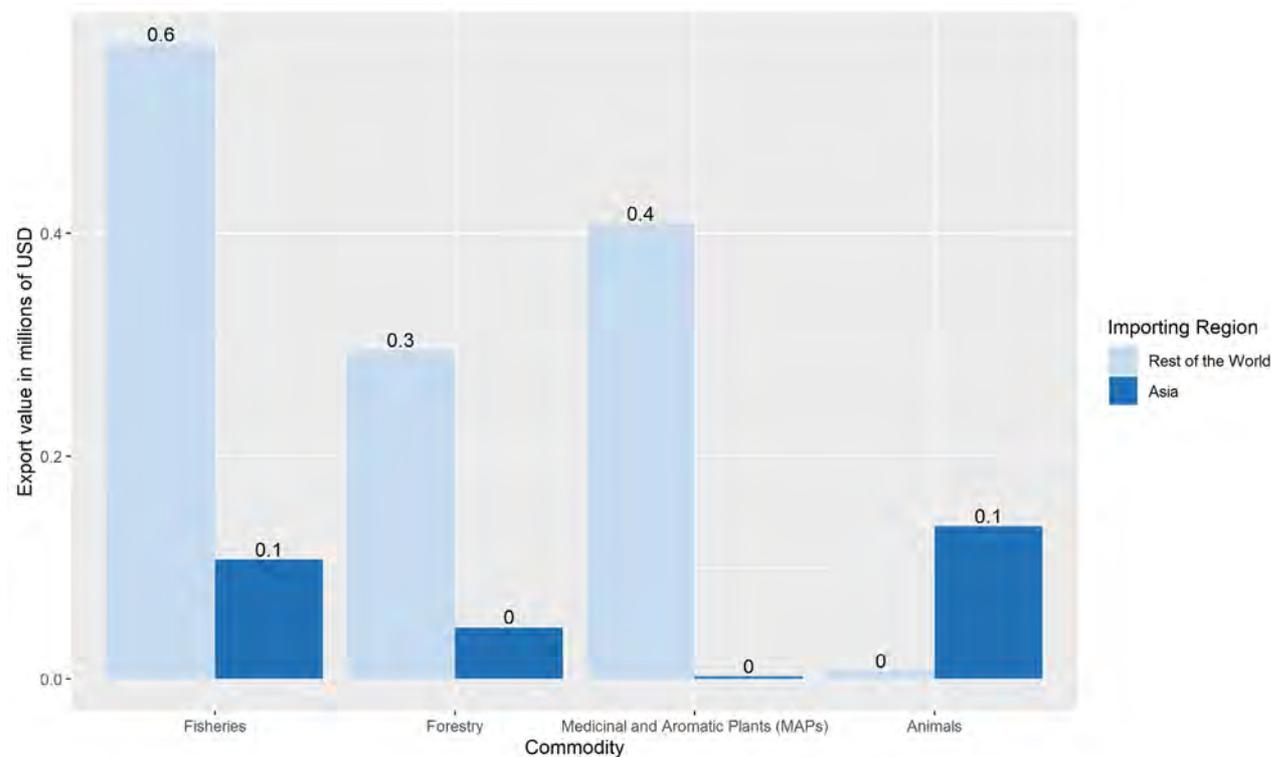


Burkina Faso's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

BURUNDI

Burundi's highest value commodity group exported to Asia was animals. Within this group, Burundi reported exports under the code HS 50790 of USD139,837, the majority of which was exported to mainland China (USD 137,070) during 2016 and 2017 (17,315 kg). This HS code is very broad covering commodities from tortoiseshell to claws, nails and beaks. It is not possible from UN Comtrade alone to determine which species may be being traded under this code, and there are no reports of CITES-listed species exported from Burundi to mainland China during this time in the CITES Trade Database.

While there were no reports of trade in CITES-listed species from Burundi to mainland China, Hong Kong SAR did report imports of 14,227 kg of Giant Pangolin (*Manis gigantea*) scales from shipments from Burundi in 2016 and 2017. These were accompanied by CITES permits, however according to the IUCN Red list, Giant Pangolin are not believed to native to Burundi (Nixon, 2019). The CITES Secretariat asked the Management Authority of Burundi for clarification (CITES, 2017). As the Management Authority did not provide evidence for the legal acquisition of these scales, the Secretariat was not in a position to recommend the acceptance of the documents (CITES, 2017).



Burundi's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 050790

(Animal products; tortoise-shell, whalebone and whalebone hair, horns, antlers, hooves, nails, claws and beaks, unworked or simply prepared but not cut to shape, waste and powder of these products.)

Export value from Burundi to global markets: USD139,838

CAMEROON

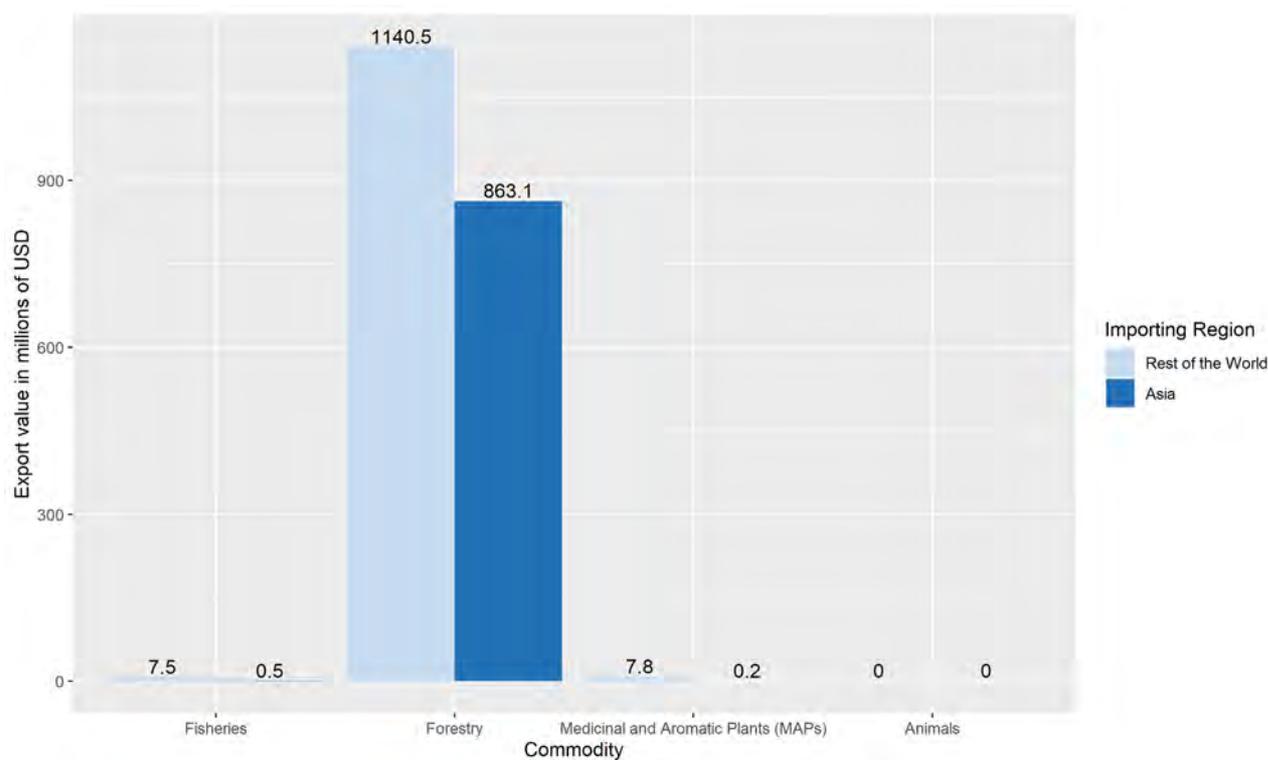
Cameroon mostly reported exports of wood commodities, just under half of which were reported to be exported to Asia. One important wood product exported was Sapelli *Entandrophragma cylindricum*, which was reported under HS 440727 to overseas markets. Mainland China was the biggest reported Asian importer of Sapelli sawn wood (HS 440727) from Cameroon, followed by Malaysia.

Sapelli was classified as Vulnerable by the IUCN in 1998 with heavy exploitation posing a threat throughout its range (Hawthorne, 1998). It is believed to be one of the most lucrative timber commodities exported from Cameroon (Noutcheu et al., 2016). Sapelli trees are a valuable to local communities as they host an edible caterpillar considered an important source of nutrition; a reduction in large host trees could reduce the availability of caterpillars (Noutcheu et al., 2016).

HS CODE IN FOCUS:

HS code: 440727 (Wood, tropical; Sapelli, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm)

Export value from Cameroon to global markets: USD308,903,394

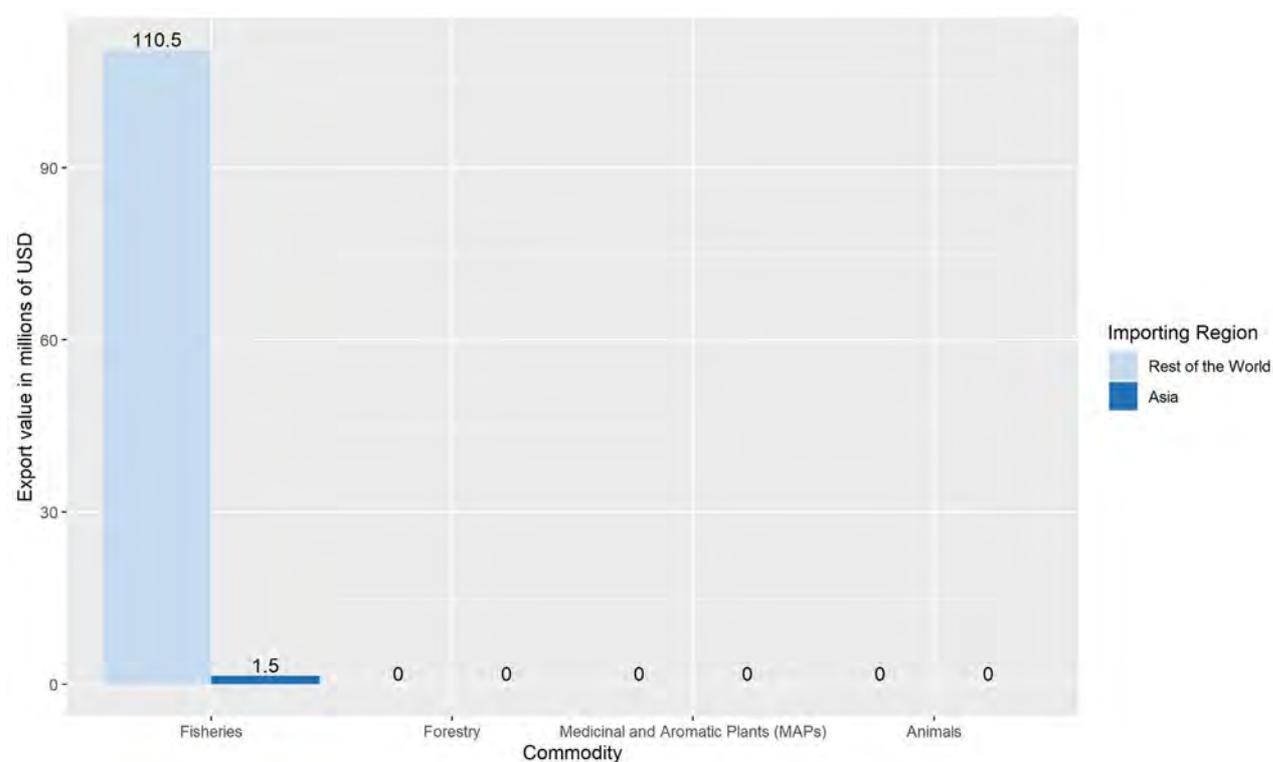


Cameroon's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

CAPE VERDE

Although fisheries commodities made up Cape Verde's highest value reported exports, only a small proportion was reported to be exported to Asia. Tuna was reported to be a significant export for Cape Verde with USD 67,755,768 worth of frozen tuna exported under HS code 030349 between 2014 and 2018. Viet Nam was Cape Verde's biggest reported importer in Asia of this HS code with reported export values of USD391,895.

Fisheries are estimated to provide livelihoods for a fifth of the population in Cape Verde. There are concerns about the high dependency of some communities on fisheries, particularly as there is evidence that in some places fish stocks are in decline (Dancette, 2019) and that these declining stocks are under further pressure due to illegal fishing by foreign fishing vessels (Dancette, 2019).



Cape Verde's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030349 (Fish; tuna, frozen, (n.e.s) in item no. 0303.4 excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Cape Verde to global markets: USD67,755,773

CENTRAL AFRICAN REPUBLIC

Central African Republic (CAR) reported a high value of tropical wood (HS 440349) exports globally. In Asia, CAR reported the largest importers to be mainland China, followed by Indonesia.

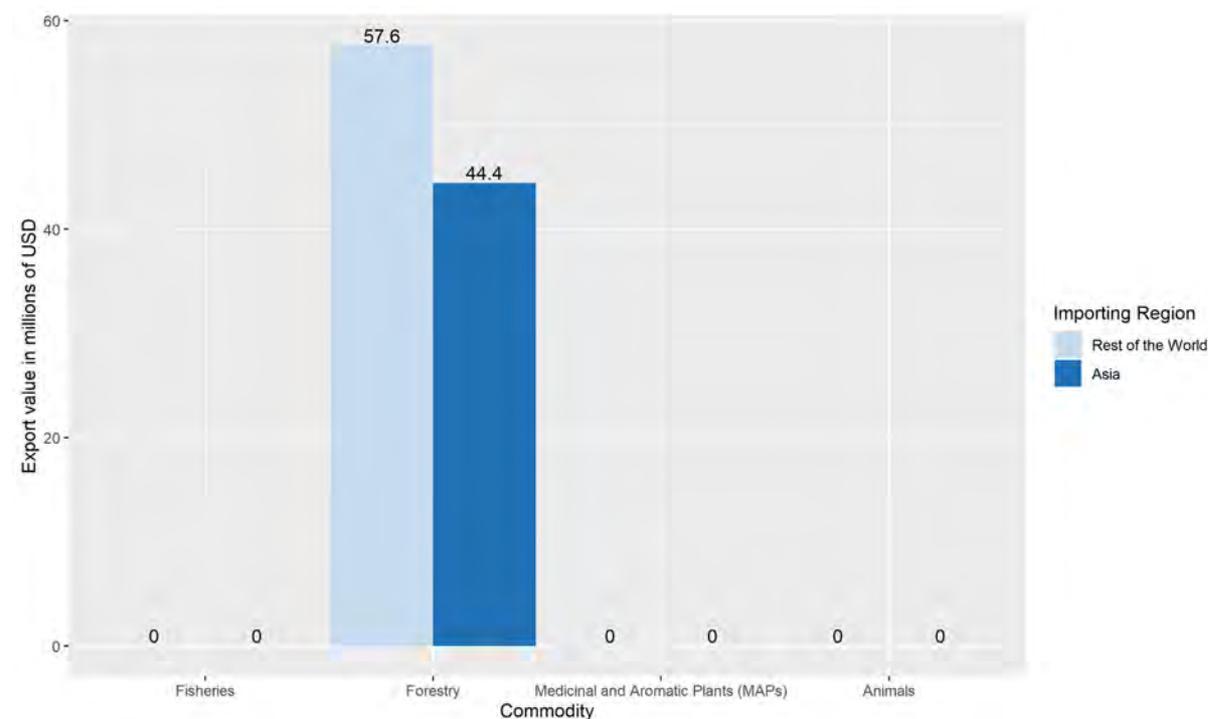
Although it is not possible from the reported UN Comtrade data to determine which species are being traded, CITES data shows exports (primarily to China) of wild collected wood from rosewoods *Guibourtia pellegriniana* and *Guibourtia demeusei* which were listed in CITES Appendix II in 2017. In addition, a study by the FAO found that Sapelli *Entandrophragma cylindricum* was the main type of wood produced overall by CAR (Karsenty, 2016).

The annual illegal trade in wood in CAR is believed to be equal or even greater in value to the average annual legal exports of wood to all trading partners (Karsenty, 2016). The high levels of illegal trade reflect a lack of governmental capacity to monitor and implement management (NEPCon, 2017c). Steps however have been taken to improve management as, between 2009 and 2010, CAR and the EU negotiated a Voluntary Partnership Agreement (VPA) to improve sustainability of wood; however, these were disrupted in 2012 with a civil and political uprising. With the election of a new President in 2016, there has been more focus on implementing the VPA (EU FLEGT Facility, 2020.). The VPA requires that efforts are taken to ensure timber legality, to fulfil this requirement from 2020 to 2023 there will be a project supported by the Food and Agriculture Organization of the United Nations (FAO) to develop systems to verify timber legality in the Central African Republic (EU FLEGT Facility, 2020).

HS CODE IN FOCUS:

HS code: 440349 (Wood, tropical; as specified in Subheading Note 2 to this Chapter, other than dark red meranti, light red meranti and meranti bakau, in the rough, whether or not stripped of bark or sapwood, or roughly squared, untreated)

Export value from Central African Republic to global markets:
USD30,260,022



Central African Republic's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

CHAD

Chad did not submit any merchandise trade reports between 2014 and 2018 to the UN Comtrade Database. However, there are records of wildlife commodities being imported by Chad from other countries, notably mainland China which reported imports of USD66,683 worth of animal commodities; ivory, unworked or simply prepared but not cut to shape, ivory powder and waste (HS 050710).

Interestingly, there was no record of ivory being exported from Chad to mainland China in the CITES Trade Database during this time. Additionally, a number of other CITES-listed species were reported by Thailand as having been imported from Chad during this period including leather commodities from a variety of reptile species (58 pieces), live non-native artificially propagated orchids (40 plants) and leather pieces made from ostriches (4 pieces).

Chad has recently taken encouraging steps to curb illegal wildlife trade within the country through becoming a member of the AFRICA-TWIX platform. The Africa TWIX platform allows close collaboration and data sharing between the law enforcement officers of different member states (TRAFFIC, 2020).

COTE D'IVOIRE

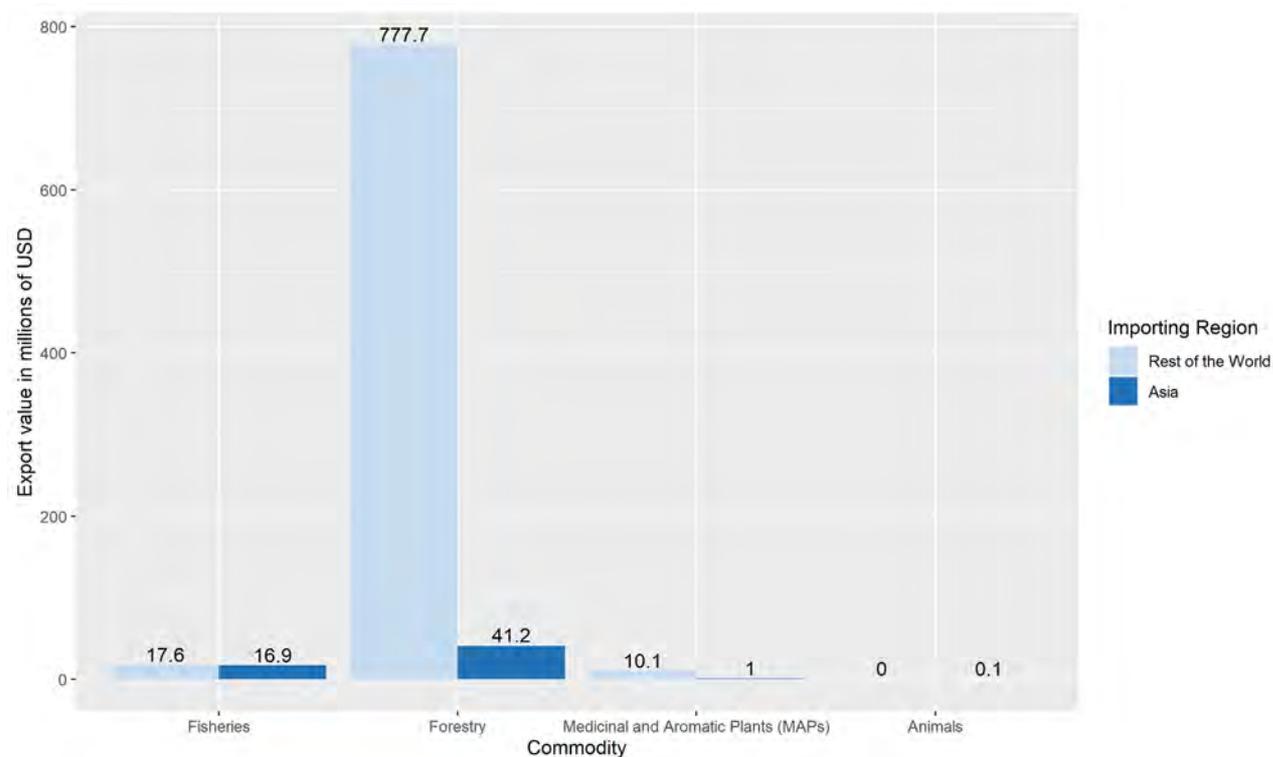
Cote d'Ivoire's exports were dominated by wood commodities, a small percentage of which was reported to be exported to Asia. Cote d'Ivoire's biggest reported importing partner in Asia was mainland China.

There are concerns about the illegal trafficking of rosewood in Cote d'Ivoire. Most of the African Rosewood species *Pterocarpus erinaceus* in Cote d'Ivoire lies within an area which has been protected from logging since 1982 (CITES, 2016). However, there is evidence of serious levels of illegal logging of this wood, with a seizure of illegal timber (suggested to be African Rosewood) in 2012 being valued at over a million dollars (CITES, 2016). The largest market for this wood has been suggested to be China (CITES, 2016).

HS CODE IN FOCUS:

HS code: 440729 (Wood, tropical; as specified in Subheading Note 2 to this Chapter, n.e.c. in item no. 4407.2, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm)

Export value from Cote d'Ivoire to global markets: USD242,706,038



Cote d'Ivoire's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

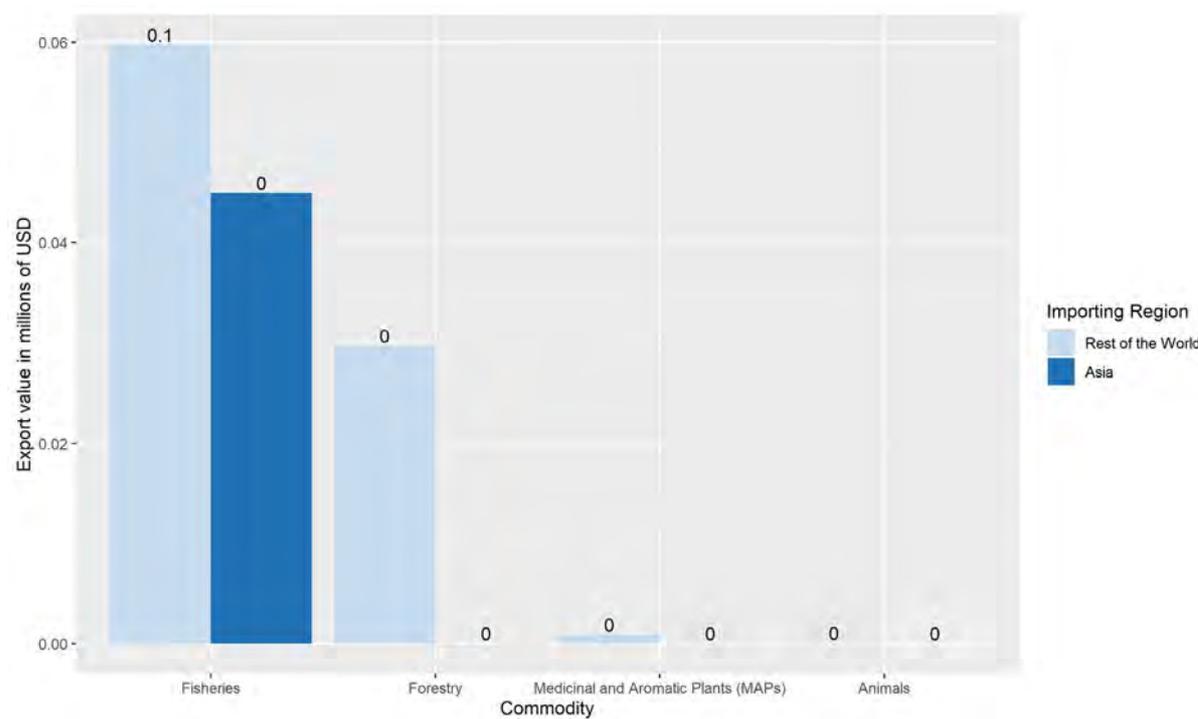
DEMOCRATIC REPUBLIC OF SAO TOME AND PRINCIPE

Fisheries made up the highest value exports of Sao Tome and Principe, almost a quarter of which was exported to Asia. Scallop exports made up an important part of the fisheries and the largest importers of this commodity in Asia were Japan, Hong Kong SAR and mainland China. Fisheries operations are small scale, with foreign vessels working in joint ventures with local companies (FAO, 2019b).

HS CODE IN FOCUS:

HS code: 030729 (Molluscs; scallops, whether in shell or not, including queen scallops of the genera *Pecten*, *Chlamys* or *Placopecten*, frozen, dried, salted, in brine, or smoked, cooked or not before or during the smoking process)

Export value from Sao Tome to global markets: USD54,996



Democratic Republic of Sao Tome and Principe's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

DEMOCRATIC REPUBLIC OF THE CONGO

The Democratic Republic of the Congo (DRC) did not report any exports to the UN Comtrade Database between 2014-2018, and has not submitted data since 1986 (UN Comtrade, 2020). However, trading partners have reported significant amounts of trade between 2014 and 2018. DRC traditionally exported timber to Europe, but there has been an increase in trading links with mainland China (Lawson, 2014).

Mainland China reported the greatest value of imported wood and articles of wood including wood charcoal from the DRC in Asia (HS 44); in total, a staggering USD193,626,188 worth of imported wood and charcoal (HS 44).

Estimates of logging in 2011 alone place the amount of timber exploited at around 2.4 million m³, at least 87% of which was collected illegally (Lawson, 2014). In addition to the sheer volume of timber being exported to China, there are concerns about the species being exported as the endangered wood *Millettia laurentii* has been suggested to make up approximately 50 percent of wood exported from DRC to China (Chang & Peng, 2015). There are also reports of links between the illegal timber trade to Uganda and militant groups operating in the DRC (Lawson, 2014).

DJIBOUTI

Djibouti did not submit any merchandise trade reports between 2014 and 2018 to the UN Comtrade Database. Other countries did report importing goods from Djibouti during this time and of these Hong Kong SAR was the largest reported importer from Asia of fisheries commodities (HS 03) with modest reported imports of USD642,968.

No exports to Asia were reported by Djibouti to the CITES Trade Database between 2014 and 2018. Djibouti has been subject to a suspension for the commercial trade in CITES-listed species since 2004 due to inadequate national legislation (CITES, 2019a). A second suspension was imposed in 2018 for all trade in CITES-listed species after Djibouti failed to submit their annual reports (CITES, 2019a).

USD193 MILLION

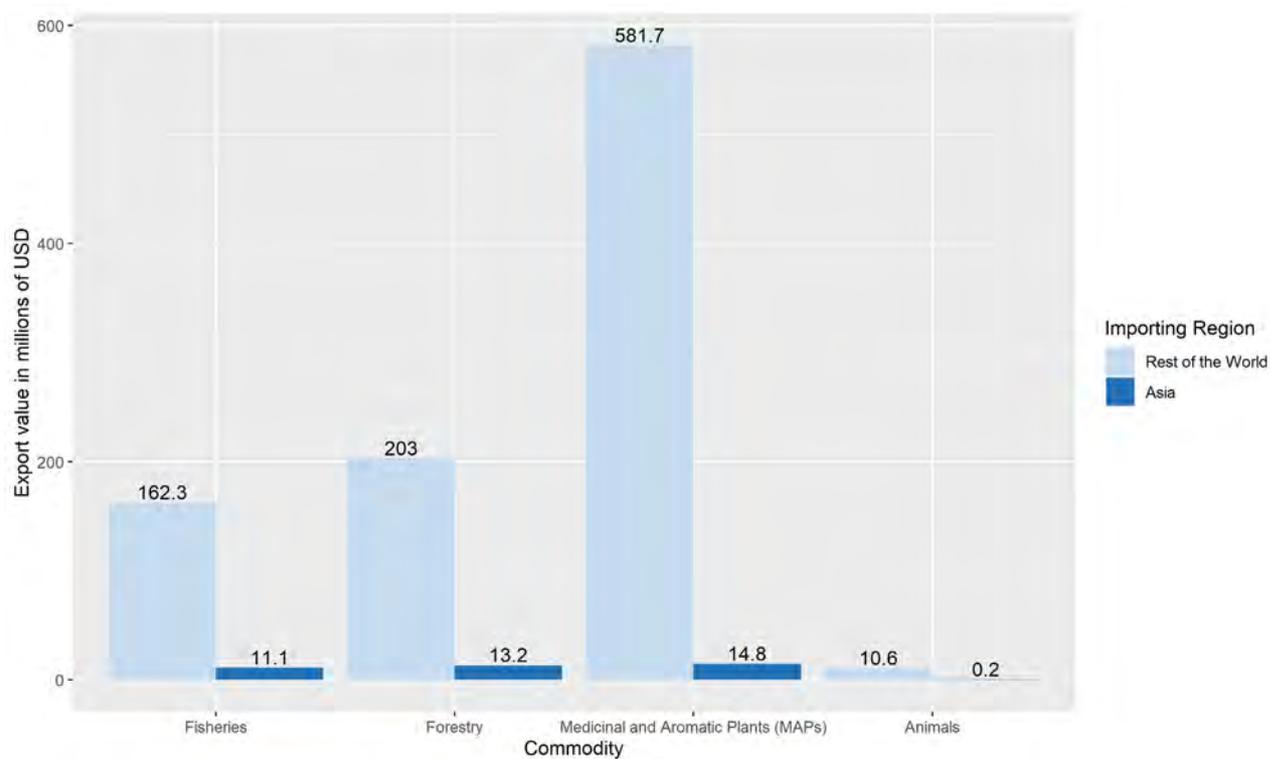
The value of wood and wood charcoal reported on China's import records from the DRC no submissions of data by the DRC since 1986.

EGYPT

The majority of Egypt's reported exports were made up of medicinal and aromatic plants followed by wood and fisheries commodities. In all categories, only a small percentage of exports were made to Asia. One interesting fisheries export reported by Egypt was flat fish. Egypt reported the second highest value of flatfish exports from Africa to overseas markets and the biggest reported trading partner in Asia of flatfish was mainland China, followed by Hong Kong SAR.

Flat fish in Egypt in some cases are sourced from lakes. Lakes including Lake Qarun have had to be re-stocked as human activities including the construction of significant dam projects, have led to progressive lake salination and subsequent extinction of local species (Cruz-Rivera & Malaquias, 2016). Selected salt tolerant species including *Solea vulgaris* were acclimatized to Lake Quarun conditions in the 1990s to support local fisheries (Cruz-Rivera & Malaquias, 2016; Ezzat et al., 1979).

In addition to the restocking project, Egypt has also been developing its aquaculture and in 2010 was reported to have the largest aquaculture output of any African country, particularly for Nile tilapia *Oreochromis niloticus* and Thinlip Grey Mullet *Liza ramada* (FAO, 2010; Global Aquaculture Alliance, 2017; Saleh, 2008).



Egypt's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030229 (Fish; fresh or chilled, flat fish, n.e.c. in item no. 0302.2, excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Egypt to global markets: USD72,830,947

EGYPT HAS THE LARGEST AQUACULTURE output of any African country

EQUATORIAL GUINEA

Equatorial Guinea did not submit any trade reports to the UN Comtrade Database between 2014 and 2018 (UN Comtrade, 2020). However, other countries did report importing from Equatorial Guinea during this time. Notably, mainland China which was the largest importer of wood (HS 44) from Equatorial Guinea with imports of USD1,135,749,168. An analysis of 2011-2016 trade data has suggested that that the timber trade to mainland China has been consistently increasing (Forest Trends, 2018). While it is not possible to determine the species of timber traded through UN Comtrade, the CITES Trade Database recorded Bubinga *Guibourtia demeusei*, as imported by mainland China from Equatorial Guinea during this time period.

ERITREA

Eritrea did not submit trade reports to the UN Comtrade Database between 2014-2018 (UN Comtrade, 2020). No exports or imports were also reported in the CITES Trade Database from Eritrea to Asia between 2014 and 2018. Only very low values of goods were reported to be imported from Eritrea by trading partners in Asia. The biggest reported importer of all fisheries commodities from Eritrea (HS 03) was Taiwan, Province of China (POC) (USD 195,268).

Gaps in the UN Comtrade Database due to countries not submitting trade data lead to serious challenges for monitoring of wildlife trade flows. A lack of reporting in some cases can lead to there being no records of particular trade transactions being recorded on the UN Comtrade Database, alternatively there may be records from only the exporter or importer. Trade records from both importing and exporting parties allow a more detailed analysis of trade, including allowing discrepancies in reporting to be explored. It is important therefore that countries like Eritrea are encouraged to submit data through the UN Comtrade Database.

In addition to the issue of Eritrea not submitting UN Comtrade Database data, there is also the issue that even if Eritrea did submit data to UN Comtrade, the trade of certain commodities of conservation would be challenging to trace. One product which this applies to and is traded by Eritrea internationally, is frankincense extracted from the tree *Boswellia papyrifera* (Addisalem et al., 2016; Ogbazghi et al., 2006). The greatest use of frankincense is incense, which is widely used by Orthodox and Roman Catholic churches, as well as in China for incense sticks (IFEAT Report Frankincense, 2017). It would be difficult to tell from the UN Comtrade Database alone exactly how much frankincense is traded annually, as there is no specific code for frankincense. It may be exported under a code like HS 130190 (Natural gums, resins, gum-resins, balsams) however this could refer to a wide range of different commodities.

Droughts combined with anthropogenic stressors like over-tapping (cutting the tree too many times to collect the frankincense) and expansion of agricultural areas have been linked to steep declines in this species (Ogbazghi et al., 2006). The lack of trade reports from countries like Eritrea as well as specific HS codes to follow this trade in data from the UN Comtrade Database makes it difficult to track the trade in these species which produce frankincense.

USD1.1 BILLION

The value of wood imports logged by China's import records from Equatorial Guinea despite a lack of reporting from the African country

ESWATINI/SWAZILAND

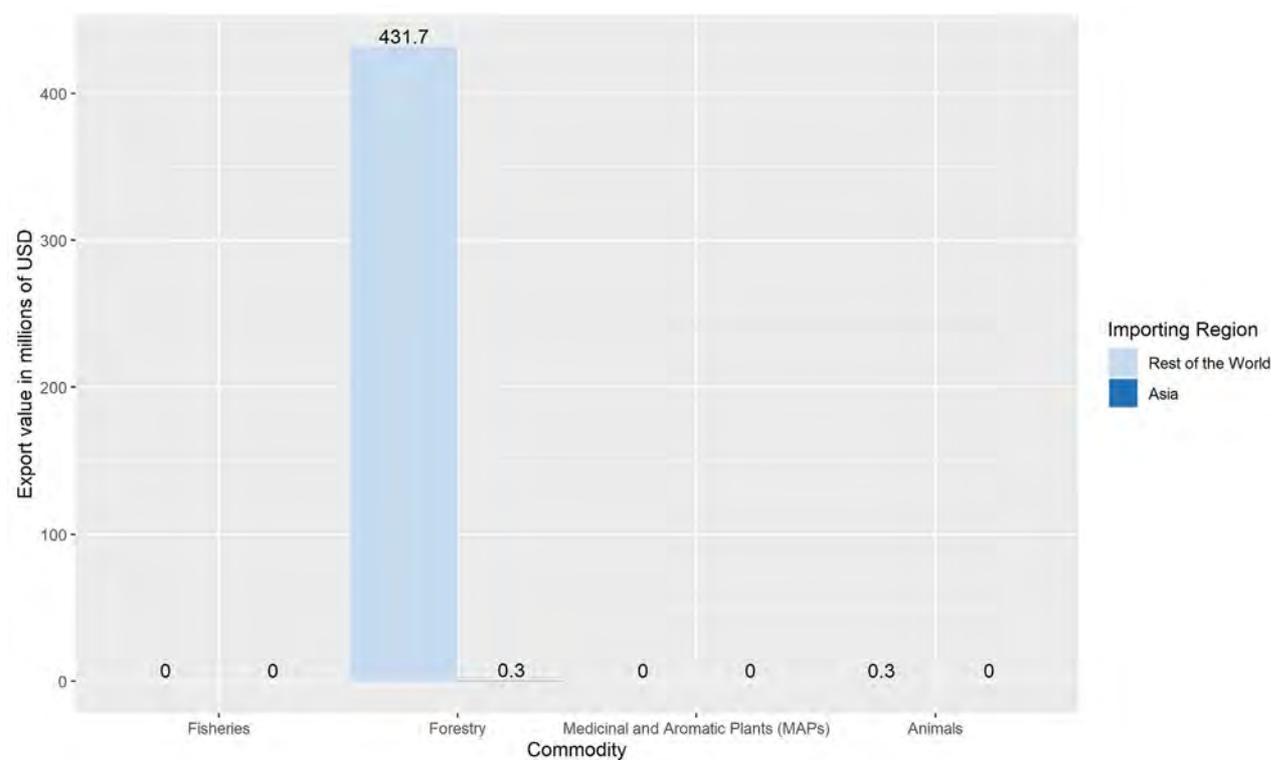
Eswatini reported very little trade to Asia, despite exporting USD 431,986,787 of wood (HS 44) to global markets between 2014 and 2018. While the majority of this wood was reported to be exported to other countries in Africa, some of this wood was exported to Asia, with Japan being Swaziland's biggest reported importer of wood in Asia.

A report by the Forest Stewardship Council has suggested that the majority of commercial timber in Eswatini timber is likely to come from plantations, some of which have been active since the 1930s (FSC, 2018). Indigenous timber is illegal to harvest and reported to be of low value. The FSC report also highlighted the presence of wild forests of non-native species like eucalyptus and wattle which have spread from the plantations into the surrounding regions (FSC, 2018). These invasive species have been identified as potentially having severe implications to the native ecosystems, particularly native grasslands, as well as water courses (FSC, 2018).

HS CODE IN FOCUS:

HS code 44: (Wood and articles of wood; wood charcoal)

Export value from Eswatini to global markets: USD431,986,822



Eswatini's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

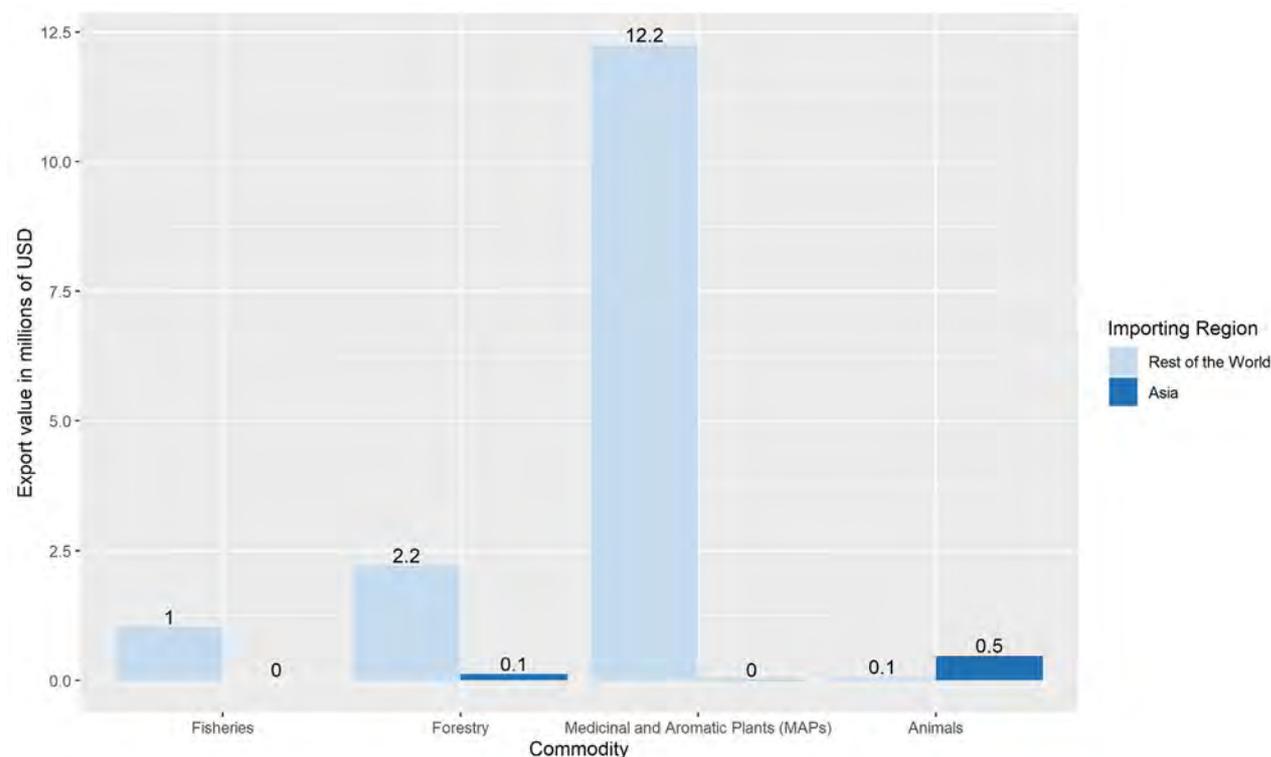
ETHIOPIA

Animals and medicinal plants were the highest value commodity groups reported as exported from Ethiopia; however, in both cases only as small proportion of the goods were reported to be exported to Asia.

Ethiopia is a major exporter of medicinal plants (HS1211), the majority of which is exported to Europe. There are several reported trading partners in Asia for medicinal plants, the largest of which is Hong Kong SAR which Ethiopia reported exporting a small amount (USD3,791) to between 2014 and 2018.

It is unclear which medicinal plants may be traded under this code. One medicinal plant which may be traded to certain countries from Ethiopia is Khat; a type of plant native to the Horn of Africa and which acts like a stimulant when chewed. It is also now cultivated over a larger area in Ethiopia than any other crop (Cochrane & O'Regan, 2016).

Trade in Khat should only be to certain countries as it is considered an illegal substance in many countries. However, despite the restrictions for recreational use in many countries (including mainland China which has added Khat to their list of controlled psychotropic substances), the demand in Asia is reported to be growing (Cochrane & O'Regan, 2016).



Ethiopia's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 1211 (Plants and parts of plants (including seeds and fruits), used primarily in perfumery, pharmacy; for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not crushed or powdered)

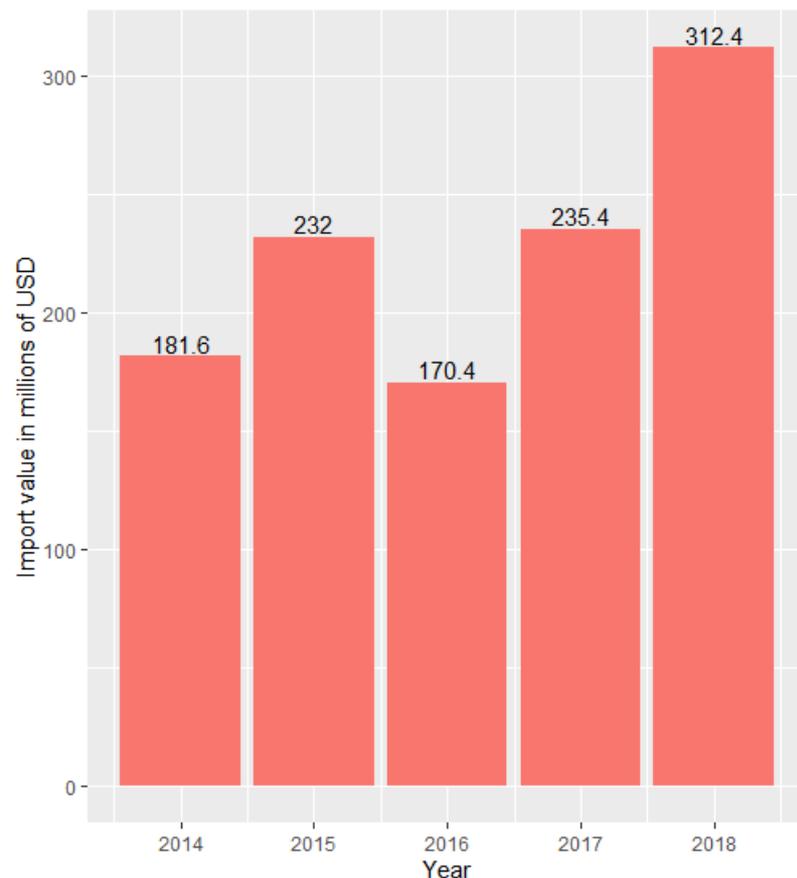
Export value from Ethiopia to global markets: USD12,248,619

KHAT

Demand for this medicinal plant is growing in Asia

GABON

Gabon did not submit reports of merchandise trade between 2014 and 2018 through the UN Comtrade Database. Other countries did report importing from Gabon between 2014 and 2018. Mainland China reported the highest value of imports of wood (HS 44) from Gabon than any other country with a total of USD 1,131,831,695 reported between 2014 and 2018.



Gabon's reported imports of wood (HS 44) from Gabon into mainland China (as reported by mainland China) (millions of USD) between 2014 and 2018.

While it is not possible to tell which species were exported from Gabon from the UN Comtrade Database, much of the wood exported is likely to be Okoumé *Aucoumea klaineana* which is the most important species in Gabon's timber industry, as it is used to produce good quality plywood (The Timber Trade Portal, 2018a).

There were also reported a number of species being exported from Gabon to Asia between 2014 and 2018 in the CITES Trade Database. According to the CITES Trade Database *Guibourtia tessmannii* was the most commonly reported wood export from Gabon, most of which went to mainland China in the form of timber, sawn logs and veneer.

A recent report by the Environmental Investigation Agency (EIA) claims that attention needs to be paid to logging in Gabon, because the majority of timber extraction in Gabon is controlled by a Chinese run business group called the Deja Group. EIA alleges that the Deja Group is guilty of bribery, tax evasion, harvesting illegal species and overharvesting timber in Gabon (EIA, 2019).

GABON

Highest value wood exporter to China, according to Chinese import records

THE REPUBLIC OF THE GAMBIA

Gambia reported a high value of exports of wood commodities, most of which were exported to Asia. After wood commodities, Gambia reported a high value of fisheries commodities, just under half of which were exported to Asia. One important fisheries commodity for Gambia was live fish, as over USD1 million worth of live fish were reported as exports to overseas markets. Gambia's largest reported partner country in Asia was the Republic of Korea, with some additional trade to Viet Nam.

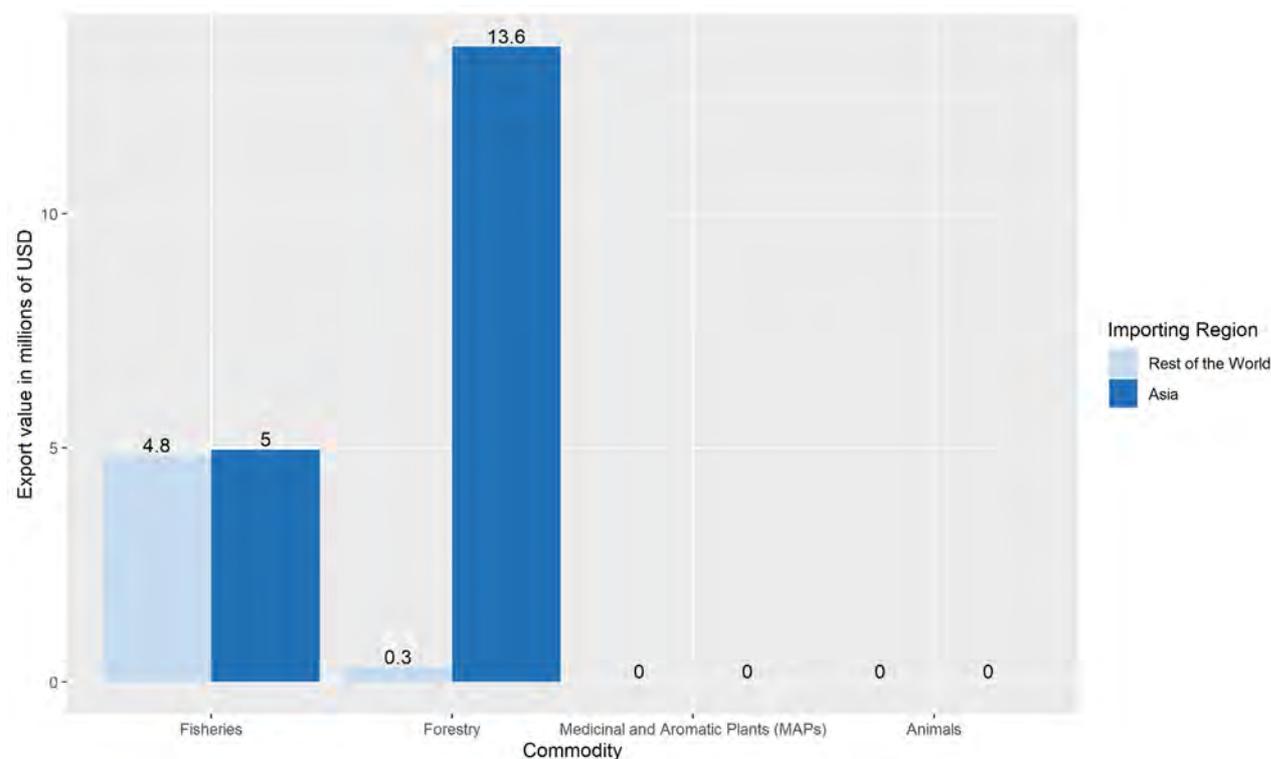
Gambia has both marine fisheries, as well as freshwater fisheries in the Gambian river system. The artisanal fisheries sector is highly important to the Gambia's food security, producing up to 90% of fish produced for consumption in country (FAO, 2015). Most of the industrial fishing in Gambia's waters is carried out by foreign vessels which land the fish elsewhere (FAO, 2015).

It has been reported that the government places high priority on developing the fisheries sector due to the high potential for job creation, particularly for women who make up a significant proportion of the workforce processing fish (UN, 2014).

HS CODE IN FOCUS:

HS code: 0301 (Fish; live)

Export value from Gambia to global markets: USD1,614,210

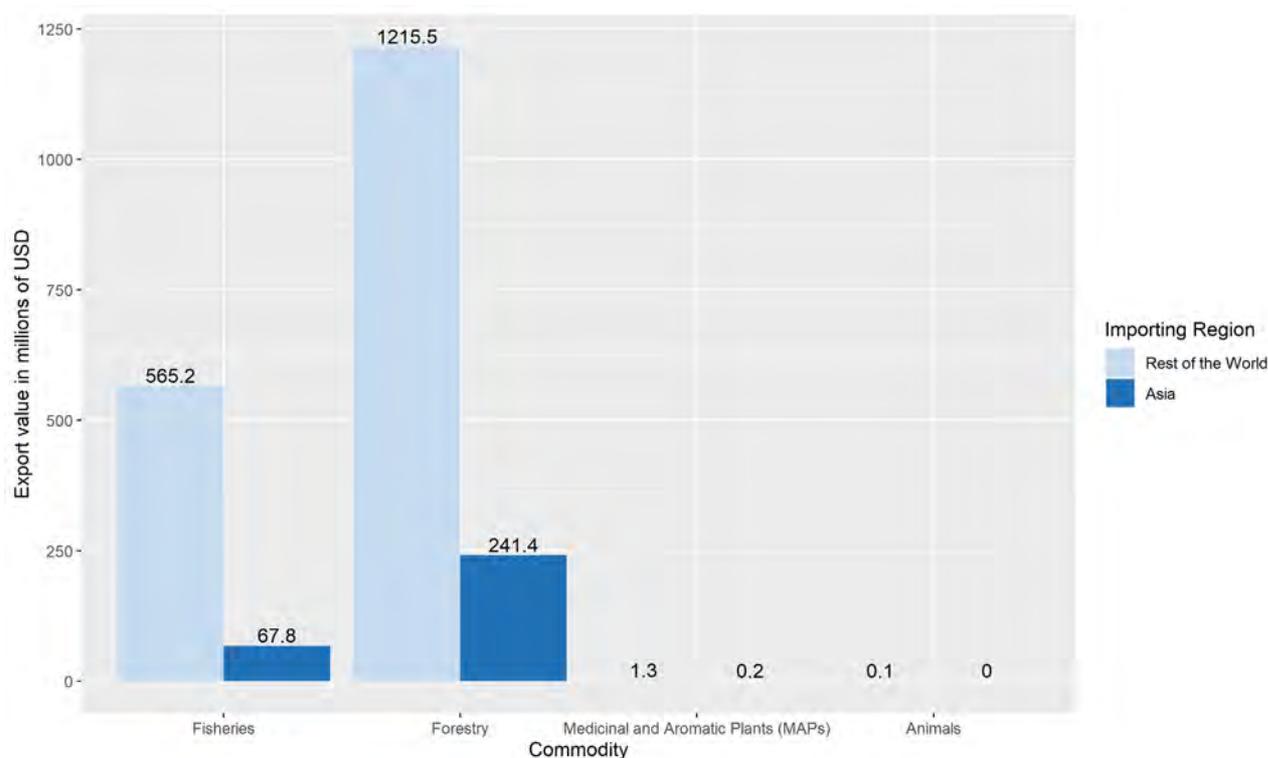


Gambia's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

GHANA

Ghana's reported exports were dominated by wood commodities, approximately USD240 million of which was exported to Asia. A smaller proportion of Ghana's exports was made up of fisheries commodities. There are concerns about the sustainability of some of Ghana's fisheries. Ghana reported the second highest value of frozen Yellowfin Tuna exports of any African country. Ghana's biggest reported importing partner in Asia of frozen Yellowfin Tuna was Iran, and Ghana's biggest reported importing partner in Asia of fresh or chilled Yellowfin Tuna was Thailand.

Marine fisheries are highly important to the Ghanaian economy, however, there have been catch declines linked to factors including overexploitation of fisheries and degradation of habitats (O'Neill et al., 2018). There has also been a recent shift in the structure of the fisheries sector in Ghana, as traditional artisanal forms of fisheries have been replaced by large purse-seine vessels with backing from Asian companies (O'Neill et al., 2018).



Ghana's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030342 (Fish; frozen, yellowfin tunas (*Thunnus albacares*), excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Ghana to global markets: USD 65,060,568

HS code: 030232 (Fish; fresh or chilled, yellowfin tunas (*Thunnus albacares*), excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Ghana to global markets: USD 2,174,699

REPUBLIC OF GUINEA

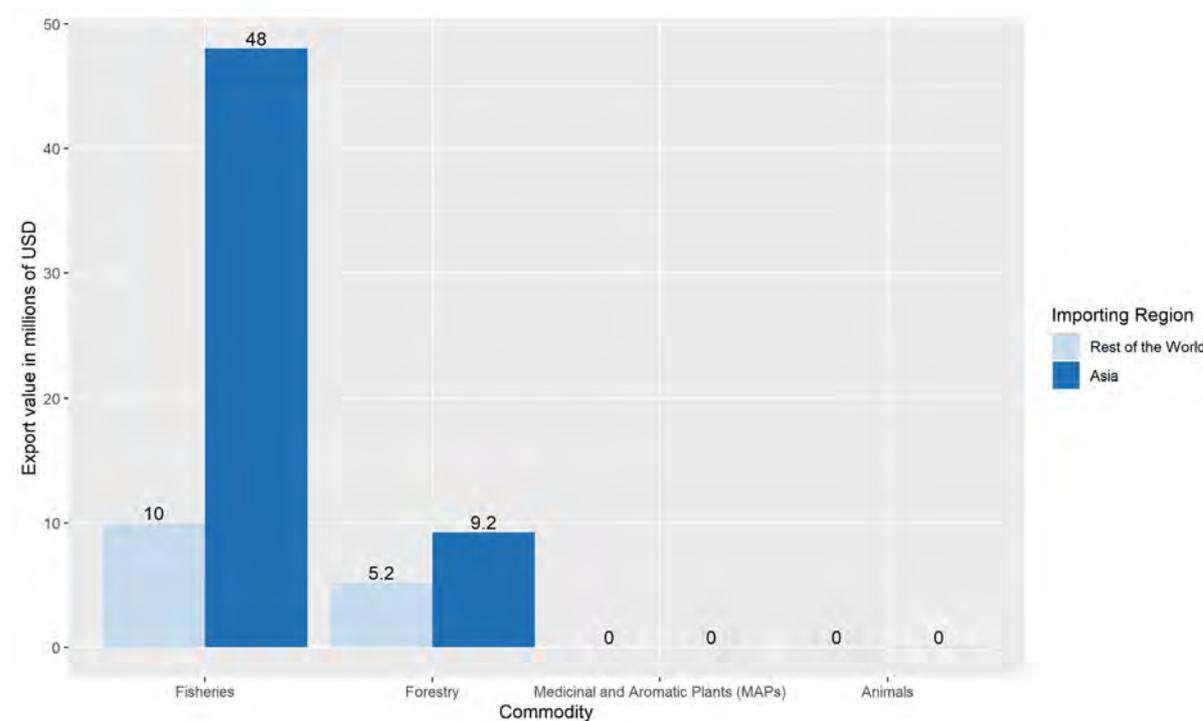
Guinea's reported exports were largely made up of fisheries commodities, most of which were reported to be exported to Asia. Part of these fisheries exports were made up of tuna. Guinea's biggest reported importing partner of frozen tuna in Asia was the Democratic People's Republic of Korea.

In Guinea, marine fisheries produce a higher proportion of produce than inland fisheries or aquaculture however, little is known about the state of the marine stocks (FAO, 2019d). There are additional concerns about illegal fishing by international vessels in Guinean waters; some reports have suggested that Chinese vessels may make up a significant proportion of these vessels (Mallory, 2013).

HS CODE IN FOCUS:

HS code: 030349 (Fish; frozen, tuna, n.e.c. in item no. 0303.4, excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Guinea to global markets: USD 3,820,137



Guinea's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

Guinea-Bissau

Guinea-Bissau did not submit any reports on the trade in merchandise to UN Comtrade between 2014 and 2018, and no CITES reports of exported CITES-listed species were reported between Guinea-Bissau and Asia in this time either.

While Guinea-Bissau did not report any exports, Guinea-Bissau's trading partners did report significant imports from Guinea-Bissau between 2014 and 2018, with mainland China alone reporting imports of USD75,588,585 of wood (HS 44) during this period.

Although HS 44 is a high-level code which does not specify the species trade, following the 2012 coup there has been evidence of concerning levels of overexploitation and export of rosewood timber, of which mainland China has been suggested to be the main market, due to the demand for high-end rosewood furniture (Wrathall, 2019). A report by EIA has claimed that even the exports of apparently legal rosewood from Guinea-Bissau may not have come from legal sources as they claim that CITES permits are being used to launder illegal timber into the legal timber market (EIA, 2018).

SIGNIFICANT IMPORTS

Reported by Guinea Bissau's trading partners despite lack of reporting from the African's country

KENYA

Fisheries dominated Kenya's reported exports, almost a fifth of which were exported to Asia between 2014 and 2018. Kenya's biggest reported importing partners of fish filets and other fish meat in Asia was mainland China.

While Kenya is producing significant amounts of fisheries produce, there are some concerns about the impact that introduced non-native fish may have on Kenyan freshwater fisheries (Okwiri et al., 2019), some of which are exported to markets in Asia (Bagumire et al., 2018).

Twenty-nine species of fish have been introduced, mainly intentionally and there are concerns about predation, competition, disease spread and hybridization between the introduced fish and native species (Okwiri et al., 2019). An extreme case of this was the introduction of the Nile Perch *Lates niloticus* to Lake Victoria. Kenya is a supplier of Nile Perch swim bladders (maws) to China both through legal and illicit channels. Despite the value of Nile Perch as a trade commodity, there are concerns surrounding the presence of the Nile Perch in Kenyan waterways (Bagumire et al., 2018). After the introduction, Nile Perch have been attributed with the decline in native fish populations including the extinction of approximately 200 endemic species, insect outbreaks and algal blooms (Okwiri et al., 2019). A recent report argues the need for better monitoring of introduced fish species to prevent their further spread (Okwiri et al., 2019).

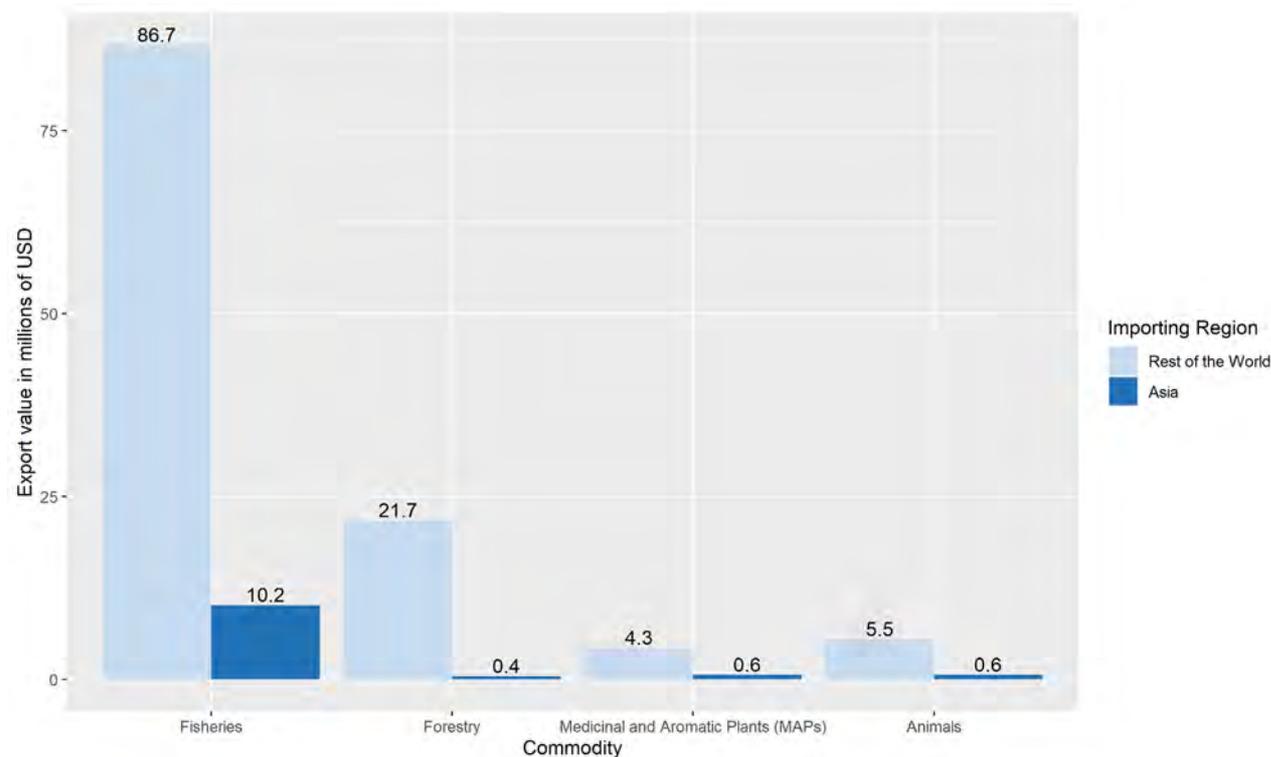
HS CODE IN FOCUS:

HS code: 0304 (Fish fillets and other fish meat (whether or not minced); fresh, chilled or frozen)

Export value from Kenya to global markets: USD22,072,995

NILE PERCH

Introduced to Lake Victoria but causing decline in native fish populations



Kenya's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

KINGDOM OF LESOTHO

Fisheries dominated Lesotho's exports and only a small percentage of these were exported to Asia. One unusual fisheries commodity which has important conservation implications, is trout. Lesotho reported the highest value fresh or chilled trout exports to Asia of any African country: all of which was exported to Japan.

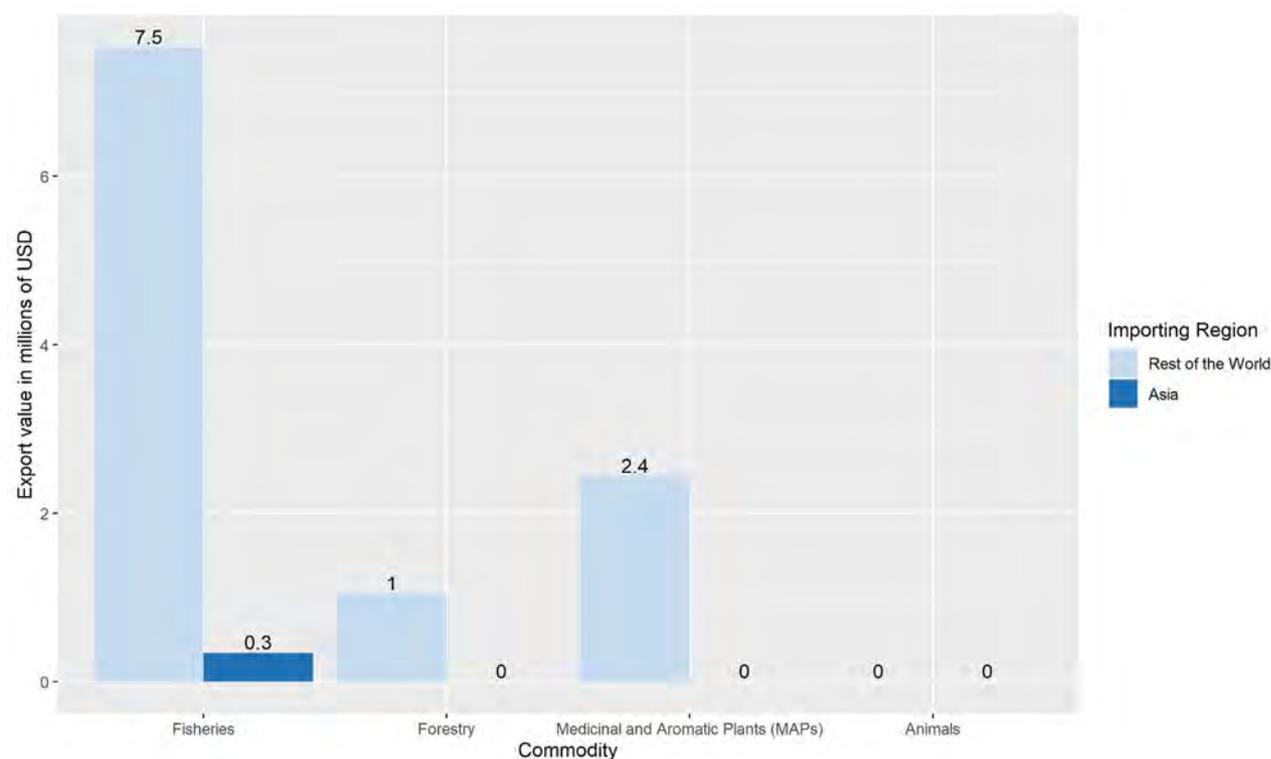
Following the development of the Highland Water Project, Lesotho began trout farming in 2006 and these trout farms play a significant role in the economy. Lesotho's clean water means the trout command premium prices on the Japanese market where it is made into sushi (The Economist, 2014). However, the introduction of non-native fish including Rainbow Trout *Oncorhynchus mykiss* and Brown Trout *Salmo trutta* has resulted in serious concerns about disease outbreaks (Kutu et al., 2017), as well as concerns about the severe impacts these introduced species may have on native fish including the Maluti Minnow *Pseudobarbus quathlambae* (Mccafferty et al., 2018). The Maluti Minnow has already been driven to extinction in many rivers in its South African range by predation by non-native trout species (Kubheka et al., 2017).

In addition to trout production, Lesotho has laid out plans to expand into production of salmon, with plans for Africa's first land-based salmon farm (Antoni, 2019)

HS CODE IN FOCUS:

HS code: 030211 (Fish; fresh or chilled, trout (*Salmo trutta*, *Oncorhynchus mykiss*, *Oncorhynchus clarki*, *Oncorhynchus aguabonita*, *Oncorhynchus gilae*, *Oncorhynchus apache* and *Oncorhynchus chrysogaster*), excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Lesotho to global markets: USD1,432,252



Lesotho's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

LIBERIA

Liberia did not report any exports between 2014 and 2018 in the UN Comtrade Database. Additionally, there were no records of exports of CITES-listed species from Liberia to Asia reported by Liberia between 2014 and 2018. This is likely to be due to the CITES recommendation of a trade suspension of all CITES listed species for commercial reasons from Liberia since 2016 (CITES, 2019a). However, there were imports reported by importing countries to the UN Comtrade database. One high value commodity which was reported to be imported from Liberia was tropical wood (HS440349).

China reported the highest value imports of tropical wood (HS440349) from Liberia of any trading partner globally, with USD92,798,487 worth of tropical wood between 2014 and 2018. While it is not possible to determine what species are being exported from UN Comtrade alone, the Timber Trade Portal reports that Liberia has exploited 60 different species of timber. The species most commonly harvested in Liberia for commercial purposes include Azobé *Lophira alata*, Niangon *Heritiera utilis*, Bossé *Guarea cedrata* and Iroko *Milicia excelsa* (The Timber Trade Portal, 2018c).

During the civil war (1999–2003), the UN placed an embargo on timber from Liberia to prevent the different factions involved in the fighting from financing their actions by selling timber (Vorrath, 2018). The war stopped shortly after the embargo was put in place, and the ban lifted in 2006. Since the civil war, Liberia has made sweeping reforms to its national wood legislation, however there are concerns that corruption and poor governance may mean that these reformed laws are not being followed (NEPCon, 2017b) (Vorrath, 2018).

NEPCon (Nature Economy and People Connected) is an NGO which promotes sustainability through a range of schemes, including sustainable timber certification (NEPCon, 2018). NEPCon has reported on Liberia's timber trade, and highlights that all timber apparently comes from wild forests under different management schemes rather than plantations (NEPCon, 2017a), and while most of the timber is used domestically, of the timber exported, the majority is exported to China (NEPCon, 2017a).

LIBYA

Libya did not submit any merchandise reports to UN Comtrade between 2014 and 2018. Other countries, however, did report significant imports of fisheries commodities (HS 03) from Libya between 2014 and 2018 (USD142,954,000), with the highest value imports of any Asian country being reported by Japan (USD46,301,074).

An estimate of 32,000 tonnes of fish were caught in Libya in 2017, significantly less than catches before the ongoing Libyan civil war. International fishing vessels are also reported to have taken advantage of the conflict by illegally fishing in Libyan waters, particularly for Bluefin Tuna (Belhabib et al., 2019).

CORRUPTION AND POOR GOVERNANCE

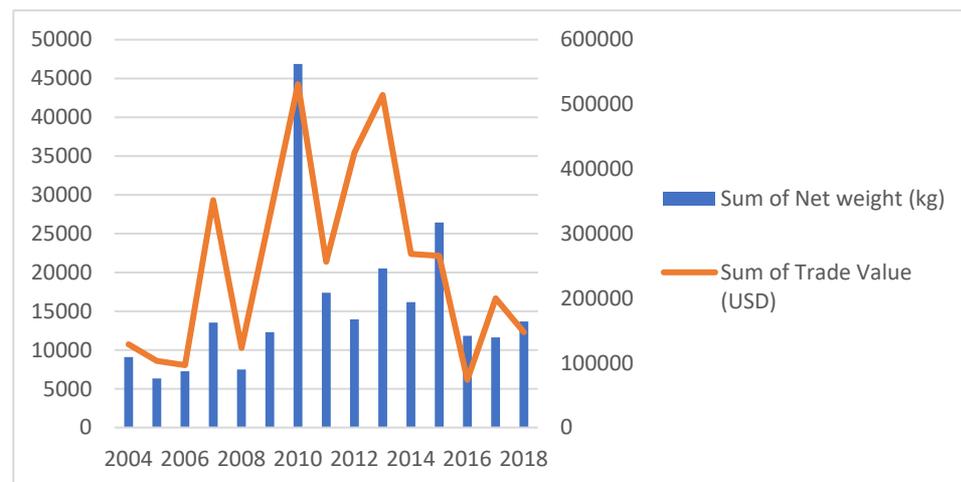
**may result in wood
legislation reforms made
after the civil war not being
followed**

MADAGASCAR

Fisheries commodities make up Madagascar's highest value exports out of the explored commodity groups. One valuable fisheries commodity exported by Madagascar are eels, which is both a valuable commodity in itself, but also in terms of conservation as the trading routes for eels have been changing since the 2009 ban on the trade of European eel. Madagascar reported significant exports of frozen eel *Anguilla* spp. to global markets, and the largest importer in Asia was the Republic of Korea.

In 2009, European Eel *Anguilla anguilla* was listed on CITES Appendix II, and the EU banned all trade in European eel into or out of EU countries (CITES, 2018; Species+, 2020). The greater regulation of the trade of European Eel in the EU has had implications for the trade of other species of eel. In a 2018 CITES technical workshop on eels which assessed the impacts of CITES listings, it was noted that since the listing of *A. Anguilla* there have been changes in the demand for other species of eel, including an increased demand for *A. mossambica* from Madagascar (CITES, 2018).

Looking at UN Comtrade export data for live eels and fresh or frozen eels from Madagascar (HS 030326 and HS 030266) to global trading partners from 2004 to 2018, (see graph below) this trend is not supported. While there was a peak in reported trade in 2009, export quantities from 2010 to 2018 were highly variable and do not show a clear increase, making it challenging to determine whether the CITES listing of European Eel has caused a rise in demand for eel from Madagascar.



Reported exports of eel (live eels and fresh or frozen eels) from Madagascar to all overseas trading partners (HS 030326 and HS 030266) between 2004 and 2018.

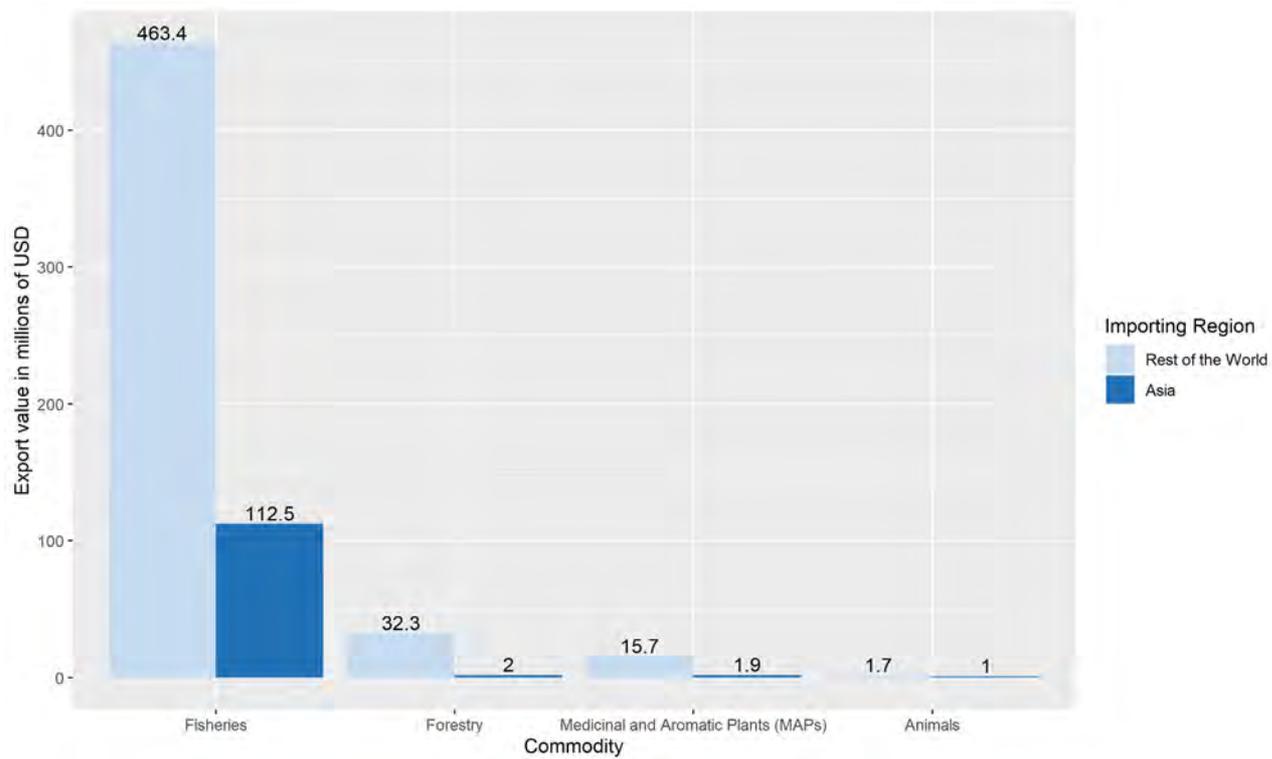
HS CODE IN FOCUS:

HS code: 030326 (Fish; frozen eels (*Anguilla* spp.), excluding fillets, liver, roes, and other fish meat of heading 0304)

Export value from Madagascar to global markets: USD1,174,128

EUROPEAN EEL BAN

may fuel demand for other species including *Anguilla mossambica* from Madagascar



Madagascar's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

MALAWI

Malawi's reported exports were made up primarily of wood commodities, very little of which were exported to Asia. Fisheries made up a smaller proportion of Malawi's exports by value. One of the most significant fisheries, and one which may have conservation concerns is the export of live fish. Malawi's biggest reported importer of both live fish, and live ornamental fish in Asia was Hong Kong SAR.

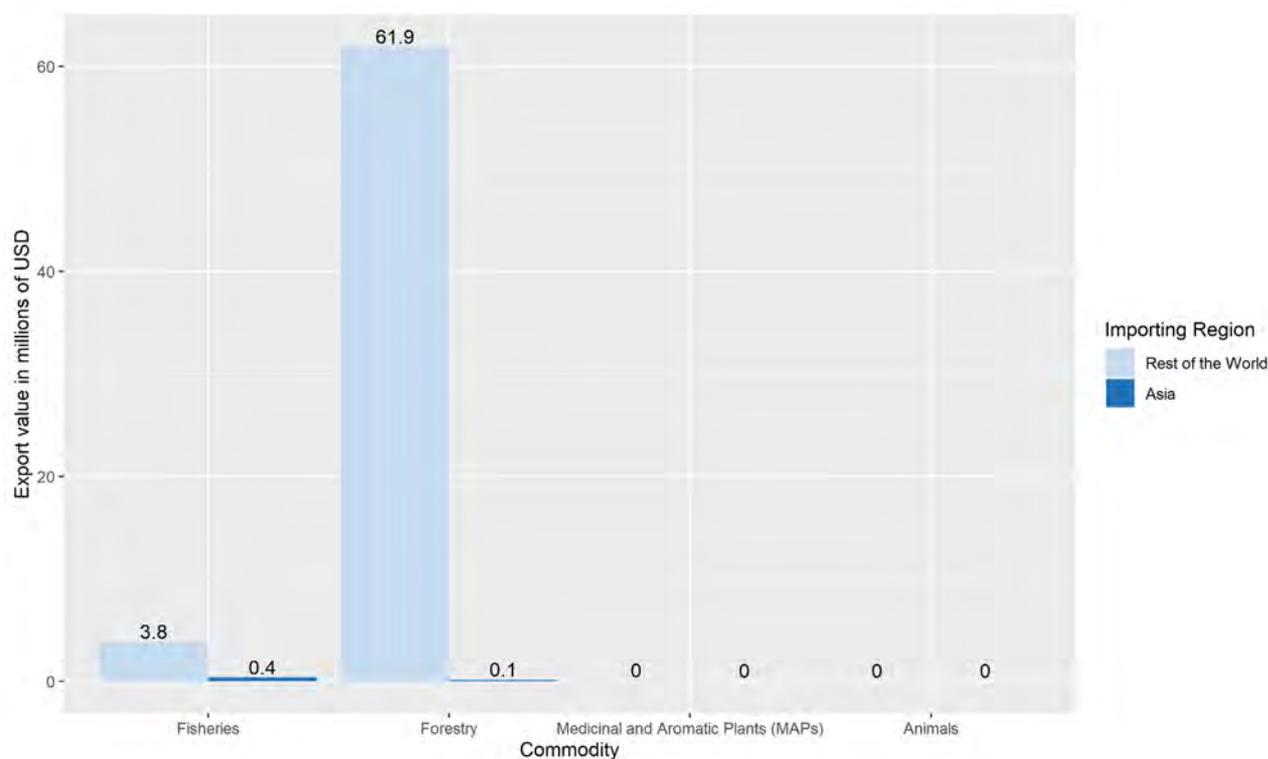
Despite being land locked, Malawi has developed its fisheries and aquaculture which are mainly focussed in the South of Lake Malawi (FAO, 2019e). However, there are serious concerns about the degradation of Malawi's fish stocks, due to factors including overfishing by artisanal and commercial fisheries mainly for domestic markets, habitat degradation, reduced migratory species in Malawi's rivers, and the invasion of Asian snails into Lake Malombe (Jamu et al., 2011).

HS CODE IN FOCUS:

HS code: 0301 (Fish; live)
USD3,813,893

HS code: 030111 (Fish; live, ornamental, freshwater)

Export value from Malawi to global markets: USD 186,849

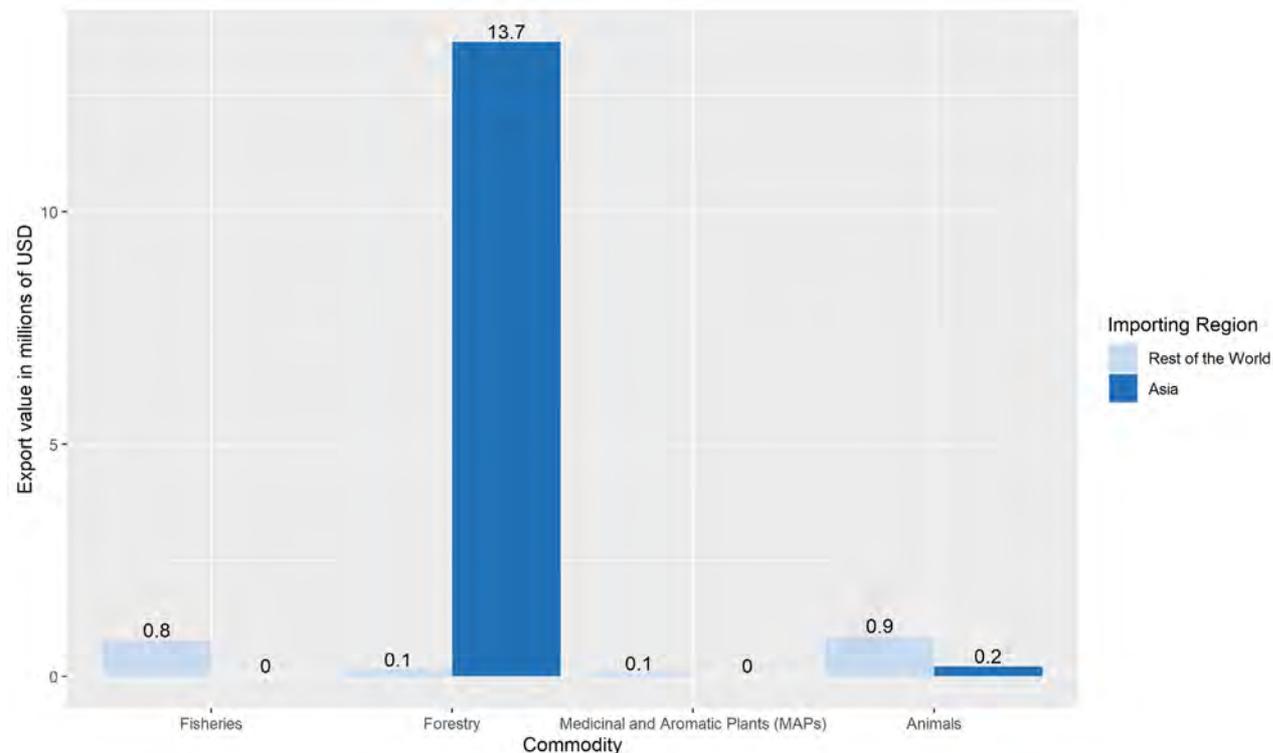


Malawi's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

MALI

Mali's exports were reported to be made up predominately of wood commodities, almost all of which were exported to Asia. The only trading partner reported by Mali as an importer of their wood (HS 4407 sawn or chipped lengthwise, sliced or peeled) in Asia was mainland China. The HS code system does not identify the species of wood being traded, except that some of the wood was reported to be coniferous.

There are concerns about the illegal international trade in some species of wood. Rosewood is highly valued and widespread illegal logging and trading led to the Malian government imposing a total trade ban on rosewood in 2014. CITES has suggested that there is a high demand for African rosewood in mainland China (CITES, 2015), a trend supported by data in this report.



Mali's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 4407 (Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness exceeding 6mm)

Export value from Mali to global markets: USD13,635,233

ROSEWOOD BAN

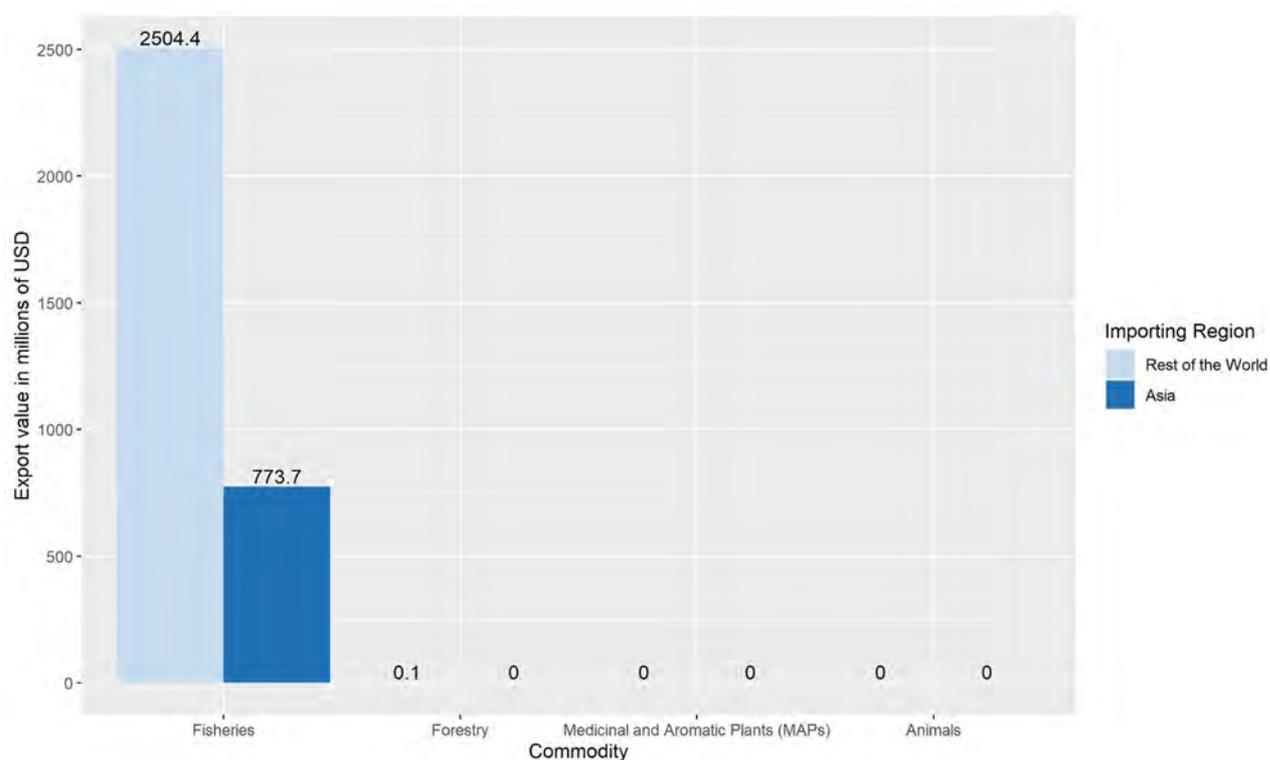
By Malian government to crackdown on illegal logging

MAURITANIA

Mauritania's exports were predominantly fisheries commodities, with around a quarter by value destined for Asia. One high value fisheries commodity exported by Mauritania was octopus (frozen, dried, salted, in brine, or smoked). The largest reported Asian importer of this commodity was Japan, followed by the Republic of Korea and mainland China.

Long-term data sets suggest octopus fisheries in Mauritanian waters are overexploited, both by small scale and industrial fishing operations (Meissa & Gascuel, 2015). However, since 2005 there have been changes to the octopus fisheries in Mauritanian waters including longer closures of octopus fisheries and removal of certain trawling vessels which are likely to reduce pressures on stocks (Meissa & Gascuel, 2015).

Concerns have been raised about how effective enforcement is in Mauritanian waters to enforce legislation protecting octopus stocks, as well as around the accuracy of reporting (Sauer et al., 2019). In addition to the extended closure of octopus fisheries in 2018, a fisheries improvement project was announced for octopus fisheries in Mauritania by the Sustainable Fisheries Partnership, to improve sustainability of octopus production (Sustainable Fisheries Partnership, 2018).



Mauritania's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030759 (Molluscs; octopus (Octopus spp.), frozen, dried, salted, in brine, or smoked, cooked or not before or during the smoking process)

Export value from Mauritania to global markets: USD838,151,621

OCTOPUS

Exported to Japan, Republic of Korea and mainland China in many forms: frozen, dried, salted, in brine, or smoked

REPUBLIC OF MAURITIUS

Fisheries commodities were dominated by fisheries exports, around half of which were reported to be exported to Asia. Ornamental freshwater fish only made up a small proportion of the overall fisheries trade in Mauritius, however collection of wild ornamental fish could have important implications for local biodiversity. Mauritius' biggest reported importing partners in Asia (both freshwater and not freshwater) were Hong Kong SAR, Singapore and Japan.

There are thought to be over 1100 species of fish in Mauritius, with nearly 400 identified as potentially being in the aquarium trade.

In recent years, the ornamental fish trade in Mauritius has received governmental support as it is recognised as a growing lucrative market (Service Government Information, 2018). In 2018, the Government of the Republic of Mauritius announced the provision of new training and technical support for local cooperatives in order to encourage the expansion of aquaculture for ornamental fish (Service Government Information, 2018). However, data available in the UN Comtrade Database does not include source so it is not possible to know how many of the exported fish are from captive breeding facilities, and how many are currently wild collected.

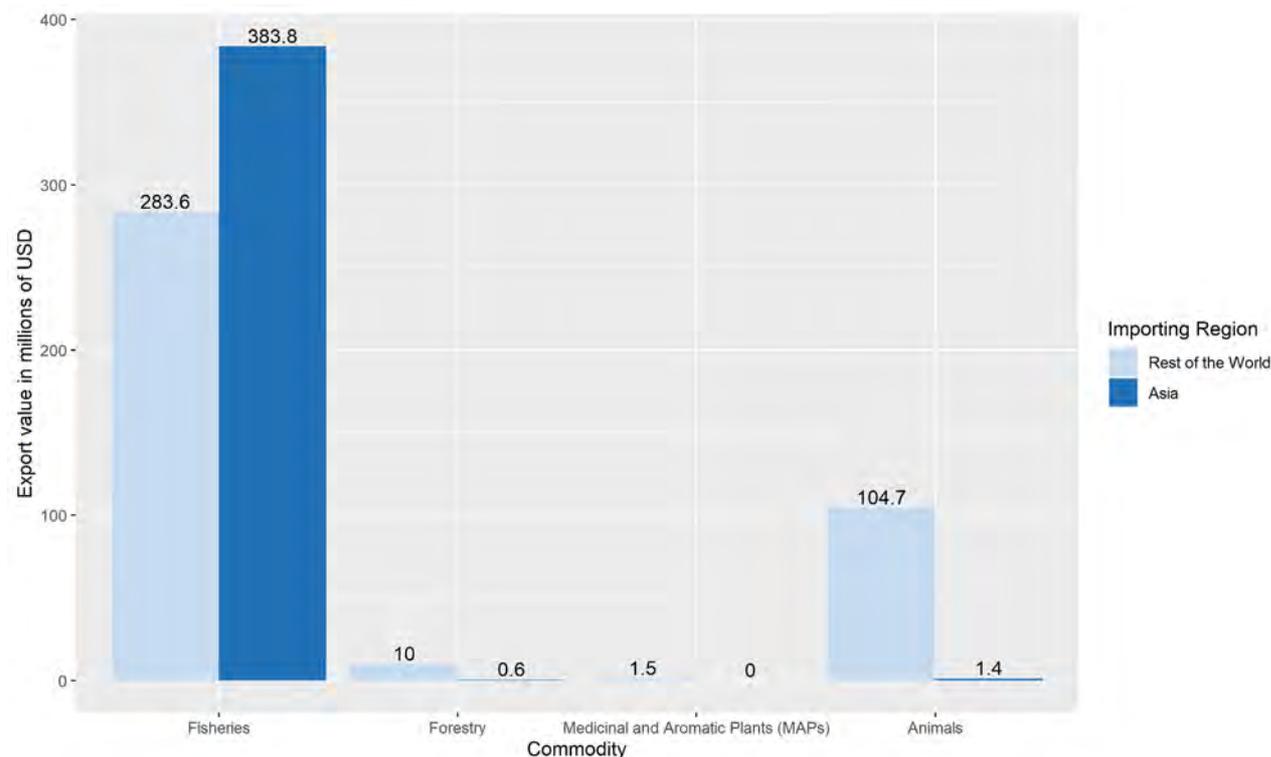
HS CODE IN FOCUS:

HS code:030111 (Fish; live, ornamental, freshwater)

Export value from Mauritius to global markets: USD196,164

HS code: 030119 (Fish; live, ornamental, other than freshwater)

Export value from Mauritius to global markets: USD400,281



Mauritius' reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

400

The number of fish species swimming in Mauritian waters are potentially in aquarium trade

MAYOTTE

Mayotte did not report any exports of wildlife commodities, fisheries produce or wood commodities to Asia between 2014 and 2018 in the UN Comtrade Database. Mayotte is a French overseas department, but is listed separately as a reporter on the UN Comtrade Database (Comtrade, 2020). No exports from Mayotte to Asia were reported in the CITES Trade Database between 2014 and 2018.

Most of the fisheries in Mayotte are small scale and artisanal with unpowered canoes making up the highest proportion of fishing vessels (Pusineri & Quillard, 2009). Fishing techniques and gear is regulated, but it has been suggested that the number of turtles caught as bycatch could threaten the local turtle populations (Pusineri & Quillard, 2009).

In addition to the artisanal fisheries, there is also industrial fishing fleets which operate in the fishing grounds of Mayotte (European Commission, 2017). There is a fleet of French purse-seiners which operate in Mayotte's waters, but do not dock there (European Commission, 2017). In addition to the French fleet, other EU and other non-EU seiners also fish in Mayotte's waters, and EU vessels in particular gain access to the waters through an EU – Seychelles agreement; an arrangement which is seen as controversial by local fishermen (European Commission, 2017).

MOROCCO

Morocco reported significant export value fisheries commodities between 2014 and 2018. One fisheries commodity in particular was live eels. Over USD15 million worth of live eels were reported as exported between 2014 and 2018, with the biggest importers in Asia being the Republic of Korea, followed by Hong Kong SAR.

Data from UN Comtrade does not specify which species was exported, but one species of eel known to be traded internationally is the European Eel *Anguilla anguilla* (Outhwaite & Brown, 2018) which is described as Critically Endangered by the IUCN Red List and was listed by CITES in Appendix II in 2009. Appendix II listed animals are allowed to be traded if a Non-detriment Finding (NDF) shows that the proposed levels of trade will not be detrimental to the population, however, the Scientific Review Group of the EU have so far been unable to make a NDF due to the complex life-cycle of the European Eel, the extent of the illegal trade in eels and the range of ways eels can be reported at export (Musing et al., 2018). Availability of eels from legal sources has decreased due to declines in eel populations coupled with Europe introducing quotas and trade bans to protect remaining stocks. This decreased availability combined with high demand from Asia for eel have led to the emergence of an illegal trade in eels (Musing et al., 2018).

Non-detriment Finding:

For an export permit for a CITES Appendix II listed species to be issued, the CITES Scientific Authority of the exporting country has to advise that the proposed export will not have a negative impact on the species being traded. To do this the Scientific Authority will complete a Non-detriment Finding which should use scientific evidence to assess the risks of trade to the species.

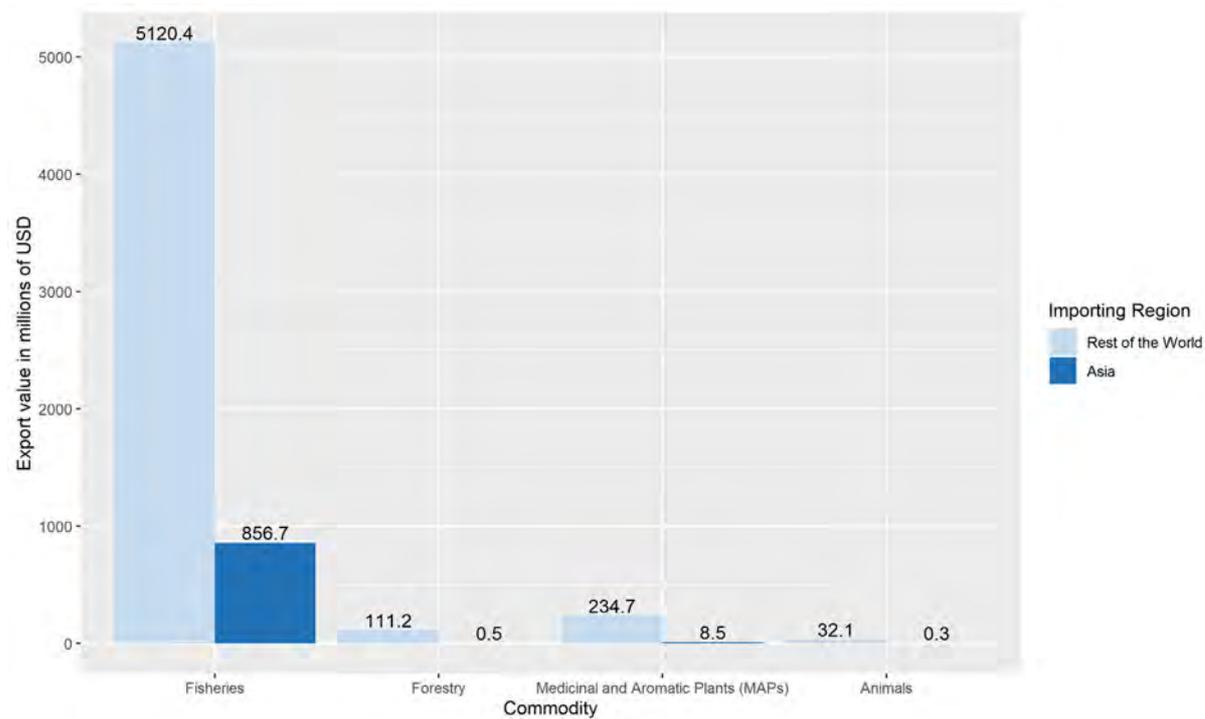
Wild European Eel are caught for human consumption at each stage of their life cycle. In

HS CODE IN FOCUS:

HS code: 030192 (Fish; live, eels (*Anguilla* spp.))

Export value from Morocco to global markets: USD15,777,980

addition to capture for direct consumption there is also significant trade in wild eel fry (glass eels) which are then raised predominately in farms in South East Asia (Musing et al., 2018). The highly lucrative nature of the trade in European Eel led to multiple crime syndicates becoming involved in the illegal trade of this species (Richards et al., 2020), with known trafficking routes from Europe to Asia via Morocco (Musing et al., 2018). There are significant challenges in regulating this illegal trade including the visual similarities between European Eel fry to the that of other species of eel, making the detection of this species very challenging for law enforcement (Richards et al., 2020). Despite these challenges, the high numbers of European Eel detected in supermarkets in Hong Kong, and lack of CITES permits for imports of European Eel into Hong Kong SAR, has led to allegations that these eels may not be entering the markets entirely undetected (Richards et al., 2020).



Morrocco's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

REPUBLIC OF MOZAMBIQUE

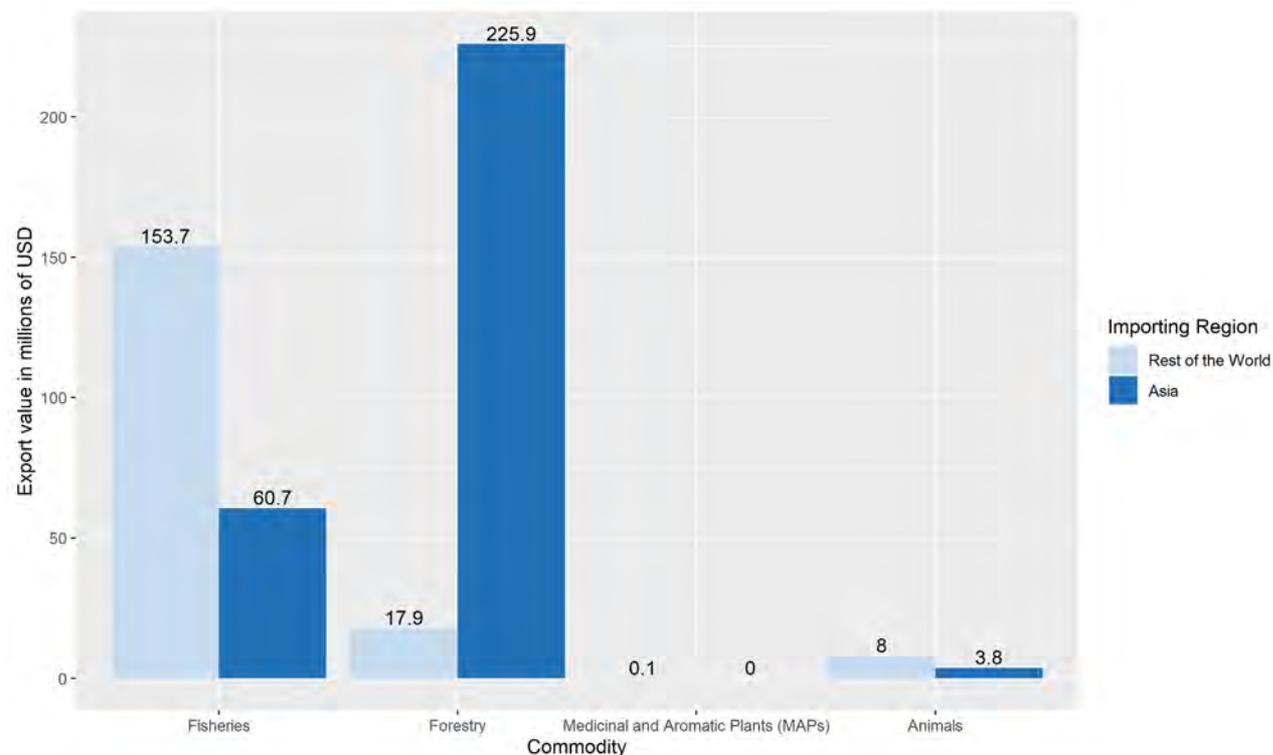
Wood commodities made up the highest value commodity group of Mozambique's reported exports, the majority of which were exported to Asia. Fisheries commodities also made up an important percentage of Mozambique's exports, a quarter of which consisted of shrimps and prawns. Mozambique's biggest reported partner for importing frozen shrimps and prawns in Asia was mainland China.

While most fishing in Mozambique is carried out by artisanal fishers, industrial fisheries are also present in Mozambique, targeting shrimps in particular (FAO, 2019f). There have been attempts to develop shrimp farming in Mozambique, however, a serious outbreak of white spot in the shrimp farms in 2011 caused serious damage to the sector (FAO, 2019f).

HS CODE IN FOCUS:

HS code: 030613 (Shrimps & prawns, whether/not in shell, frozen)

Export value from Mozambique to global markets: USD69,059,849

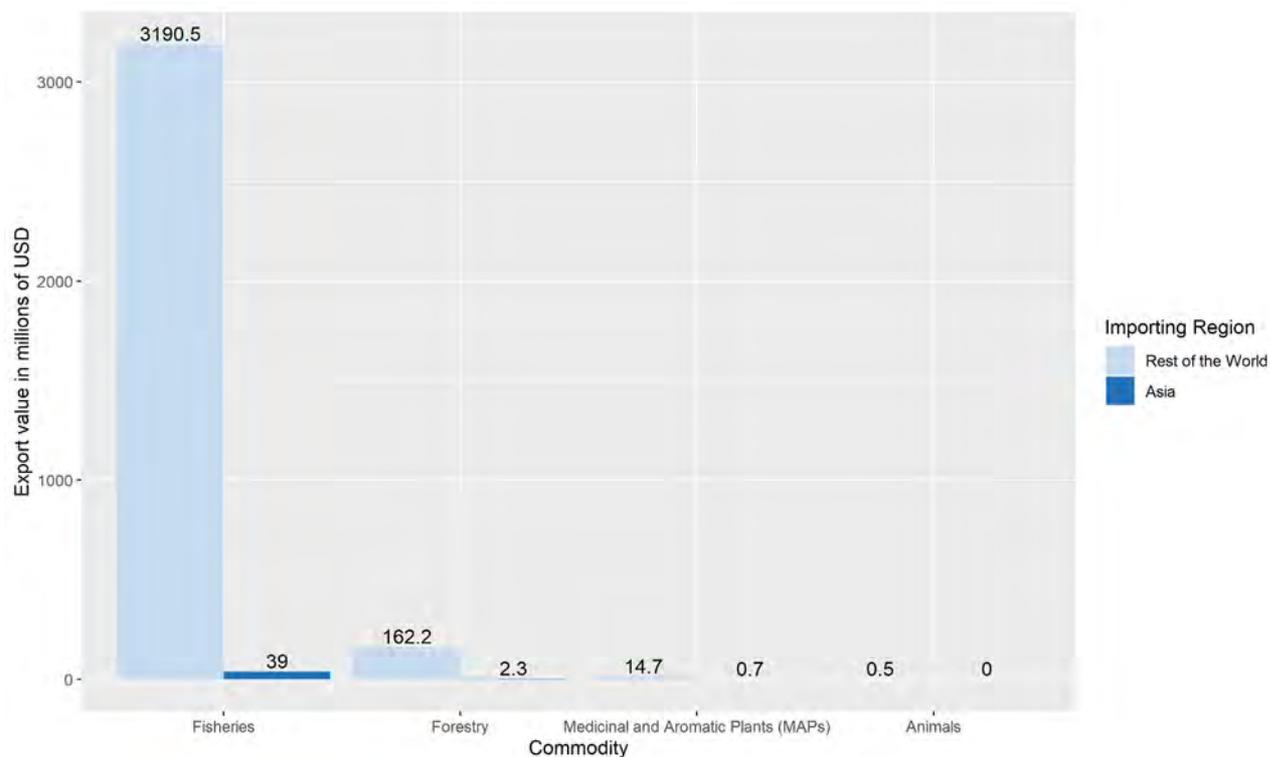


Mozambique's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

NAMIBIA

Crustacean fisheries made up an important part of the majority of Namibia's reported fisheries exports, around 10% of which was reported to be exported to Asia (USD8,306,957). Namibia's biggest reported importer of Namibian crustaceans in Asia was Japan. Within these exports crustaceans including crabs and lobsters and could have been traded.

Namibia has a small abalone farming project, however there are concerns that abalone are being collected illegally in South African waters, transported to Namibia then being brought back to South Africa before export, allowing smugglers to claim the product is not from South African waters (Minnaar et al., 2018).



Namibia's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 0306 (Crustaceans; in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked, cooked or not before or during smoking; in shell, steamed or boiled, whether or not chilled, frozen, dried, salted or in brine; edible flours, meals, pellets)

Export value from Namibia to global markets: USD80,438,859

SOPHISTICATED SMUGGLING

of abalone collected in South African waters is routed through Namibia before export

REPUBLIC OF THE NIGER

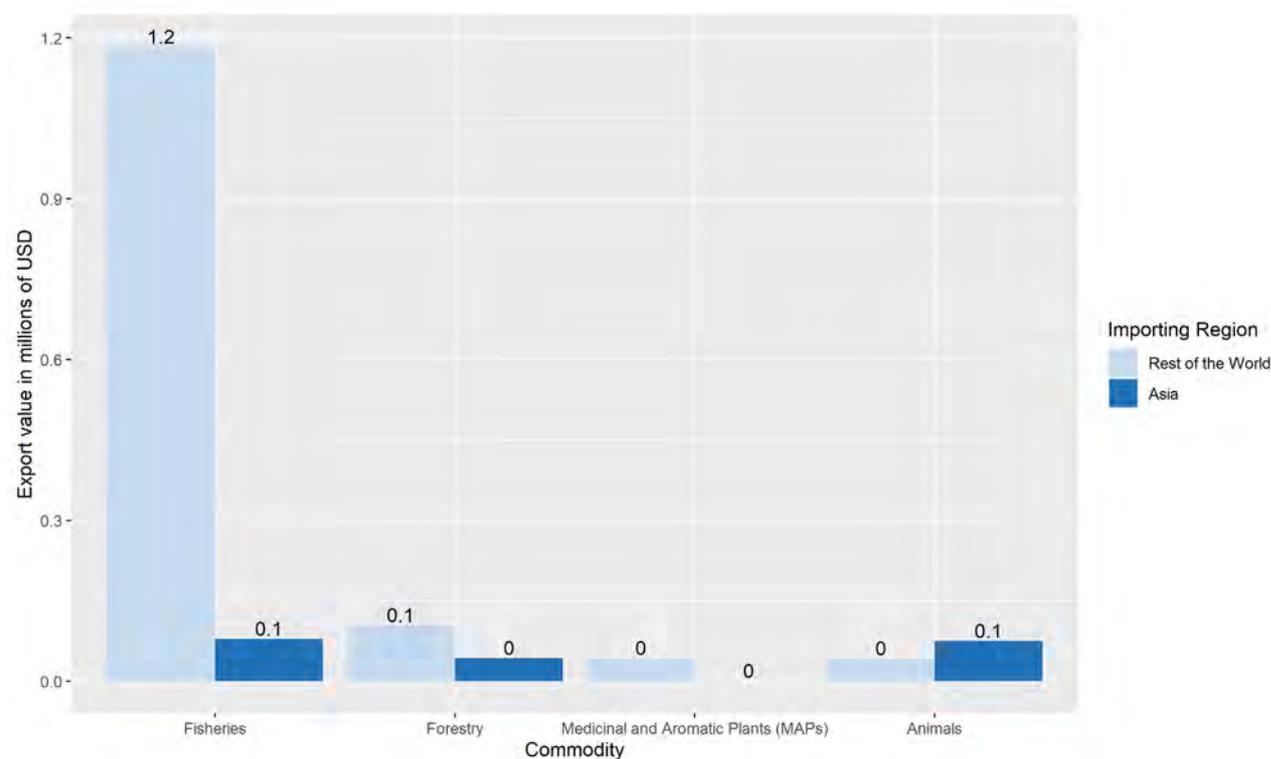
Niger's fisheries exports make up the majority of reported exports, but only a small proportion of this was exported to Asia. One exported commodity which was exported to Asia was fish exported under HS code 030243 which covered sardines, sardinella, brisling or sprats. Niger's biggest reported importing partners in Asia for HS code 030243 was Singapore, followed by mainland China, however these were likely to be re-exports.

Niger is land locked and relies on lakes, ponds and reservoirs for fisheries. Aquaculture activities only occur at a very low level (FAO, 2017b). However, there are currently very serious concerns about food security within Niger, given recent increasing levels of armed conflict and associated high displacement of people within the country (FAO, 2019c).

HS CODE IN FOCUS:

HS code: 030243 (Fish; fresh or chilled, sardines (*Sardina pilchardus*, *Sardinops* spp.), sardinella (*Sardinella* spp.), brisling or sprats (*Sprattus sprattus*), excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Niger to global markets: USD78,752



Niger's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

FEDERAL REPUBLIC OF NIGERIA

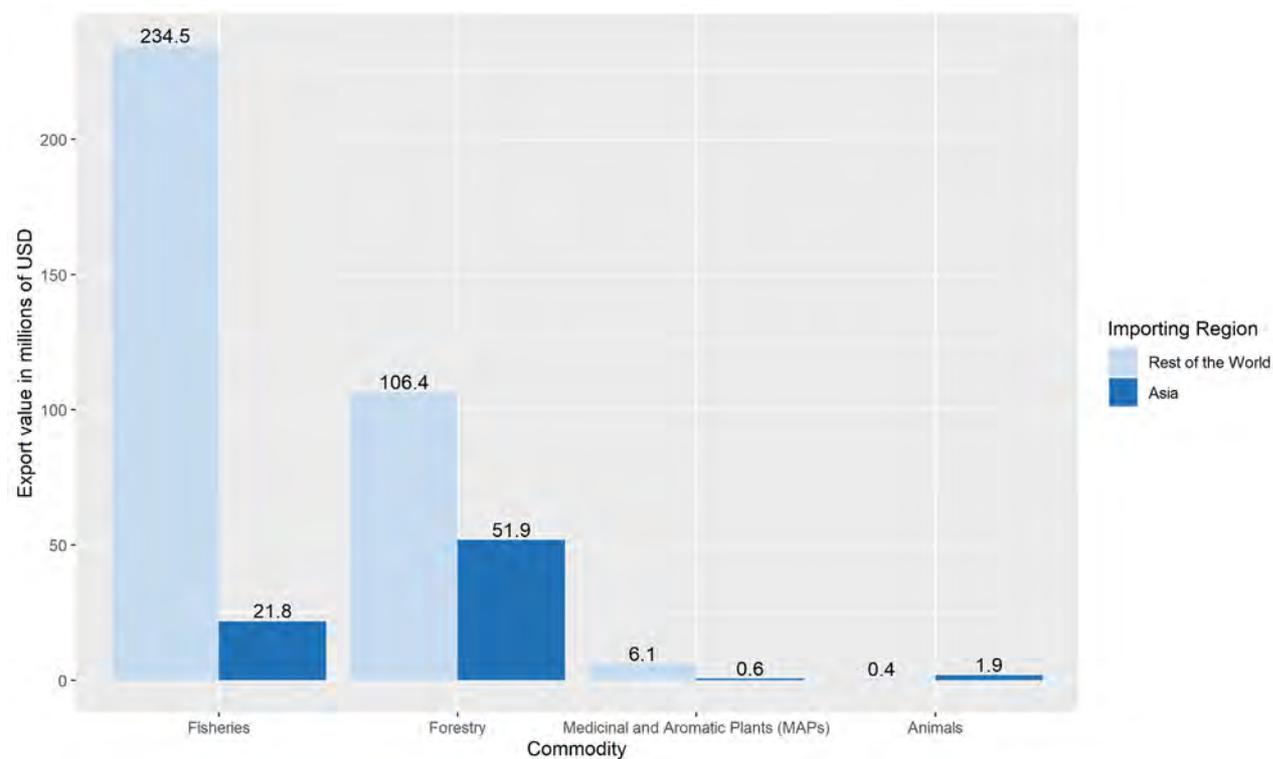
Nigeria's reported exports were mainly made up of fisheries exports, only a small amount of which was exported Asia. However, one fisheries commodity with conservation implications was trout. Nigeria's only reported importing partner in Asia for live trout was Viet Nam.

Nigeria has both freshwater and marine fisheries, with artisanal fishers playing a highly important role in fisheries production (FAO, 2017a). Nigeria has also seen recent development of its aquaculture capabilities and is now the largest producer of aquaculture fish in sub-Saharan Africa (FAO, 2017a). However, it has been reported that aquaculture waste products can be detrimental to natural ecosystems and have to be regulated (Akinrotimi et al., 2011).

HS CODE IN FOCUS:

HS code: 030191 (Live trout (*Salmo trutta*, *Oncorhynchus mykiss/clarki/aguabonita/gilae/apache/chrysogaster*))

Export value from Nigeria to global markets: USD1,977,659



Nigeria's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

REUNION

Reunion is an overseas department of France, and therefore the trade of Reunion has been included under France in data from the UN Comtrade Database since 1996 (UN Comtrade, 2009). In the cases of overseas territories like Reunion, UN Comtrade may not be a useful tool given the challenges of separating trade information from the trade of France and other overseas departments.

Nevertheless, other sources of information can provide insights into changing trends in wildlife trade in Reunion. In the past, Reunion was known to have Green Sea Turtle mariculture facilities producing meat, fat and carapace commodities, where wild hatchlings would be collected and farmed until they were a size suitable to market. Much of the historical trade in this species was domestic and National legislation was reportedly put in place to protect the turtles in the 1980s (Ciccione & Bourjea, 2006), although the scope of this protection is unclear. Support from the European Union and Regional Council has provided financial support to allow a gradual move away from the turtle farming industry (D’Cruze *et al.*, 2014). Now Reunion is used as a case study for a successful move away from turtle farming without harming wild populations; wild populations are increasing, and tourist visits to the turtle rescue and research centre have increased to around 100,000 a year (D’Cruze *et al.*, 2014).

TURTLE TOURISM

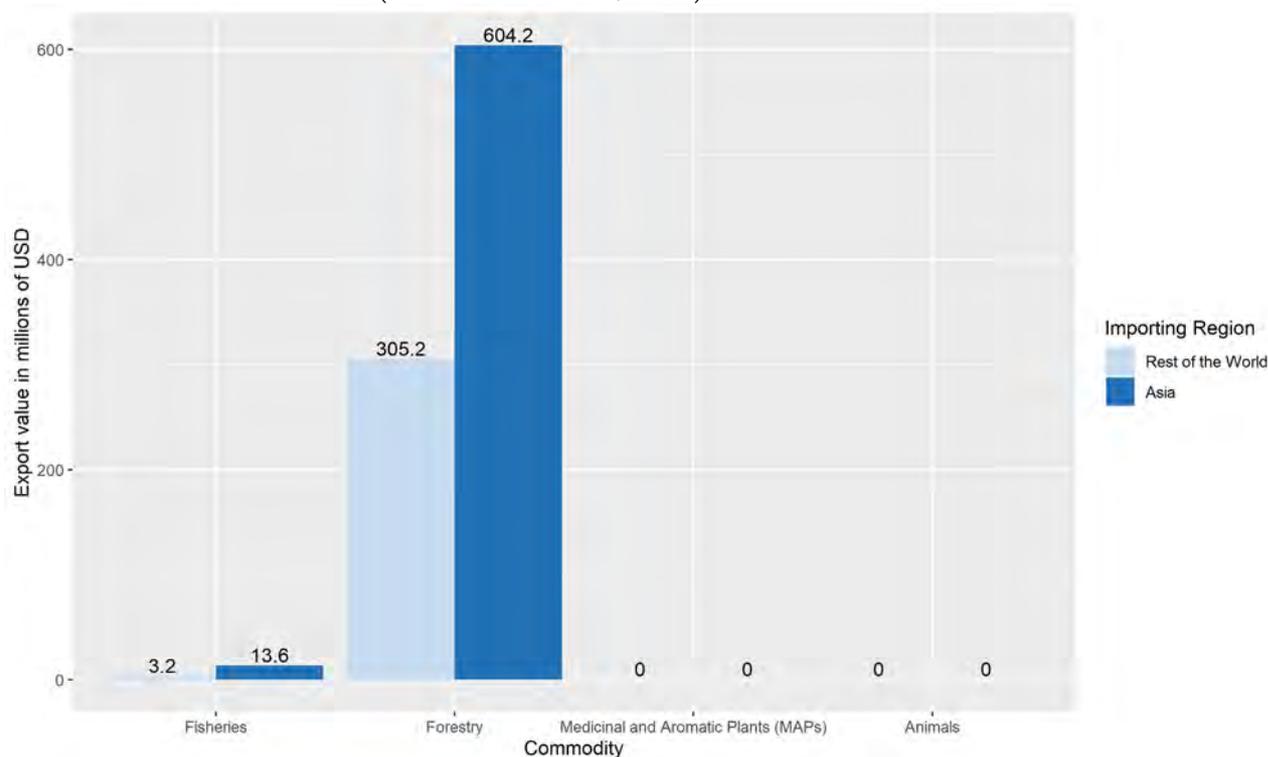
**Boosted by Reunion
moving away from turtle
farming industry**

REPUBLIC OF THE CONGO

The Republic of the Congo is a significant exporter of wood commodities, the majority of which is exported to Asia. Sapelli wood *Entandrophragma cylindricum* (under code HS 440727) in particular is one of the Republic of the Congo's biggest wood exports and between 2014 and 2018 USD44,696,556 of Sapelli wood was reported to be exported to global trading partners. Mainland China was the Republic of the Congo's largest trading partner in Asia for this HS code, with reporting exports of USD4,966,754.

While 80 different species of timber are exploited in the Republic of the Congo, two thirds of the trees exploited were Okoumé *Aucoumea klaineana* or Sapelli (The Timber Trade Portal, 2018b). Over 60% of the country is covered by forest, the majority of which are natural or regenerated. Logging is dominated by large logging companies, many of which are Asian firms (The Timber Trade Portal, 2018b).

Despite the high percentage of land still covered by forest in the Republic of the Congo, there are concerns that the rapidly expanding roadways through the Republic of the Congo may facilitate illegal activities and forest fragmentation. Following financial incentives from the government, logging companies in the Republic of the Congo have been contracted to upgrade logging tracks into roads into the rainforest (Kleinschroth et al., 2019).



Republic of the Congo's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 440727 (Wood, tropical; Sapelli, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm)

Export value from Republic of Congo to global markets: USD44,696,583

REPUBLIC OF RWANDA

Rwanda did submit trade reports to UN Comtrade between 2014 and 2018, but did not report any trade of fisheries, wood or wildlife commodities to Asia. No commodities were reported in the CITES Trade Database as having been traded to Asia from Rwanda during that time either.

Despite being a landlocked country, aquaculture has been highlighted as a promising area for future development. Currently research on improving aquaculture in Rwanda is being supported by the Belgian Development Cooperation. However, a lack of capacity for aquaculture research and training in country is hampering aquaculture improvements (Duijn et al., 2018).

SENEGAL

Senegal reported the highest value of exported frozen tuna (fillets excluded) from any African country to global markets. Senegal's biggest reported Asian importing partners were the Republic of Korea, Thailand and China.

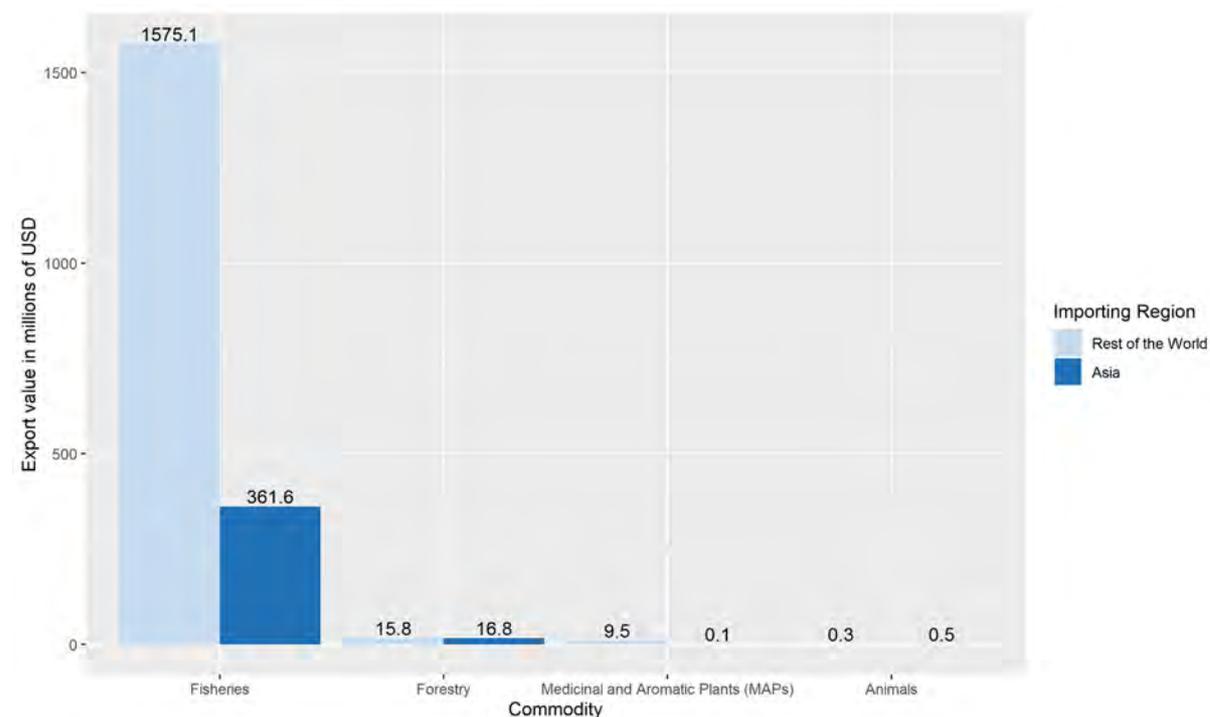
While it is unclear from data from the UN Comtrade Database alone what species are covered under this code, the 2019 Standing Committee on Research and Statistics (SCRS) report estimated that Senegal landed 18,353 t of Yellowfin Tuna (*Thunnus albacares*) between 2014 and 2018 (ICCAT, 2019). While *T. albacares* is the second most common tuna species for canning (Collette et al., 2011), *T. albacares* populations are in decline and continue to be exploited by longline, baitboat and seine fisheries. Further pressure is put on stocks as some European purse seiners have also started exploiting East Atlantic stocks due to the risks of piracy in the Indian Ocean (ICCAT, 2019).

Concerns have also been raised about the regional declines of *T. albacares* in the Senegal-Mauritania area. It is not fully understood why Yellowfin Tuna has been so rapidly declining in the Senegal-Mauritania part of its range. Several hypotheses have been put forward, including reduced fecundity associated with reduced genetic diversity of this population (Fonteneau & Meissa, 2017).

HS CODE IN FOCUS:

HS code: 030349 (Fish; frozen, tuna, n.e.c. in item no. 0303.4, excluding fillets, livers, roes, and other fish meat of heading 0304)

Export value from Senegal to global markets: USD17,147,284



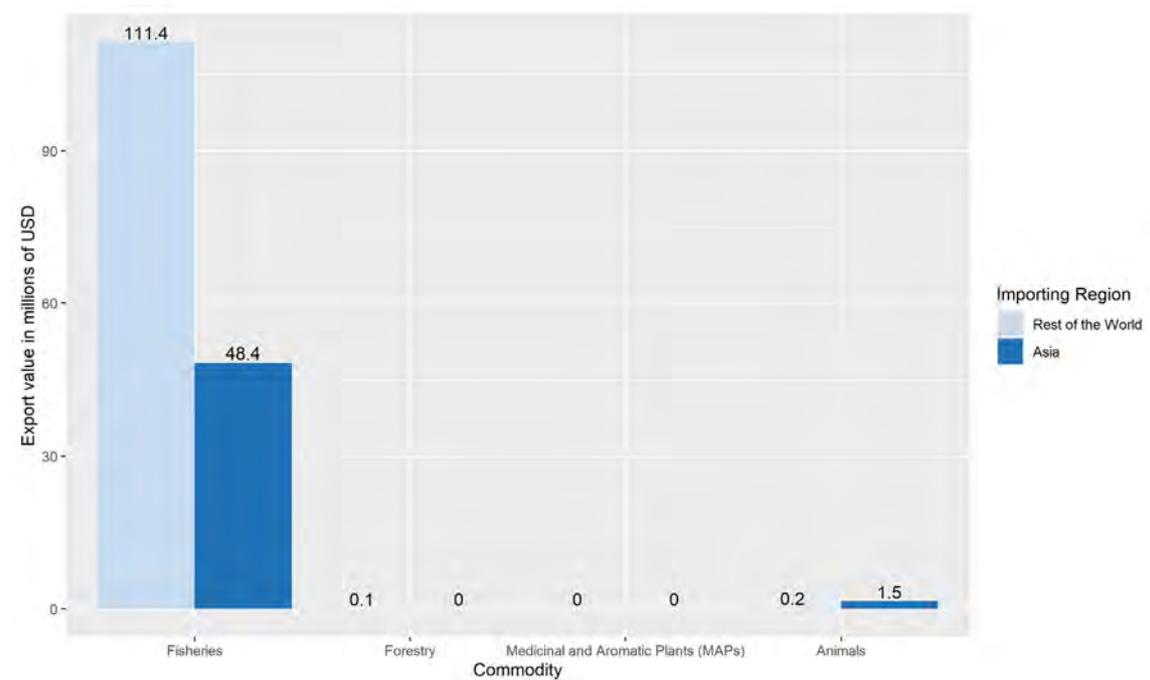
Senegal's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

SEYCHELLES

Fisheries commodities dominated the Seychelles exports, around a third of which was exported to Asia. One fisheries commodity exported by the Seychelles which is of particular conservation interest is the sea cucumber. The Seychelles reported a high value of exports of the sea cucumber *Stichopus japonicus*, to Asia, in live, fresh or chilled, or frozen and prepared form. All of the Seychelles exports of this commodity were reported to be exported to Hong Kong SAR, which is the recognised entry point of sea cucumber to Asia (CITES, 2019b).

Sea cucumbers are harvested, predominantly by scuba divers (Seychelles Fishing Authority, 2019) and dried to create a product called bêche-de-mer (Koike, 2017). This trade in sea cucumbers has been increasing globally from 1990 to 2016 (CITES, 2019b). Research looking at sea cucumbers in the Seychelles between 2000-2011 has suggested that while sea cucumbers stocks are in decline, the declines are not reflected in the amount of sea cucumbers harvested annually as there has been increasing effort to collect sea cucumbers over a wider area (Koike, 2017). Recent research looking at the Hong Kong SAR import data however suggests a decline in sea cucumber imports from the Seychelles between 2012 and 2019 (Burgener & Louw, 2020). Sea cucumbers are vulnerable to overfishing as a critical population density is needed to ensure breeding is successful. Sea cucumbers release their gametes into the water to breed therefore too great a distance between individuals reduces the possibility of reproductive success, making it difficult for populations to recover from overfishing (CITES, 2019b).

Three species of sea cucumber *Holothuria fuscogilva*, *Holothuria nobilis*, *Holothuria whitmaei*, were listed in CITES Appendix II at COP18.



Seychelles' reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030811 (Aquatic invertebrates; sea cucumbers (*Stichopus japonicus*, Holothurioidea), live, fresh or chilled)
Export value from Seychelles to global markets: USD610,569

HS code: 030819 (Aquatic invertebrates; sea cucumbers (*Stichopus japonicus*, Holothurioidea), frozen, dried, salted or in brine, smoked, whether or not cooked before or during the smoking process)

Export value from Seychelles to global markets: USD1,672,720

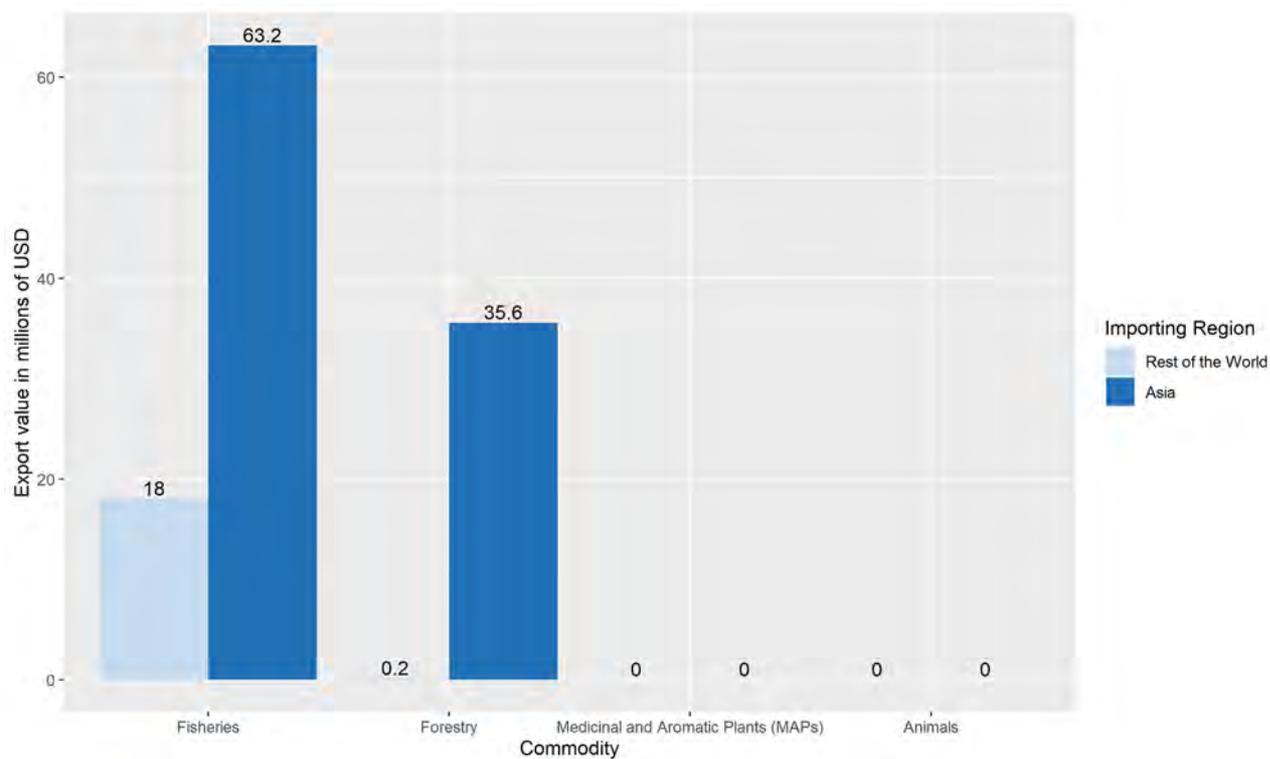
SCUBA DIVERS

The primary harvesters of sea cucumbers

SIERRA LEONE

The majority of wood and fisheries commodities exported by Sierra Leone were to Asia. Between 2014 and 2018 more fisheries commodities were exported from Sierra Leone than wood produce. Sierra Leone's biggest reported trading partner for this commodity was mainland China, followed by the Republic of Korea. However, there are likely to be underestimates of the extraction of these commodities, particularly wood as there is reported to be serious issues with illegal logging in Sierra Leone (Sierra Leone Government, 2017).

A recent report highlighted threats to Sierra Leone's fishery stocks from illegal foreign fishing vessels from a range of countries including Europe and mainland China, which have been reported to be increasing since 2014 (Seto *et al.*, 2017). Illegal fishing can present serious issues to sustainable fisheries management as illegally caught fish would not be included in official fisheries. Therefore, reported data including UN Comtrade reports could be minimum estimates of overall trade from Sierra Leone's waters. Seto *et al.*, (2017) suggest that Sierra Leone's actual catch after illegal activities take place could be 2.25 times the reported catch volumes. The combined fishing pressure of legal and illegal foreign vessels in Sierra Leone's waters was estimated, in some years, to exceed the overall biomass of fish which could be extracted sustainably (Seto *et al.*, 2017).



Sierra Leone's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 03 (Fish and crustaceans, molluscs and other aquatic invertebrates)

Export value from Sierra Leone to global markets: USD 81,217,006

ILLEGAL FOREIGN FISHING VESSELS

are threatening Sierra Leone's fishery stocks

SOMALIA

Somalia did not submit any merchandise trade reports to the UN Comtrade Database between 2014 and 2018. However, other countries did report importing goods from Somalia between 2014 and 2018 on the UN Comtrade Database such as mainland China which reported importing USD32,884 (HS 050710) of animal commodities; ivory, unworked or simply prepared but not cut to shape, ivory powder and waste. Interestingly there is no records of ivory on the CITES Trade database being exported from Somalia to mainland China during this time.

SOMALILAND

Somaliland is not recognised by the UN so does not submit reports to the UN Comtrade Database. Somaliland has a very low gross domestic product per person (The World Bank, 2014). High levels of poverty and high-value opportunities for illegal wildlife smuggling make this country significant in the trade of vulnerable species like cheetahs, the cubs of which are highly valued in the illegal international pet trade. Pressure from wildlife trading has been highlighted as a real conservation concern for this species (Tricorache et al., 2018).

SOUTH AFRICA

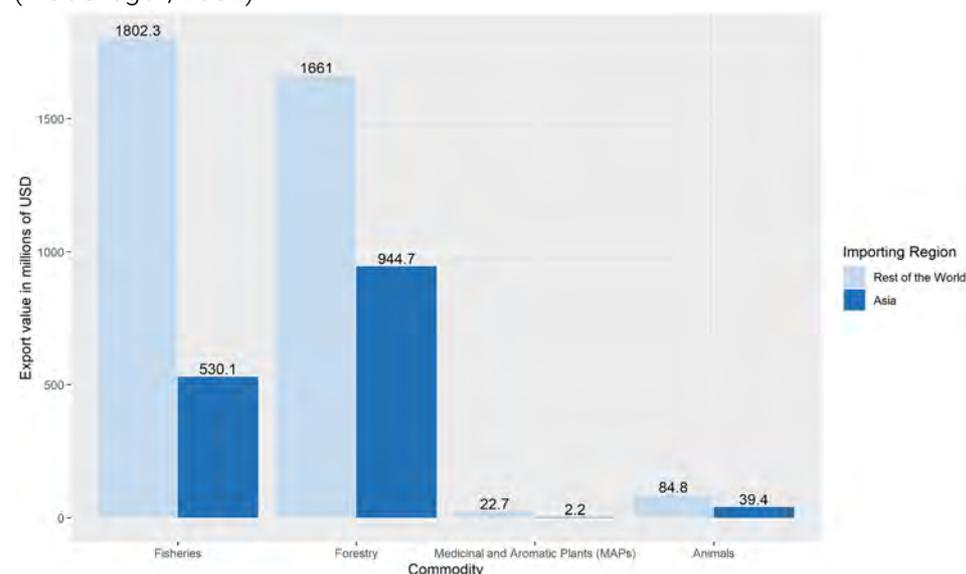
South Africa reported the highest value of tanned or crust reptile skin exports to global markets than any other country in Africa. South Africa's biggest reported importing partners of raw or semi processed reptile skin (HS 410640) in Asia were the Republic of Korea, Viet Nam and Japan.

Data from the UN Comtrade Database does not give details on what species of reptile make up South Africa's exports of skins. CITES trade data, however, highlights that South Africa exported large quantities of Nile Crocodile *Crocodylus niloticus* skin (159,238 skins, 48,216 skin pieces as well as 300kg of skin pieces between 2014 and 2018). Nearly all (97%) of the skins were reportedly from captive-bred crocodiles. A very small number of other CITES-listed reptile species were also reported as exported by South Africa including 22 skins of the Common Water Monitor *Varanus salvator* which had been sourced from the wild. There may be additional species in the reptile skin trade which are not CITES listed, so would not be recorded in the CITES Trade Database.

According to CITES data, exports of skins of Nile Crocodile from South Africa decreased from 145,298 in 2014 to 85,482 in 2017. South Africa also acted as a re-exporter of crocodile commodities such as skins and trophies from crocodiles originally ranches in Mozambique (1,298 between 2014 and 2018).

There are a number of important reasons to monitor trade in captive-bred specimens, for example to track demand for wild vs. captive wildlife over time to infer changes in pressures on wildlife populations and related contributions to livelihoods, or to detect potential laundering of wild animals or plants as falsely being declared as from captive sources.

In the case of the Nile Crocodile, it has been suggested that the pressure through CITES particularly in the 1980s has been instrumental in facilitating sustainable utilisation of Nile crocodiles, with emphasis on captive rearing and ranching rather than using wild animals (MacGregor, 2002).



South Africa's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 410640 (Tanned or crust hides and skins; of reptiles, whether or not split, but not further prepared)

South Africa is the biggest African exporter of this code.

Export value from South Africa to global markets: USD1,399,457

SOUTH AFRICA

Acted as a re-exporter of crocodile skins and trophies from animals originally ranches in Mozambique

SOUTH SUDAN

South Sudan did not submit reports of merchandise trade between 2014 and 2018 on the UN Comtrade Database. However, according to the UN Comtrade Database, mainland China reported USD138,323 worth of wood and charcoal imports from South Sudan. While there were limited reports of wood exports from South Sudan to Asia, there were reports of high value exports of wood from Asia to South Sudan. The value of wood exported from mainland China to South Sudan was reported as USD2,263,712. Wood was also imported from other African countries due to limited infrastructure for harvesting wood in-country (WWF, 2012).

South Sudan became independent in 2011 and since then has been working with FAO to develop its agriculture, fisheries and timber industries (FAO, 2019a).

SUDAN

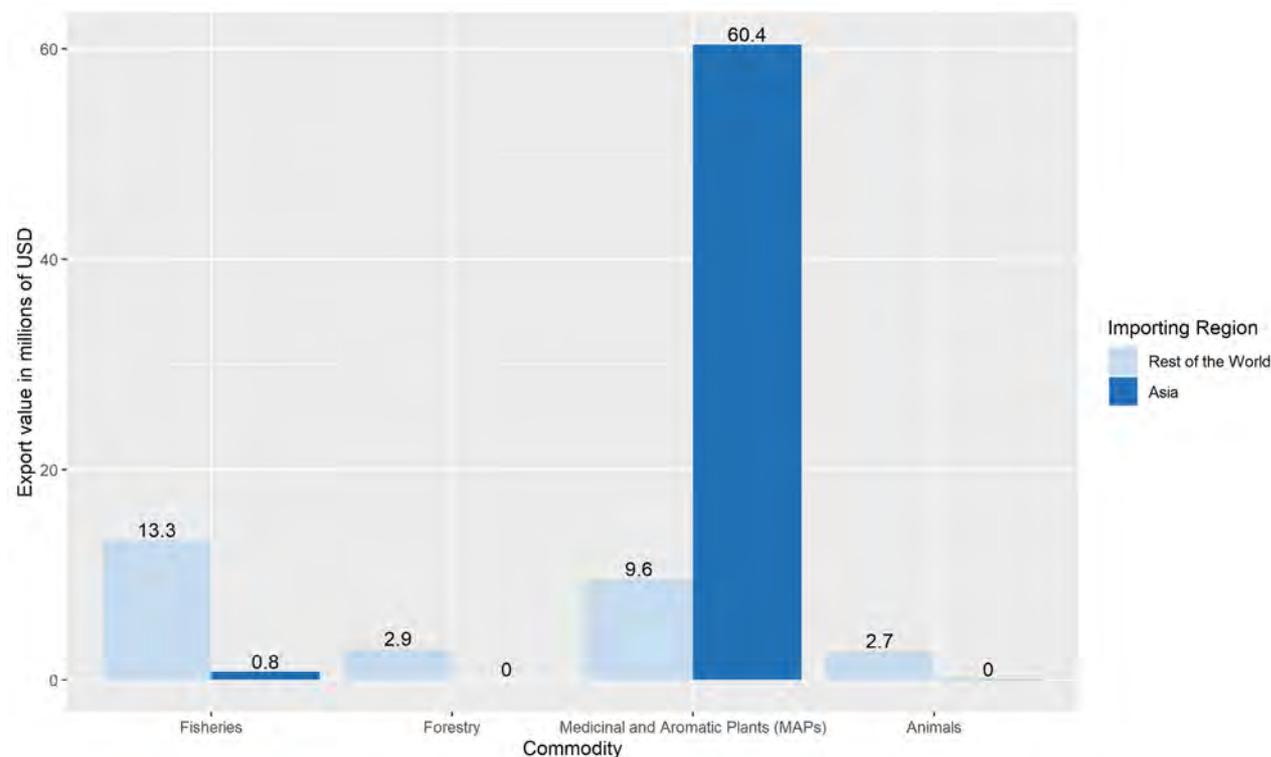
Sudan's exports were dominated by animals and medicinal and aromatic plants, the majority of which were reported to be exported to Asia. Sudan reported exporting USD69,952,856 worth of medicinal plants (HS 1211) to global overseas markets, 85% (USD59,179,985) of which was reportedly exported to Japan.

While species specific information is not available, Gum Arabic is likely to represent the greatest proportion of these exports as Sudan is reported to be a world leading producer of Gum Arabic (Elkarim & Osman, 2019; Khalid et al., 2012). Gum Arabic is used to make medicines and cosmetics more viscous, as well as being used in the production of sweets (Khalid et al., 2012). It is harvested within Sudan from a 25,200 square kilometre region known as the Sudanese Gum Belt (Sudan Trade Point, 2020a). In addition to Gum Arabic production, there are other important medicinal plants reported to be exported from Sudan including henna which is used both as a dye and a fungicide (Khalid et al., 2012). Henna is cultivated and grown in small hedges which can be harvested two to four times a year (Sudan Trade Point, 2020b).

HS CODE IN FOCUS:

HS code: 1211 (Plants and parts of plants (including seeds and fruits), used primarily in perfumery, pharmacy; for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not crushed or powdered)

Export value from Sudan to global markets: USD69,952,861



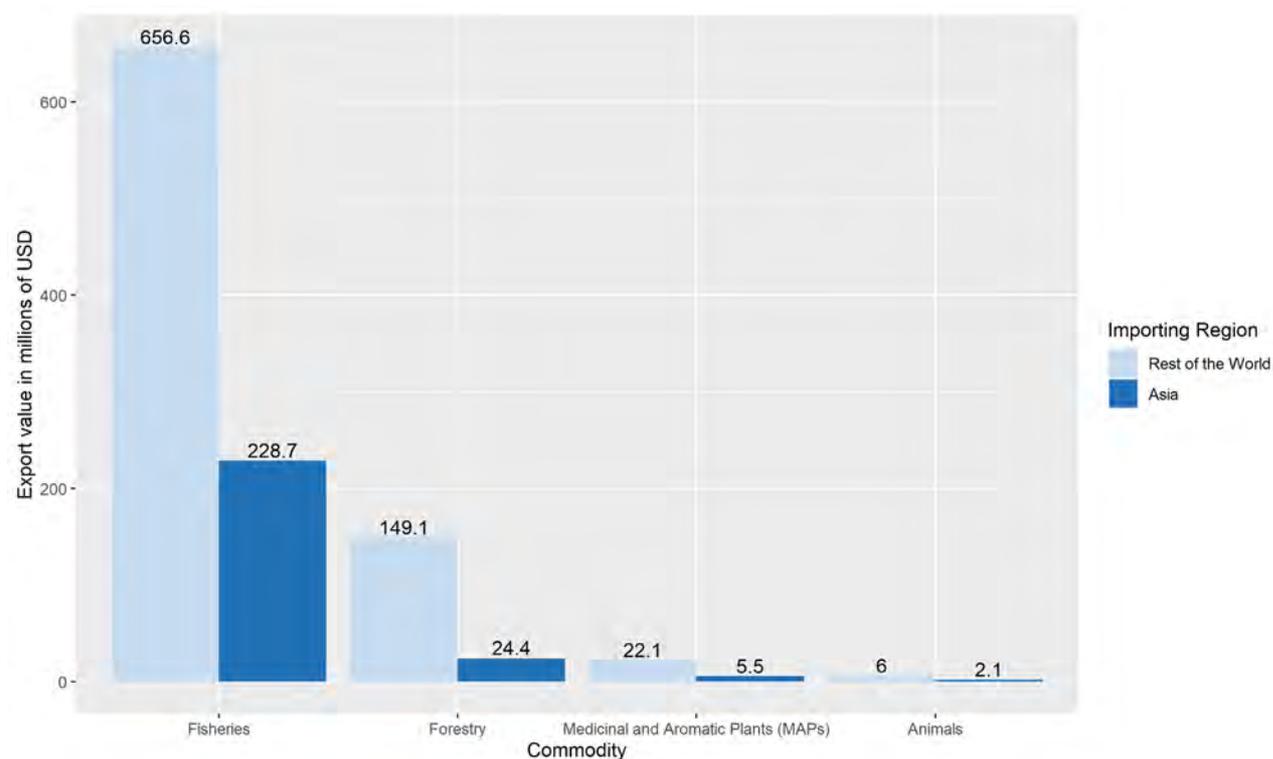
Sudan's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

TANZANIA

Tanzania reported high fisheries exports, a significant proportion of which was reportedly exported to Asia. Although representing a small proportion of the fisheries exports, the exports of ornamental saltwater fish could have important conservation implications. Tanzania reported the largest Asia importers as Hong Kong SAR, followed by Singapore and the Republic of Korea. No information is provided by the UN Comtrade Database on which saltwater ornamental species may be traded.

An estimated 90-95% of saltwater ornamental fish are wild-caught (King, 2019). It is unclear which species are traded under this HS code. While FishBase identifies 532 fish species in Tanzanian water for the aquarium trade (FishBase, 2020), only three species Chisawasawa *Lethrinops lunaris*, Mbuna *Cyathochromis obliquidens* and Red/White Top Afra *Cynotilapia afra* are reported by FishBase to be traded commercially from Tanzania. These three ornamental species however, are all freshwater fish (FishBase, 2020). It is therefore unclear which ornamental saltwater fish may be exported from Tanzania, and this could be an avenue for further research.

While there is little work currently showing the sustainability of fisheries for aquarium species, there is evidence and concerns about overexploitation and destructive fishing methods being used in the collection of fish for the aquarium trade in other places (King, 2019).



Tanzania's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 030119 (Fish; live, ornamental, other than freshwater)

Export value from Tanzania to global markets: USD532,222

ORNAMENTAL SALTWATER FISH

More research is needed to establish the species being exported

TOGO

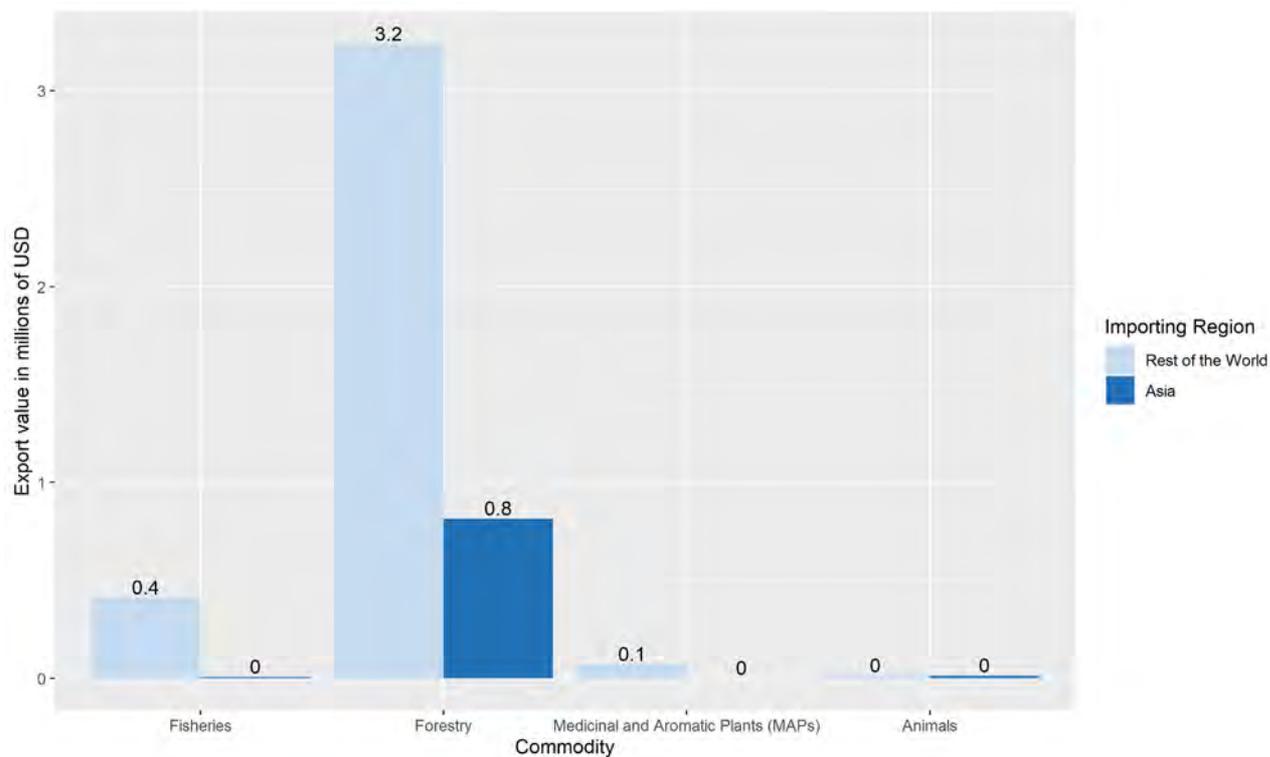
Togo's reported exports were dominated by wood commodities, of which almost a quarter were exported to Asia. Togo reported the largest Asian importer to be mainland China, followed by Singapore.

Togo's Government has been taking steps to protect its wood resources, following concerning increases in exports of rosewoods and illegal felling of species like African Rosewood *Pterocarpus erinaceus*. Togo has since placed a ten-year ban on the harvesting of any African Rosewood between 2016 and 2026 to allow natural regeneration of these resources (Adjonou et al., 2020; Banla et al., 2019), which is now coupled with the CITES Appendix II listing of this species since 2017.

HS CODE IN FOCUS:

HS code: 440349 (Wood, tropical; as specified in Subheading Note 2 to this Chapter, other than dark red meranti, light red meranti and meranti bakau, in the rough, whether or not stripped of bark or sapwood, or roughly squared, untreated)

Export value from Togo to global markets: USD475,100



Togo's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

TUNISIA

Fisheries made up the majority of Tunisia's reported exports; only a small proportion of which were exported to Asia and almost half of these exports were made up of crustaceans. Of the crustaceans exported to Asia by Tunisia, most were exported to Viet Nam.

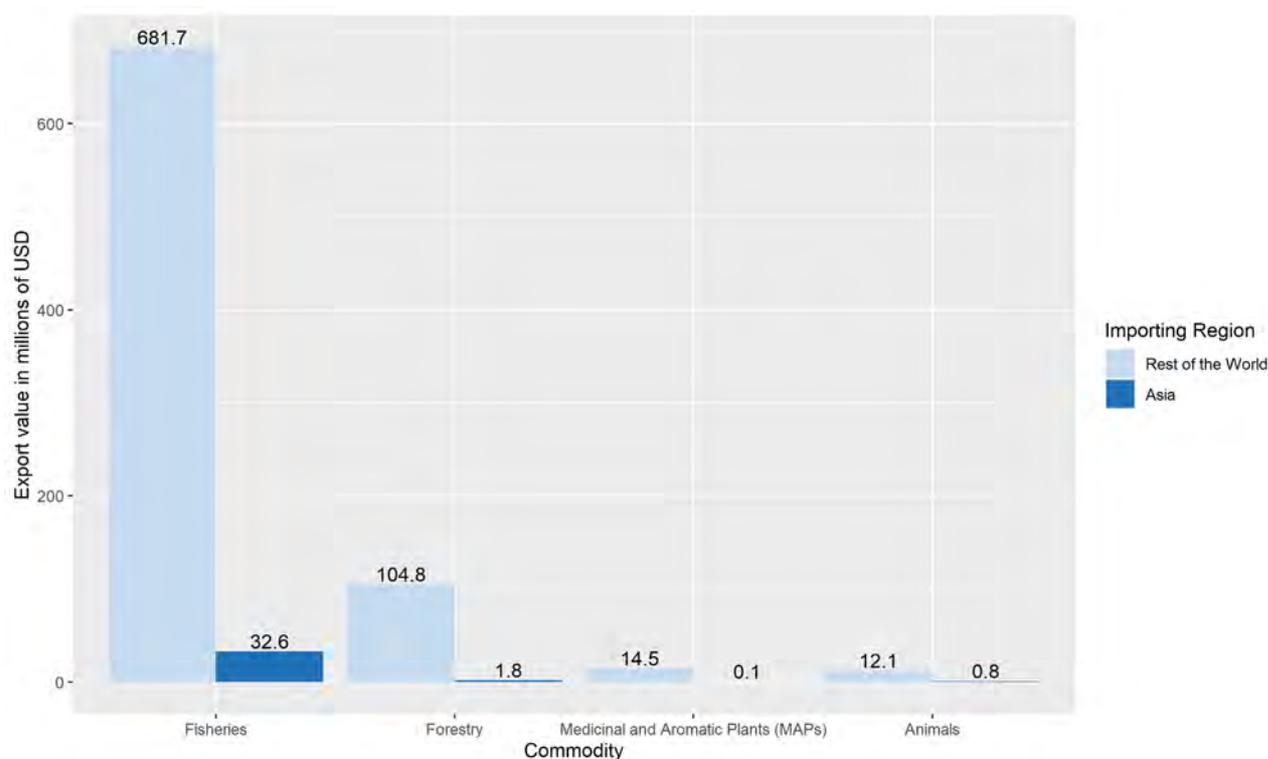
The FAO list shrimp as one of the four most valuable commodities fished in Tunisian waters (FAO, 2019g). The trawling fleets in Northern Tunisian waters target the deepwater Rose Shrimp *Parapenaeus longirostris* (Vendeville *et al.*, 2016). However, this fishery is considered to be overexploited, and there are concerns about the damage which bottom trawling for this species is having on local ecosystems, particularly nurseries and spawning areas (Vendeville *et al.*, 2016).

Modelling of fisheries data has highlighted a need for Tunisia to manage the shrimp fisheries in order to protect the shrimp stocks, but also to protect fish stocks of species which may be caught as bycatch or affected by the habitat changes caused by trawling (Vendeville *et al.*, 2016).

HS CODE IN FOCUS:

HS code: 0306 (Crustaceans; in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked, cooked or not before or during smoking; in shell, steamed or boiled, whether or not chilled, frozen, dried, salted or in brine; edible flours, meals, pellets)

Export value from Tunisia to global markets: USD 251,405,637



Tunisia's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

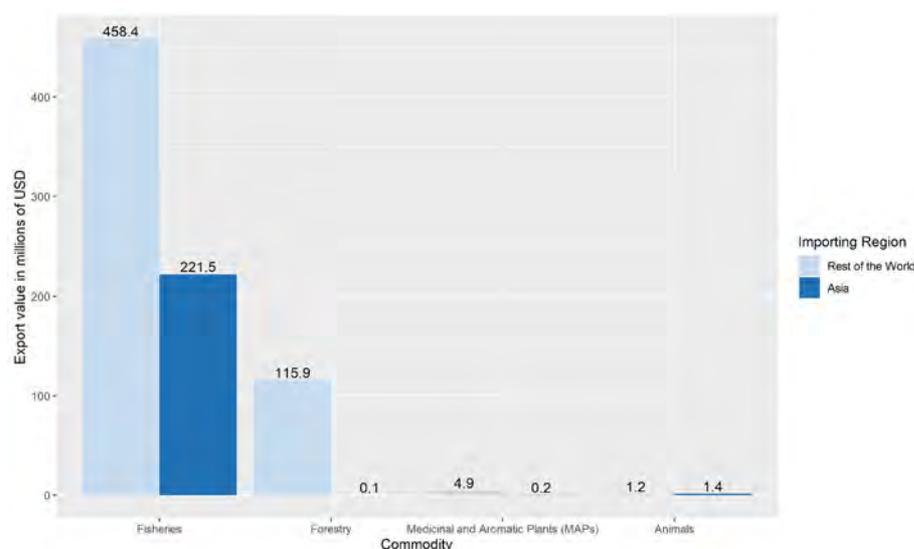
UGANDA

While fisheries made up Uganda's most valuable exports (with approximately a third of the goods being exported to Asia), the country also reported exports under the code of HS 960190, covering a range of goods which may have conservation implications, including coral and tortoise shell.

Uganda reported the second highest value of exports of the HS code 960190 of any African country. This HS code is interesting as tortoise shell has traditionally been the shell of the Hawksbill turtle which is now CITES Appendix I and therefore illegal to trade. As a landlocked country, the commodities which are exported by Uganda under this code are unlikely to be Hawksbill Turtle (unless it is re-exported). There were no records of terrestrial tortoise shell being traded from Uganda to Asia on the CITES Trade Database from 2014 to 2018.

Mainland China and Hong Kong SAR were the biggest Asian importers of this commodity code from Uganda. Given the broadness of this code it is difficult to determine what type of product and the species being traded. In the case of bone commodities, this could be wild animals or domestic livestock. Looking at CITES data between 2014 and 2018, Uganda does report exports of 3191 kg of hippo teeth to Hong Kong SAR and 1kg of hippo teeth to mainland China. These teeth may have been traded under this HS code as a carving material, however without further information it is not possible to tell. It is important to consider how HS codes, which have a high volume of trade and contain wildlife commodities, could be improved to give more usable data about possible wildlife trading.

In addition to the commodities described in this HS code, Uganda exported a range of other wildlife commodities. CITES trade data includes a number of CITES-listed species which were reported to be exported to Asia from Uganda between 2014 and 2018. The most significantly traded species (by weight) as reported by Uganda was the Giant Ground Pangolin, *Smutsia gigantea*, 3000 kilos of skins and 1000 kilos of scales of which were reported to be exported to mainland China in 2016. The species was listed as CITES Appendix I in 2017 meaning no commercial trade is now permitted.



Uganda's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 960190 (Bone, tortoise shell, horn, antlers, coral, mother-of-pearl and other animal carving material and articles thereof (including articles obtained by moulding))

Export value from Uganda to global markets: USD2,173,198

BROAD HS CODES

Make it hard to determine the product and species in trade

WESTERN SAHARA

Western Sahara is a disputed territory and not currently a submitter of data to the UN Comtrade Database (Comtrade, 2020), it has therefore not reported any trade in wildlife commodities, fisheries produce or wood commodities from 2014 to 2018. The CITES Trade Database did include exports of a small number of orchids (20) *Dendrobium aberrans* and *Neofinetia falcata* to Thailand in 2015. These are native to Papua New Guinea and Japan respectively and were reported as artificially propagated.

ZAMBIA

Zambia reported significant volumes of timber between 2014 and 2018. Between 2014 and 2018 Zambia reported exporting USD1,079,963 of tropical wood (HS 440729), Zambia also reported that during this period mainland China was the main importer of wood traded under this HS code (USD1,018,189), mainland China was also Zambia's only reported importer of this product outside Africa.

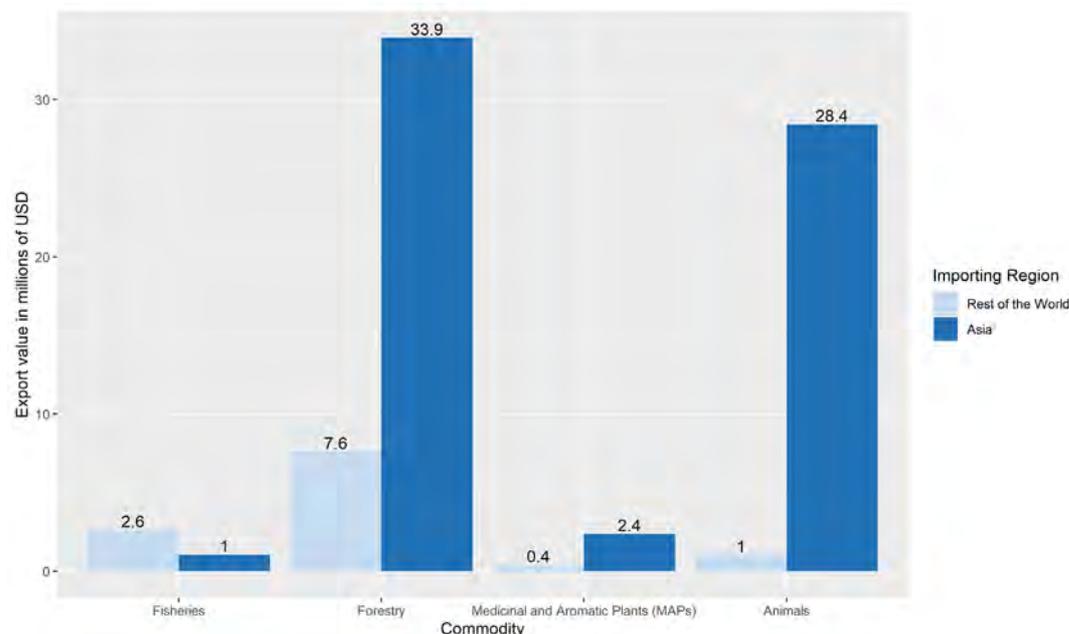
There have been concerns raised about reporting discrepancies in customs data for Zambia's forestry products. Discrepancies have been consistently noted between the quantities of wood exports reported by Zambia and the quantities of which importing countries (particularly China) report as being imported from Zambia (Lukumbuzya & Sianga, 2017).

Additionally, logs have been reported to be imported from Zambia by trading partners including mainland China despite the national ban on exporting unworked logs (Lukumbuzya & Sianga, 2017). It has been suggested that these discrepancies may be due to differences in the HS codes used by the different parties or misreporting of trade data (Lukumbuzya & Sianga, 2017), but further information would be needed to determine the source of these discrepancies.

HS CODE IN FOCUS:

HS code: 440729 (Wood, tropical, n.e.c. in item no. 4407.2, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness exceeding 6mm)

Export value from Zambia to global markets: USD1,079,963

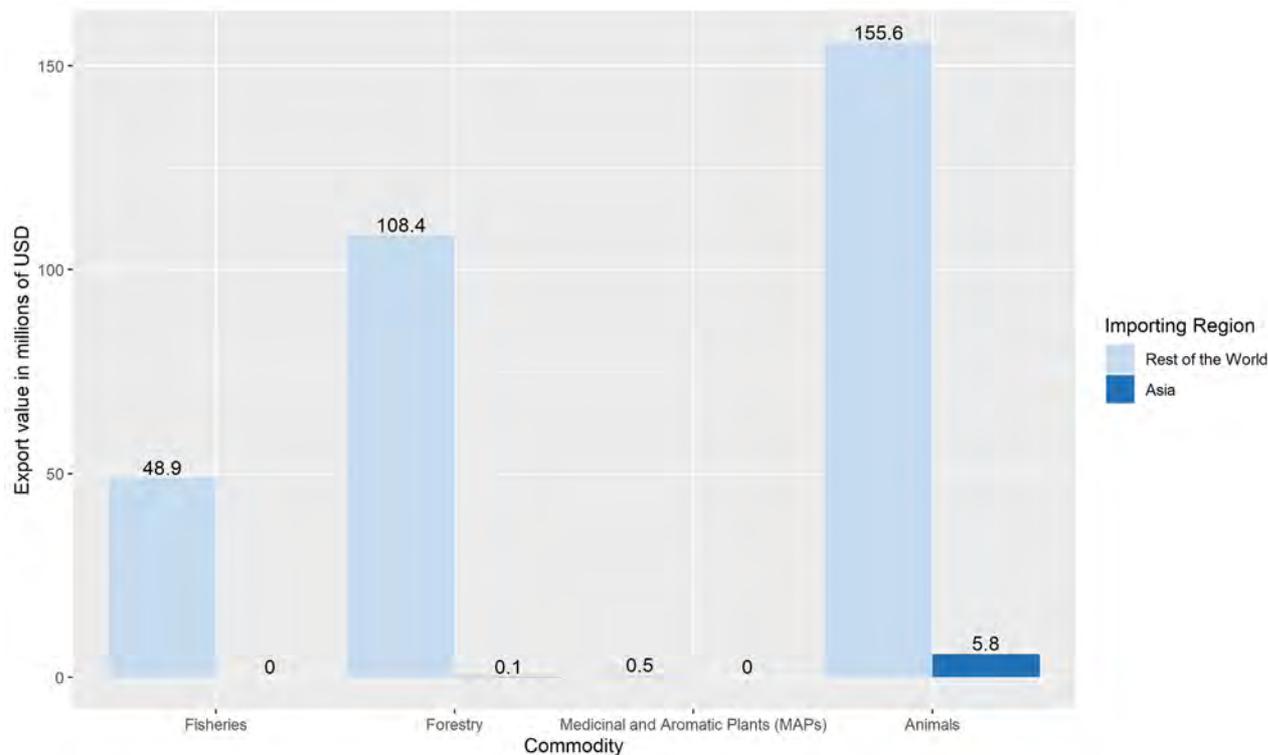


Zambia's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

ZIMBABWE

The majority of Zimbabwe's trade in the selected commodities was to countries outside Asia. However, according to the UN Comtrade Database data, Zimbabwe was the largest (by value) African exporter of raw reptile hides and skins globally. Exports from Zimbabwe increased between 2014 and 2018, while global exports of the two next biggest exporters (Zambia and South Africa) declined in the same time period. The biggest reported importer of raw reptile hides in Asia was Singapore, followed by Japan and the Republic of Korea.

Species-specific information is not available from the UN Comtrade Database, but according to the CITES Trade Database between 2014-2018, Zimbabwe reported exports of a total of 18,640 Nile Crocodile skin pieces, 90,360 skins and 3,893 small pieces of leather to Asia. Nearly all (99%) were reported as being from ranched animals. The exported reptile hides and skins reported in UN Comtrade could also include other species which are not CITES-listed.



Zimbabwe's reported exports to global trading partners in comparison to exports to Asian trading partners (millions of USD) between 2014 and 2018. This graph shows fisheries data reported under HS code 03, forestry (wood) data reported under HS code 44, medicinal plants reported under HS code 1211 and animals reported under a range of codes (see Appendix II).

HS CODE IN FOCUS:

HS code: 410320

(Hides and skins; raw, of reptiles (fresh or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split.)

Export value from Zimbabwe to global markets: USD152,045,480

90,360

The number of skins exported from Zimbabwe between 2014 and 2018

CONCLUSIONS

OVERALL CONCLUSIONS

The aim of this report is to highlight how data from the UN Comtrade Database can provide insights into the trade in wildlife, with a particular focus on trade from Africa to Asia. By highlighting a case study of trade for each country this report has demonstrated the diversity of wildlife being traded from Africa to Asia, and highlighted commodities or species of concern in terms of illegal or unsustainable trade.

African countries reported diverse trade relationships with Asia. In some cases (for example for medicinal plant and animal exports from countries including Tanzania and Sudan), Asia was an integral trading partner and the destination of almost all of their exports. For other countries including South Africa, Asia was an important trading partner to which a high value of fish and wood commodities were exported, but Asia was not the only export market. For some countries like Algeria, only a small percentage of their fish or wood exports were destined for Asia. The relationships between African and Asian countries are important to monitor as increasing globalisation and international projects, such as China's Belt and Road initiative, may lead to significant changes in trade networks of commodities (Tian, 2019), many of which could be monitored using the UN Comtrade Database.

KEY FINDINGS:

- **FREELY AVAILABLE DATA** - For many commodities, the UN Comtrade Database provides the only (or most comprehensive) freely available dataset that can be used to monitor trade.
- **SUPPORT THE IDENTIFICATION OF TRADE PATTERNS** - Data from the UN Comtrade Database can be used to help understand broad patterns in the trade in wildlife commodities, and the countries involved. This could allow governments and industry to identify trade patterns which may be unsustainable as well as untapped opportunities for the development of sustainable trade.
- **DETECT REPORTING ISSUES** - Looking at discrepancies between importer and exporter reported trade can aid detection of reporting issues, either due to illegal activity or problems with the reporting process. An example of this includes concerns raised about reporting discrepancies in customs data for Zambia's forestry commodities between the quantities of wood exports reported by Zambia and the quantities of which importing countries
- **EARLY WARNING FOR CONSERVATION CONCERNS** - The long-term data from the UN Comtrade Database can provide insights into decreasing or increasing exports which could provide an early warning for sustainability or conservation concerns. For example, changes in exports could infer declining wild populations, or increased demand for commodities. However, care must be taken when making any inferences as UN Comtrade Database contains little species-specific data, and export levels can be affected by other factors like the increase in harvest effort or change in value.
- **MONITOR EXPORT PATTERNS** - Long-term data from the UN Comtrade Database could also allow changes in global export patterns to be monitored following national or international events. National events, such as the export ban of particular commodities, could lead to a drop in global trade, or the commodity being sourced from elsewhere. The impacts of global events like COVID-19 or global recessions on the wildlife trade could be monitored through UN Comtrade Database data.
- **IMPROVE TRADE MONITORING FOR CONSERVATION** - A set of HS codes has been identified in this report which could improve trade monitoring for conservation (Appendix IV). It is important to explore how these codes, and others not explored in this report could be adapted to improve the monitoring of wildlife trade.

CHALLENGES

There are also significant challenges to using the UN Comtrade Database for monitoring wildlife trade. Unfortunately, some of these issues are often common in trade data and have to be taken into account when planning any analysis.

KEY CHALLENGES:

- BROAD HS CODES - HS codes were often too broad to determine which species or even which group of species, or commodities are being traded, and cross checking with other databases cannot always bring any clarity. This lack of detail, particularly to species level makes using these data challenging for conservation and sustainability planning purposes.
- MISUSE OF HS CODES - In some cases, it was unclear which HS code a product should best be reported under, which may lead to different countries reporting the same product using different codes.
- INCOMPLETE DATA - The UN Comtrade Database frequently contained complete data about the value of the trade, but the quantity was often incomplete (number of specimens, weight, volume). No information is provided in the data on the source (wild, captive bred) of wildlife. This makes it difficult to determine how many actual animals or plants are in trade, and therefore, the impact the trade may be having on wild populations.
- LACK OF REPORTING - There were significant gaps in reporting from some countries, as well as discrepancies between trade levels reported by exporting countries, and the corresponding importing country.

Overall, while there are limitations for fine-scale species level assessments, there are many groups of species for which other data does not exist or cannot be easily accessed. Therefore, UN Comtrade Database data are one of the only available data sources to monitor their trade. While the UN Comtrade Database data may often be the only available source of trade data, there are often other

sources of information like reports by NGOs, or species lists which can be used to put the trade data in the UN Comtrade Database into context. Using other sources of information, where possible, is crucial to understanding trade data. With careful planning of the analysis and consideration of the limitations of the data, there are still significant benefits to using the UN Comtrade Database.

COMMODITY-SPECIFIC CONCLUSIONS

Fisheries:

Between 2014 and 2018, more than USD3.9 billion worth of fisheries commodities were reportedly exported to Asia by 36 African countries, encompassing a wide range of commodities including tuna, shellfish and ornamental fish. Some trade routes, like those involving the sea cucumber *Stichopus japonicus* may be of conservation interest due to declining stocks and overharvesting.

However, there are caveats to using data from the UN Comtrade Database for fisheries commodities for conservation purposes. For high value taxa like sea cucumber for example it was apparent that declines in species abundance would not necessarily be reflected in the export data as harvesters may increase their harvesting effort in order to continue selling the same quantity.

An additional caveat to using data from the UN Comtrade Database for conservation purposes is that these data capture international trade but not trade within a country. This is important in cases like the inland fisheries in Malawi where a low export volume of fish from inland fisheries is likely to only represent a very minute percentage of the total extracted volume of fish, as most of the fisheries produce is consumed by domestic markets.

Similarly reported exports of a country could include fish caught outside of its territorial waters or on the high seas, which could present further challenges to estimating whether national fishing levels are sustainable. Finally, even in cases when the location of extraction could reasonably be estimated, in many cases the HS codes are too broad to allow species specific monitoring of fisheries

trade. Overall, while in certain cases fisheries data from the UN Comtrade Database may be useful for conservation purposes particularly when cross referenced with other data sources like [FishBase](#), care must be taken to account for the caveats of these data.

Wood:

Between 2014 and 2018, over USD3.3 billion worth of wood commodities were reported to be exported to Asia by 38 African countries. A wide range of wood commodities were reported, some of which are of conservation interest including large exports of Sapelli *Entandrophragma cylindricum* and Cherry *Prunus*. spp. This report has demonstrated the UN Comtrade Database can be valuable in monitoring the quantities of wood exports in trade flows. These exports included both CITES-listed species and non-CITES listed species. Particularly for species which are not CITES-listed, these data are the only available information on the levels of wood being exported from different countries. Despite the lack of species specific detail in the UN Comtrade Database, it is possible to cross check the results with other sources like the [Timber Trade Portal](#) (International Trade Portal, 2020), a repository of country specific timber data which can provide information on which species of wood a country is most likely to be exporting.

Alongside the benefits of using data from the UN Comtrade Database to monitor wood trade there were also some challenges, particularly in terms of re-exports. In many cases, wood is traded between African countries before being re-exported to Asia, making the original source of this wood difficult to trace. This creates additional challenges such as mis-reporting of large volumes that may or may not be accurately recorded as re-exported.

Animals:

Between 2014 and 2018, more than USD91 million worth of animals and animal commodities were reported to be exported from to Asia

by 29 African countries. A wide range of animal commodities were reported ranging from reptiles to ivory and marine mammals, and this report shows how data from the UN Comtrade Database can be used to monitor their export.

As mentioned previously, the lack of detail in the HS codes does not provide species specific information, but for CITES-listed species, the CITES Trade Database can be used to identify some of the species covered under the trade. Comparing UN Comtrade and CITES trade data can identify exports likely containing large quantities of non-CITES-listed species, which may be of particular interest as these likely receive less attention and regulation than listed species meaning their overexploitation may go undetected. The lack of detail in the HS code also extends to the commodity type as many commodities are grouped together such as 'bone' and 'coral'. It is also unclear if animal commodities were sourced from livestock or wild caught species.

Medicinal and aromatic plants:

Between 2014 and 2018, more than USD99 million worth of medicinal and aromatic plants were reportedly exported to Asia by 23 African countries. However, the value of medicinal plants exported is likely to be far higher as the code used for this analysis (HS 1211) does not cover all relevant plants or commodities containing medicinal plants as ingredients (Jenkins et al., 2018). Similar to the other wildlife commodities, the HS code is also so broad that it is highly challenging to determine which species are being traded. In some cases, published literature can be used to determine the species that make up the bulk of trade. However, often the plants come from a wide array of sources, from wild-tapped sap to intensively farmed bushes, which could make extrapolating data using this code for conservation purposes challenging.

RECOMMENDATIONS

(1) Increase capacity building and awareness raising among governments about the UN Comtrade Database.

- NGOs with expertise in trade monitoring and management of natural resources to consider supporting increased use of the UN Comtrade Database by relevant government bodies (e.g., bodies responsible for international trade, customs, statistics, fisheries, wood) by identifying and filling their capacity needs through training. NGOs may find it most effective to simultaneously approach multiple departments within one government, recognising that the needs and motivations will vary by department.

- NGOs to consider engaging with and offering support to countries which do not submit data to the Comtrade Database, or do so inconsistently (eg Gabon, Chad and Djibouti).

- Relevant government bodies to consider building their internal capacity to use the UN Comtrade Database by working with NGOs to receive training, as well as making use of the [guidance](#) supplied by the UN Statistics Division. A range of NGOs use the UN Comtrade Database and are likely to be able to provide training, examples of NGOs in this category include TRAFFIC, the World Wildlife Fund (WWF) and the International Tropical Timber Organization (ITTO).

(2) Investigate which species or genera would benefit most from the development of specific HS codes.

- NGOs, IGOs and government agencies to consider how HS codes could be developed to benefit conservation and work together to come to a consensus as to which species or genera would benefit most from the creation of specific codes based on a variety of factors, for example prevalence in international trade and lack of other data sources. Codes identified in Appendix IV could be a starting point for these discussions. NGOs may consider working with academics to undertake such an analysis.

- NGOs to consider collaborating with IGOs (in particular FAO who have significant experience of working to improve the detail of the HS codes) to develop and submit proposals to WCO for amendments to the HS nomenclature for 2027.

- NGOs to consider identifying countries which report high levels of wildlife trade, and who therefore may be interested in engaging with improving the international HS code system for better wildlife trade monitoring (for example, high forestry exports reported by the Gambia could mean that the Gambia may be interested in engaging with proposals for the development of improved 6 digit timber codes, or as another example, the dominance of fisheries in the exports reported by the Seychelles could mean there may be interest from the Seychelles in engaging with changes to request changes in the international fisheries HS codes.)

(3) Encourage changes in national HS codes

- Recognising that it can take many years for WCO to adopt amendments to the 6-digit harmonised system, NGOs could consider proposing amendments to national custom codes systems which would enable national data generation to begin much sooner. To achieve this, NGOs could work to build capacity of this issue, garner political support and prioritise species or genera that would benefit most from more specific national customs codes (a starting point for which could be the codes identified in this report as being possible candidates for change). National systems are typically much more detailed (eight+ digits) than the six-digit HS codes, so any changes would need to be designed to allow for harmonisation at the six-digit level.

(4) Encourage uptake and use of new HS and national customs codes relevant to wildlife trade

- NGOs and government agencies to consider monitoring changes to national and HS codes, publicise these changes to government and industry partners, and support their ability to implement these changes (including through additional training).

Appendix I: Codes used to look at fisheries, wood and medicinal plants

Code	Description
03	Fish and crustaceans, molluscs and other aquatic invertebrates
44	Wood and articles of wood: wood charcoal
1211	Plants and parts of plants (including seeds and fruits), used primarily in perfumery, in pharmacy; for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not crushed or powdered

Appendix II: Codes which are likely to contain wildlife commodities from animals

Code	Description
010611	Mammals; live, primates
010612	Mammals; live, whales, dolphins and porpoises (mammals of the order Cetacea); manatees and dugongs (mammals of the order Sirenia); seals, sea lions and walruses (mammals of the suborder Pinnipedia)
010620	Reptiles; live (including snakes and turtles)
010631	Birds; live, birds of prey
010632	Birds; live, Psittaciformes
010633	Birds; live, ostriches; emus (<i>Dromaius novaehollandiae</i>)
010641	Insects; live, bees
010649	Insects; live, other than bees
021091	Meat and edible meat offal; salted, in brine, dried or smoked, and edible flours and meals of meat or meat offal, of primates
021092	Meat and edible meat offal; salted, in brine, dried or smoked; edible flours, meals of meat or meat offal, of whales, dolphins, porpoises (of order Cetacea); manatees, dugongs (of order Sirenia); seals, sea lions, and walruses (of suborder Pinnipedia)
021093	Meat and edible meat offal; salted, in brine, dried or smoked, and edible flours and meals of meat or meat offal, of reptiles (including snakes and turtles)
021099	Meat and edible meat offal; salted, in brine, dried or smoked, and edible flours and meals of meat or meat offal, other than of primates, whales, dolphins, porpoises, manatees, dugongs, seals, sea lions, walruses, reptiles (including snakes and turtles)
050290	Animal products; badger hair and other brush making hair and waste of such bristles or hair, n.e.c. in heading no. 0502 (excluding horsehair)
050710	Animal products; ivory, unworked or simply prepared but not cut to shape, ivory powder and waste
050790	Animal products; tortoise-shell, whalebone and whalebone hair, horns, antlers, hooves, nails, claws and beaks, unworked or simply prepared but not cut to shape, waste and powder of these products
960110	Ivory and articles thereof; worked

960190	Bone, tortoise shell, horn, antlers, coral, mother-of-pearl and other animal carving material and articles thereof (including articles obtained by moulding)
020830	Meat and edible meat offal; of primates, fresh, chilled or frozen
020840	Meat and edible meat offal; of whales, dolphins and porpoises (mammals of the order Cetacea); of manatees and dugongs (mammals of the order Sirenia); of seals, sea lions and walruses (mammals of the suborder Pinnipedia), fresh, chilled or frozen
020850	Meat and edible meat offal; of reptiles (including snakes and turtles), fresh, chilled or frozen
410320	Hides and skins; raw, of reptiles (fresh or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split
410640	Tanned or crust hides and skins; of reptiles, whether or not split, but not further prepared
411330	Leather; further prepared after tanning or crusting, including parchment-dressed leather, of reptiles, whether or not split, other than leather of heading 41.14

Appendix III: HS codes (other than those in Appendix I or II) explored in this study

Code	Description
0301	Fish; live
0304	Fish fillets and other fish meat (whether or not minced); fresh, chilled or frozen
0306	Crustaceans; in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked, cooked or not before or during smoking; in shell, steamed or boiled, whether or not chilled, frozen, dried, salted or in brine; edible flours, meals, pellets
030111	Fish; live, ornamental, freshwater
030119	Fish; live, ornamental, other than freshwater
030191	Live trout (<i>Salmo trutta</i> , <i>Oncorhynchus mykiss/clarki/aguabonita/gilae/apache/chrysogaster</i>)
030192	Fish; live, eels (<i>Anguilla</i> spp.)
030211	Fish; fresh or chilled, trout (<i>Salmo trutta</i> , <i>Oncorhynchus mykiss</i> , <i>Oncorhynchus clarki</i> , <i>Oncorhynchus aguabonita</i> , <i>Oncorhynchus gilae</i> , <i>Oncorhynchus apache</i> and <i>Oncorhynchus chrysogaster</i>), excluding fillets, livers, roes, and other fish meat of heading 0304
030229	Fish; fresh or chilled, flat fish, n.e.c. in item no. 0302.2, excluding fillets, livers, roes, and other fish meat of heading 0304
030232	Fish; fresh or chilled, yellowfin tunas (<i>Thunnus albacares</i>), excluding fillets, livers, roes, and other fish meat of heading 0304
030243	Fish; fresh or chilled, sardines (<i>Sardina pilchardus</i> , <i>Sardinops</i> spp.), sardinella (<i>Sardinella</i> spp.), brisling or sprats (<i>Sprattus sprattus</i>), excluding fillets, livers, roes, and other fish meat of heading 0304
030282	Fish; fresh or chilled, rays and skates (<i>Rajidae</i>), excluding fillets, liver, roes and other fish meat of heading 0304

030326	Fish; frozen eels (<i>Anguilla</i> spp.), excluding fillets, liver, roes, and other fish meat of heading 0304
030342	Fish; frozen, yellowfin tunas (<i>Thunnus albacares</i>), excluding fillets, livers, roes, and other fish meat of heading 0304
030349	Fish; tuna, frozen, (n.e.s) in item no. 0303.4 excluding fillets, livers, roes, and other fish meat of heading 0304
030613	Shrimps & prawns, whether/not in shell, frozen
030729	Molluscs; scallops, whether in shell or not, including queen scallops of the genera <i>Pecten</i> , <i>Chlamys</i> or <i>Placopecten</i> , frozen, dried, salted, in brine, or smoked, cooked or not before or during the smoking process
030811	Aquatic invertebrates; sea cucumbers (<i>Stichopus japonicus</i> , Holothurioidea), live, fresh or chilled
030819	Aquatic invertebrates; sea cucumbers (<i>Stichopus japonicus</i> , Holothurioidea), frozen, dried, salted or in brine, smoked, whether or not cooked before or during the smoking process
440349	Wood, tropical; as specified in Subheading Note 2 to this Chapter, other than dark red meranti, light red meranti and meranti bakau, in the rough, whether or not stripped of bark or sapwood, or roughly squared, untreated
4407	Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness exceeding 6mm
440727	Wood, tropical; Sapelli, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm
440729	Wood, tropical; as specified in Subheading Note 2 to this Chapter, n.e.c. in item no. 4407.2, sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, thicker than 6mm

Appendix IV: HS codes which could be considered for revision for conservation reasons

HS code	Description	Conservation opportunity
HS code: 030111	Fish; live, ornamental, freshwater	Developing additional code(s) which specify particular taxa of conservation interest. Additional codes could provide key insights which would be beneficial to conservation and sustainable management of ornamental fish. There is a precedent for developing codes specifying specific taxa within fisheries.
HS code: 030119	Fish; live, ornamental, other than freshwater	Developing additional code(s) which specify particular taxa of conservation interest. Additional codes could provide key insights which would be beneficial to conservation and sustainable management of ornamental fish. There is a precedent for developing codes specifying specific taxa within fisheries.
HS code: 030282	Fish; fresh or chilled, rays and skates (<i>Rajidae</i>), excluding fillets, liver, roes and other fish meat of heading 0304	Developing additional code(s) which specify genera of conservation interest. Additional codes could provide key insights which would be beneficial to conservation and sustainable management of rays and skates. There is a precedent for developing codes specifying specific taxa within fisheries.

HS code: 410320	Hides and skins; raw, of reptiles (fresh or salted, dried, limed, pickled or otherwise preserved, but not tanned, parchment-dressed or further prepared), whether or not dehaired or split.	Developing additional code(s) which differentiate crocodiles (Crocodylidae) from other reptiles, as crocodile skins are assumed to dominate this code it is difficult to determine trade levels in other reptile species. Additional codes could provide key insights which would be beneficial to conservation and sustainable management of reptiles. This suggestion may also apply to other codes relating to the reptile skin or leather trade.
HS code: 050790	Animal products; tortoise-shell, whalebone and whalebone hair, horns, antlers, hooves, nails, claws and beaks, unworked or simply prepared but not cut to shape, waste and powder of these products.	This code needs splitting as is it is currently not possible to determine whether the products come from livestock or wildlife so is of very little conservation value. Some of the products traded under this code are CITES listed, which should be taken into consideration when options for new codes are explored.
HS code: 030572*	Fish; edible offal, fish heads, tails and maws	Developing additional code(s) which separate fish maws from offal could provide key insights which would be beneficial to conservation and sustainable fisheries management.
HS code: 030571*	Fish, edible offal, shark fins	Developing additional code(s) which separate shark fins from offal could provide key insights which would be beneficial to conservation and sustainable shark fisheries management.
<p>It must be noted that there are many other codes which could also benefit from revision which have not been included in this study.</p> <p>*These are codes which have been suggested by expert consultation within TRAFFIC, but have not been explored in this report.</p>		

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