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# EXECUTIVE SUMMARY
# ECONOMIC LETTER OF EAST AFRICA AND THE INDIAN OCEAN (EAIO)

A PUBLICATION OF THE REGIONAL ECONOMIC DEPARTMENT – NAIROBI, KENYA

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# Fisheries and aquaculture in EAIO

## In concise...

**The EAIO area benefits from numerous water frontages which offer a diversity of aquatic species**. Nevertheless, the potential of fishing and aquaculture, which has only recently been developed, is still under-exploited, with fisheries production representing only 22% of the total production in sub-Saharan Africa. Eritrea and Somalia especially, despite a significant coastline, still under-exploit their resources. Fish consumption also remains low, particularly in the Horn of Africa, and only half of the countries in the area are self-sufficient in fish products, with a dependence on imports that has remained stable for the last twenty years. The East African aquaculture and fishing sector also faces challenges that hinder its development: lack of infrastructure and funding, illegal fishing or water pollution while Lake Tanganyika was named in 2017 "Most Endangered Lake of the Year".

## In detail ...

### A region with a large coastline and lake frontage

**10 of the 15 countries in the EAIO region have a maritime coastline, while four others have significant water bodies within their territory**. The IO countries benefit from large fishing zones, notably the Seychelles, which has the largest EEZ in the EAIO estimated at 1.34 million km$^2$, followed by the Mauritian EEZ which covers 1.28 million km$^2$. The countries in the Horn of Africa, and in particular Eritrea and Somalia, also have large EEZs and coastlines: Somalia, for example, has the second longest coastline in EAIO, behind Madagascar, and the first in continental Africa. The landlocked countries are not disadvantaged since they are located in the Great Lakes region and benefit from large fresh water bodies, especially Tanzania and Uganda thanks to Lake Victoria. These two countries have the two largest continental waters areas in EAIO (61 500 km$^2$ for Tanzania, 41 030 km$^2$ for Uganda), respectively the second and third largest inland water in Africa, behind DRC.

**However, there are some claims over EEZs**, notably in the Horn of Africa between Sudan and Egypt, between Djibouti and Eritrea or between Kenya and Somalia. Other areas are claimed in the Indian Ocean by a few countries (Madagascar for Scattered Islands, Mauritius for Tromelin Island, and Comoros archipelago).

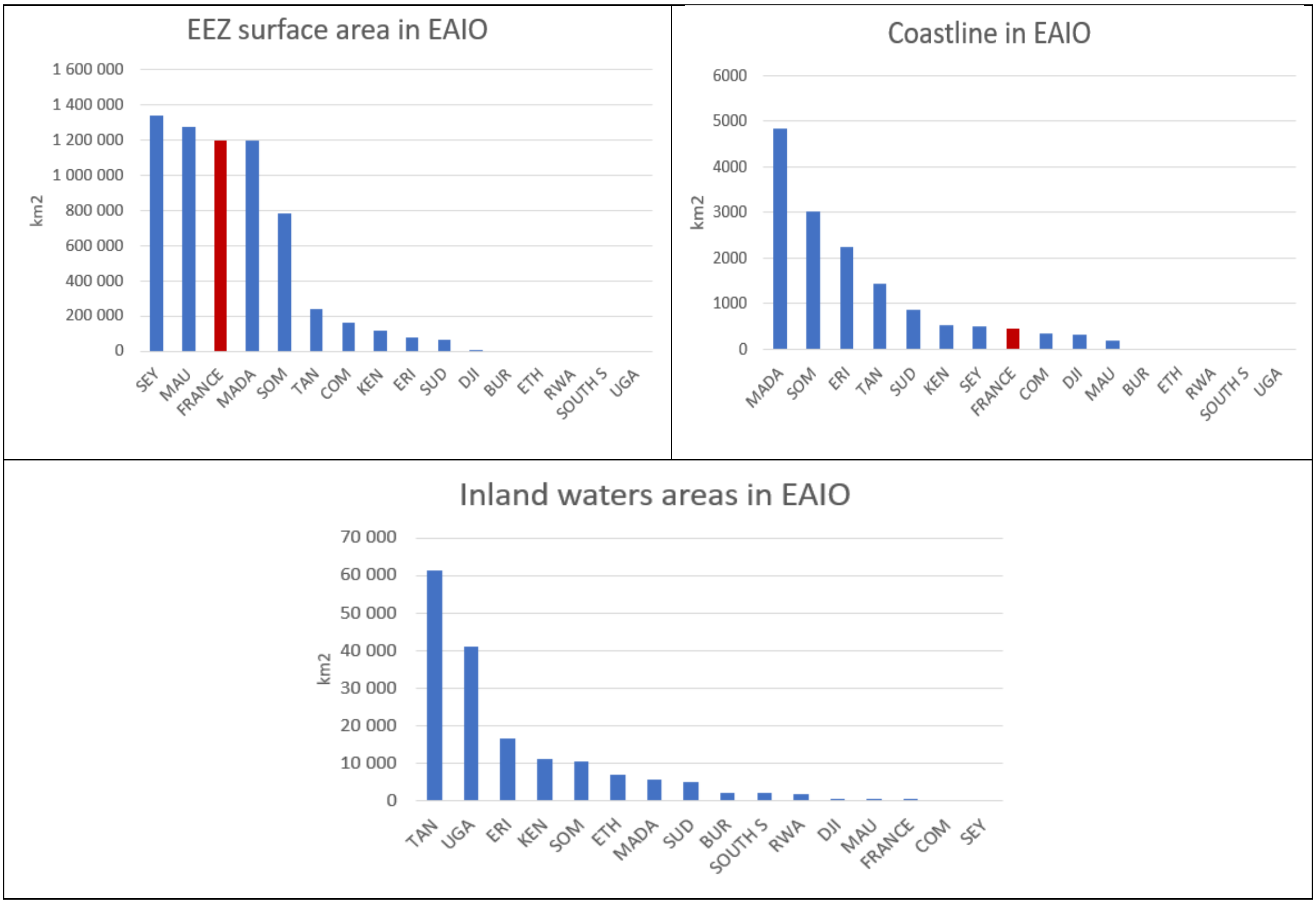



*Figure 1 : Marine and inland areas in EAIO, Source: Marine Regions and FAO*

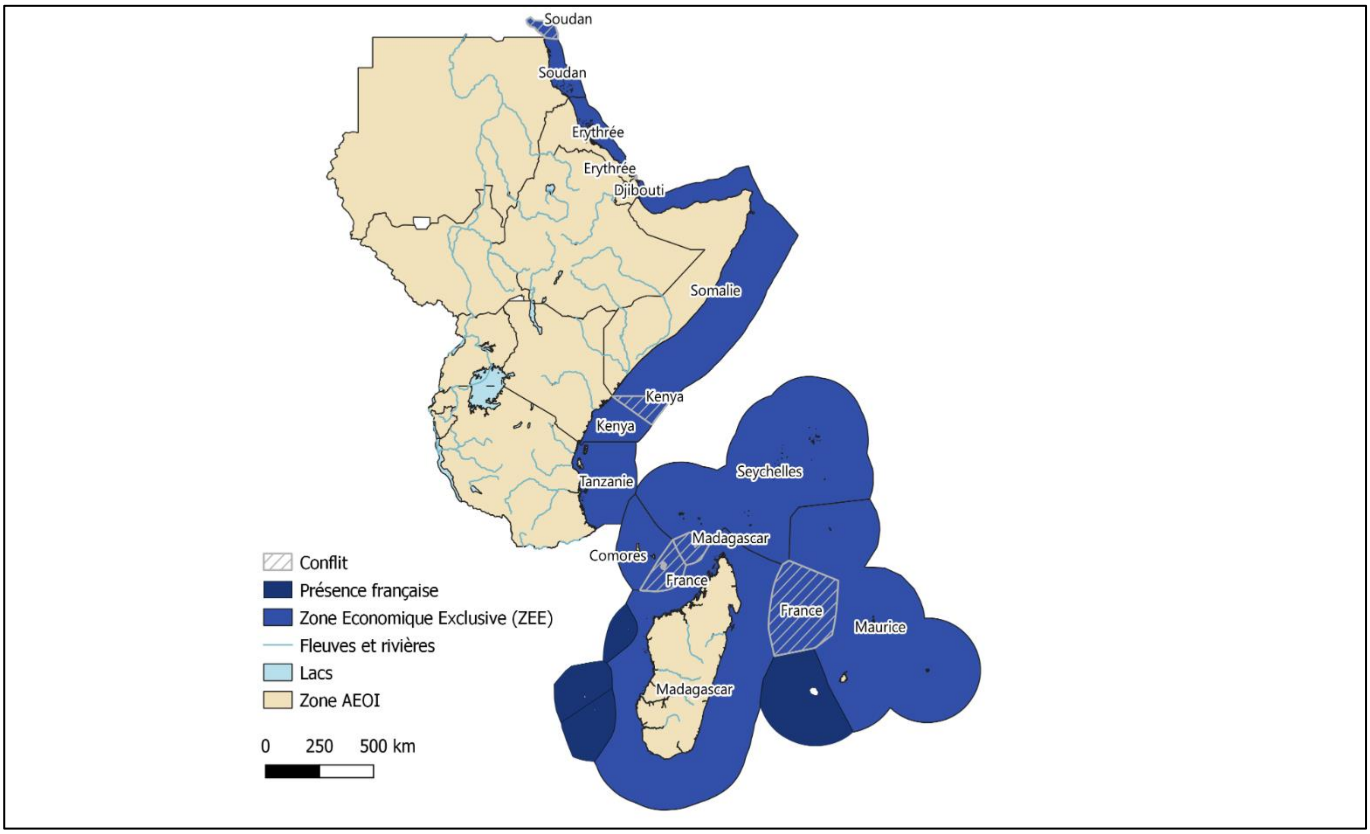



*Figure 2 : Inland waters and EEZ in EAIO, based on data from Marine Regions*

## Fishing still largely dominates aquaculture

**Aquatic production has increased by 81% in 20 years.** Fisheries production in EAIO has been increasing steadily since the 1950s. However, inland fishing is the fastest growing sector: production has exploded by 1700% between 1950 and 2020. Aquaculture has been growing since the 1990s. Inland aquaculture began to grow in 2006, while mariculture has been developing earlier.

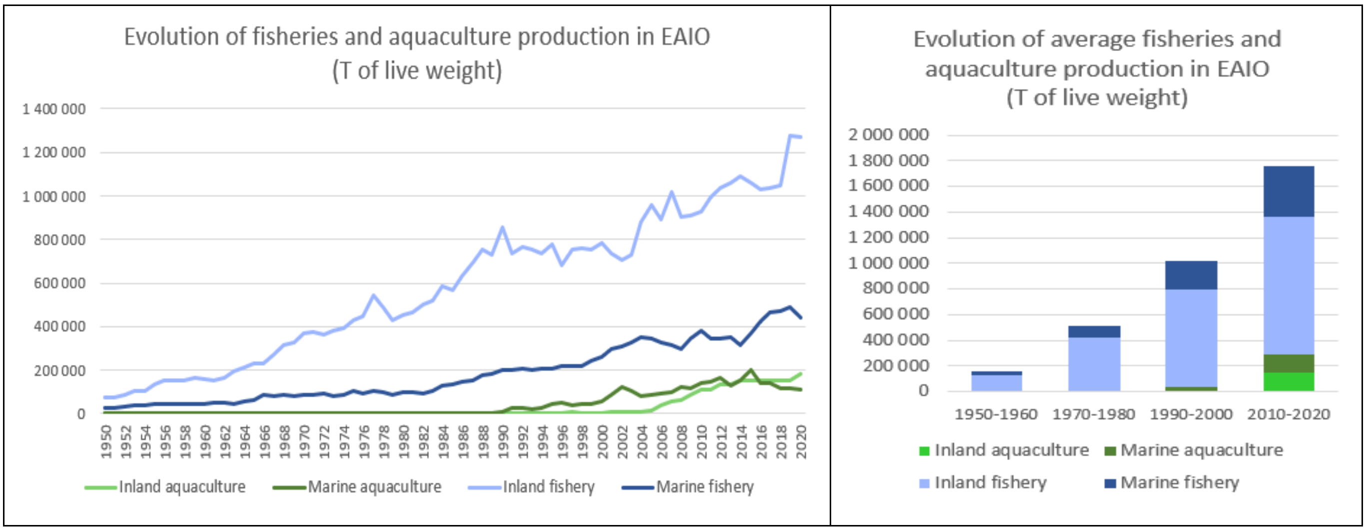



*Figure 3 : Evolution of fisheries and aquaculture production since 1950, Source: FAO*

**Fisheries production is quite diversified, while aquaculture is dominated by two species.** Catches mainly come from inland fishing: 1 198 407 T on average per year between 2018 and 2020, while marine fishing contributes 466 000 T per year. The difference between marine and continental aquaculture is less pronounced: the annual productions are respectively 162 000 T and 115 000 T. The species caught are rather diverse, although the *Silver cyprinid* and the *Nile perch* represent respectively 18% and 13% of the catches. Aquaculture is dominated by three species: *Nile tilapia* (43% of production), the red seaweed *Spiny eucheuma* (36%) and *North African catfish* (15%).

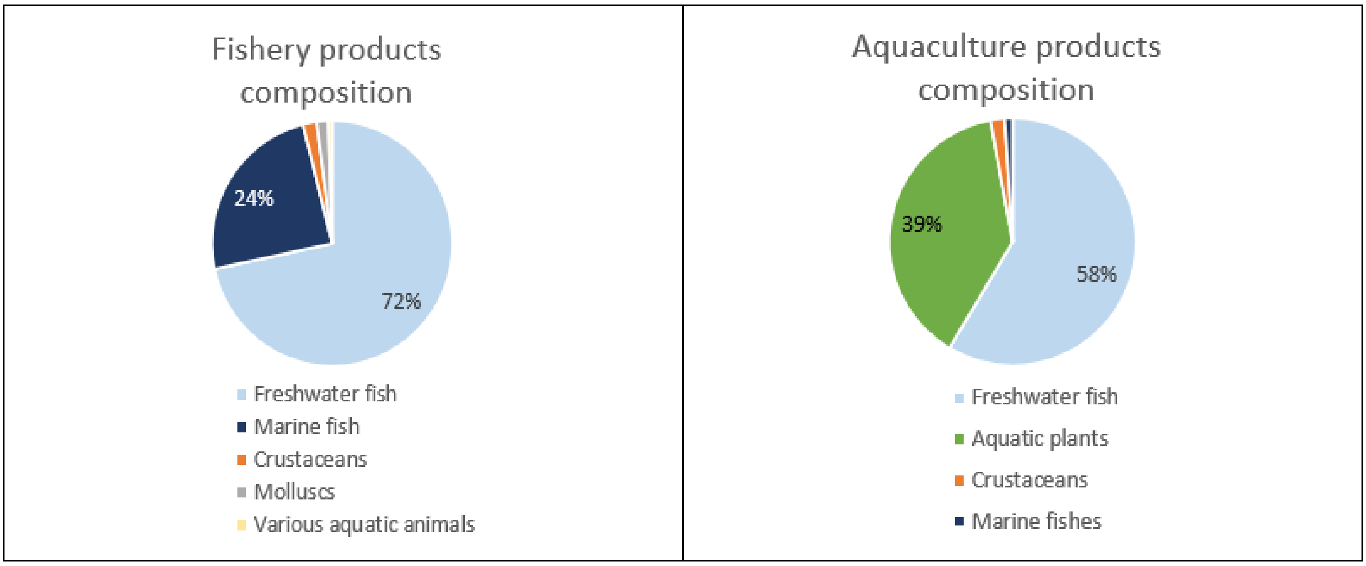



*Figure 4 : Composition of fisheries and aquaculture production, Average 2018-2020, Source: FAO*

**22% of the fisheries and aquaculture production in sub-Saharan Africa**. Production is dominated by Uganda and Tanzania, which account respectively for 7,40% and 6,75% of East African fisheries production. Tanzania is Sub-Saharan Africa's champion for the production of seaweed, accounting for 83% of the aquatic plants produced (thanks to Zanzibar islands especially). However, East Africa has a relatively small share in Sub-Saharan Africa aquatic production.

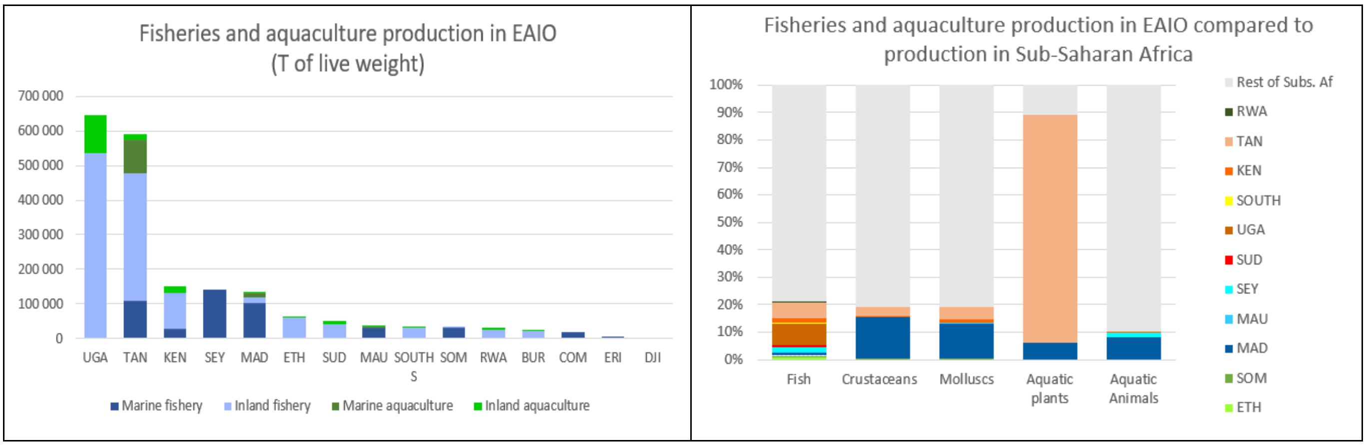



*Figure 5 : Fisheries and aquaculture production in EAIO in absolute value and compared to Sub-Saharan Africa production (Average 2018-2020), Source: FAO*

## A low consumption and an unequal dependence on imports

**A low and declining consumption of fish and other fishery products.** The average consumption of fishery products in the EAIO was 10,7 kg/pers/year in 2022, down by 21% compared to 2010. It should be noted that this figure is raised by the Seychelles and Mauritius, the only countries in the area with a consumption higher than the world average. Protein intake from aquatic products represents a small share of total protein intake: around 8% for Mauritius, Uganda and Comoros, and less than 3% for the other countries in the area, whereas the world average is 7%. This ratio is sometimes extremely low, as in Ethiopia where the share of fish, molluscs and crustaceans in protein intake is only 0,24%. The products consumed are mostly marine fish, with crustaceans or molluscs representing a small share of the intake, while no consumption of aquatic plants is recorded. In Uganda, however, the share of protein from fishing and aquaculture represents more than 36% of the animal protein consumed.

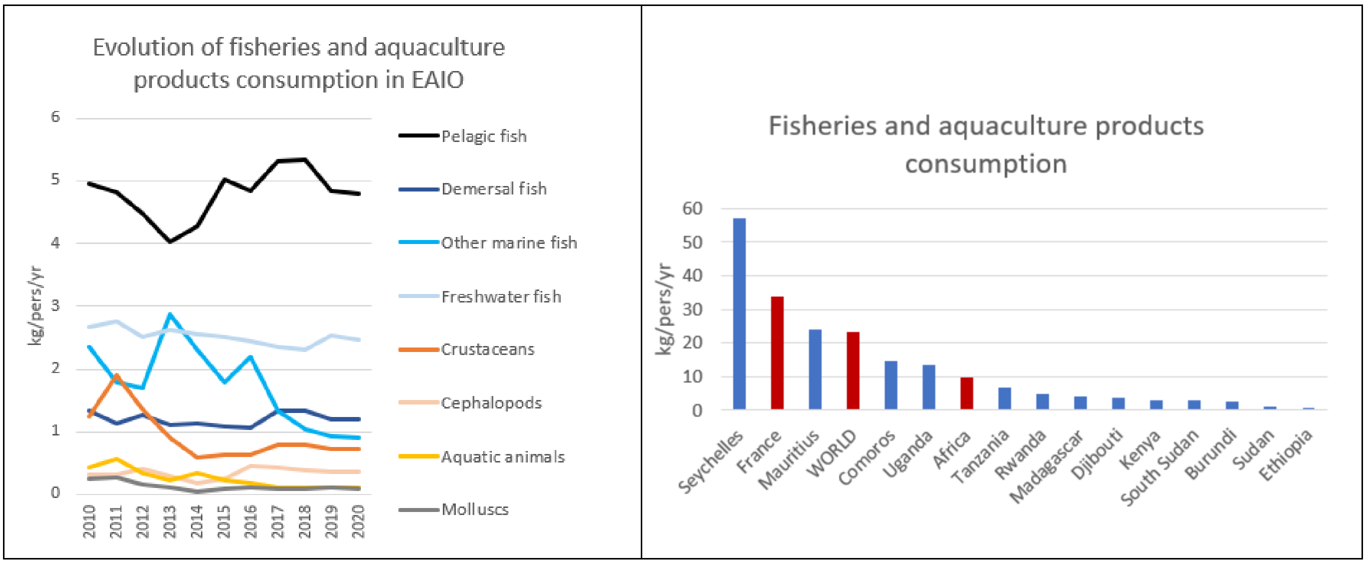
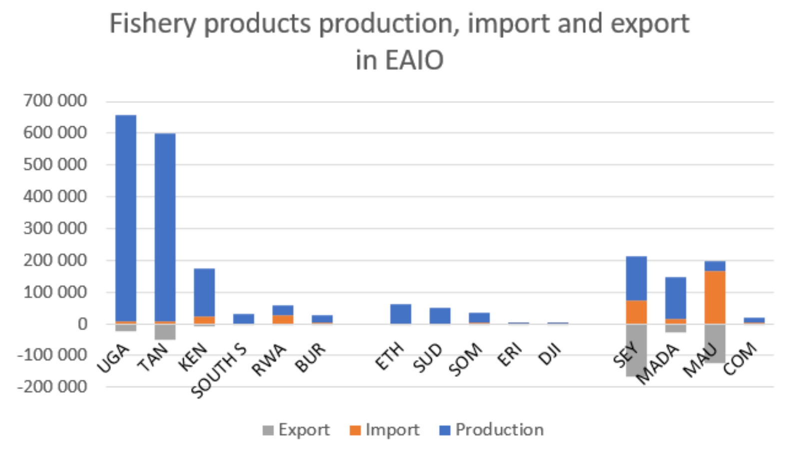



*Figure 6 : Fish consumption in EAIO since 2010, Source: FAO*

**Import dependency has remained stable since the end of the 2000s**. While production is increasing by an average of +4.5% per year, the level of imports remains stable and stagnates at around 300 000 T, with a peak of 370 000 T in 2016. Only half of the countries in the EAIO area are self-sufficient in fish, molluscs and crustaceans: this is the case of Ethiopia, Madagascar, Seychelles, Sudan, South Sudan, Uganda and Tanzania. Apart from Djibouti, Mauritius and Rwanda, which have fairly low Self Sufficiency Ratios (SSR) (54%, 52%, 43% respectively), the rest of EAIO has a rather satisfactory level of self-sufficiency, which is around 80%. However, some countries have a high import dependency ratio (IDR) because they import raw products for processing or packaging: this is the case for Mauritius and the Seychelles.



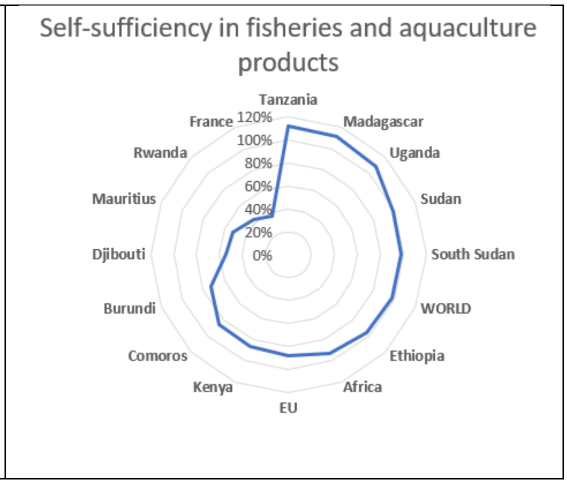




*Figure 7 : Evolution of fishery products production, imports and exports (including seaweed) in EAIO, from 1976 to 2020 (Left) and ranking of countries according to their self-sufficient ratio (SSR) (Right), Average 2018-2020. In order to obtain a homogeneous graph, Seychelles SSR (1722%) has not been taken into account, Source: FAO*

| | BUR | COM | DJI | ETH | KEN | MAD | MAU | UGA | RWA | SEY | SUD | SOUTH S | TAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL | 27% | 15% | 46% | 4% | 20% | 19% | 368% | 2% | 72% | 979% | 6% | 2% | 4% |
| Aquatic animals | - | - | - | 100% | 0% | 0% | 100% | 100% | - | 0% | - | - | - |
| Cephalopods | - | - | 100 | 100% | 1% | 0% | 76% | - | - | 96% | 100% | 100% | 0% |
| Crustaceans | - | 0% | 77% | 100% | 30% | 0% | 100% | 100% | - | 93% | 7% | 100% | 1% |
| Demersal fish | 100% | 2% | 2% | 100% | 0% | 0% | 115% | 100% | 100% | 1% | 104% | 100% | 0% |
| Fish oil | - | - | - | - | - | - | 7% | - | - | 100% | - | - | - |
| Liver oil | - | - | - | - | 100% | - | - | - | - | - | - | - | - |
| Freshwater fish | 0% | 100% | 100 | 0% | 3% | 0% | 101% | 0% | 21% | 100% | 0% | 1% | 1% |
| Other marine fish | 100% | 11% | 12% | 100% | 99% | 0% | 76% | 100% | 101% | -8% | 31% | 100% | 1% |
| Aquatic plants | - | 100% | 100 | - | 0% | 0% | 100% | | - | 100% | 200% | - | 0% |
| Mollusks | 100% | 15% | 59% | 100% | 125% | 1% | 100% | 100% | - | 350% | - | - | 0% |
| Pelagic fish | 27% | 15% | 46% | 100% | 75% | 75% | 477% | 128% | 223% | 1453% | 94% | 100% | 55% |

*Table 1 : Import-dependency ratio (IDR), or share of imported fish products (Average 2018-2020), Source: FAO*

**Fairly low exports that have been stagnant since 2016.** The EAIO countries export relatively little, apart from Mauritius, the Seychelles and Rwanda which export respectively 614%, 150% and 34% of their production. However, these high figures are mostly re-exports and not exports of domestically produced goods. The countries in the Horn of Africa, on the other hand, have almost no exports: 16 T for Djibouti and 560 T for Ethiopia, representing respectively 0,8% and 1% of their production.

## Common challenges

**A small-scale fishing, a small processing sector and a lack of infrastructure, resulting in post-harvest losses**. Fishermen are mainly artisanal fishermen, using rudimentary tools and techniques. Except for the Indian Ocean, a small part of the production is dedicated for export. Moreover, due to the lack of preservation infrastructure, fish are often sold directly after harvesting, without any added value and therefore at low prices. Fish processing is insufficient and this sector often operates below capacity or has a fairly low processing capacity: 100 T/day for the largest factory in Kenya for example. With limited processing and refrigeration, post-harvest losses are therefore often recorded. Two exceptions in the fish processing sector stand out, particularly within EAIO: Mauritius and the Seychelles, which specialize in canned tuna export.

**The challenges of overfishing and Illegal, Unreported and Unregulated (IUU) fishing that threaten fish stocks**. As fishing infrastructures are poorly developed, some areas are overfished, as vessels cannot venture further into the waters. In inland waters, the pressure on aquatic resources is also high, and governments sometimes have to suspend fishing for several months, particularly in lakes Kivu and Tanganyika. This overfishing is partly due to IUU fishing, which takes place both in continental waters and at sea, and which governments are struggling to curb.

**The pollution threatens inland waters: Lake Tanganyika was the most endangered lake in 2017**. In addition to overfishing, there are also water pollution issues, especially in lakes Tanganyika and Victoria, which are often affected by untreated effluent from surrounding cities and villages. High concentration of nutrients in the water leads to an oxygen concentration abatement, an algal and invasive plants bloom such as water hyacinth. Overfishing and pollution have earned Lake Tanganyika the unfortunate designation of "Most Endangered Lake of 2017."

**Inputs: an obstacle to aquaculture development, which could however be a solution for food security**. Many countries in EAIO have identified aquaculture as a sector that could partly meet the needs of food security. Its development, except in Uganda, which is the second largest producer in Sub-Saharan Africa, remains fairly limited, particularly due to the challenges of input supply. The animal feed sector is still underdeveloped and fingerlings supply remains difficult.

## Fishing agreements: a strong link with the European Union

**A strong relationship between EU and the Indian Ocean**. Spain and France have the largest European fishing fleets in the Indian Ocean. The European Union has three fishing agreements in the Indian Ocean currently effective: in Mauritius, Madagascar and the Seychelles. The most important fishery in the western Indian Ocean is the purse seine fishery, which is dominated by European purse seiners that account for about two-thirds of the total catch. Three species of tuna are mainly targeted: *skipjack* (Katsuwonus pelamis), *yellowfin* (Thunnus albacares) and *bigeye* (Thunnus obesus). The EU purse seine fleet consists of large vessels, measuring between 60 and 90 meters. In 2015, there were 30 active vessels, of which 17 were Spanish, 12 French and 1 Italian. The EU longline fleet in the region is much smaller than the purse seine fleet (representing about 10% of the total longline catch in the area in 2007-2011), in a sector dominated by Asian fleets. In 2015, the French longline fleet consisted of 20 relatively small vessels.

**European Union and France: a strong presence in the Indian Ocean**. France, which has the second largest EEZ in the world behind the United States, is the only EU member state to be present in the EAIO. Its EEZ extends over 693 306 $km^2$ in the region thanks to Reunion Island, Mayotte and the Europa, Bassas da India and Juan de Nova Islands (Scattered Islands).

**The Indian Ocean Tuna Commission (IOTC): a fisheries management body in the Indian Ocean**. The IOTC is an RFMO (regional fisheries management organization) and is in charge of the sustainable management of tuna and tuna-like species in the Indian Ocean. Species which are not covered by the IOTC are managed by another RFMO, the Southern Indian Ocean Fisheries Agreement (SIOFA). The main target of this agreement is to ensure the conservation and sustainable use of non-tuna species in the area. The parties to this agreement are the Cook Islands, China, the Republic of Korea, Australia, Comoros (non-contracting party), France and its territories, Japan, Mauritius, Seychelles, Thailand and EU.

## A willingness to foster aquaculture development but public policies are still shy

**Aquaculture is identified as a solution for food security**. Despite the fact that the sector organization needs to be improved, aquaculture (inland and marine) has developed in recent years and is now considered a promising sector for combating food insecurity. Programs are developing in the East African Community, notably in Kenya and Burundi, but are not yet a priority in the Horn of Africa.

**An incomplete regulation in the Horn of Africa and a difficulty curbing IUU fishing**. Although the aquaculture and fishery sectors are growing, development programs scope remains heterogeneous within the EAIO area. In particular, the Horn of Africa is still rather behind in terms of fishery policies: Eritrea, for example, does not have a planning program, and is struggling to contain IUU fishing issues, especially in Somalia. However, this threat is better controlled on the lakes, such as in Burundi and Rwanda, where the governments have drastic policies towards illegal fishermen and regularly confiscate equipment.

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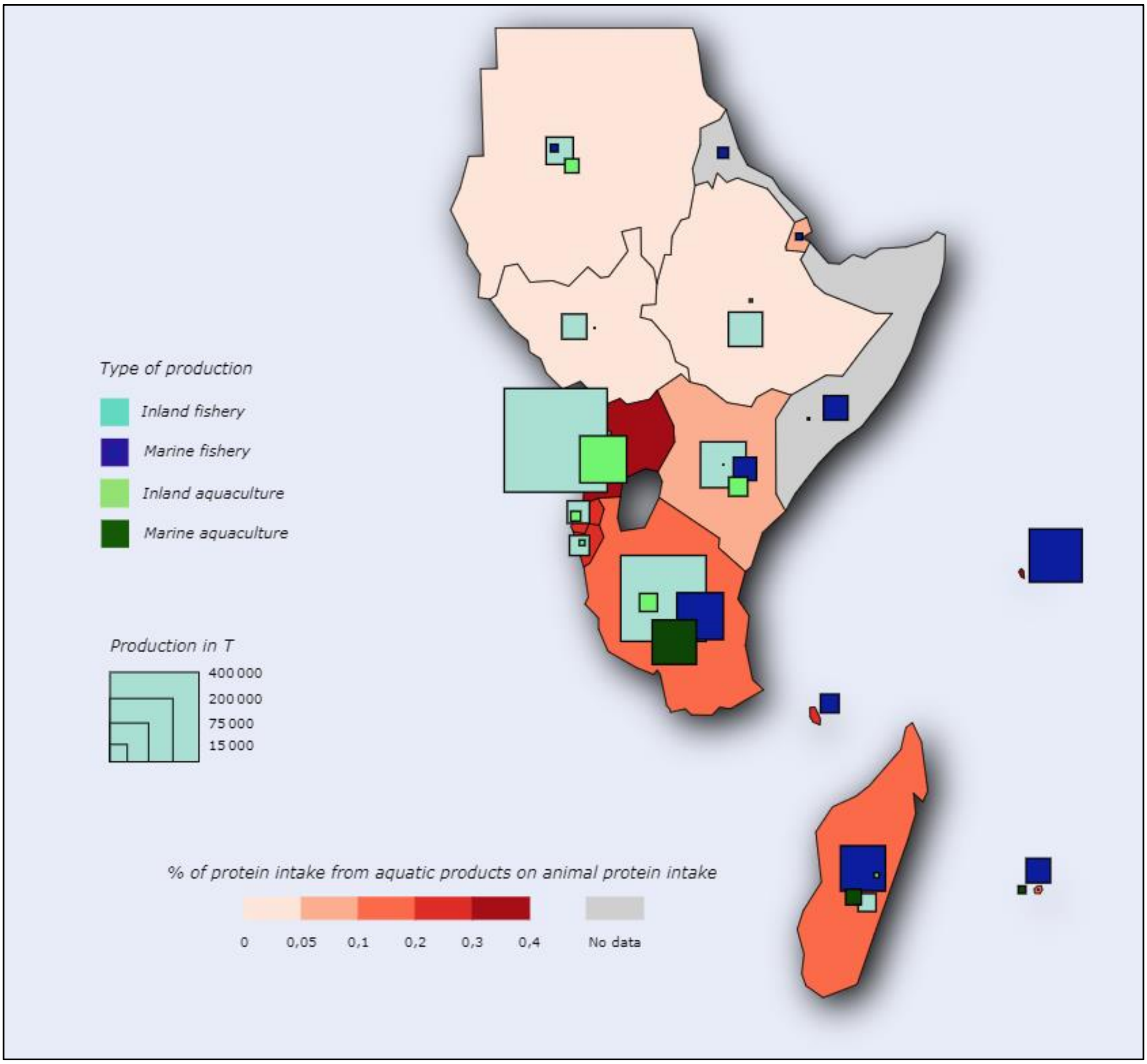
***Executive summary written by Kenza TAZI***

# Graph of the month

## Fisheries and aquaculture production in EAIO




*Map edited by the Regional economic department with data from the FAO*