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OCTOPUS

A SUMMARY OF THE GLOBAL SITUATION IN TERMS OF PRODUCTION AND TRADE

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SUMMARY

This report provides a concise summary of the global status of the octopus sector, with a primary focus on production and trade. The analysis is based on publicly available data from sources such as FAO FishStatJ, UN COMTRADE, and FishSource. While the report is not exhaustive, it offers valuable insights into the sector. The analysis involved a thorough examination of internet-accessible information, including international production and trade data. The collected information encompasses five main areas: (1) availability of fisheries data, (2) fisheries production, (3) fisheries trade, (4) stock status, exploitation, and management performance, and (5) certification and improvement initiatives.

Similar to other cephalopods (e.g., cuttlefish and squids), octopuses are a group of species with a very particular set of biological traits, such as a short lifespan, rapid growth, developmental plasticity, and a highly adaptive capacity to changing environmental conditions (**Doubleday et al., 2016**). These particular traits make octopuses a highly resilient species group, and they have proliferated when other species groups (e.g., finfish species) are facing serious declines due to environmental degradation and overfishing (**Di Cosmo et al., 2021; Sauer et al., 2021**). Global octopus production has exhibited consistent growth, surpassing 500,000 tonnes in recent years. Key producing countries include Viet Nam, China, Morocco, and Mexico. Octopus trade has also witnessed steady expansion, with major importers such as South Korea, Spain, and Italy, while major exporters include China, Morocco, and Mauritania. However, similar to other seafood commodities, available trade information does not provide a complete picture of trade flows, particularly for countries known as seafood trading hubs, such as China.

Although sustainability status and challenges in octopus fisheries were not extensively investigated in this report, available information suggests a general dearth of biological and fisheries-dependent and independent data for most octopus stocks, making it difficult to assess stock status and exploitation levels. Consequently, in many cases management is not considered a priority, and specific regulations tend to be lacking or inadequate. Despite an increasing number of fishery improvement projects dedicated to octopus, most of the sector lacks evidence of engagement in market-based initiatives to improve fisheries sustainability. For a more comprehensive understanding of the sector, readers are encouraged to consult the original data sources and other relevant literature.

Octopus pots and traps. Sagres, southern Portugal. © Shutterstock

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1 BACKGROUND

While the number of finfish fisheries on the verge of full exploitation or overexploitation continues to increase, and wild catches for many finfish species have stabilized or decreased, there has been growth in the wild capture of octopus and other cephalopods (**FAO, 2023**). In fact, recent research suggests that octopus and other cephalopod populations have increased globally over the last few decades. This growth can be attributed to a combination of factors, including favorable environmental conditions, the short lifespan and adaptive plasticity of these species (**Doubleday et al., 2016**), and a decrease in predator finfish populations due to overexploitation (**Sauer et al., 2021**). As the global human population and the consequent demand for seafood continue to rise, the importance and magnitude of octopus fisheries and trade are also expected to increase (**Sauer et al., 2021**).

This concise report summarizes the current global production and trade status of the octopus sector (family Octopodidae). The analysis relies exclusively on publicly available data. It is important to note that the report does not intend to offer a comprehensive overview of the sector. For additional information on the sector, please consult the original sources of data and information used, as well as other relevant literature (e.g., **Sauer et al., 2011; SFP, 2022; SFP, 2023b**).

Octopus fishing vessel returning from fishing trip, Mauritania.

2 SCOPE OF THE ANALYSIS AND SOURCES USED

A comprehensive desktop analysis was conducted from May 15-16, 2023, based on available fisheries-related data for all species within the Octopus sector (family Octopodidae). The research exclusively relied on information and documentation accessible on the internet.

Hauling octopus traps in a Portuguese small-scale fishery.
© Mafalda Rangel

The collected information encompassed five main areas: (1) availability of fisheries data, (2) fisheries production, (3) fisheries trade, (4) stock status, exploitation, and management performance, and (5) certification and improvement initiatives. The primary sources of information were the FAO FishStatJ database (version 2023.1) (**FAO, 2023**) for reported data on wild octopus production, and the Sea Around Us database (**Pauly et al., 2023**) for assessing the contribution of different fishing sectors and gears to total octopus catches. Data on seafood trade (imports and exports) was obtained from FishStatJ (**FAO, 2022a; 2022b**) and UN COMTRADE via the Panjiva platform (**S&P Global, 2023**). The FishSource database (**SFP, 2023a**) and relevant scientific literature were used to gather information on stock status, exploitation, and management performance. Finally, data on current octopus certifications and improvement initiatives were obtained from the Marine Stewardship Council (MSC), FisheryProgress, and FishSource websites, respectively.

Descriptive statistics, tables, charts, and summaries of the major findings were developed based on the gathered data. Although the research covers all species and countries, particular attention is given to the main countries in terms of production and trade.

3 MAIN FINDINGS

3.1 Data availability and transparency

Most countries have relatively comprehensive data on production information. However, and in particular for Asia and Africa, the reported production is often at the family level (e.g., "Octopuses, etc. nei" in China, Indonesia, the Philippines, Mauritania, Morocco, Senegal) or at a higher taxonomic level (e.g., "Cephalopods nei" in Viet Nam, Madagascar) (**Table App. F- 2**). In cases where catch is reported for all combined cephalopods, the proportion of octopus in the catches was estimated based on trade statistics and other available information. This estimation introduces a high level of uncertainty around the reported octopus catches for these countries.

Similarly, the trade data for octopus has low granularity. Typically, trade data is reported at the family level, which, although relatively detailed compared to other commodities, does not allow for the identification of specific octopus species in countries that capture multiple species of octopus.

3.2 Production: status and recent trends

Despite its relatively low global production compared to other seafood sectors, octopus holds significant importance for certain countries. Annual production in recent years has averaged around 500,000 tonnes (**Figure 1**). While there is some farmed production, mainly from Spain, it remains minimal in comparison to wild production (**FAO, 2023**). In addition, the actual total octopus catches are likely much higher than the reported amount. According to the Sea Around Us (SAU) database (**Pauly et al., 2023**), approximately 16% of total octopus catches remain unreported, although there is a decreasing trend in underreporting of catches (**Figure 2**).

The primary producing countries for octopus are Viet Nam (22% of average annual production from 2019 to 2021), China (21%), Morocco (11%), Mexico (7%), Mauritania (7%), Japan (6%), South Korea (4%), and Indonesia (3%). Together, these countries account for approximately 80% of global octopus production (**Figure 3**). However, concrete figures for octopus production in countries such as Viet Nam or Madagascar remain somewhat uncertain, as these countries report combined data for all cephalopods (**FAO, 2023**). Catches are estimated to primarily come from the industrial sector, accounting for 60% of the total catch, compared to 37% from the artisanal sector. Among the different fishing gears, bottom trawls make the largest contribution to total catches, representing 45% of the total, followed by small-scale pots or traps at 20%. Catches from subsistence and recreational fisheries are estimated to contribute less than 5% to the global octopus catches (**Figure App. E- 1 |** 2019 estimated percentage of total octopus production per fishing sector and fishing gear. Source: Pauly et al. (2023)). The importance of each specific fleet segment and gear type varies between countries (**Table App. F- 1**) (**Pauly et al., 2023**).

Global octopus production has shown steady growth. Production has increased from 37,000 tonnes in 1950, with only a few countries reporting catches of this species group, to more than 500,000 tonnes in 2015. Since then, global octopus catches appear to have stabilized (**Figure 2**). Furthermore, there has been a considerable increase in the number of fishing countries exploiting this resource, from just nine in 1950 to 80 in 2021 (**FAO, 2023**).

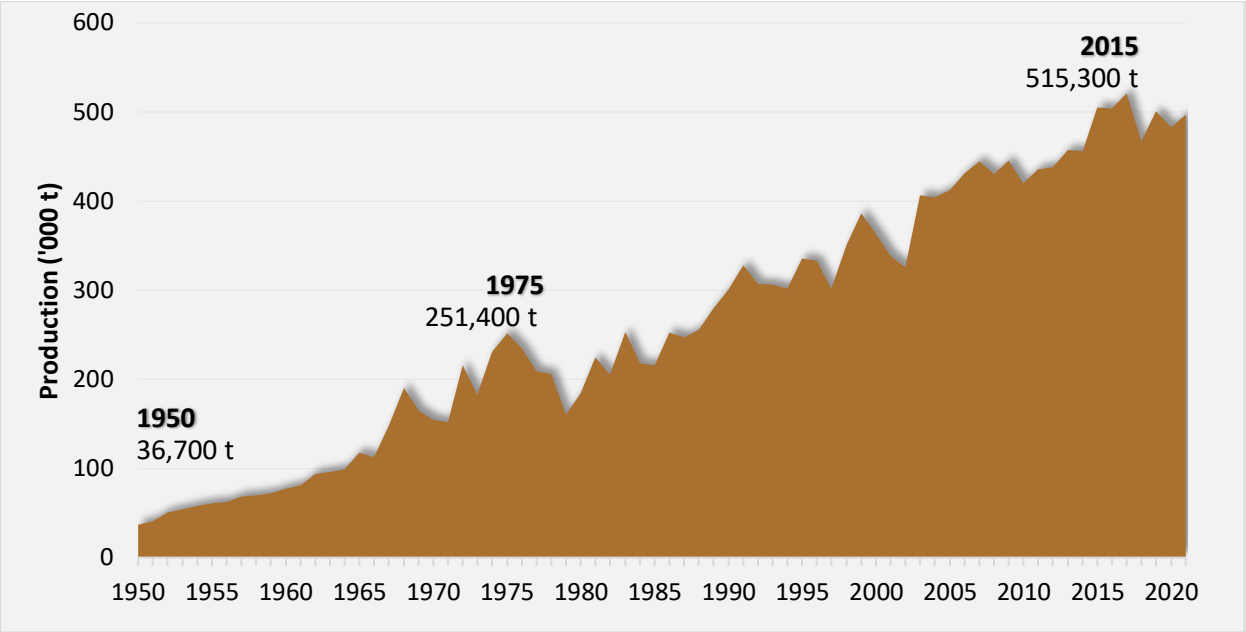

Figure 1 | Reported global octopus production ('000 t) from 1950 to 2021. Source: FAO, 2023a

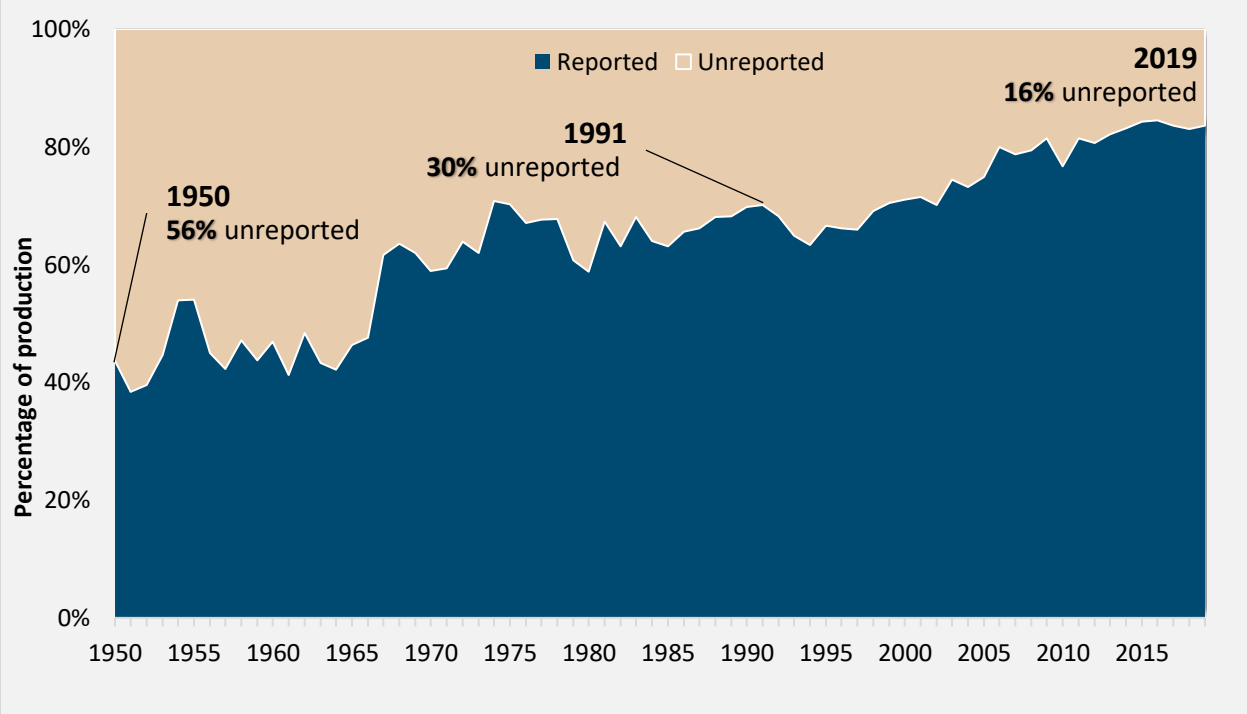

Figure 2 | Estimated percentage of reported (blue) and unreported (orange) global octopus production from 1950 to 2019. Source: Sea Around Us (Pauly et al., 2023)

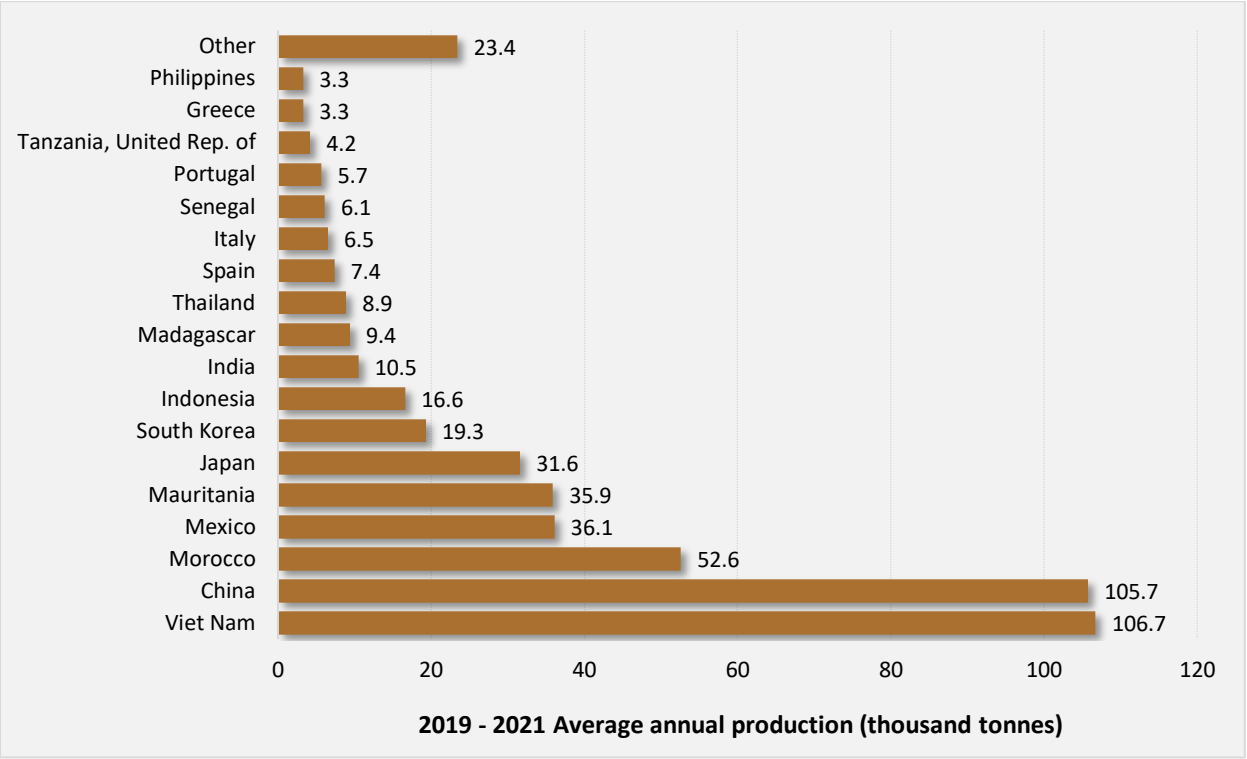

Figure 3 | Average (2019-2021) annual octopus production for the main producing countries. Source: FAO, 2023a

3.3 International trade and key exporters/importers of octopus

Octopus is a significant sector in the global seafood market. In line with production trends, international trade in this sector has steadily increased since the 1970s. According to the Food and Agriculture Organization of the United Nations (FAO), global octopus imports reached a total value of USD 2.1 billion (295,000 tonnes) in 2020 (**Figure 4**). However, there was a significant drop in 2020 compared to previous years, due to the impact of the COVID-19 pandemic. The globalization of this commodity is evident, with 169 different countries reporting octopus imports in 2020, compared to only nine in 1976. Currently, the major importers of octopus by quantity are South Korea (23%), Spain (17%), Italy (15%), Japan (13%), the United States (7%), Portugal (5%), and China (5%). These seven countries collectively account for 85% of global octopus imports by quantity (**Figure 5**) (**FAO, 2022a**).

The leading exporters of octopus by quantity are China (16%), Morocco (16%), Mauritania (15%), Spain (12%), Viet Nam (10%), and Indonesia (6%). These six exporting countries together account for three-quarters of global octopus exports by quantity (**Figure 5**) (**FAO, 2022a**). The primary trade partners for each major exporter, both in terms of quantity and value, are shown in **Figure 6** and **Figure 7**, respectively. Both figures indicate that the primary Asian exporting countries predominantly trade with other Asian countries, particularly South Korea and Japan. Conversely, European and African key exporters primarily export to the European Union, specifically Spain and Italy. Mexico and the Philippines are the main exporters to the United States (**Figure 6**, **Figure 7**) (**FAO, 2022b**).

Available data suggests that both China and Morocco, as well as Mauritania, have experienced a decline in their market share since 2009, while Indonesia and India have gained market share in global octopus exports (**Figure App. E- 3**).

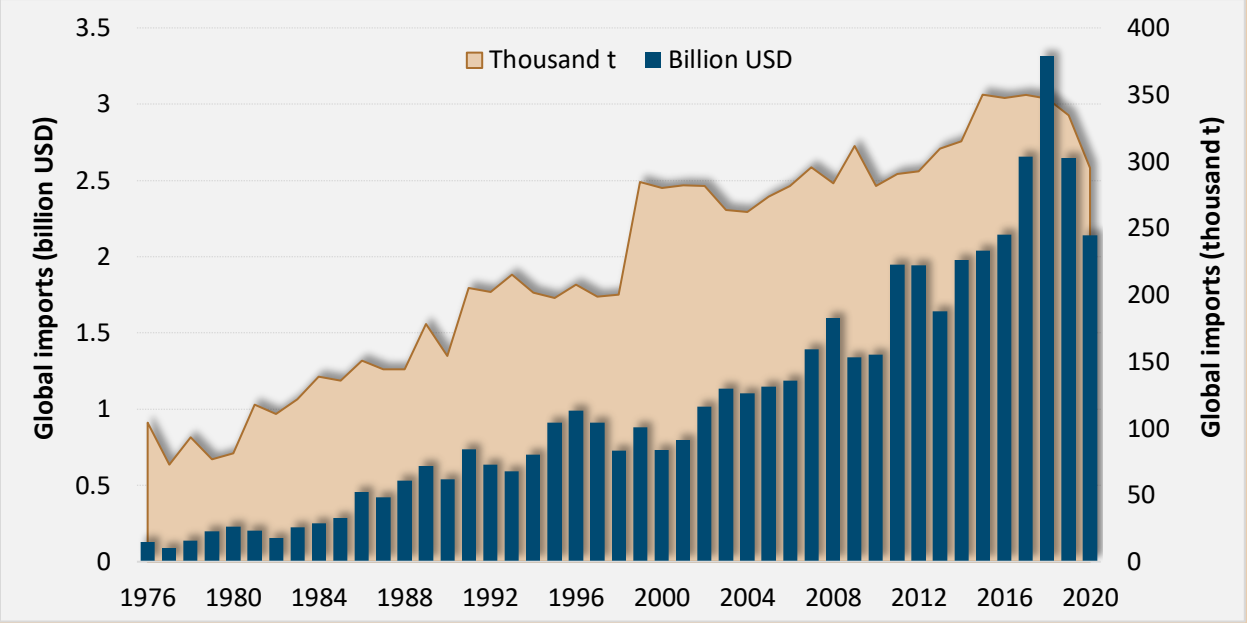

Figure 4 | Reported global octopus imports by value (blue bars, billion USD) and quantity (orange area, '000 t) from 1976 to 2020. Source: FAO, 2022a

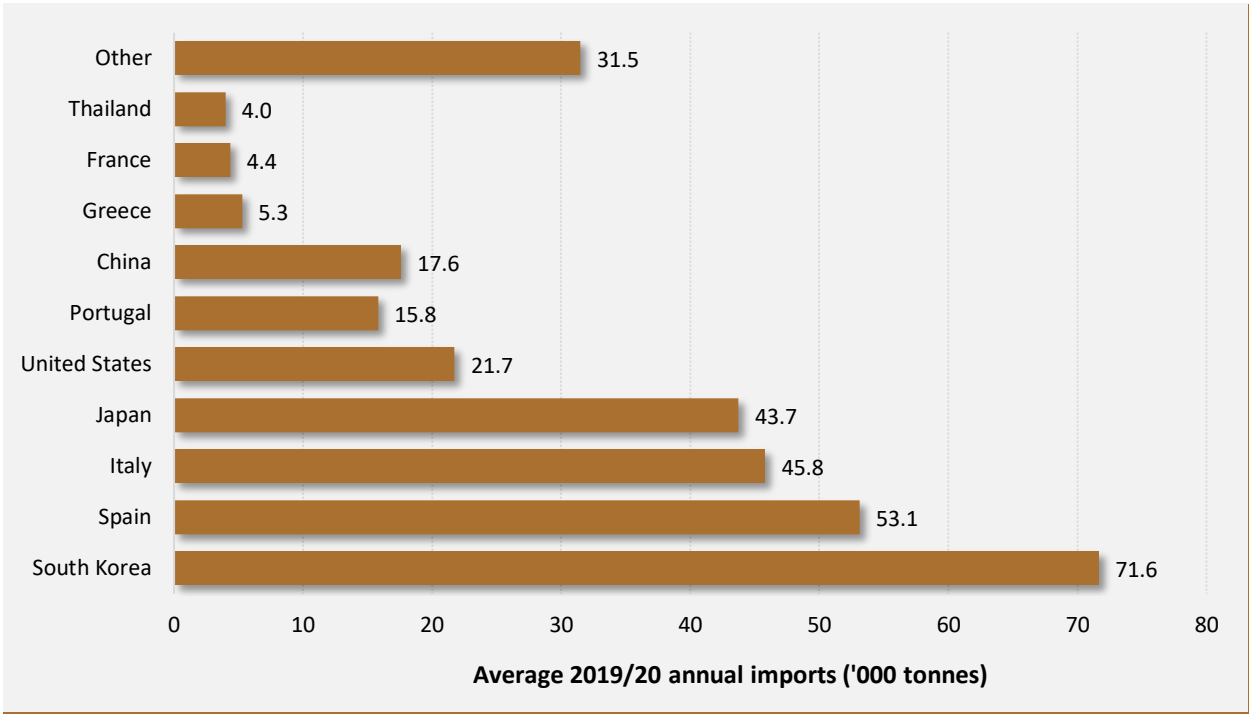

Figure 5 | Average annual octopus imports (2019-20) by quantity ('000 t) for the main importing countries. Source: FAO, 2022a

Exporter / Importer	South Korea	Spain	Italy	Japan	United States	China	Portugal	Viet Nam	Greece	France	Germany	Taiwan	Australia	Netherlands	Canada	Other	Total
China	61%	0%	0%	22%	4%	0%	0%	1%	0%	0%	0%	3%	0%	0%	1%	8%	16%
Morocco	0%	49%	28%	19%	0%	0%	1%	0%	2%	0%	0%	0%	0%	0%	1%	1%	16%
Mauritania	5%	50%	6%	29%	0%	6%	3%	0%	2%	0%	0%	0%	0%	0%	0%	0%	15%
Spain	0%	0%	34%	0%	17%	0%	25%	0%	2%	4%	4%	0%	0%	1%	0%	11%	12%
Viet Nam	69%	1%	3%	18%	3%	1%	0%	0%	0%	0%	0%	0%	1%	1%	0%	4%	10%
Indonesia	7%	1%	22%	6%	17%	19%	1%	3%	6%	1%	0%	0%	3%	1%	0%	13%	6%
India	0%	4%	12%	1%	10%	23%	0%	39%	1%	2%	0%	0%	1%	1%	0%	6%	5%
Thailand	64%	0%	2%	9%	7%	10%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	3%
Portugal	0%	56%	9%	0%	13%	0%	0%	0%	0%	7%	1%	0%	0%	1%	1%	12%	2%
Senegal	0%	32%	47%	10%	0%	2%	1%	0%	1%	3%	0%	0%	0%	0%	0%	3%	2%
Mexico	1%	10%	39%	3%	25%	7%	1%	4%	4%	2%	0%	0%	0%	0%	0%	6%	2%
Philippines	20%	0%	1%	8%	48%	3%	1%	6%	0%	0%	0%	1%	1%	0%	2%	8%	2%
Malaysia	21%	0%	1%	0%	6%	38%	0%	1%	0%	0%	0%	1%	6%	0%	0%	26%	1%
Italy	0%	21%	0%	0%	2%	0%	2%	2%	12%	17%	18%	0%	0%	0%	0%	26%	1%
Netherlands	0%	1%	14%	0%	0%	0%	7%	0%	5%	9%	39%	0%	0%	0%	0%	24%	1%
Other	2%	10%	21%	2%	3%	8%	8%	4%	4%	7%	1%	0%	1%	3%	1%	25%	6%
Total	20%	18%	15%	14%	7%	5%	4%	3%	2%	2%	1%	1%	1%	1%	1%	7%	

Figure 6 | The main octopus exporters and their top trade partners, by percentage of each country's total exports by quantity (2019/20 average). Source: FAO, 2022b

Exporter / Importer	South Korea	Spain	Japan	Italy	United States	Portugal	China	France	Greece	Germany	Taiwan	Viet Nam	Hong Kong	Canada	Switzerland	Other	Total
China	51%	0%	28%	0%	4%	0%	0%	0%	0%	0%	6%	1%	3%	1%	0%	6%	20%
Morocco	0%	52%	16%	26%	0%	1%	0%	0%	2%	0%	0%	0%	0%	1%	0%	1%	17%
Mauritania	5%	51%	28%	5%	0%	4%	5%	0%	2%	0%	0%	0%	0%	0%	0%	0%	15%
Spain	0%	0%	0%	33%	17%	24%	0%	5%	2%	5%	0%	0%	0%	1%	3%	11%	15%
Viet Nam	64%	1%	22%	3%	3%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	5%	11%
Indonesia	7%	1%	11%	24%	19%	1%	9%	1%	6%	1%	1%	2%	0%	0%	0%	17%	4%
Portugal	0%	53%	0%	10%	14%	0%	0%	8%	0%	1%	0%	0%	0%	1%	2%	10%	2%
Thailand	72%	0%	10%	2%	7%	0%	3%	0%	0%	0%	2%	1%	0%	0%	0%	3%	2%
India	0%	5%	2%	14%	12%	0%	19%	2%	1%	0%	0%	36%	0%	0%	0%	9%	2%
Senegal	0%	33%	8%	49%	0%	1%	1%	3%	1%	0%	0%	0%	0%	0%	0%	3%	2%
Mexico	1%	9%	2%	32%	32%	0%	6%	1%	3%	0%	0%	4%	0%	0%	0%	9%	1%
Italy	0%	15%	0%	0%	3%	1%	0%	21%	9%	23%	0%	1%	0%	0%	4%	23%	1%
Philippines	27%	0%	13%	1%	39%	1%	1%	0%	0%	0%	1%	6%	0%	2%	0%	7%	1%
Japan	9%	0%	0%	0%	41%	0%	4%	0%	0%	0%	5%	7%	10%	6%	0%	18%	1%
Malaysia	40%	0%	0%	1%	8%	0%	26%	0%	1%	0%	1%	1%	0%	0%	0%	22%	1%
Other	1%	8%	3%	23%	2%	8%	4%	7%	3%	6%	0%	3%	0%	1%	1%	30%	5%
Total	21%	20%	16%	14%	6%	5%	2%	2%	1%	1%	1%	1%	1%	1%	1%	7%	

Figure 7 | The main octopus exporters and their top trade partners, by percentage of each country's total exports by value (2019/20 average). Source: FAO, 2022b

3.4 Sustainability challenges

As mentioned earlier, this report does not extensively delve into the sustainability challenges within the octopus sector. However, this section offers a brief summary regarding the management quality and stock status of octopus fisheries on a global scale.

The FishSource database (**SFP, 2023a**) currently covers 38 octopus stocks or assessment units, primarily from Asia, South and Central America, Northwest Africa, and Southern Europe. However, most of these fisheries have yet to be evaluated and lack FishSource scores (**Table App. F- 2**). For those fisheries with available FishSource scores, the data reveals that the primary issues revolve around the absence of effective management and insufficient data on the status and impacts of these fisheries, e.g., on the environment. Nevertheless, it is anticipated that traditional fishing gears like pots, traps, and harpoons would have minimal impacts on habitats and the overall ecosystem.

These findings align with a recent review of global octopus fisheries that summarizes the existing knowledge on the main exploited species and stocks. According to this research, conducted by Sauer et al. (2021), more than 20 octopus species are harvested globally, primarily in shallow water environments. Despite the consistent growth in octopus catches, most of the investigated stocks lack sufficient biological and fisheries-dependent data, and the stock condition and exploitation status are unknown. Consequently, management and specific regulations are generally inadequate or lacking.

This may be the consequence of a commonly held belief that highly adaptative and resilient species like octopuses are genetically prepared to continually recover their stock biomass. Additionally, octopuses often serve as a "refuge" fishery for fishers when the availability of less-resilient finfish species declines. Their accessibility in coastal reefs, coupled with the low capital required for harvesting, makes them a crucial resource for the livelihoods of vulnerable people. These factors frequently lead management authorities to prioritize other fisheries over octopuses, especially when they face limited financial and human resources for effective management, as is particularly true in many countries in the Global South.

3.5 Certifications and Improvement initiatives

Despite the growing global trade and demand for octopus, and the increasing interest in sustainable products through eco-labeling and certification programs like the Marine Stewardship Council (MSC) (**Washington, 2008**), the volume of globally certified octopus production remains minimal. Recent estimates suggest that only 0.1% of global octopus catches come from two MSC-certified fisheries: Western Australia octopus (200- 500 metric tons annually) and Western Asturias Octopus Traps Fishery of Artisanal Cofradias (approximately 30-100 metric tons annually) (**MSC, 2023**) (**Table App. F- 4**). This situation can be attributed to the challenges faced by certifications in the Global South, including the significant gap between the sustainability performance of fisheries and the certification requirements and their associated costs, particularly in small-scale fisheries (**Gutierrez et al., 2016; Wakamatsu & Wakamatsu, 2017).**

In light of the increasingly important role of octopus fisheries for seafood businesses, precompetitive improvement initiatives, such as the Supply Chain Roundtables (SRs) led by SFP, have put the spotlight on this seafood sector. As a result, the number of fishery improvement projects (FIPs) in octopus fisheries has been increasing. As of the end of 2022, there were six active FIPs from various regions around the world, and one prospective octopus FIP in Mauritania (**Table App. F- 5**). However, despite these efforts, there is still a lack of evidence of engagement in market-based initiatives to enhance the sustainability of most octopus fisheries (**SFP, 2023b**).

Even with the new FIPs, the octopus sector is currently lagging behind in terms of its overall progress toward sustainability. Further efforts are needed to actively involve mid-upper and end markets in promoting improvements within octopus fisheries and to engage fishers and processors from producing countries in long-term public-private alliances with management authorities to address governance gaps. Ensuring the effective management of fisheries that depend on resilient species like octopuses can be a valuable tool for redirecting fishing effort away from less-resilient species or overfished stocks to enable their recovery, and also support the development of resilient livelihoods and thriving economies in coastal fishing communities.

Common octopus (*Octopus vulgaris*), southern Portugal. ©Pedro Veiga

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5 SUPPORTING TABLES AND FIGURES

Table App. F- 1 | Estimated 2019 catches (metric tons) per fishing sector and fishing gear, for the main octopus producing countries. Source: Pauly et al., 2023.

Fishing country	Fishing sector	Fishing gear	2019 catches (t)	% of country / sector total
China	**Industrial**	bottom trawl	81,730.8	76%
	Artisanal	small-scale pots or traps	16,386.2	15%
		small-scale lines	3,423.1	3%
		small-scale other nets	3,003.9	3%
		artisanal fishing gear	2,544.2	2%
	Subsistence	subsistence fishing gear	245.3	0%
China total			**107,333.5**	**23%**
Viet Nam	**Industrial**	bottom trawl	45,680.0	78%
	Artisanal	artisanal fishing gear	11,295.0	19%
	Subsistence	subsistence fishing gear	1,634.3	3%
Viet Nam total			**58,609.2**	**13%**
Morocco	**Industrial**	bottom trawl	44,862.4	77%
	Artisanal	small-scale pots or traps	12,000.0	21%
		small-scale lines	1,305.7	2%
		small-scale gillnets	118.3	0%
	Subsistence	subsistence fishing gear	112.9	0%
Morocco total			**58,399.3**	**13%**
Japan	**Industrial**	other	18,367.0	46%
		longline	3,989.5	10%
		bottom trawl	13.2	0%
	Artisanal	small-scale pots or traps	14,399.6	36%
		small-scale longline	3,097.0	8%
	Recreational	recreational fishing gear	311.1	1%
	Subsistence	subsistence fishing gear	112.8	0%
Japan total			**40,290.2**	**9%**
Mexico	**Artisanal**	small-scale pots or traps	35,980.6	100%
Mexico total			**35,980.6**	**8%**
Mauritania	**Artisanal**	small-scale lines	17,555.8	57%
	Industrial	pelagic trawl	12,981.7	43%
Mauritania total			**30,537.5**	**7%**
South Korea	**Industrial**	other	8,774.8	40%
		bottom trawl	4,436.7	20%
		dredge	190.8	1%
		shrimp trawl	185.4	1%

Fishing country	Fishing sector	Fishing gear	2019 catches (t)	% of country / sector total
	Artisanal	small-scale pots or traps	4,605.0	21%
		small-scale other nets	1,534.9	7%
		small-scale lines	1,512.1	7%
	Subsistence	subsistence fishing gear	782.2	4%
	Recreational	recreational fishing gear	3.5	0%
South Korea total			**22,025.3**	**5%**
Senegal	**Industrial**	unknown class	4,486.0	32%
		bottom trawl	4,201.4	30%
		other industrial	2,233.0	16%
	Artisanal	artisanal fishing gear	2,373.3	17%
		small-scale lines	749.0	5%
Senegal total			**14,042.8**	**3%**
India	**Industrial**	unknown class	10,164.3	84%
	Artisanal	artisanal fishing gear	1,815.4	15%
	Subsistence	subsistence fishing gear	83.7	1%
India total			**12,063.4**	**3%**
Thailand	**Industrial**	bottom trawl	9,615.7	86%
		purse seine	12.5	0%
	Artisanal	artisanal fishing gear	1,260.3	11%
	Subsistence	subsistence fishing gear	354.3	3%
Thailand total			**11,242.8**	**2%**
Tanzania	**Artisanal**	small-scale lines	5,855.3	52%
		small-scale gillnets	402.3	4%
	Subsistence	subsistence fishing gear	4,909.7	44%
	Industrial	other nets	23.0	0%
		hand or tools	23.0	0%
Tanzania total			**11,213.4**	**2%**
Spain	**Industrial**	bottom trawl	4,540.3	48%
		unknown class	589.7	6%
		pelagic trawl	55.3	1%
		unknown by author	51.0	1%
		purse seine	0.8	0%
		longline	0.0	0%
	Artisanal	artisanal fishing gear	1,679.6	18%
		small-scale pots or traps	754.6	8%
		small-scale gillnets	617.5	7%
		small-scale lines	25.6	0%
		unknown by author	8.7	0%
		small-scale longline	2.2	0%
	Subsistence	subsistence fishing gear	900.3	10%

Fishing country	Fishing sector	Fishing gear	2019 catches (t)	% of country / sector total
	Recreational	recreational fishing gear	168.6	2%
Spain total			**9,394.2**	**2%**
Italy	**Industrial**	bottom trawl	5,263.7	66%
		unknown class	202.0	3%
		longline	7.1	0%
		purse seine	5.5	0%
		pelagic trawl	5.3	0%
		dredge	0.4	0%
	Artisanal	small-scale pots or traps	2,278.4	29%
		artisanal fishing gear	145.7	2%
	Subsistence	subsistence fishing gear	64.4	1%
Italy total			**7,972.5**	**2%**
Portugal	**Industrial**	purse seine	2,541.9	39%
		bottom trawl	1,840.0	28%
		unknown class	3.4	0%
	Artisanal	small-scale pots or traps	1,205.0	18%
		small-scale gillnets	985.9	15%
Portugal total			**6,576.2**	**1%**
Other total			**35,353.1**	**8%**
Total			**461,033.9**	

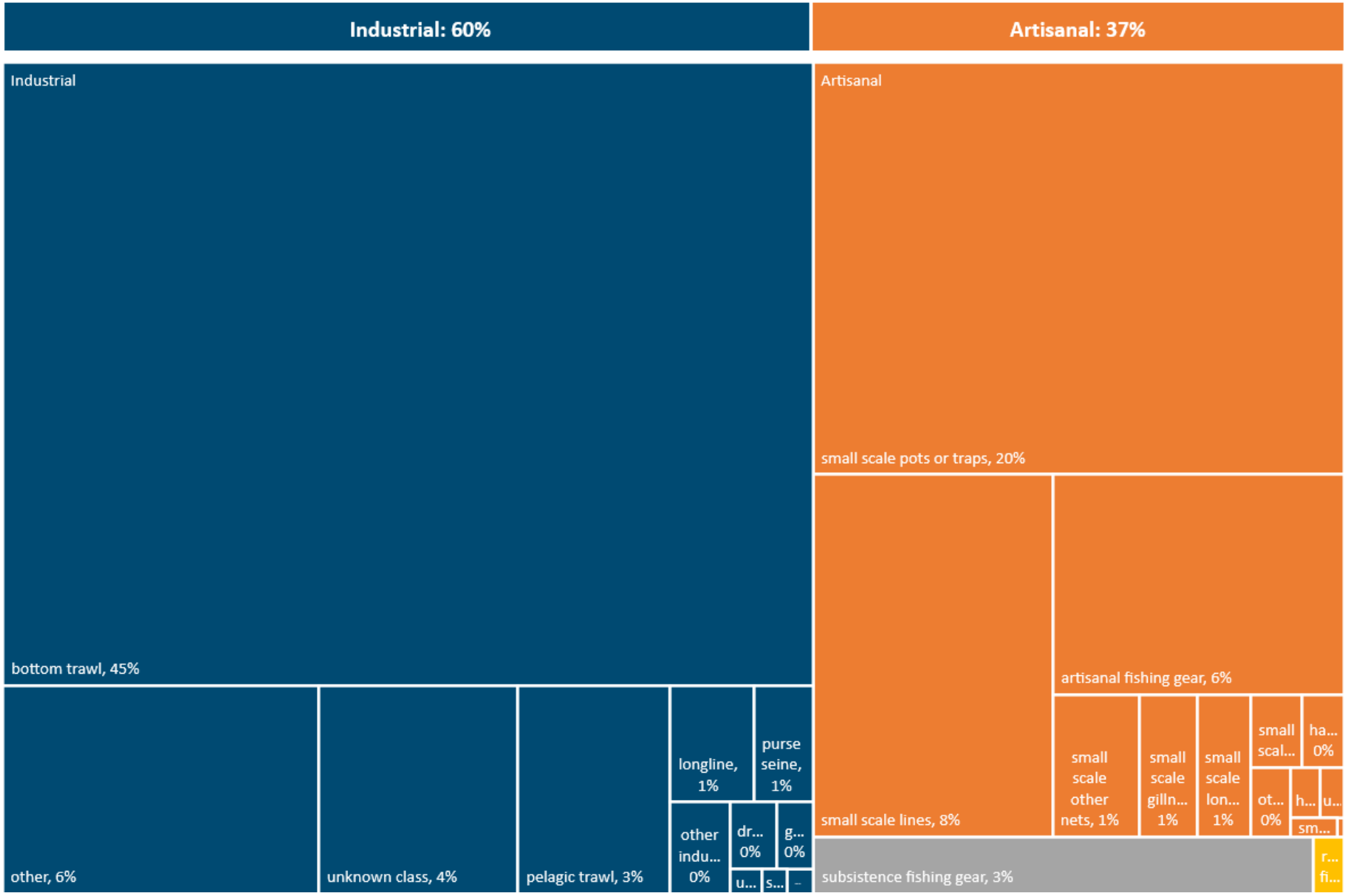

Figure App. E- 1 | 2019 estimated percentage of total octopus production per fishing sector and fishing gear. Source: Pauly et al. (2023)

Table App. F- 2 | Annual (2019 - 2021) global octopus production per species or species group. Source: FAO, 2023a

Common name	Scientific name	Reporting level	2019	2020	2021	2019-21 average	% of total (average 2019-21)
Octopuses, etc. nei	Octopodidae	Family	305,817.5	306,983.1	314,250.1	309,016.9	62.6%
Cephalopods nei [1]	Cephalopoda	Order	121,619.0	119,369.2	120,654.7	120,547.6	24.4%
Common octopus	*Octopus vulgaris*	Species	45,725.4	32,521.8	36,929.8	38,392.3	7.8%
Mexican four-eyed octopus	*Octopus maya*	Species	20,119.0	19,193.5	20,722.6	20,011.7	4.1%
Horned octopus	*Eledone cirrhosa*	Species	3,719.7	2,136.9	1,908.7	2,588.4	0.5%
Musky octopus	*Eledone moschata*	Species	2,179.2	998.9	1,124.7	1,434.3	0.3%
Horned and musky octopuses	*Eledone* spp	Genus	1,291.1	1,253.0	1,324.4	1,289.5	0.3%
Reef octopus	*Pinnoctopus cordiformis*	Species	86.8	89.1	114.9	97.0	0.0%
Spider octopus	*Octopus salutii*	Species	25.6	9.0	7.0	13.9	0.0%
Octopuses nei	*Octopus* spp	Genus	14.2	0.4	12.6	9.0	0.0%
White-spotted octopus	*Callistoctopus macropus*	Species	0.0	6.3	3.0	3.1	0.0%
Unihorn octopus	*Scaeurgus unicirrhus*	Species	2.0	0.1	0.0	0.7	0.0%
Antarctic octopuses	*Pareledone* spp	Genus	0.0	0.0	0.0	0.0	0.0%
Caribbean reef octopus	*Octopus briareus*	Species	0.0	0.0	0.0	0.0	0.0%
Pygmy octopus	*Octopus joubini*	Species	0.0	0.0	0.0	0.0	0.0%
Total			**500,599.5**	**482,561.2**	**497,052.7**	**493,404.5**	

Notes: (1) The following countries report octopus aggregated with other cephalopod species groups (e.g., squid and cuttlefish): Cambodia, Madagascar, Mozambique, Sao Tome and Principe, Somalia, East Timor, Viet Nam.

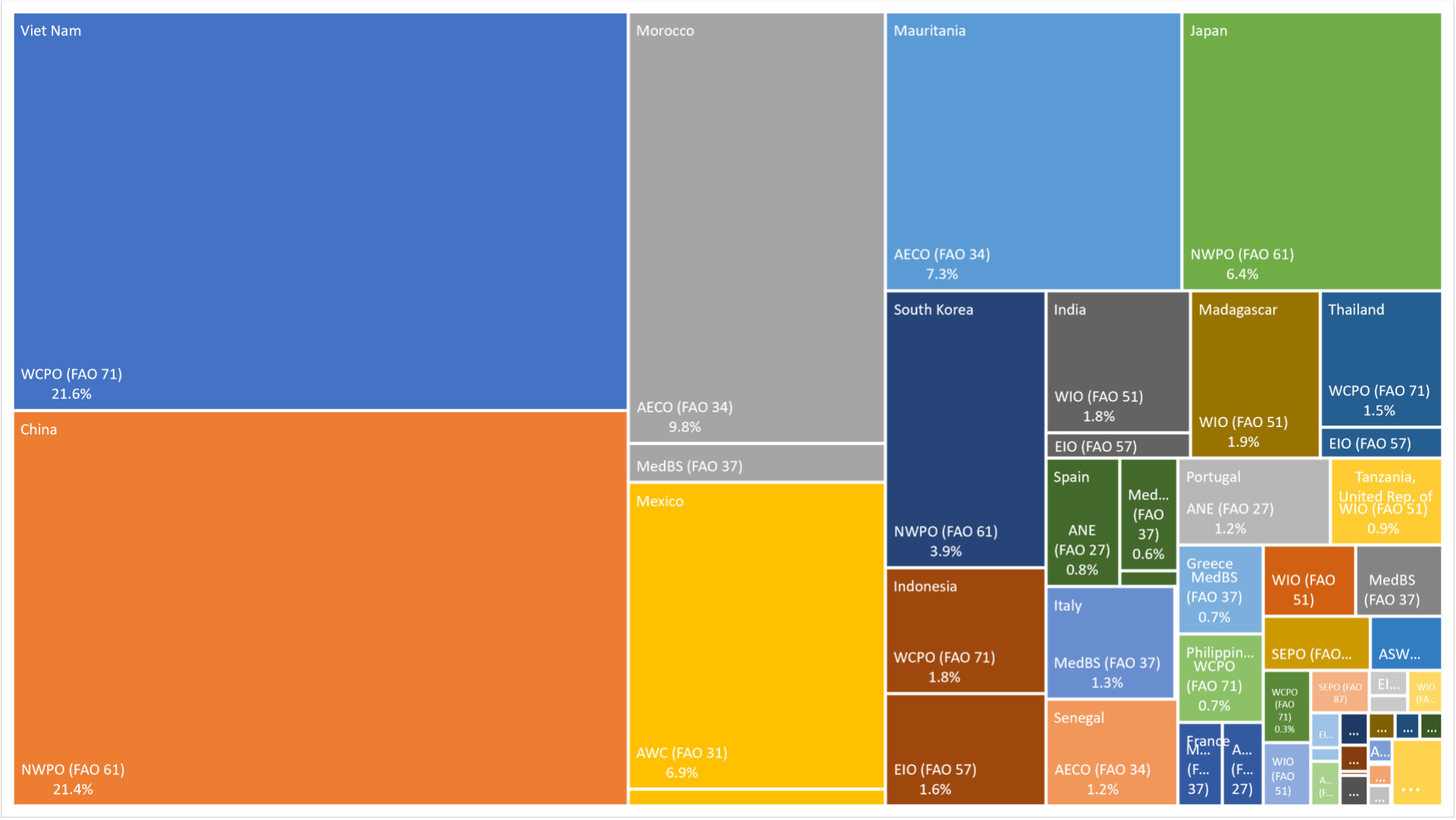

Figure App. E- 2 | Annual average (2019-2021) percentage of total octopus production per flag country and FAO major fishing area. Source: FAO (2023a)

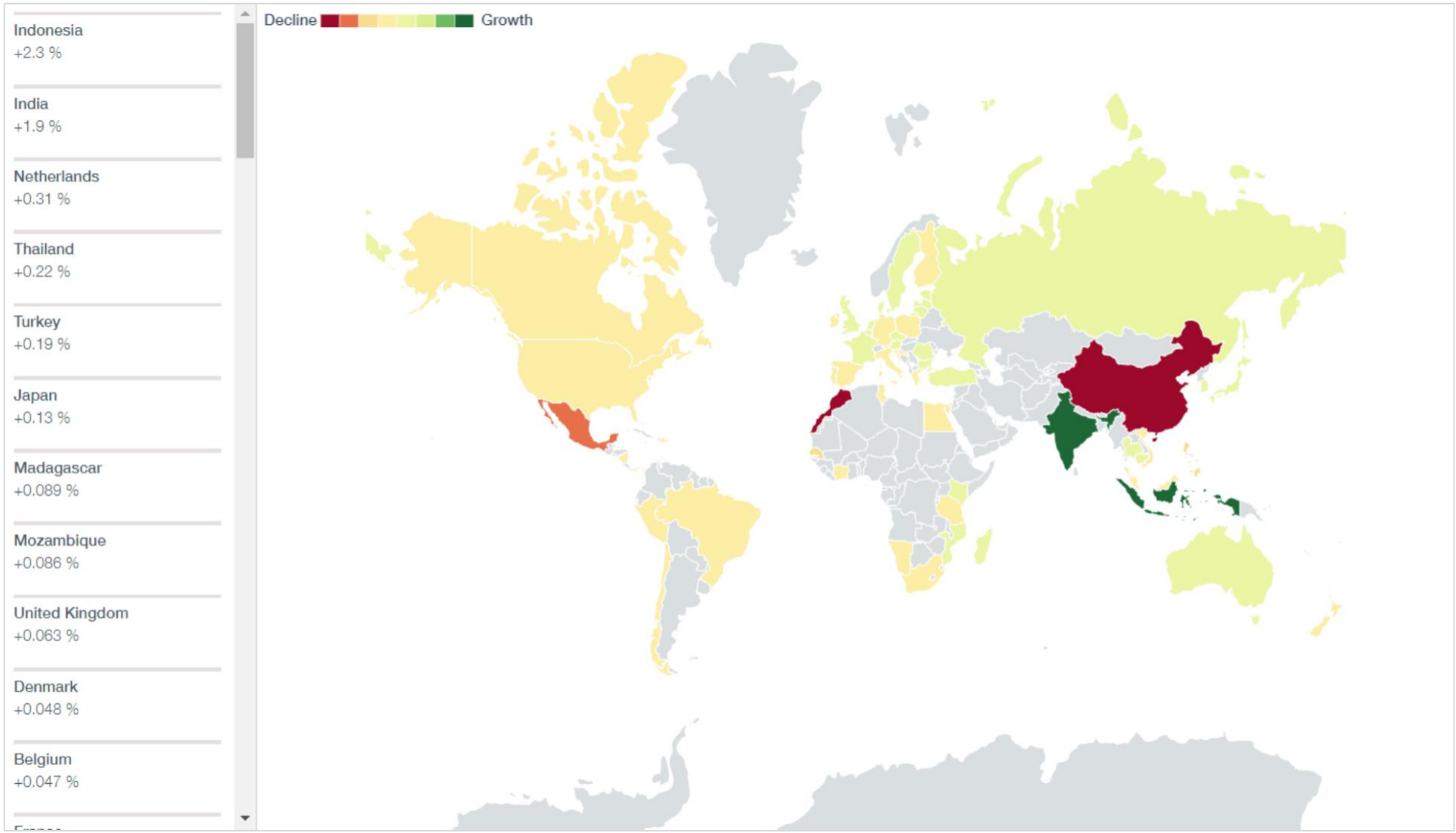

Figure App. E- 3 | Change in percent market share of octopus exports by main exporter, between 2009 and 2020. Source: S&P Global (2023)

Table App. F- 3 | FishSource profiles and the respective Management Quality and Stock Health FishSource scores for the octopus stocks currently covered in FishSource. (Source: SFP, 2023)

Stock name	Species scientific name	Flag country	Gear name	Management Quality			Stock Health	
				Management strategy	Managers' compliance	Fishers' compliance	Current health	Future health
Big blue octopus - East Nusa Tenggara	*Octopus cyanea*	Indonesia	Diving	Not scored	Not scored	Not scored	Not scored	Not scored
			Hand implements	Not scored	Not scored	Not scored	Not scored	Not scored
			Handlines hand operated	Not scored	Not scored	Not scored	Not scored	Not scored
			Hooks and lines	Not scored	Not scored	Not scored	Not scored	Not scored
Big blue octopus - SW Madagascar	*Octopus cyanea*	Madagascar	Diving	Not scored	Not scored	Not scored	Not scored	Not scored
			Hand implements	Not scored	Not scored	Not scored	Not scored	Not scored
California two-spot octopus - Eastern Pacific Mexico	*Octopus bimaculatus*	Mexico	Diving	Not scored	Not scored	Not scored	Not scored	Not scored
			Hand implements	Not scored	Not scored	Not scored	Not scored	Not scored
			Pots	Not scored	Not scored	Not scored	Not scored	Not scored
			Traps	Not scored	Not scored	Not scored	Not scored	Not scored
Changos octopus - Lobos Islands	*Octopus mimus*	Peru	Diving	<6	≥6	<6	DD	DD
Changos octopus - Northern Chile	*Octopus mimus*	Chile	Diving	<6	<6	<6	<6	<6
Changos octopus - Peru	*Octopus mimus*	Peru	Hand implements	<6	≥6	<6	DD	DD
Common octopus - Asturias	*Octopus vulgaris*	Spain	Traps	Not scored	Not scored	Not scored	Not scored	Not scored
Common octopus - Cape Blanc	*Octopus vulgaris*	Mauritania	Bottom trawls	≥6	<6	<6	7.92	7.68
			Pots	≥6	<6	<6	7.92	7.68
			Traps	≥6	<6	<6	7.92	7.68
Common octopus - China	*Octopus vulgaris*	China	Handlines hand operated	Not scored	Not scored	Not scored	Not scored	Not scored
Common octopus - Dakhla	*Octopus vulgaris*	Morocco	Bottom trawls	≥6	10	10	≥6	DD
			Pots	≥6	10	10	≥6	DD
			Traps	≥6	10	10	≥6	DD
			Vertical Lines	≥6	10	10	≥6	DD
Common octopus - India	*Octopus vulgaris*	India	Midwater trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Common octopus - Ivory Coast waters	*Octopus vulgaris*	Côte D'Ivoire	Bottom trawls	Not scored	Not scored	Not scored	Not scored	Not scored

Stock name	Species scientific name	Flag country	Gear name	Management Quality			Stock Health	
				Management strategy	Managers' compliance	Fishers' compliance	Current health	Future health
Common octopus - Kenyan waters	*Octopus vulgaris*	Kenya	Handlines hand operated	Not scored	Not scored	Not scored	Not scored	Not scored
			Harpoons	Not scored	Not scored	Not scored	Not scored	Not scored
Common octopus - Senegal-Gambia	*Octopus vulgaris*	Gambia	Bottom trawls	<6	<6	<6	7.92	10
			Single boat bottom otter trawls	<6	<6	<6	7.92	10
			Traps	<6	<6	<6	7.92	10
		Senegal	Bottom trawls	<6	<6	<6	7.92	10
			Pots	<6	<6	<6	7.92	10
			Single boat bottom otter trawls	<6	<6	<6	7.92	10
			Trammel nets	<6	<6	<6	7.92	10
			Traps	<6	<6	<6	7.92	10
			Vertical Lines	<6	<6	<6	7.92	10
Common octopus - Southern Iberian Peninsula	*Octopus vulgaris*	Portugal	Traps	<6	<6	DD	DD	DD
		Spain	Pots	<6	<6	DD	DD	DD
			Traps	<6	<6	DD	DD	DD
Gloomy octopus - Australian West coast	*Octopus tetricus*	Australia	Traps	Not scored	Not scored	Not scored	Not scored	Not scored
Gold-spot octopus - China	*Amphioctopus fangsiao*	China	Single boat midwater otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
			Vertical Lines	Not scored	Not scored	Not scored	Not scored	Not scored
Gold-spot octopus - East and South China Seas	*Amphioctopus fangsiao*	China	Bottom trawls	DD	DD	DD	DD	DD
			Purse seines	DD	DD	DD	DD	DD
Gold-spot octopus - Thai Andaman Sea	*Amphioctopus fangsiao*	Thailand	Single boat bottom otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Gold-spot octopus - Thai Gulf of Thailand	*Amphioctopus fangsiao*	Thailand	Single boat bottom otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Horned octopus - Bay of Biscay	*Eledone cirrhosa*	Spain	Beam trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Horned octopus - British waters	*Eledone cirrhosa*	United Kingdom	Beam trawls	Not scored	Not scored	Not scored	Not scored	Not scored
			Pots	Not scored	Not scored	Not scored	Not scored	Not scored

Stock name	Species scientific name	Flag country	Gear name	Management Quality			Stock Health	
				Management strategy	Managers' compliance	Fishers' compliance	Current health	Future health
			Single boat bottom otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Hubb's octopus - Eastern Pacific Mexico	*Octopus hubbsorum*	Mexico	Diving	Not scored	Not scored	Not scored	Not scored	Not scored
			Hand implements	Not scored	Not scored	Not scored	Not scored	Not scored
			Pots	Not scored	Not scored	Not scored	Not scored	Not scored
			Traps	Not scored	Not scored	Not scored	Not scored	Not scored
Mexican four-eyed octopus - Yucatan Peninsula	*Octopus maya*	Mexico	Pole-lines hand operated	<6	≥6	<6	DD	DD
Neglected ocellate octopus - Kerala	*Octopus neglectus*	India	Bottom trawls	Not scored	Not scored	Not scored	Not scored	Not scored
North Pacific giant octopus - Japan	*Enteroctopus dofleini*	Japan	Miscellaneous	Not scored	Not scored	Not scored	Not scored	Not scored
Octopus americanus - Mexico	*Octopus americanus*	Mexico	Pole-lines hand operated	<6	≥6	≥6	DD	DD
Octopuses nei - Costa Rica	*Octopus* spp.	Costa Rica	Diving	Not scored	Not scored	Not scored	Not scored	Not scored
Octopuses nei - Indonesian waters	*Octopus* spp.	Indonesia	Cover pots/Lantern nets	<6	<6	DD	DD	DD
			Hand implements	<6	<6	DD	DD	DD
			Handlines hand operated	<6	<6	DD	DD	DD
			Harpoons	<6	<6	DD	DD	DD
Octopuses nei - Thai waters	Octopus spp.	Thailand	Traps	Not scored	Not scored	Not scored	Not scored	Not scored
Octopuses, etc. nei - Philippines	Octopodidae	Philippines	Harpoons	<6	DD	<6	≥6	<6
			Traps	<6	DD	<6	≥6	<6
			Vertical Lines	<6	DD	<6	≥6	<6
Patagonian giant octopus - Chile Los Lagos (X)	*Enteroctopus megalocyathus*	Chile	Diving	<6	<6	≥8	10	10
Sandbird octopus - China	*Amphioctopus aegina*	China	Handlines hand operated	Not scored	Not scored	Not scored	Not scored	Not scored
Sandbird octopus - Indonesian waters	*Amphioctopus aegina*	Indonesia	Harpoons	Not scored	Not scored	Not scored	Not scored	Not scored
			Lift nets	Not scored	Not scored	Not scored	Not scored	Not scored
			Single boat bottom otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Sandbird octopus - Myanmar	*Amphioctopus aegina*	Myanmar	Bottom trawls	<6	<6	DD	DD	DD

Stock name	Species scientific name	Flag country	Gear name	Management Quality			Stock Health	
				Management strategy	Managers' compliance	Fishers' compliance	Current health	Future health
Veined octopus - Kerala	*Amphioctopus marginatus*	India	Bottom trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Webfoot octopus - India	*Amphioctopus membranaceus*	India	Single boat bottom otter trawls	Not scored	Not scored	Not scored	Not scored	Not scored
Whiparm octopus - Thai Gulf of Thailand	*Octopus variabilis*	Thailand	Gear not known	Not scored	Not scored	Not scored	Not scored	Not scored

Table App. F- 4 | Octopus fisheries currently in the Marine Stewardship (MSC) program. Source: MSC, 2023.

MSC fishery name	Reporting country	Location	Species	Status	Certification date	Certified volume (metric tons)			
						2022	2021	2020	Average
Western Asturias Octopus Traps Fishery of Artisanal Cofradias	Spain	Asturias, Spain (FAO 27)	Common octopus (*Octopus vulgaris*)	Certified	10 Feb 2016	103	71.6	39.1	71.2
Western Australia octopus	Australia	Western Australia (FAO 57)	Western rock octopus (*Octopus djinda*)	Certified	31 Oct 2019	561	394	208.8	387.9

Table App. F- 5 | Fishery Improvement projects (FIPs) covering octopus species. Sources: FishChoice, 2023; SFP, 2023b

FIP name	Reporting country	Location	Species	Status (May 2023)	FIP start date	FIP volume (metric tons)[1,2]
Chile Patagonian red octopus - hookah	Chile	Patagonia, Chile (FAO 87)	Patagonian giant octopus (*Enteroctopus megalocyathus*)	Active	01 Oct 2018	0.5
India Kerala shrimp and cephalopods - trawl	India	Kerala, India (FAO 51)	Neglected ocellate octopus (*Octopus neglectus*); Octopuses, etc. nei (*Amphioctopus marginatus*)	Active	01 Feb 2019	1.6
Indonesia Nusa Tenggara Timur Day octopus - diver-caught, gleaning, hand gathered, handline, jig & spear	Indonesia	Nusa Tenggara Timur (FAO 57, FAO 71)	Mexican four-eyed octopus (*Octopus maya*)	Active	01 Mar 2022	0.1
Japan Tomamae giant Pacific octopus - barrel flowing	Japan	Hokkaido, Japan (FAO 61)	Octopuses, etc. nei (*Amphioctopus marginatus*)	Active	01 Apr 2019	0.1
Mexico Bahia de Los Angeles octopus - trap/diver-caught/hand gathered	Mexico	Mexico Pacific (FAO 77)	Hubb's Octopus (*Octopus hubbsorum*); Verill's two-spot octopus (*Octopus bimaculatus*)	Inactive [3]	01 Jan 2018	0.02
Mexico Yucatan octopus - drift rod and line	Mexico	Yucatan, Mexico (FAO 31)	Common octopus (*Octopus vulgaris*); Mexican four-eyed octopus (*Octopus maya*)	Active	01 Jan 2019	1.8
Shantou-Taiwan Chinese common squid and short arm octopus - jig/trawl	China	Guangdong & Fujian Province, China (FAO 61)	Verill's two-spot octopus (*Octopus bimaculatus*)	Inactive [4]	01 Nov 2013	7.7
Southwest Madagascar octopus - diving & gleaning	Madagascar	Southwest Madagascar (FAO 51)	Common octopus (*Octopus vulgaris*)	Active	01 Jan 2019	0.3
Mauritania octopus - bottom trawl, jig & pot/trap	Mauritania	Mauritania EEZ (FAO 34)	Common octopus (*Octopus vulgaris*)	Prospective	-	na

Notes: (1) FIP volume refers to data as of September 2022 (SFP, 2023b). (2) For multispecies FIPs, the FIP volume only refers to that estimated for the octopus component of the fishery. (3) This FIP became recently Inactive, due to "lack of appropriate conditions to work on-site" (FishChoice, 2023). (4) This FIP became recently Inactive due to "Three years without environmental progress" (FishChoice 2023).

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