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the support it needs to thrive.



Seafish Insight: Fishmeal production and trends

Source: FAO SOFIA 2022

August 2022

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Introduction

This summary of global fishmeal production and trends is taken from the United Nations Food and Agriculture Organisation (FAO) State of World Fisheries and Aquaculture (SOFIA) report 2022.

This flagship publication, issued every two years, provides a comprehensive, objective, and global view of capture fisheries and aquaculture.

Fishmeal is a flour-type material obtained after milling and drying of fish or fish parts, while fish oil is obtained through the pressing of the cooked fish and subsequent centrifugation and separation.

These products can be produced from whole fish, fish trimmings or other fish by-products resulting from processing. Many different species are used for fishmeal and fish oil production, small pelagic species predominating. Many of the species used, such as anchoveta (*Engraulis ringens*), have comparatively high oil yields but are rarely used for direct human consumption.

Fishmeal and fish-oil production fluctuate according to changes in the catches of these species. Anchoveta catches, for example, are dominated by the El Niño phenomenon, which affects stock abundance. Over time, adoption of good management practices and the implementation of certification schemes have decreased the volumes of catches of species targeted for reduction to fishmeal.

To download a copy of the UN FAO State of World Fisheries and Aquaculture (SOFIA) report 2022 see: <https://www.fao.org/publications/sofia/2022/en/>

This is a summary of the content of the FAO SOFIA Report. It is not necessarily the view of Seafish. It is an information service provided by Seafish for industry and key stakeholders.

Overall highlights

Total fisheries and aquaculture production was estimated at 178 million tonnes in 2020 (a slight decrease from the all-time record of 179 million tonnes in 2018). Capture fisheries contributed 90 million tonnes (51%) and aquaculture 88 million tonnes (49%). Of the overall production of aquatic animals, over 157 million tonnes (89%) were used for human consumption, equivalent to an estimated annual supply of 20.2 kg per capita. The remaining 20 million tonnes were destined for non-food uses, of which 16 million tonnes (81%) was used to produce fishmeal and fish oil.

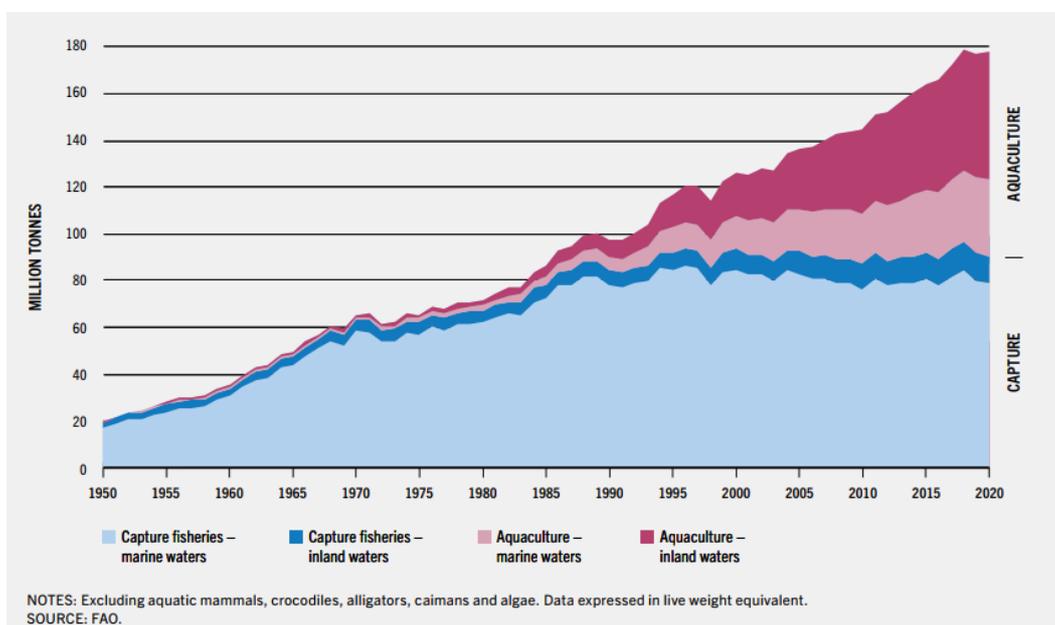
Total capture

- Global capture fisheries production in 2020 was 90.3 million tonnes, a fall of 4% compared with the average of the previous three years.
- The long-term trend in global capture fisheries continues to be relatively stable. Catches have generally fluctuated between 86 million tonnes and 93 million tonnes per year since the late 1980s.
- The top seven capture producers accounted for almost 49% of total global capture production, while the top 20 producers accounted for over 73%.

Aquaculture

- Global aquaculture production in 2020 reached a record 122.6 million tonnes, including 87.5 million tonnes of aquatic animals worth USD 264.8 billion and 35.1 million tonnes of algae worth USD 16.5 billion. Around 54.4 million tonnes were farmed in inland waters and 68.1 million tonnes came from marine and coastal aquaculture.
- The contribution of aquaculture to the global production of aquatic animals reached a record 49.2% in 2020. Aquaculture of fed aquatic animals continues to outpace that of non-fed aquatic animals.
- Despite the great diversity in farmed aquatic species, only a small number of “staple” species dominate aquaculture production, particularly grass carp for global inland aquaculture and Atlantic salmon for marine aquaculture.

World capture fisheries and aquaculture production



Overall highlights contd

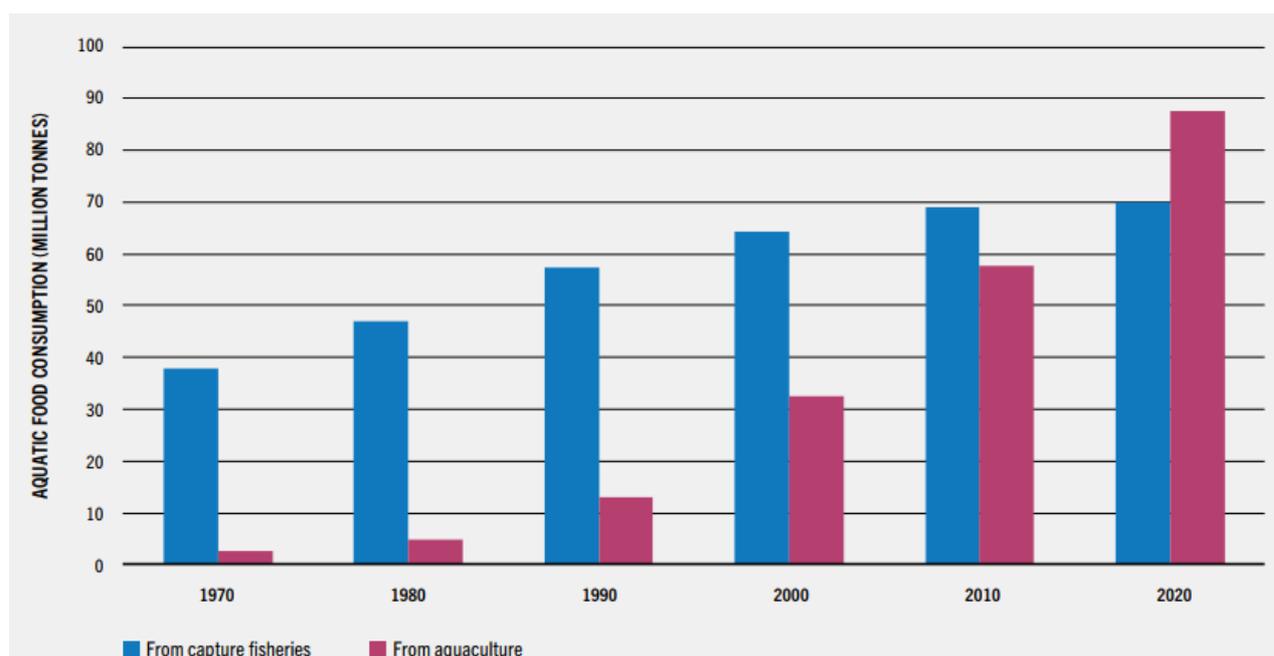
Consumption

- Global food fish consumption has increased at an average annual rate of 3% since 1961, compared with a population growth rate of 1.6%
- In per capita terms food fish consumption grew from an average of 9.9 kg (live weight equivalent) in the 1960s to a record high of 20.5 kg in 2019, while it slightly declined to 20.2 kg in 2020.
- In 2019, the world average per capita consumption was 20.5 kg. This varied from an average of 5.4 kg in low-income countries, to 15.2 kg in lower-middle-income countries, 28.1 kg in upper-middle-income countries and 26.5 kg in high-income countries.
- In 2019, fish consumption accounted for 17% of the global population’s intake of animal proteins, and 7% of all proteins consumed.
- Globally, fish provided more than 3.3 billion people with 20% of their average per capita intake of animal proteins and reached 50% or more in some countries.
- In 2019, of the 20.5 kg of per capita consumption, nearly 75% came from finfish and the remainder came from shellfish.

Outlook

- Total production of aquatic animals is expected to reach 202 million tonnes in 2030, thanks mainly to sustained growth of aquaculture, projected to reach 100 million tonnes for the first time in 2027 and 106 million tonnes in 2030.
- World capture fisheries is projected to recover, increasing by 6% from 2020 to reach 96 million tonnes in 2030, as a result of improved resource management, underfished resources, and reduced discards, waste and losses.

Relative contribution of aquaculture and capture fisheries to fish for human consumption

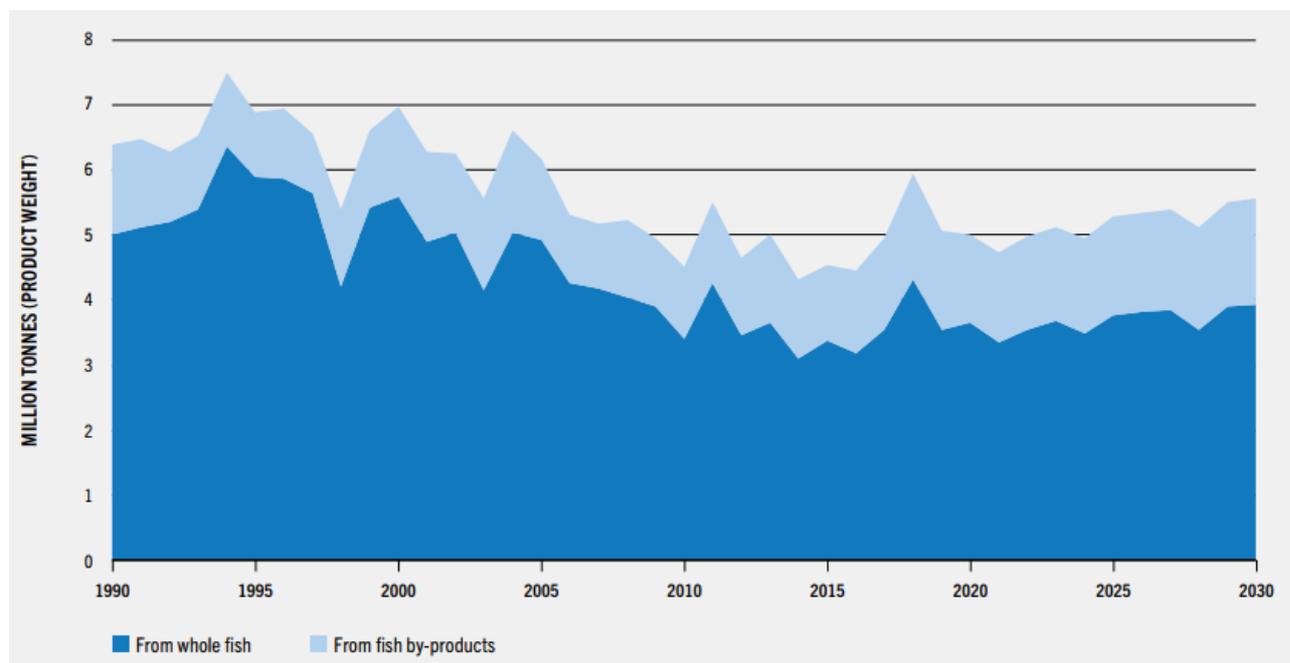


World fishmeal and fish oil production and use

A significant but declining proportion of world fisheries production is processed into fishmeal and fish oil. This progressive reduction in supply has been coupled with a surging demand driven by a fast-growing aquaculture industry, as well as by pig and poultry farming, and the pet-food and pharmaceutical industries. The increasing demand for fishmeal and fish oil led to an increase in prices.

- The amount of fish utilized for reduction to fishmeal and fish oil peaked in 1994 at over 30 million tonnes and then declined to less than 14 million tonnes in 2014. In 2018, it rose to about 18 million tonnes, before declining in the subsequent two years to reach over 16 million tonnes in 2020. This corresponds to about 20% of capture fisheries in marine waters.
- It is estimated that in 2020 about 86% of fishmeal was used in aquaculture, 9% in pig farming, 4% for other uses (mainly pet food) and 1% for poultry.
- A growing share of fishmeal and fish oil is being produced using fish by-products from capture and aquaculture processing with a positive impact on waste reduction. With no major increases in raw material expected to come from whole wild fish (in particular, small pelagics), any increase in fishmeal production will need to come from fish by-products and other sources such as krill.
- According to IFFO, in 2020, 27% of the global production of fishmeal and 48% of the total production of fish oil were obtained from by-products.

World fishmeal production 1990 – 2030



Share of raw material utilised for reduction into fishmeal and fish oil, 2020

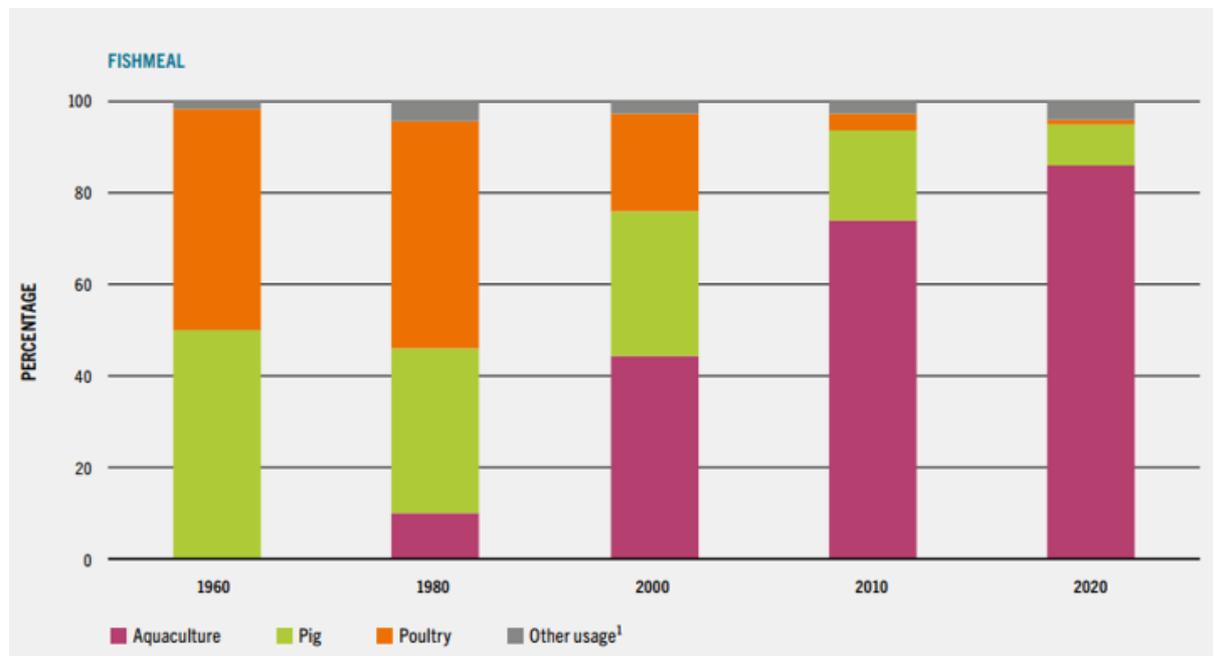


Utilisation of fishmeal and fish oil

Fishmeal and fish oil are still considered the most nutritious and most digestible ingredients for farmed fish, as well as the major source of omega-3 fatty acids (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]). However, their inclusion rates in compound feeds for aquaculture have shown a clear downward trend, largely as a result of supply and price variation coupled with continuously increasing demand from the aquafeed industry.

- Fishmeal and fish oil are still considered the most nutritious and most digestible ingredients for farmed fish, as well as the major source of omega-3 fatty acids (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]) in animal diets.
- Their inclusion rates in compound feeds for aquaculture have shown a clear downward trend, largely as a result of supply and price variation, coupled with continuously increasing demand from the aquafeed industry.
- Fishmeal and fish oil are increasingly used selectively at specific stages of production, such as for hatchery, broodstock and finishing diets, and their incorporation in grower diets is decreasing.
- Considerable research has focused on the replacement of fishmeal and fish oil with cheaper and potentially less environmentally burdensome ingredients, such as plant by-products, algae (micro- and macro-), insects, fish and land animal by-products, and single-cell proteins (including from bacteria and yeast). Furthermore, progress has been made in the usage of fisheries and aquaculture by-products to produce fishmeal, as well as in the use of agricultural protein sources to replace fishmeal and fish oil extracted from wild pelagic resources.

Utilisation of fishmeal to 2020



Fishmeal and fish oil looking ahead to 2030

- All groups of farmed species, will continue to increase, but rates of growth will be uneven across groups and the quantitative importance of different species will change as a consequence. In general, species that require larger proportions of fishmeal and fish oil in their diets are expected to grow more slowly, owing to expected higher prices and reduced availability of fishmeal.
- Capture fisheries is projected to recover during the coming decades, resulting in world capture fisheries production at the end of the outlook period reaching 96 million tonnes. Some fluctuations are expected over the next decade, linked to the El Niño phenomenon, with reduced catches in South America, especially for anchoveta, resulting in an overall decrease in world capture fisheries production of about 2% in those years.
- In 2030, production of both fishmeal and fish oil is expected to increase over the outlook period by, respectively, 11% and 13% compared with 2020, although the share of capture fisheries production reduced into fishmeal and fish oil should decline slightly (17% by 2030 compared with 18% in 2020).
- The expected increase in fishmeal and fish oil production is due to the overall growth in capture fisheries production in 2030 compared with 2020, combined with the increase in fishmeal and fish oil production obtained from fish waste and by-products of the processing industry. Between 2020 and 2030, the proportion of total fishmeal obtained from fish waste is projected to increase from 27% to 29%, while the proportion of total fish oil is projected to slightly decline from 48% to 47%.
- Trade of fishmeal and fish oil is expected to increase by 9% and 7% respectively. Peru and Chile will continue to be the main exporters of fish oil, while Norway and the European Union are the main importers, in particular for aquaculture production of salmonoids. Peru is also expected to remain the leading exporter of fishmeal, followed by the European Union and Chile, while China is the major importer.

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Here to give the UK seafood sector
the support it needs to thrive.

The logo for Seafish, featuring the word "seafish" in a white, lowercase, sans-serif font. Above the letter "i" in "fish", there is a stylized graphic of a fish's head and scales, composed of several small, white, diamond-shaped elements arranged in a curved pattern.

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