



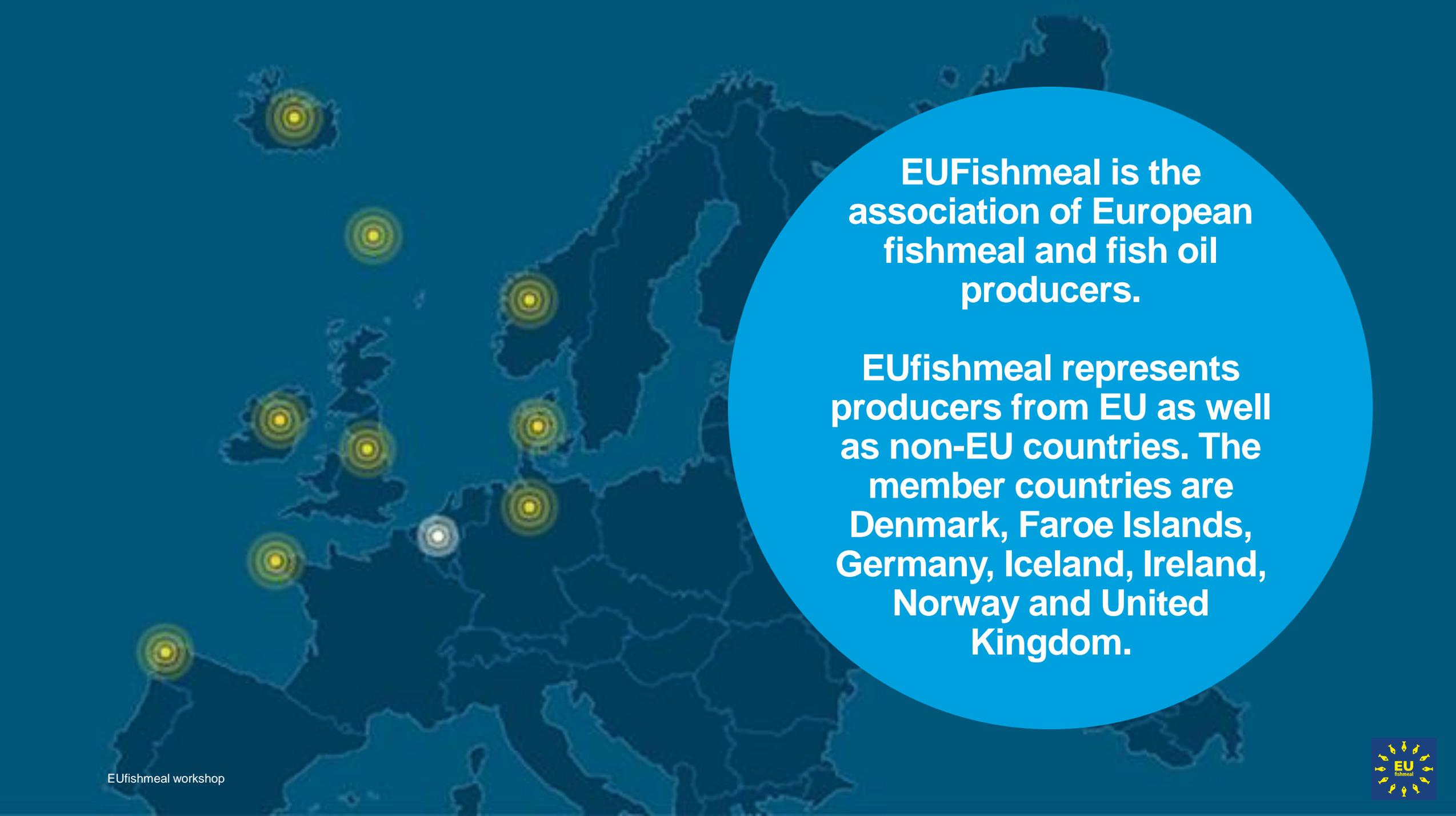
Fishmeal and fish oil

High value ingredients from marine sources

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Fishmeal and fish oil Workshop
Copenhagen 14-15 November 2018

Where are we today

- European fishmeal and fish oil production
- Production volumes and exports
- Raw material supplies
- What are our products used for
- Trends and expectations



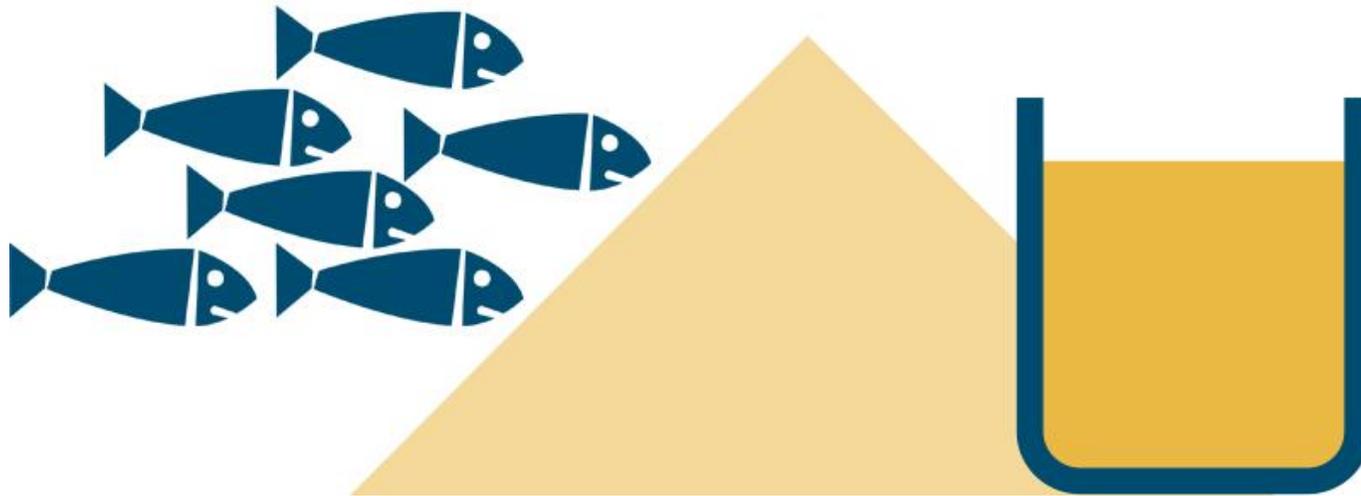
**EUFishmeal is the
association of European
fishmeal and fish oil
producers.**

**EUfishmeal represents
producers from EU as well
as non-EU countries. The
member countries are
Denmark, Faroe Islands,
Germany, Iceland, Ireland,
Norway and United
Kingdom.**

Fishmeal and fish oil

Fishmeal is a dried marine powder that holds several nutritional qualities, which makes it very attractive as a protein supplement in feed for aquaculture and agriculture

Fish oil is 100 % marine oil with a high content of the essential omega 3 fatty acids. Fish oil is mainly used for the production of feed for farmed fish and as refined fish oil for human consumption (fish oil capsules)



Production proces

- Raw fish, fish trimmings and fish offal are boiled, separated, dried and grinded into fishmeal and fish oil
- 100 kg of raw material produces ~ 20,6 kilos of fishmeal and ~ 6,5 kilos of fish oil

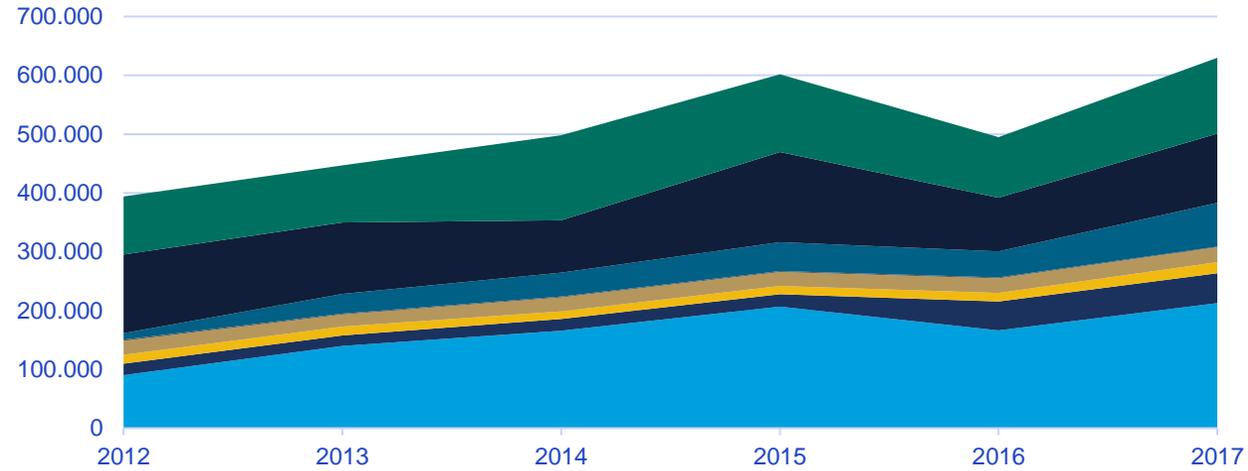


Fishmeal and fish oil production in Europe

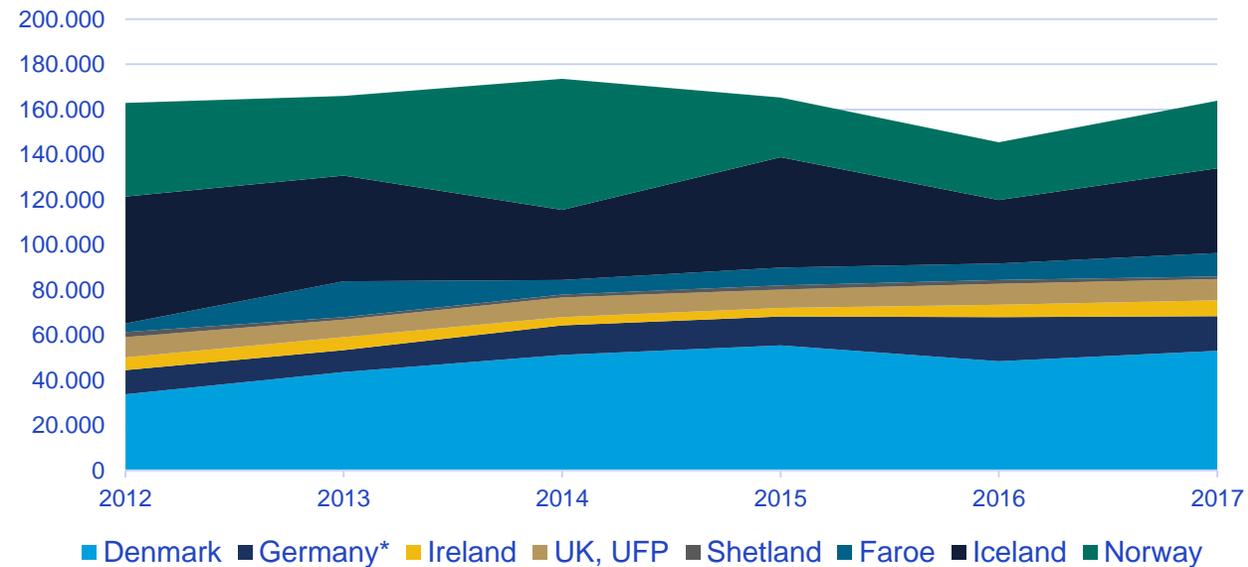
- Europe produces 530,000 tonnes of fishmeal and 160,000 tonnes of fish oil yearly on average
- Total value of production is approximately 1 billion €/year
- Exports go to a very large variety of countries

*German production includes facilities in France and Spain

EUfishmeal fishmeal production, 2012-17, tonnes

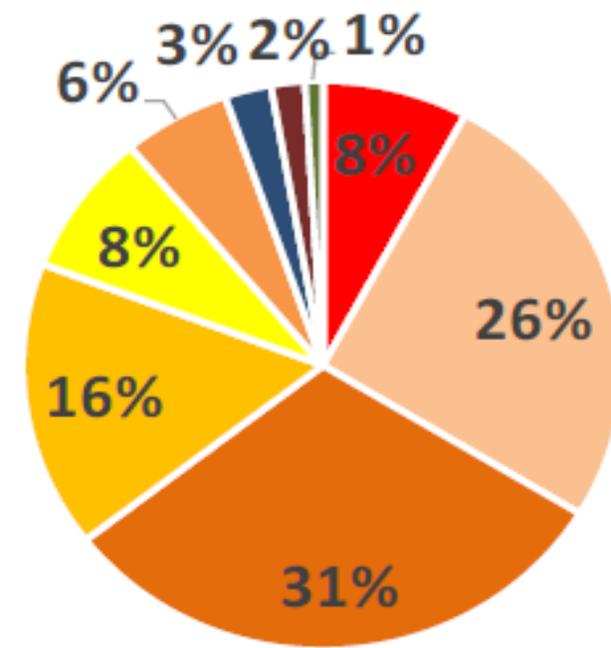


EUfishmeal fish oil production, 2012-17, tonnes

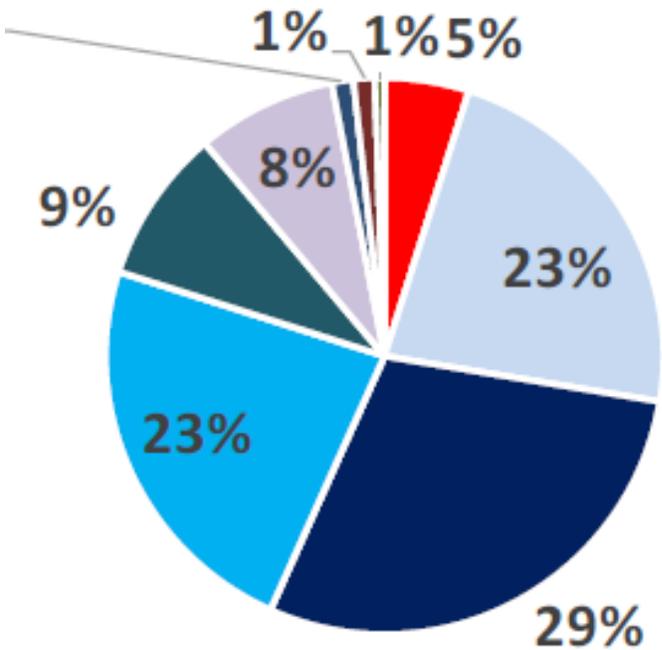


EU fishmeal on a global scale

- Europe accounts for 16 % of the world's fishmeal production (2017)



- China
- Asia
- Latin America
- Europe
- Africa
- North America
- Cis
- Middle East
- Oceania



- China
- Asia
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- Europe accounts for 23 % of the world's fish oil production (2017)



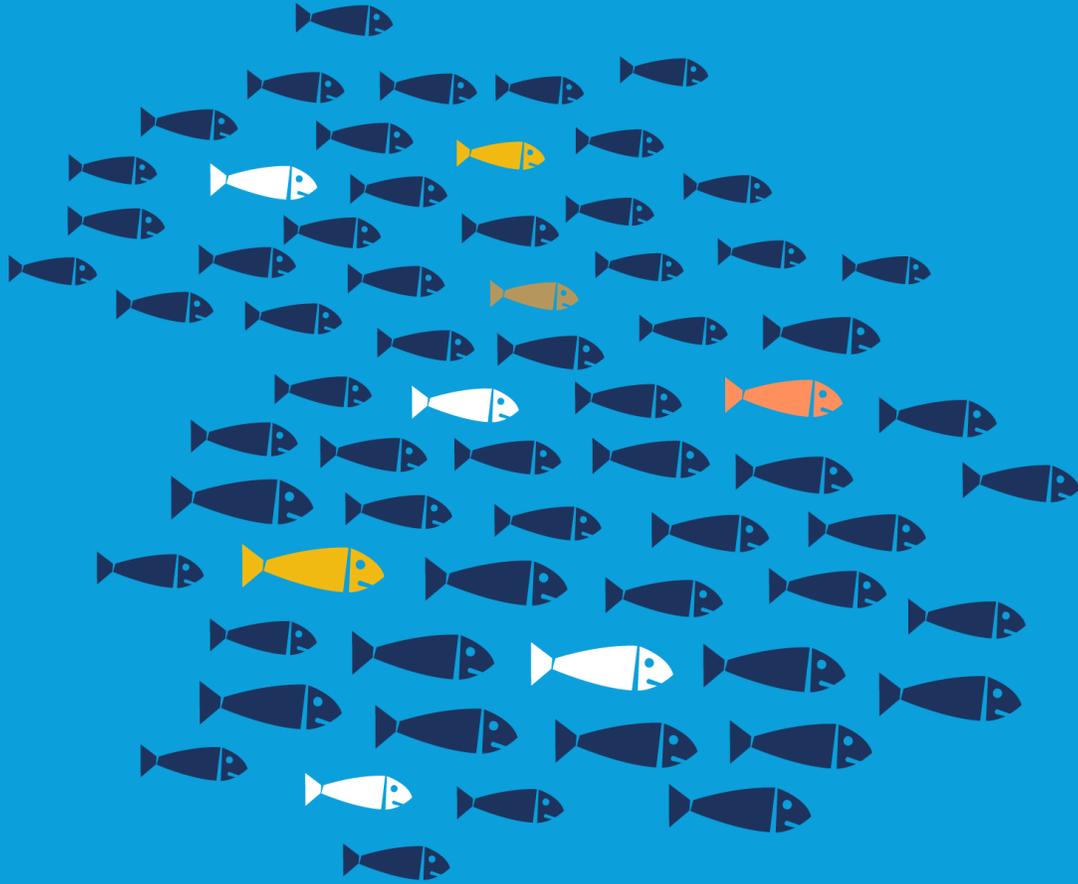
HIGH QUALITY PRODUCTS



- Raw material freshness
- Modern vessels with cooling equipment
- Pelagic fishing with minimal impact on ecosystems
- Full traceability to verify species and origin
- Safety ensured by meeting all legislative requirements
- Quality testing is performed all the way from catch to customer ensuring that all products are in accordance with the highest standards
- Production is performed in respect for the use of valuable marine resources and certified according to ISO standards



Responsible sourcing



- EUfishmeal members are committed to a sustainable exploitation of natural resources based on biological advice
- Fish stocks are within safe biological boundaries and closely monitored
- Use of fish with no or little demand for direct human consumption
- Pelagic mid-water trawl fishing with low impact on ecosystems
- Use of rest raw material/trimmings from the filleting industry (circular economy)

Forage fish and marine ecosystems

<http://www.eufishmeal.org/conference2018/>

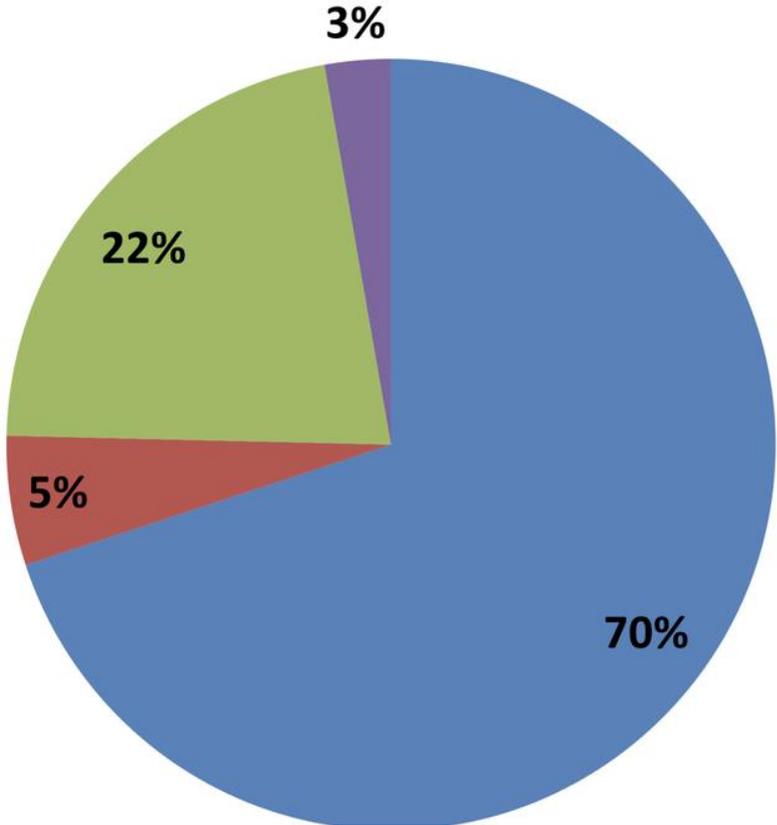
Marine resources used for feed

- *"they accustom their cattle, cows, sheep, camels, and horses to feed upon **dried fish**, which being regularly served to them, they eat without any sign of dislike."*
 - Marco Polo and de Pisa in "Book of the Marvels of the World", famous 13th century travelbook
- Pre-war photo from Ireland



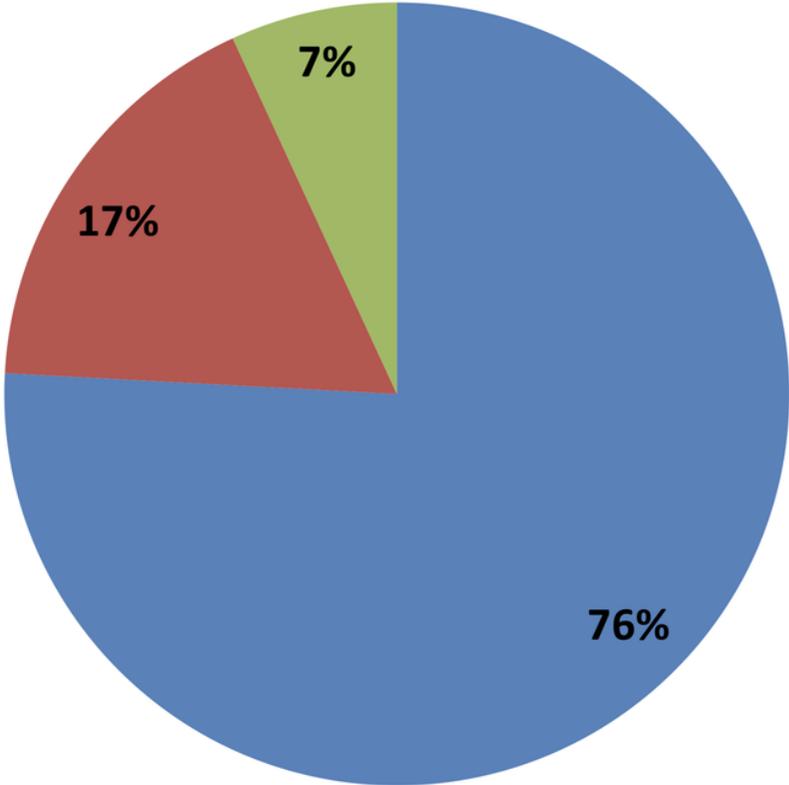
Global use of fishmeal by market in 2017 (IFFO)

■ Aquaculture ■ Chicken ■ Pig ■ Other

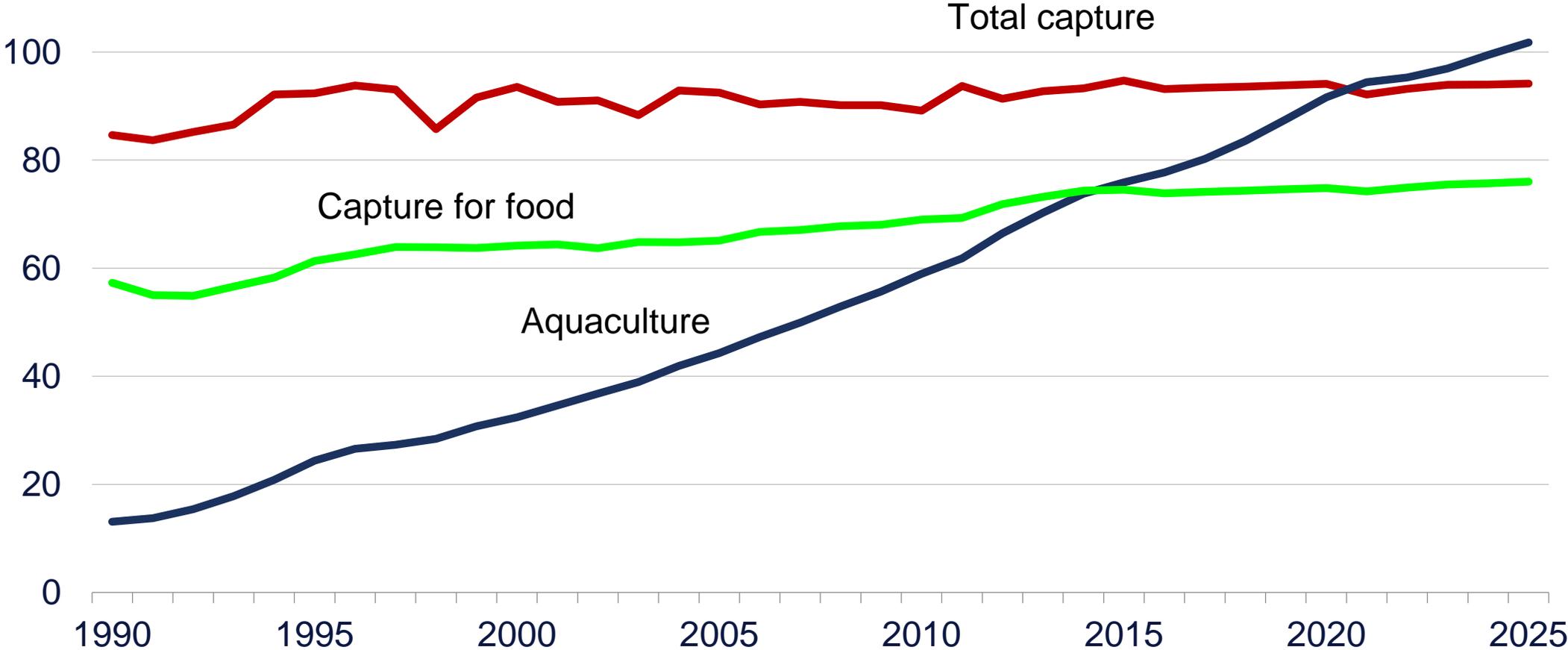


Global use of fish oil by market in 2017 (IFFO)

■ Aquaculture ■ Direct Human Consumption ■ Other



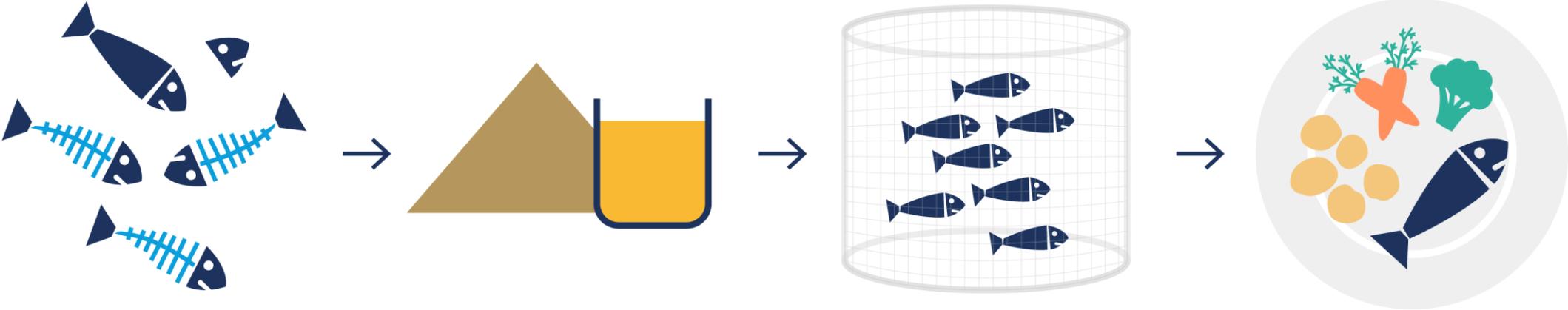
Supplying a growing aquaculture production



Source: FAO



The value chain



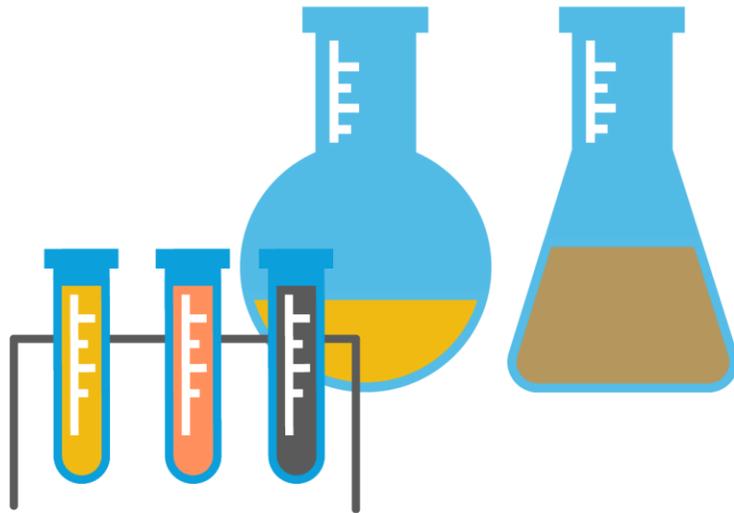
Strategic feed ingredients

All marine fish are reliant on marine omega-3 fatty acids to varying degrees and fishmeal and fish oil are, without equal, the most valuable ingredients in diets for aquaculture and many land-farmed animals.

The composition of micronutrients in fishmeal, including amino acids, vitamins and minerals, support growth and optimal physiological function of animals and farmed fish. This makes fishmeal and fish oil indispensable feed ingredients.



Strategic feed ingredients



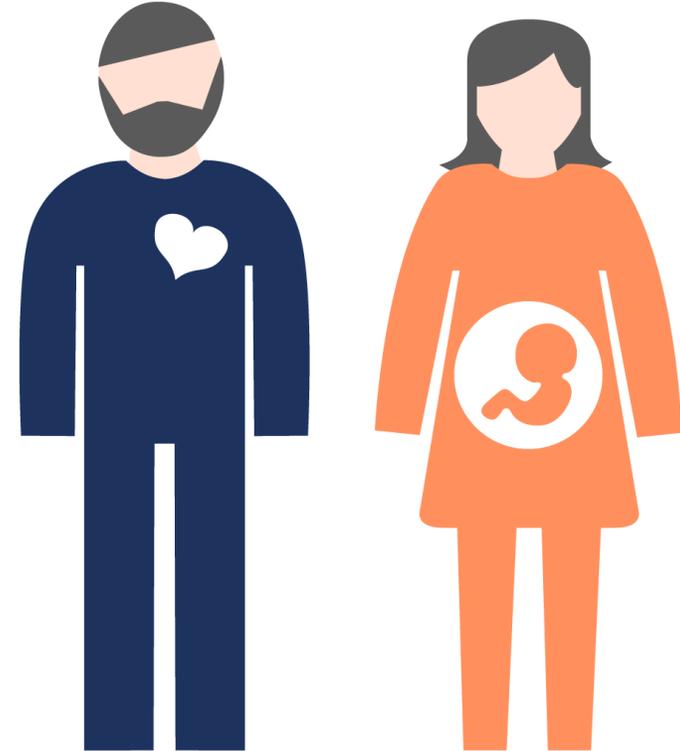
- High protein content of 62 to >70 %
- Rich in long chain omega-3 fatty acids EPA and DHA
- Contains minerals; calcium, phosphorus, magnesium, potassium and selenium
- Contains vitamins; B1, B2, B6 and B12
- High digestibility

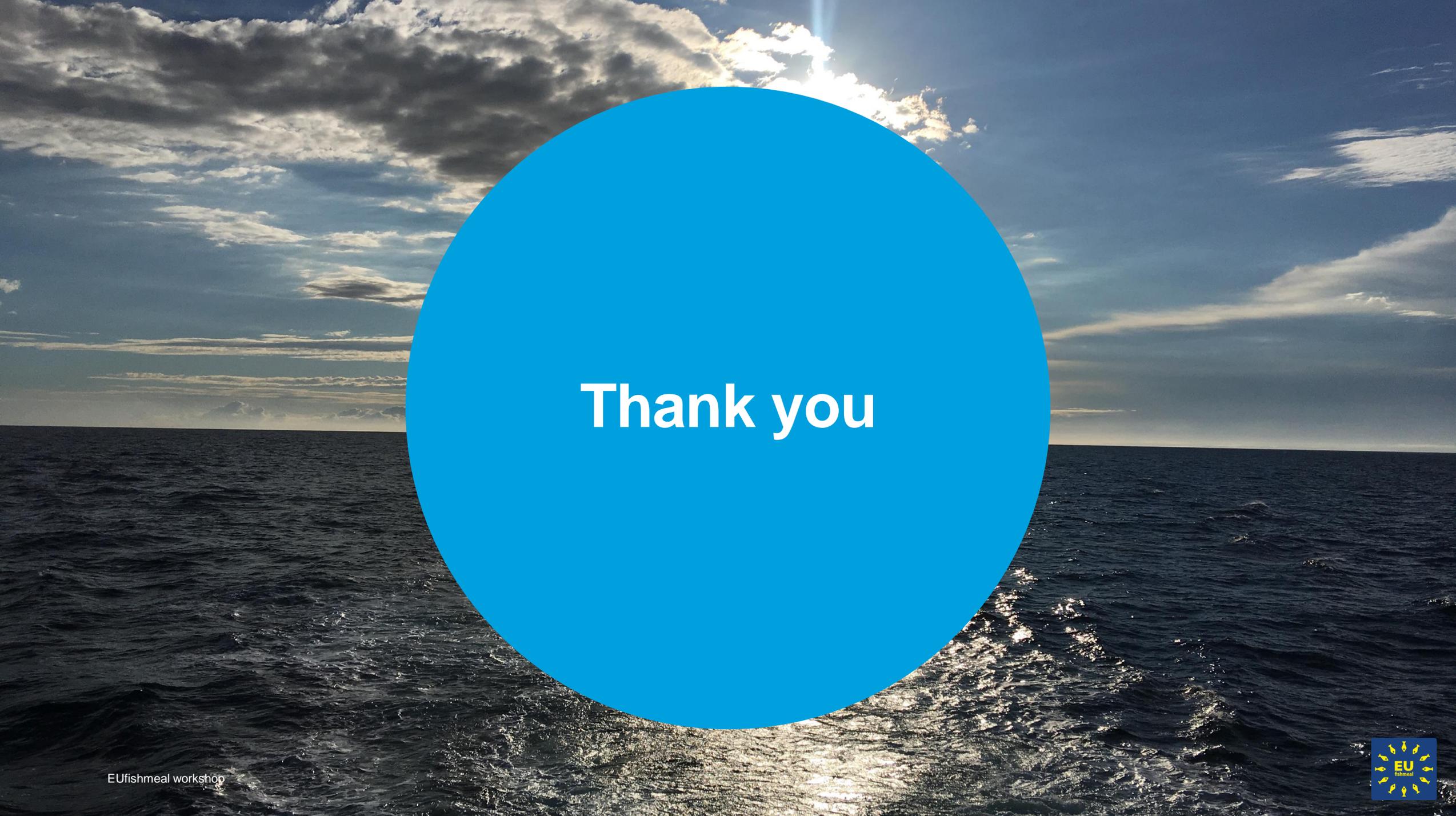
Health benefits

Fishmeal and fish oil provide all essential amino acids, minerals, phospholipids and omega-3 fatty acids (DHA and EPA) and bring those into the human diet.

EPA and DHA are central components in all cell membranes – particularly important for the development of the brain and vision early in life. EPA and DHA contributes to the function of the heart, blood system and immune system.

- Reduces blood pressure
- Reduces risk of cardiac attack
- Reduces inflammation and formation of blood clots





Thank you