

# SUBMARINER Conference Better off Blue



**Marine Ingredients**  
Denmark

Berlin, 27. September 2017

Anne Mette Bæk, director

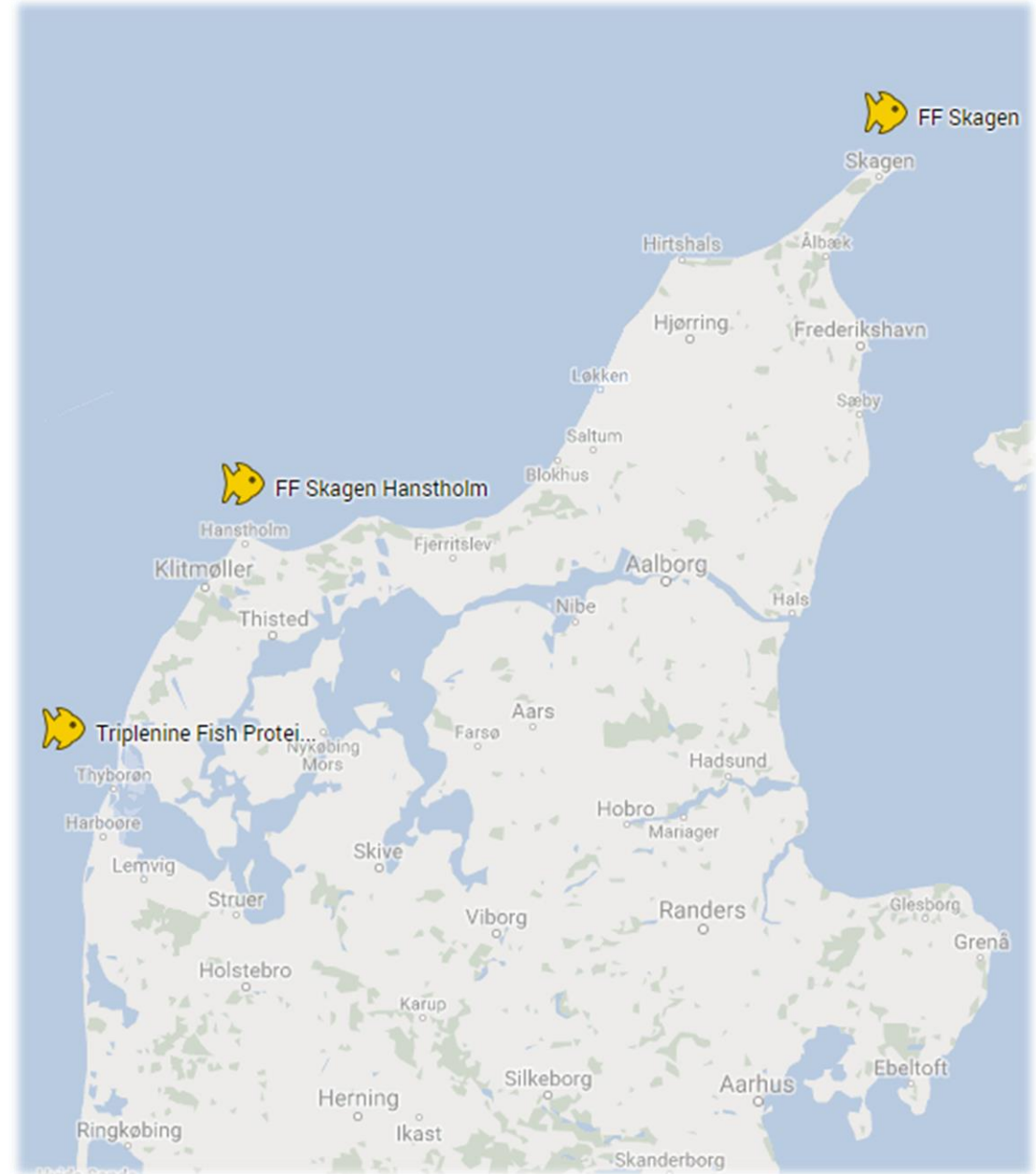


**Marine Ingredients**  
Denmark

- Who are we
- What do we produce
- What do we produce from
- How big is our production
- What is our products used for
- What do we expect for the future

# Marine Ingredients Denmark

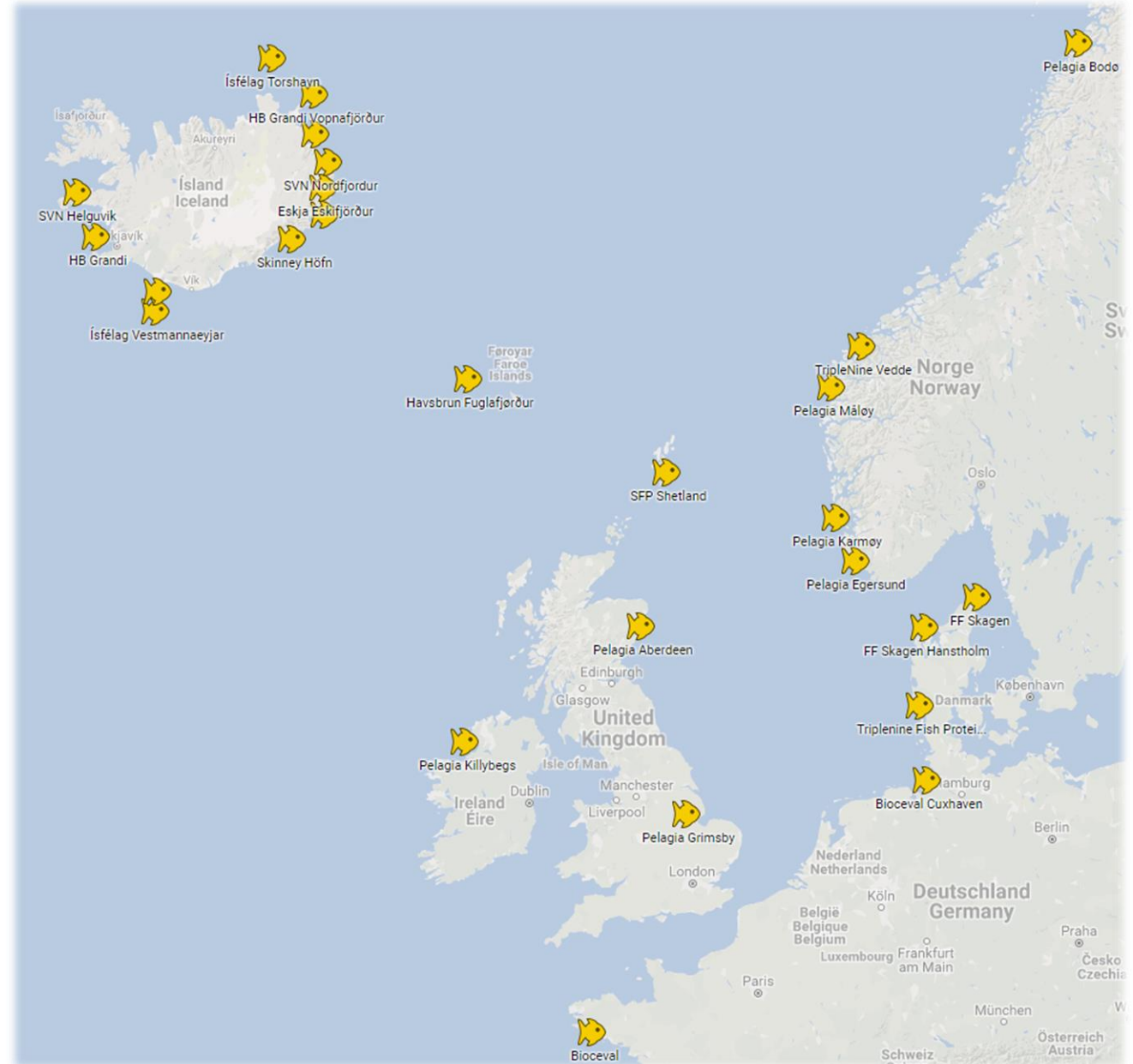
- represents the Danish producers of fishmeal and fish oil
- Secretariat in Copenhagen
- Members :
  - TripleNine Fish Protein
  - FF Skagen og FF Hanstholm
  - P/F Havsbrun (associeret medlem)
  - Bioceval Denmark (associeret medlem)



**Marine Ingredients**  
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# EU fishmeal

- represents the European producers of fishmeal and fish oil
- Members from Denmark, Faroe Islands, Germany, Ireland, Iceland, Norway and UK
- 7 associated members
- Secretariat in Copenhagen

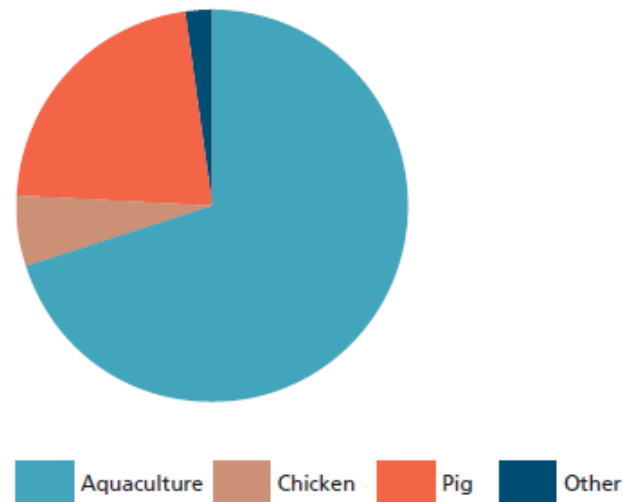


# Fishmeal and fish oil – responsible marine ingredients based on certified sustainable fisheries

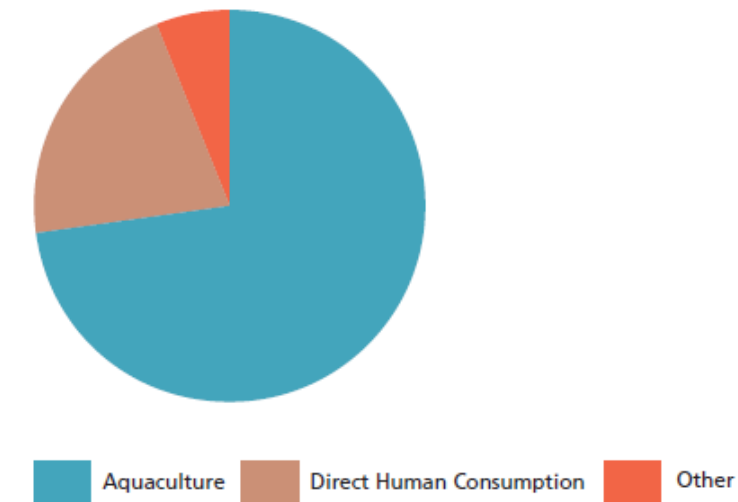
Fishmeal is a dried marine powder that holds several nutritional qualities, which makes it very attractive as a protein supplement in feed for aquaculture and agriculture

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)

Use of Fishmeal by market in 2015



Use of Fish oil by market in 2015



# Fishmeal and fish oil – responsible marine ingredients based on certified sustainable fisheries

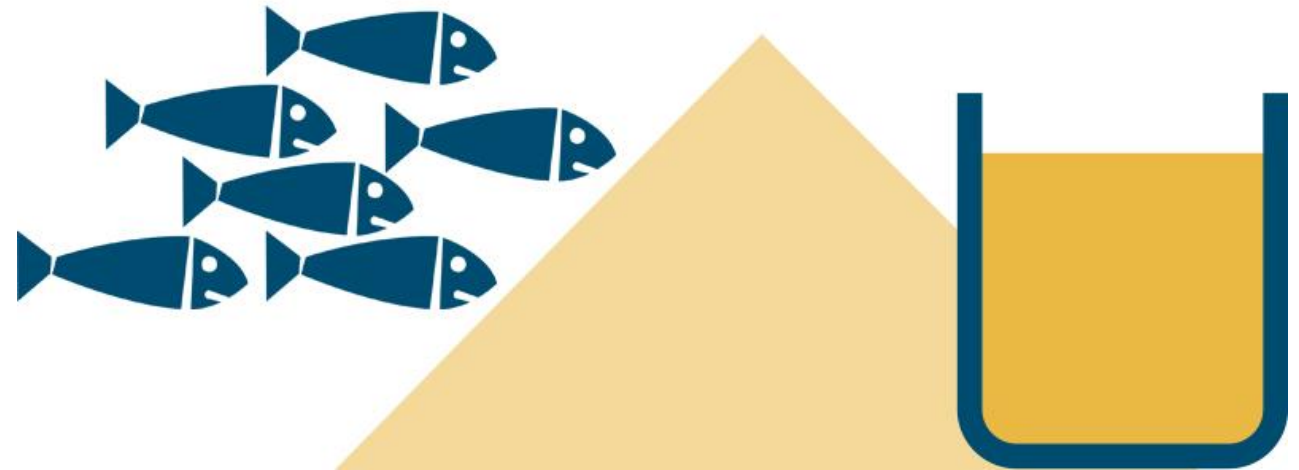
Raw fish and trimmings are boiled, separated, dried and grinded into fishmeal and fish oil

100 kg of raw material produces ~ 20,6 kilos of fishmeal and ~ 6,5 kilos of fish oil

Small, short-lived fish with little or no potential for direct human consumption

Capelin, sandeel, blue whiting, sprat, norway pout, boarfish

Total allowable catches (TACs) based on biological advice and under governmental regulation and control.



# Fishmeal and fish oil – responsible marine ingredients based on certified sustainable fisheries

## Trimmings

A growing amount of raw material from trimmings. The fillet yield for most fish species varies between 30% and 65% of the mass of the fish and the rest raw material is a valuable resource for the fishmeal and fish oil producers.

The European fishmeal industry is thus an important contributor to a circular blue bioeconomy.

Discards – a potential new resource. Nothing so far



# Utilizing raw material

The fillet yield for most fish species varies between 30% and 65% of the mass of the fish and

Opportunities in using fish that doesn't meet the criteria for human consumption

**FISH OIL PRODUCTION (TONNES ,000)**

Region	From Whole fish	From By-product	Total	% from By Product
Europe	101	90	191	47
Asia (exc China)	103	44	146	30
China	48	16	64	25
M East	8	2	10	24
CIS	16	4	20	20
Africa	28	9	37	24
S. America	304	50	353	14
N. America	71	20	91	22
Oceania	0.5	4	4	89
<b>Totals</b>	<b>678</b>	<b>240</b>	<b>918</b>	<b>26</b>

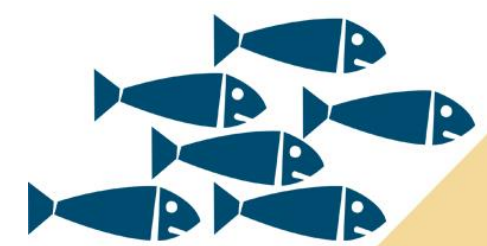
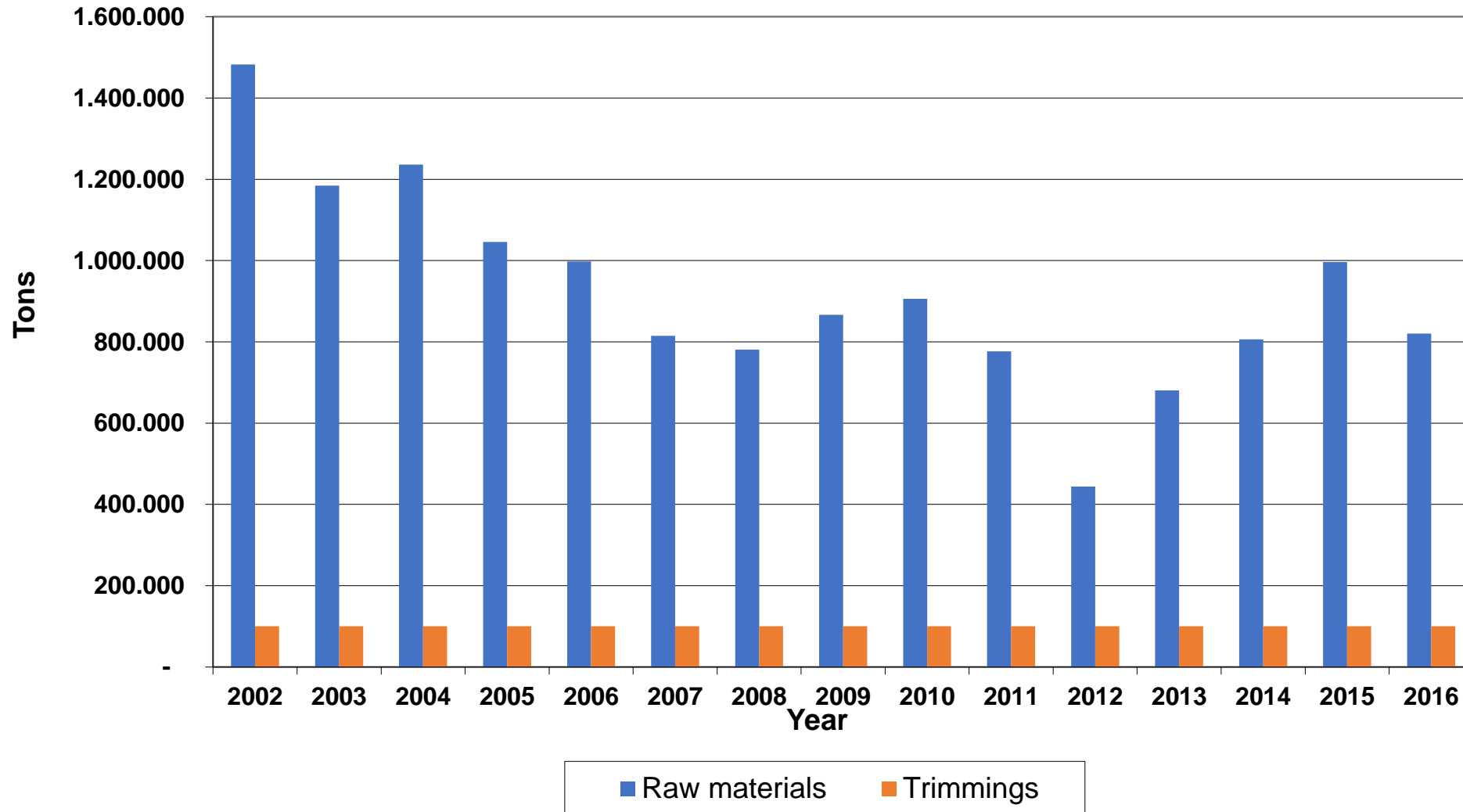
**FISHMEAL PRODUCTION (TONNES ,000)**

Region	From Whole fish	From By-product	Total	% from By Product
Europe	320	381	701	54
Asia (exc China)	580	454	1,034	44
China	281	152	433	35
M East	42	13	55	23
CIS	57	27	84	32
Africa	146	60	206	29
S. America	1,532	289	1,821	16
N. America	170	118	288	41
Oceania	2	14	16	85
<b>Totals</b>	<b>3,131</b>	<b>1,508</b>	<b>4,639</b>	<b>33</b>



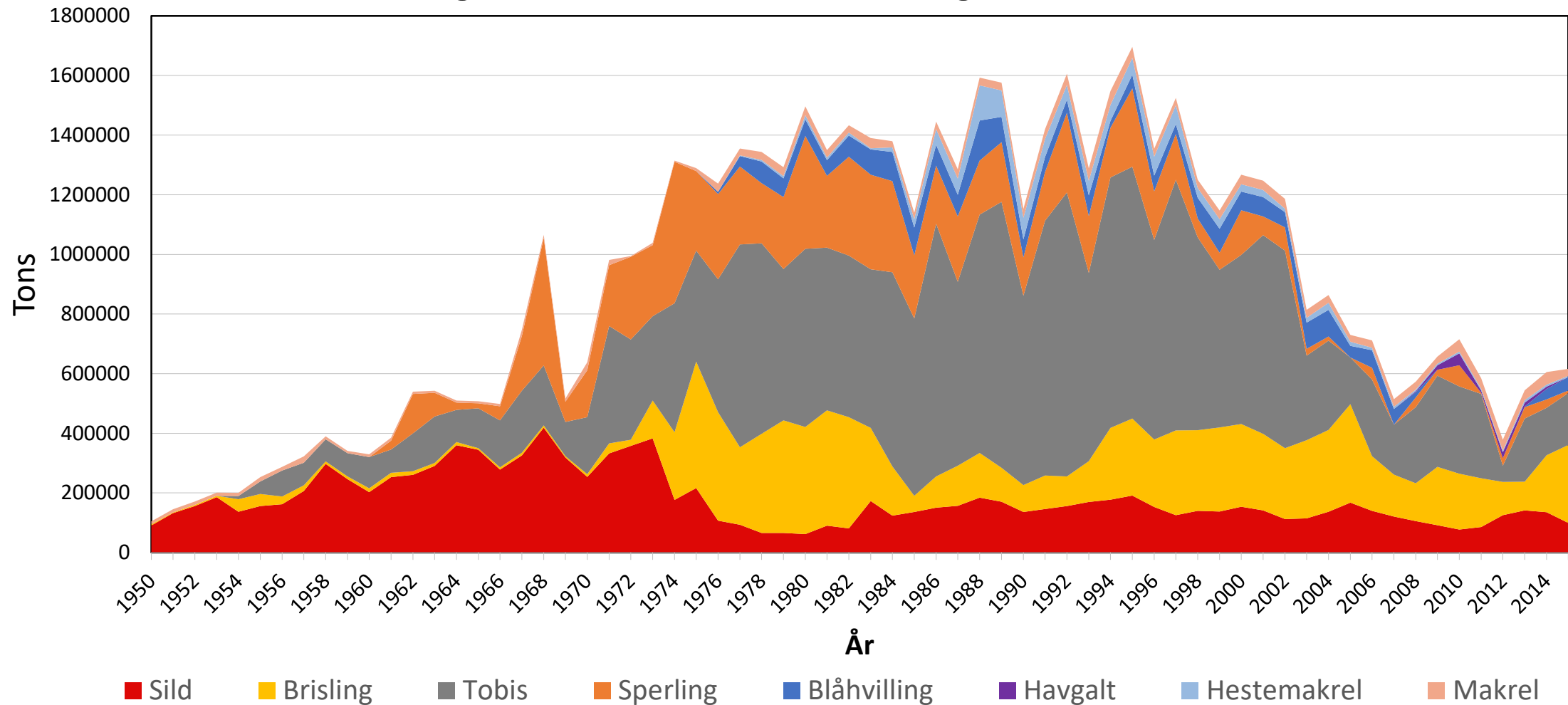
# Raw material - Denmark

2002 - 2016



# Raw material - Denmark

## Total Landings 1950-2015 – Danish and foreign vessels



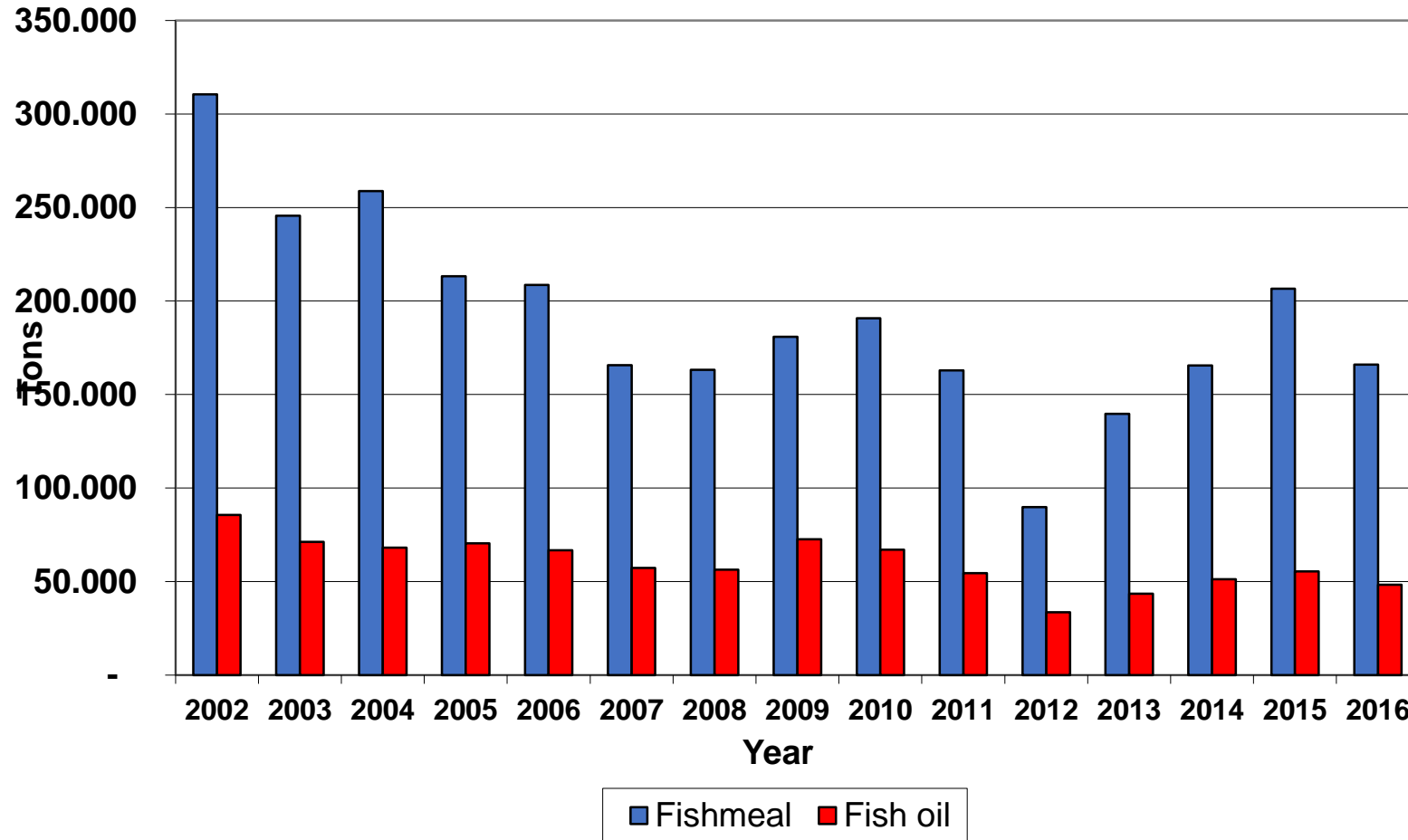
# HIGH QUALITY PRODUCTS



- 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

# Production - Denmark

2002 - 2016



Largest producer in Europe

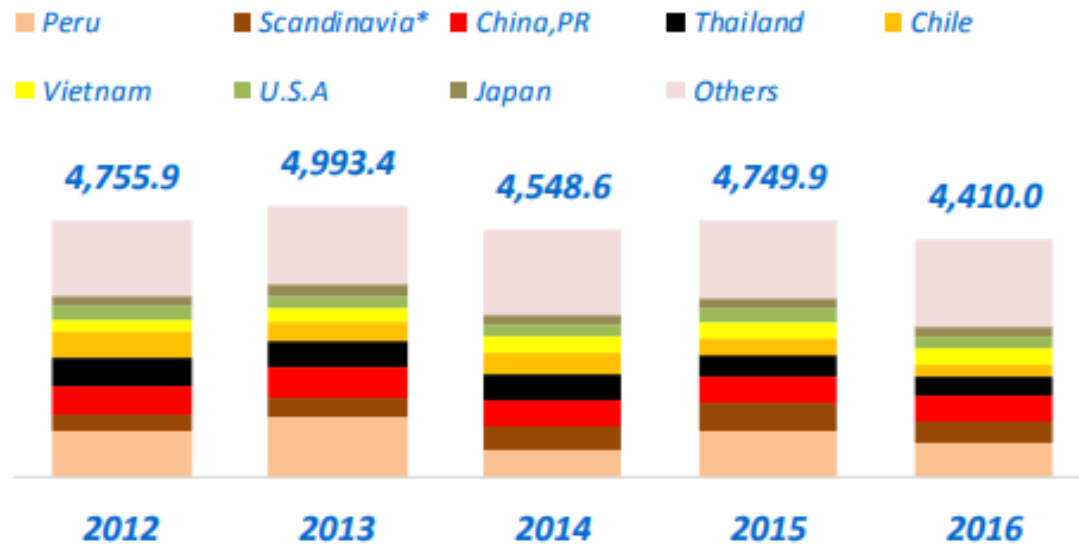
Globally the 7th largest producer  
of fishmeal

5th largest producer of fish oil  
globally

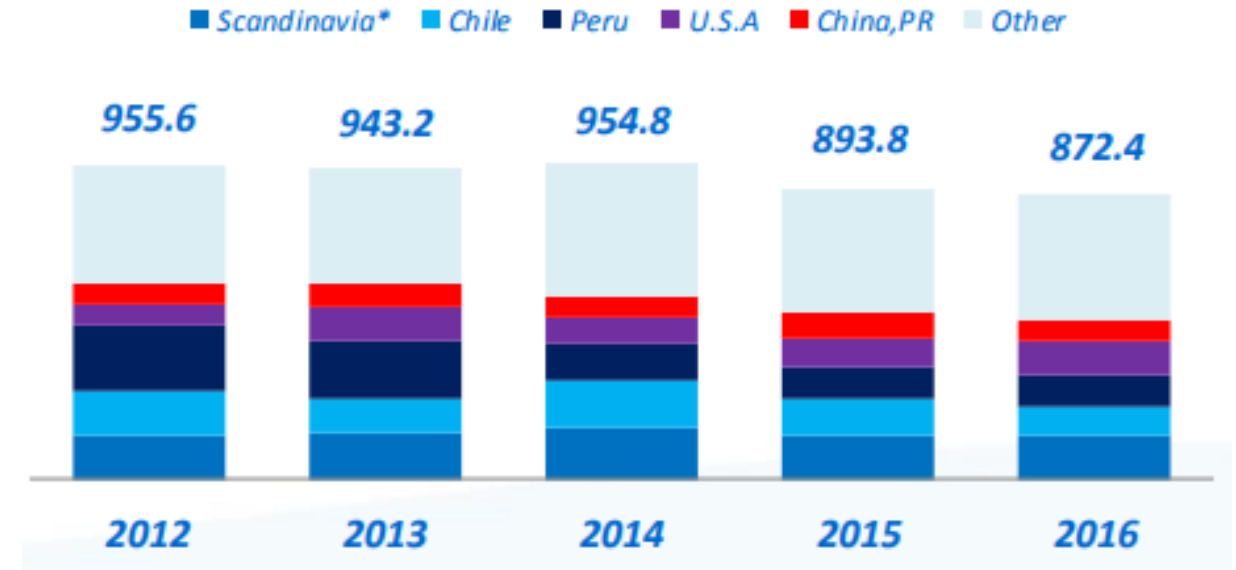


# Global production

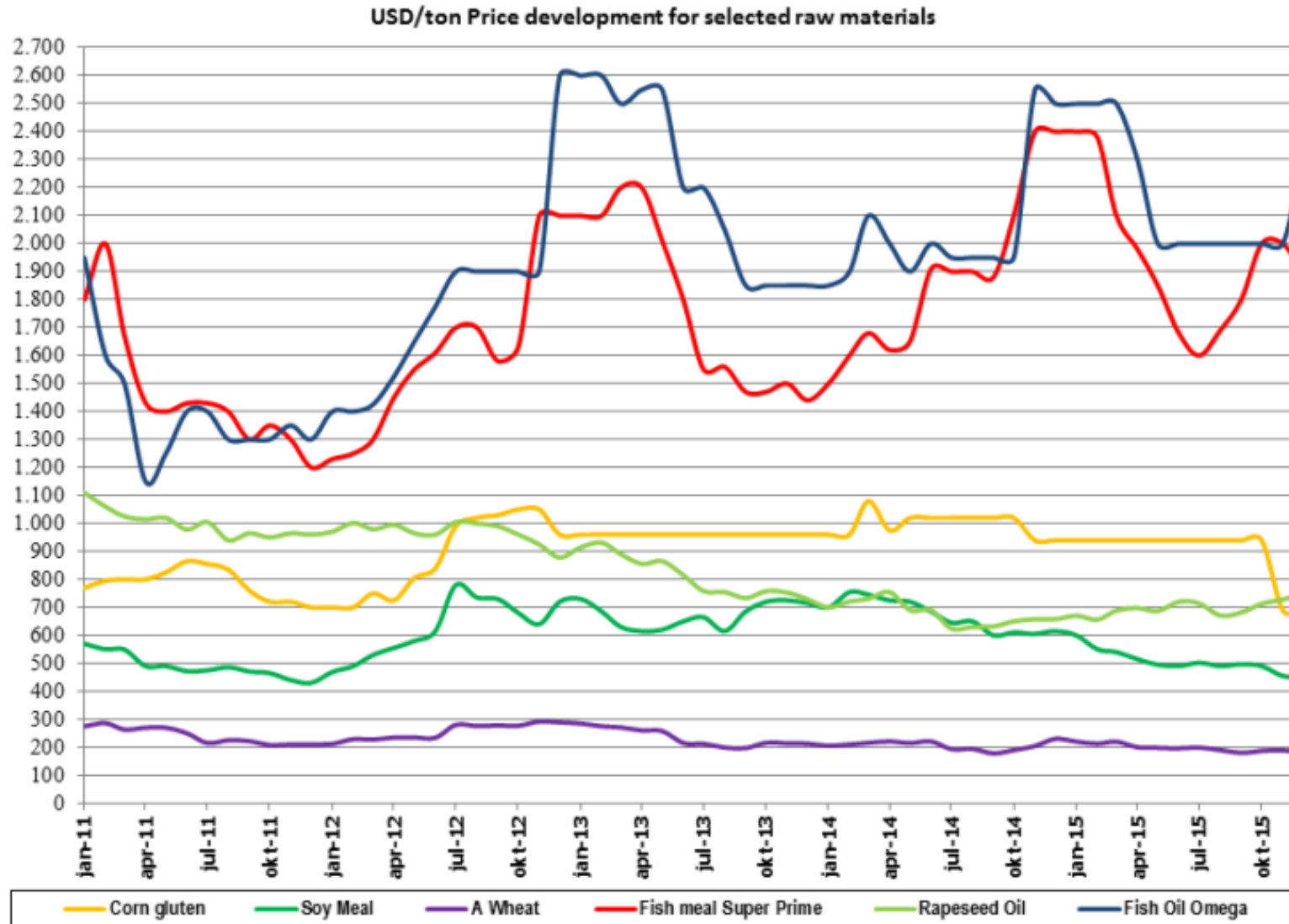
**Fishmeal world production ('000 mt)**



**Fish oil world production ('000 mt)**

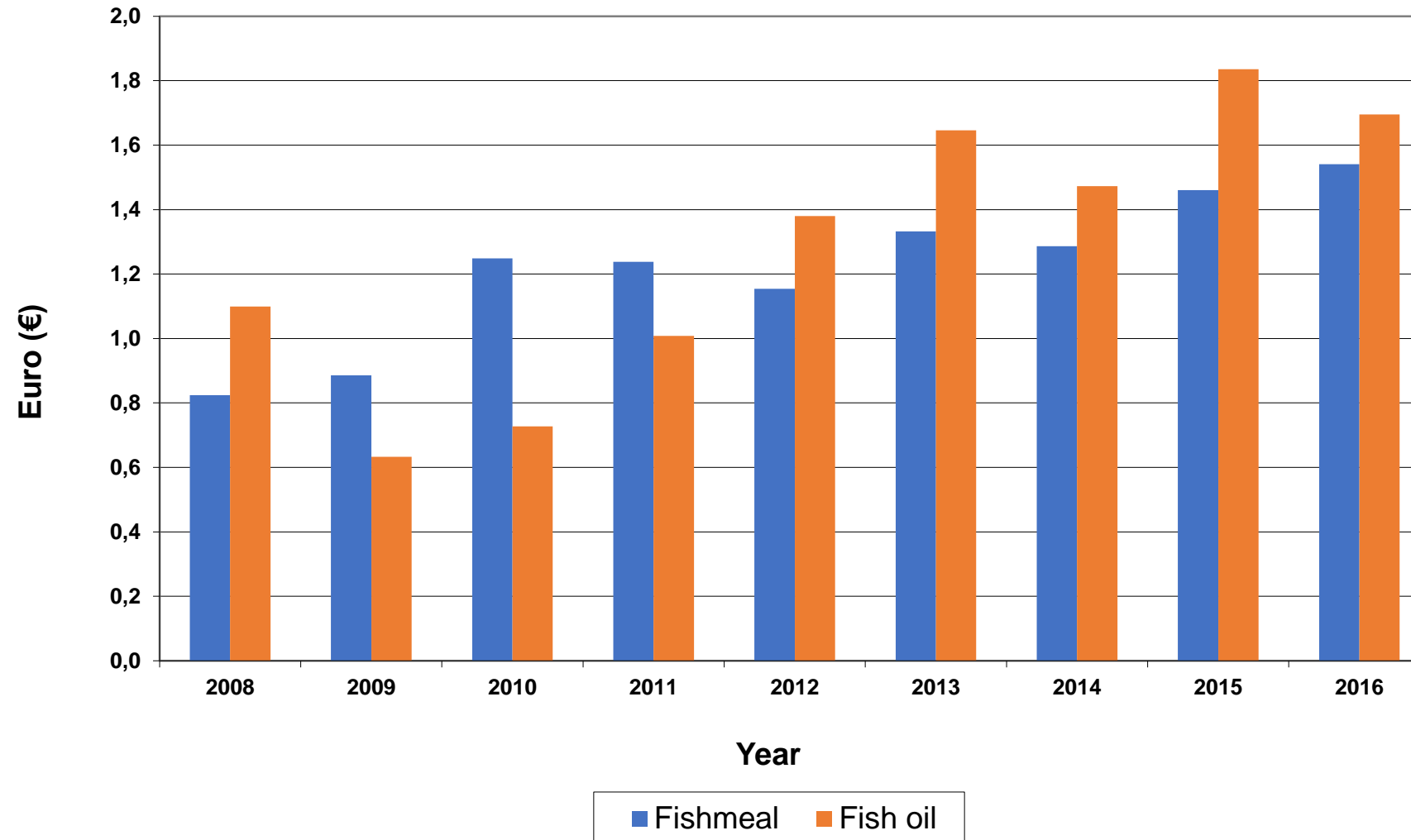


# Global market for fishmeal and fish oil



# Export - Denmark

Average export value €/kg of Danish fishmeal and fish oil 2008 - 2016

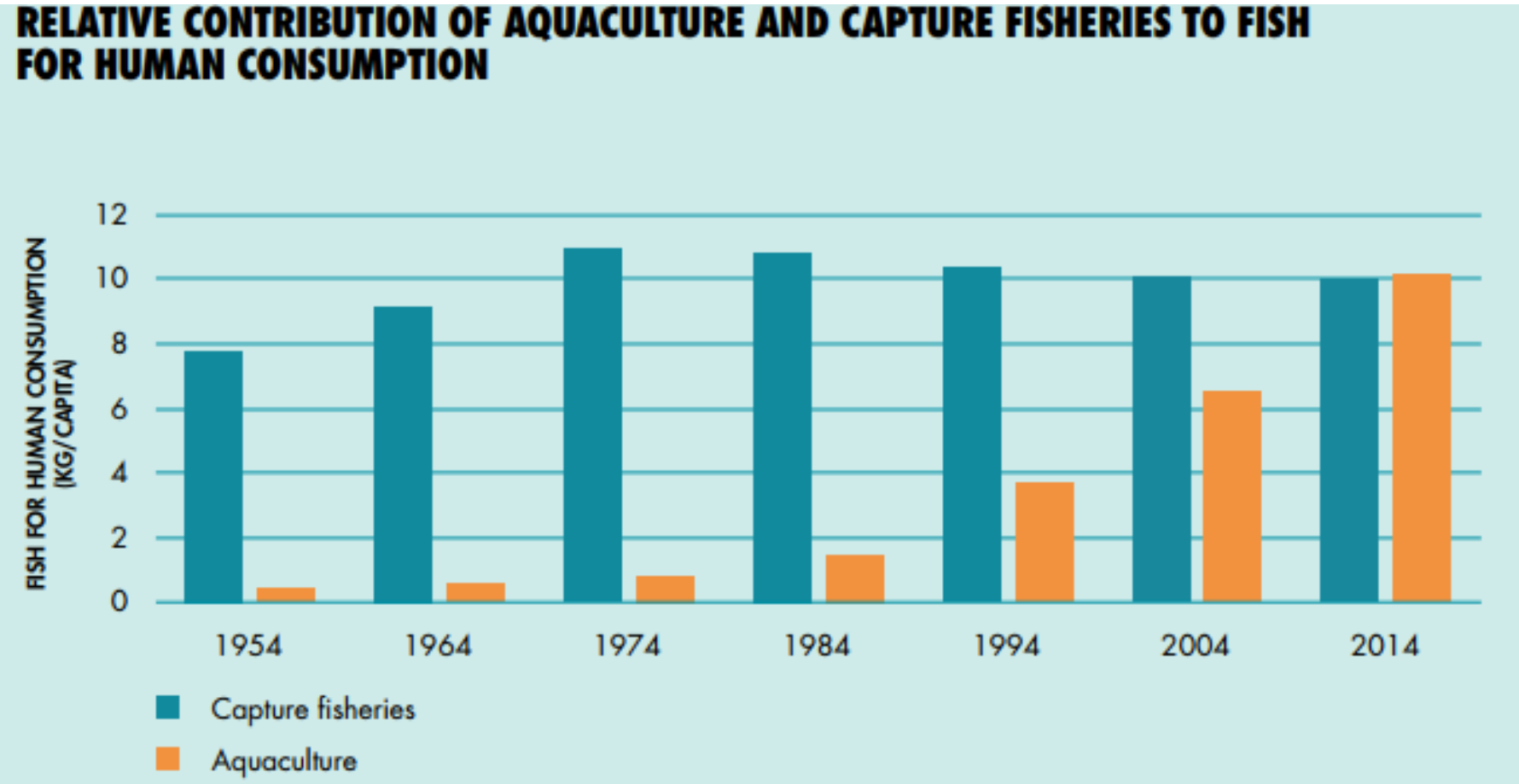


# Market potential

9,7 billion people in the world in 2050

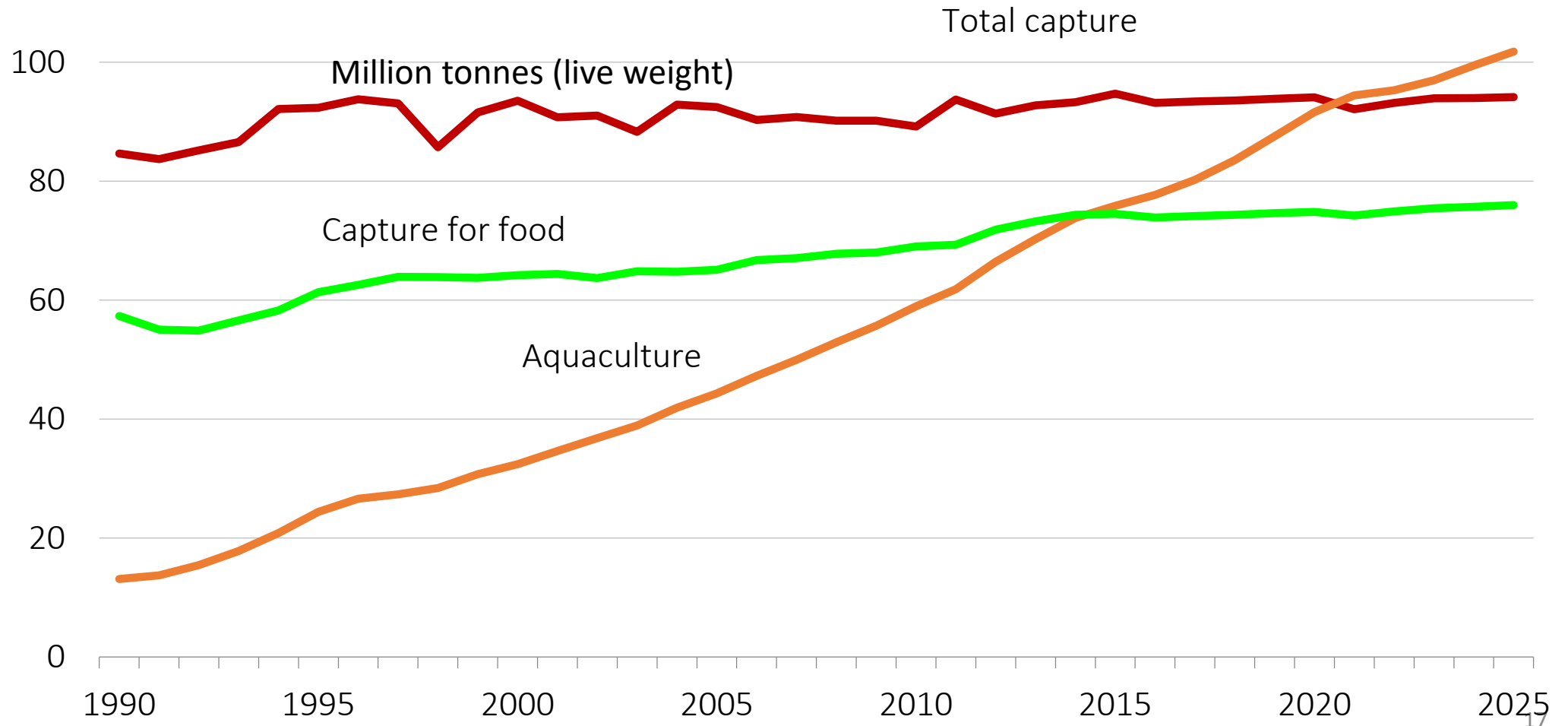
Growing demand for food

Aquaculture is the fastest-growing animal protein production sector in the world.

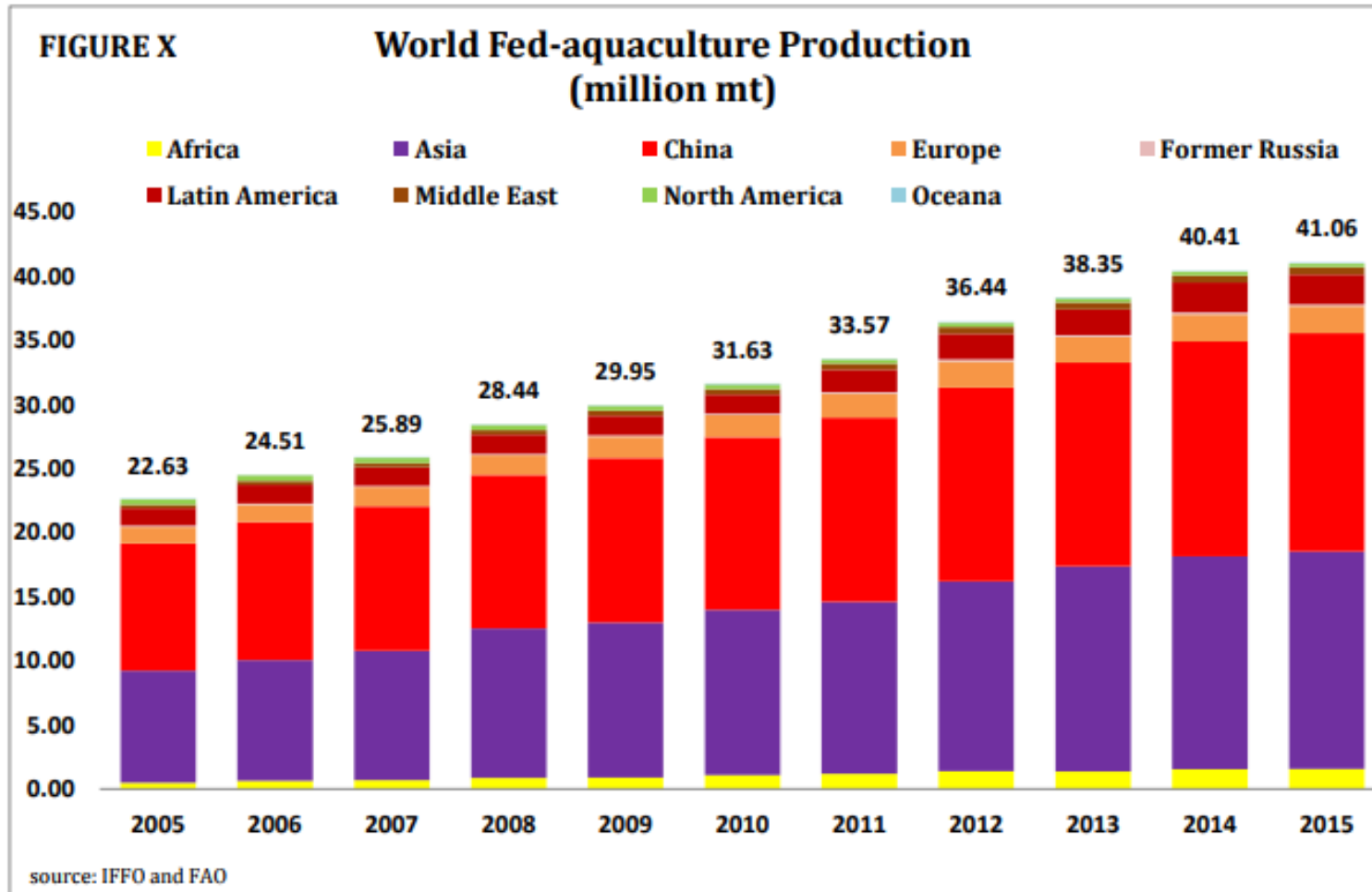




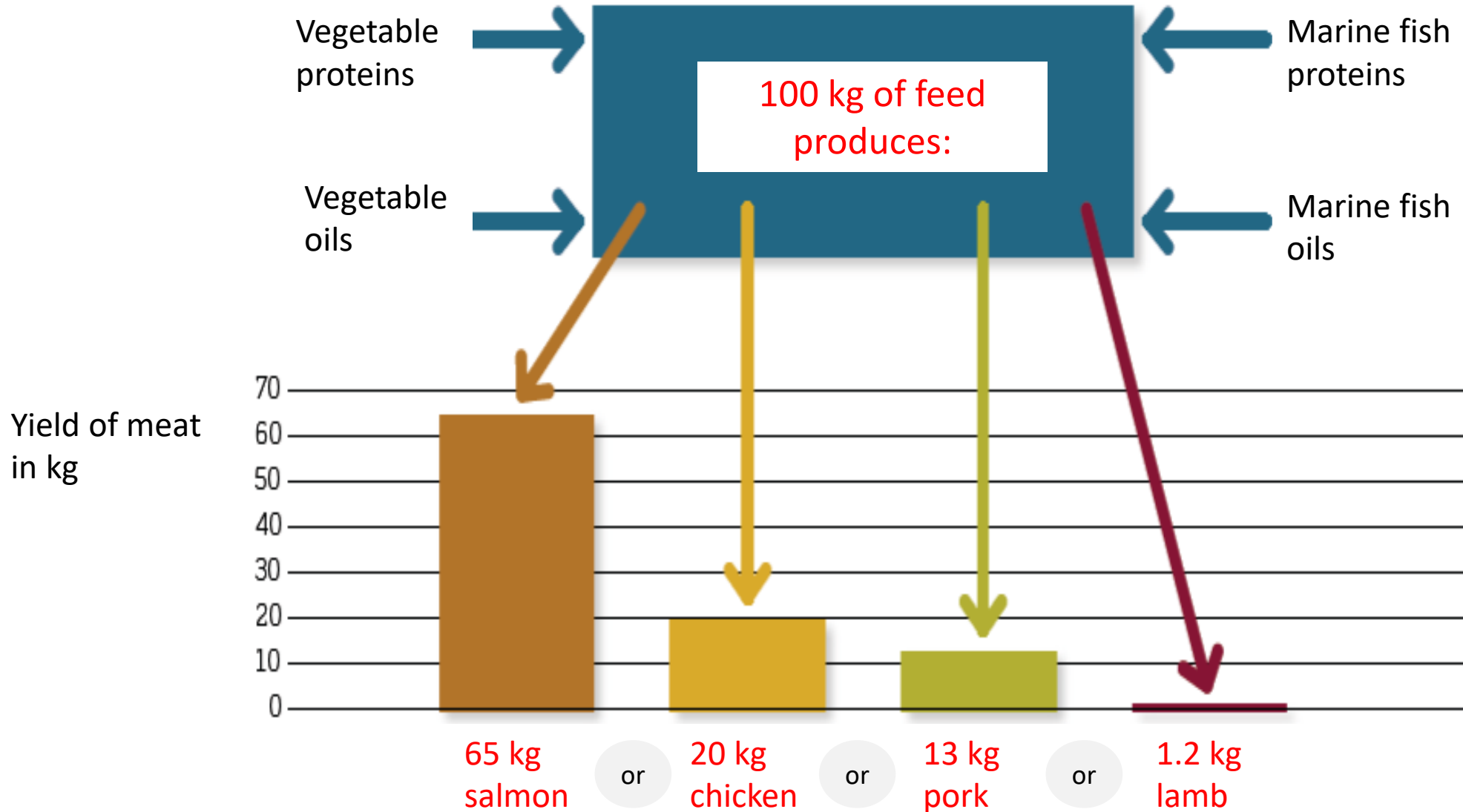
# The role of aquaculture in global fish production



# Aquaculture – efficient food production

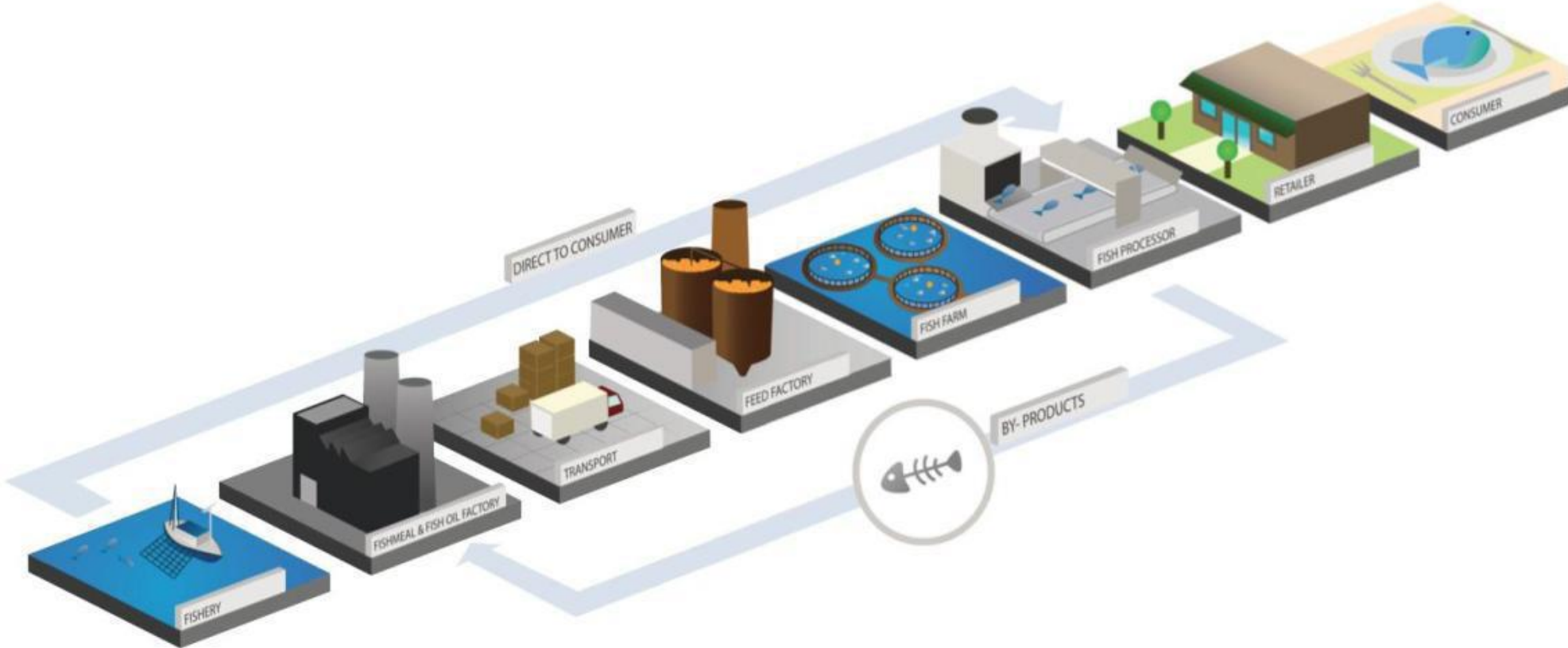


Using 100 kg of feed for fish production in aquaculture is an efficient and optimal use of both plant and marine proteins and oils.



The yield is measured as edible meat

# The link between fishery and feed production



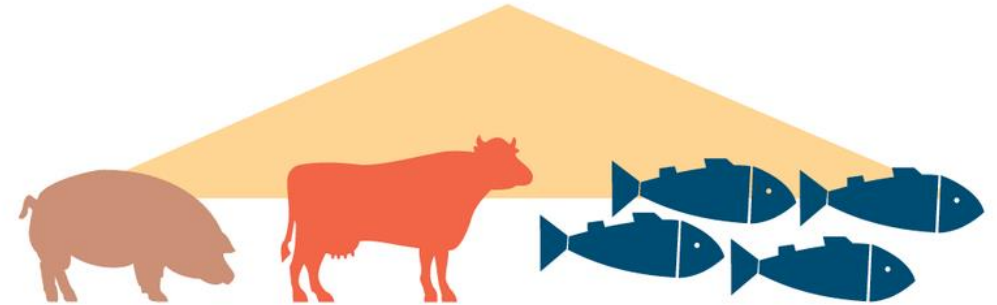
# Market potential

## Strategic ingredients

Providing all essential amino acids, minerals, phospholipids and fatty acids (DHA and EPA) to aquaculture feed

Future availability of marine ingredients is essential for an increase in aquaculture

## STRATEGIC FEED INGREDIENTS



Fishmeal and fish oil is, without comparison, the most valuable ingredients in diets for aquaculture and many land-farmed animals. The composition of micronutrients, including amino acids, vitamins and minerals support growth and optimal physiological function of animals and farmed fish, making fishmeal and fish oil indispensable 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
- Comparatively high digestibility

# Market potential

## health benefits



## HEALTH BENEFITS

Fishmeal and fish oil provide a balanced amount of all essential amino acids, minerals, phospholipids and omega-3 fatty acids (DHA and EPA) and helps bring those into the human food chain.

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



# Conclusions: The European fishmeal and fishoil industry

- Sustaining employment in remote areas
- + 1.5 billion EUR, + 3000 direct employments (but poor statistics)
- A modern and efficient fleet coupled with efficient fisheries management models,
- Green/Blue contributions by using waste and bringing to good use what is not directly consumed by humans
- Contributes to an efficient food production system (aquaculture)



# Fish meal and oil: the future

## Challenges:

- Secure stable raw material supply
- More R&D, more knowledge of products – “X-factor of fishmeal”
- Fish oil for direct human consumption
- Alternatives to fishmeal and fish oil – a threat?
- Brexit





For potential consumers of small pelagics, it increasingly comes down to what you want to eat



...or have it converted to this one

or maybe consume no fish at all





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Thank you for the word