



# Towards sustainable production of fish oil

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**Omega-3 Summit**

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## IFFO

International Fishmeal and Fish Oil Organisation is the global trade association representing fishmeal and fish oil producers and related trades.

Represents two thirds of world production and 80% of trade in fishmeal and fish oil worldwide with producers in Europe, South America, Africa, USA, China and India.



# Mass Balance of fishmeal & fish oil

Seasonal surplus of less desirable fish and inedible by-products are collected.

They are efficiently converted into concentrated stable products which can be economically shipped to where they are required



Thousand tonnes.



# Important nutrition providers

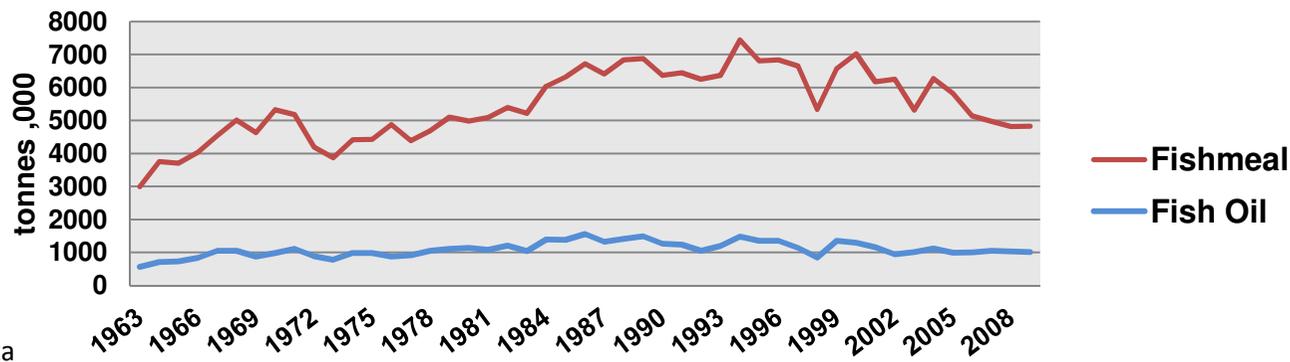
Fishmeal is an excellent high protein feed ingredient used at least at some stage in almost all intensive aquaculture systems

Fish oil is the best source of the omega-3 fatty acids EPA & DHA

However, despite the growth of aquaculture and growing demand from human nutrition the global production of both fishmeal & fish oil has remained fairly static



thousand tonnes



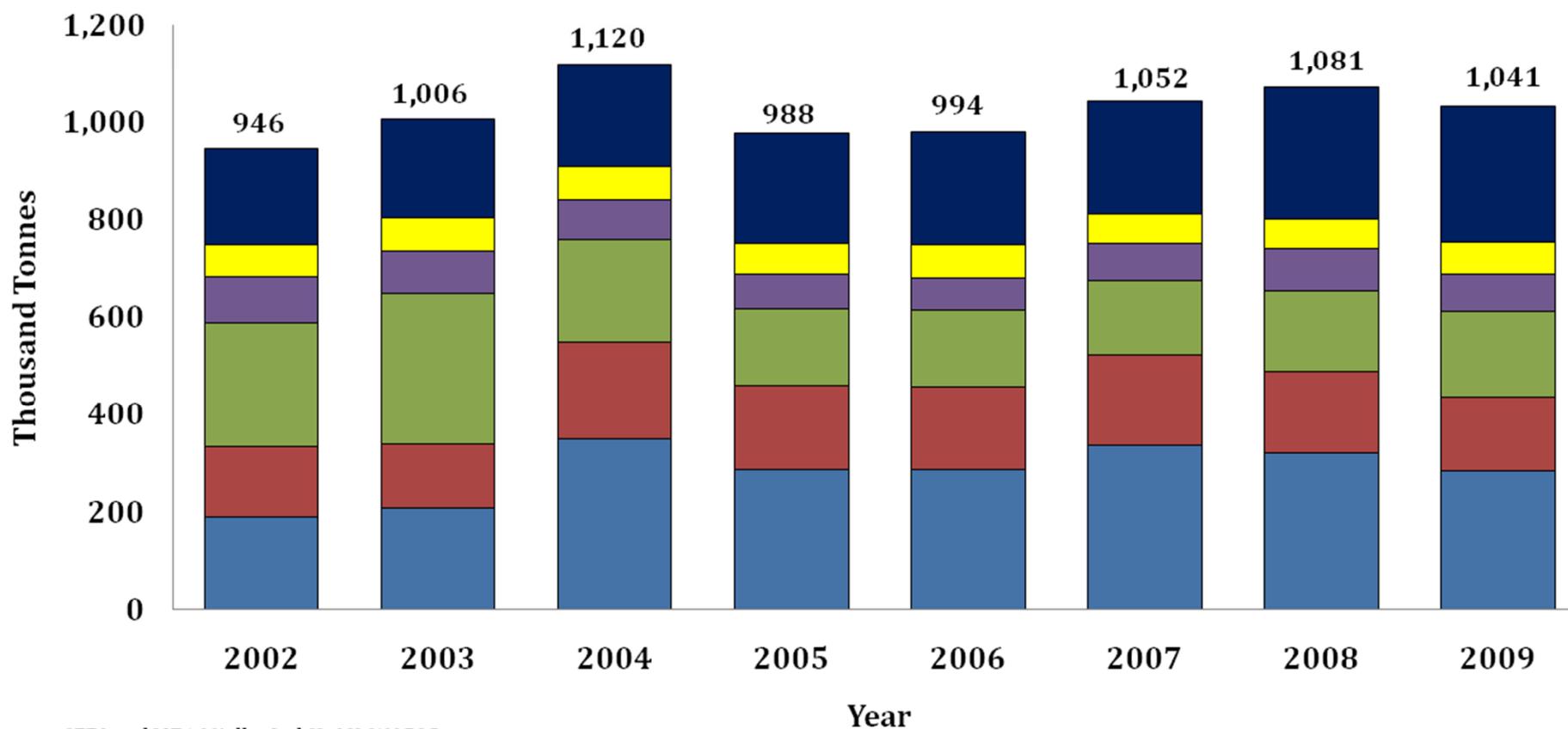
IFFO data



## WORLD FISH BODY OIL PRODUCTION

### MAJOR PRODUCERS

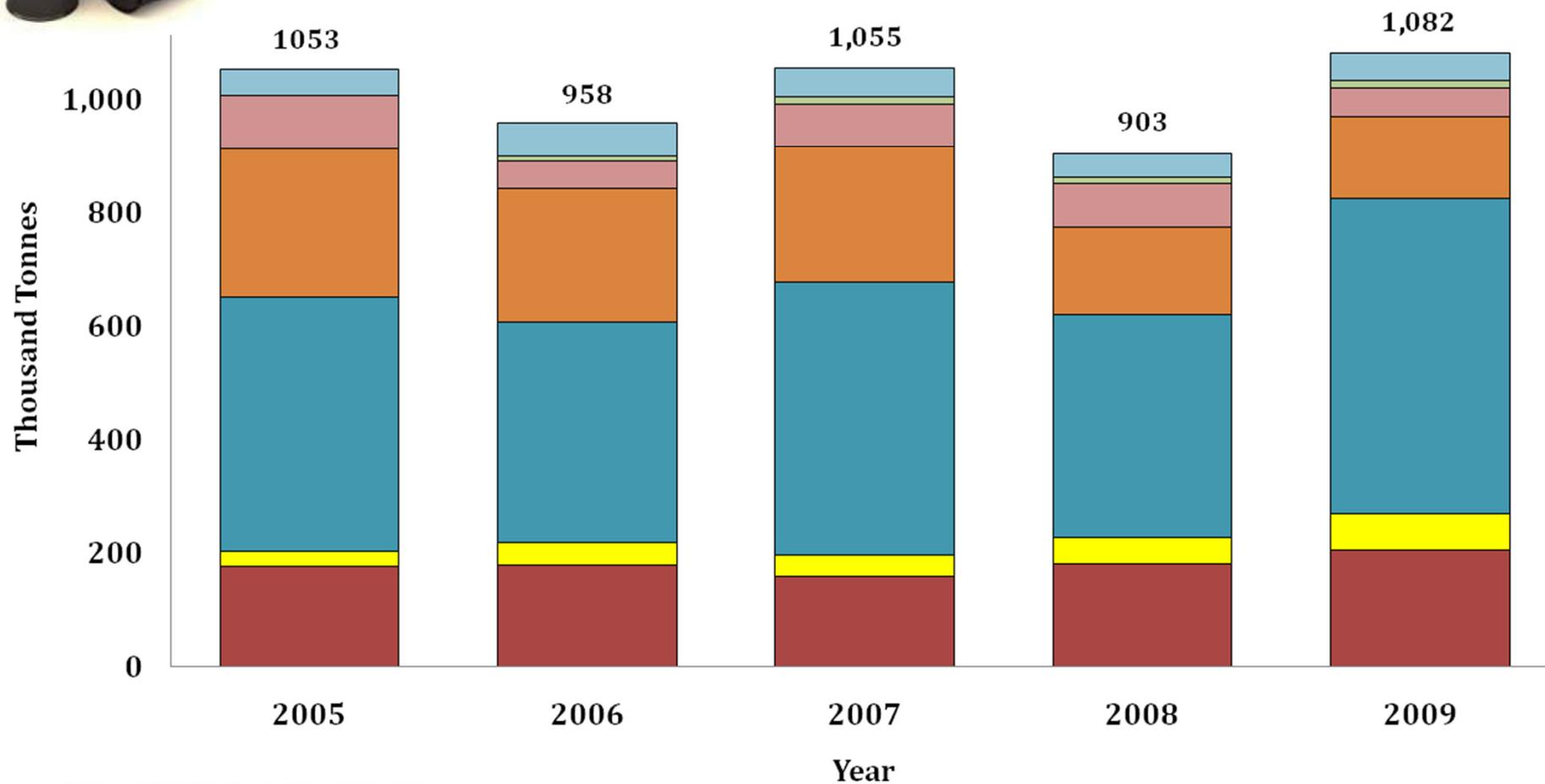
■ Peru ■ Chile ■ Scandinavia\* ■ U.S.A. ■ Japan ■ Other



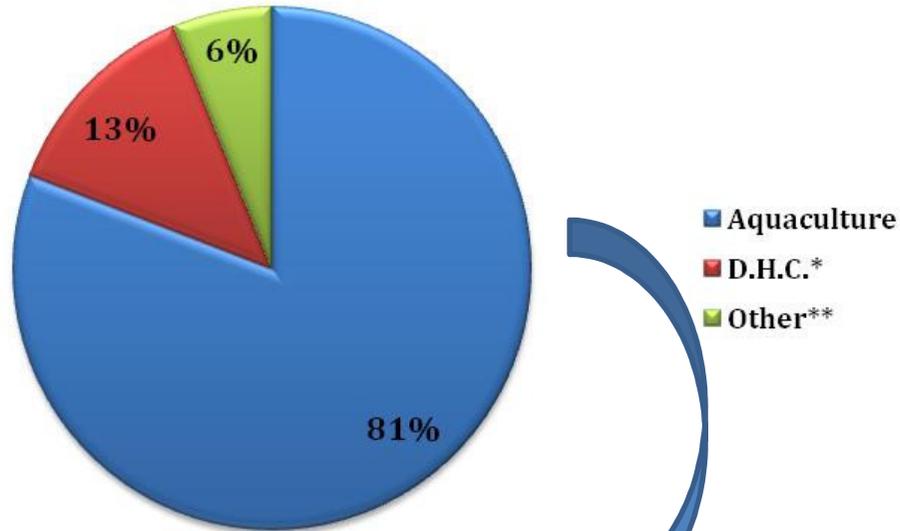


## WORLD FISH OIL APPARENT CONSUMPTION

■ Asia (Exc. China) 
 ■ China 
 ■ Europe 
 ■ Latin America 
 ■ North America 
 ■ Oceania 
 ■ Other

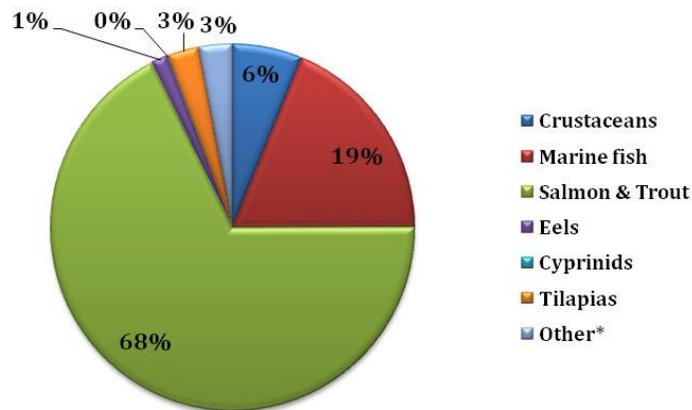


### PERCENTAGE OF FISH OIL USAGE PER MARKET 2009



We estimate that in 2009 81% of global fish oil production went to aquaculture and that 68% of that went to salmonids.

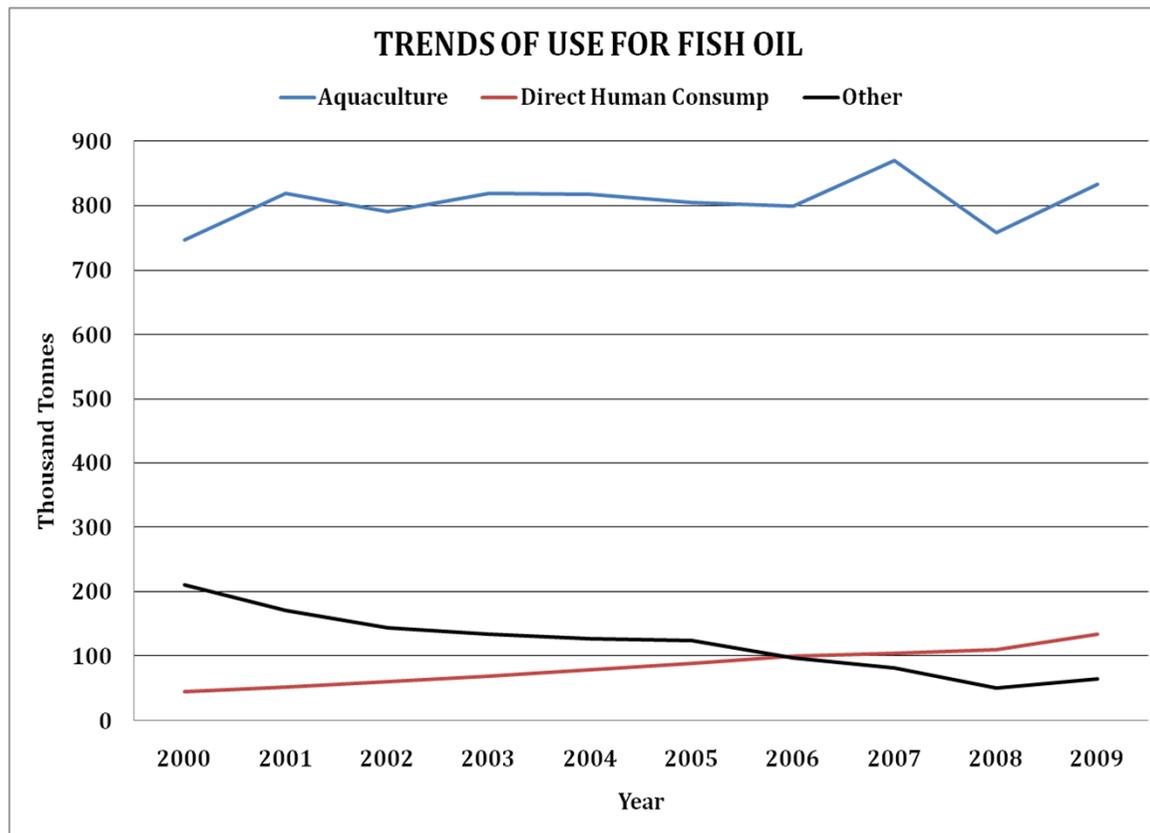
### PERCENTAGE OF FISH OIL USAGE IN AQUACULTURE 2009



\*Direct Human Consumption,  
\*\* Other usage including fat hydrogenation & industrial use

Source IFFO

# Changing markets for fish oil



IFFO data

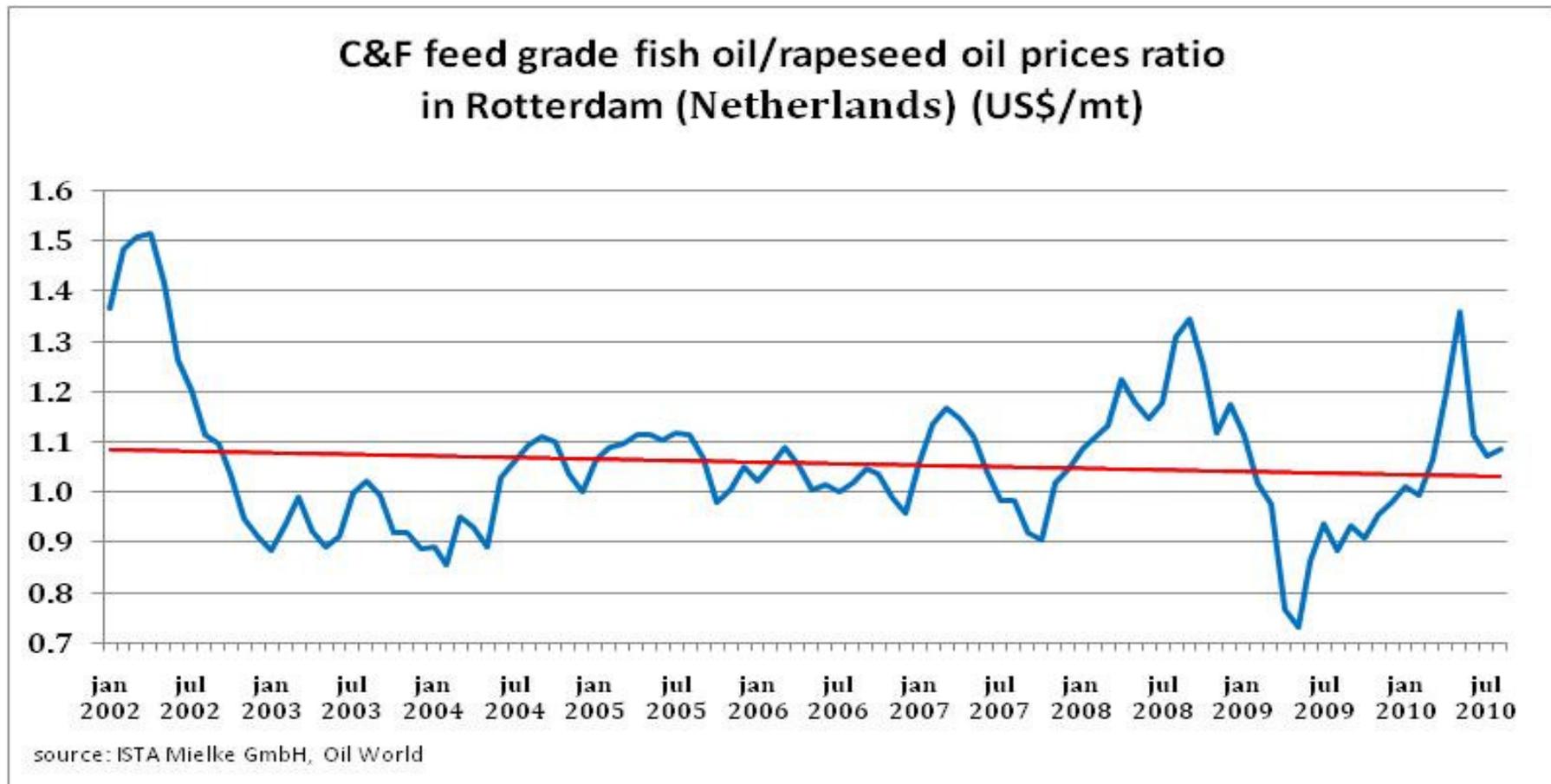
Salmon farming growing by reducing fish oil inclusion level and increasing plant oil inclusion e.g. canola

Industrial uses including for hydrogenation decreasing

Use as a direct provider of EPA & DHA increasing

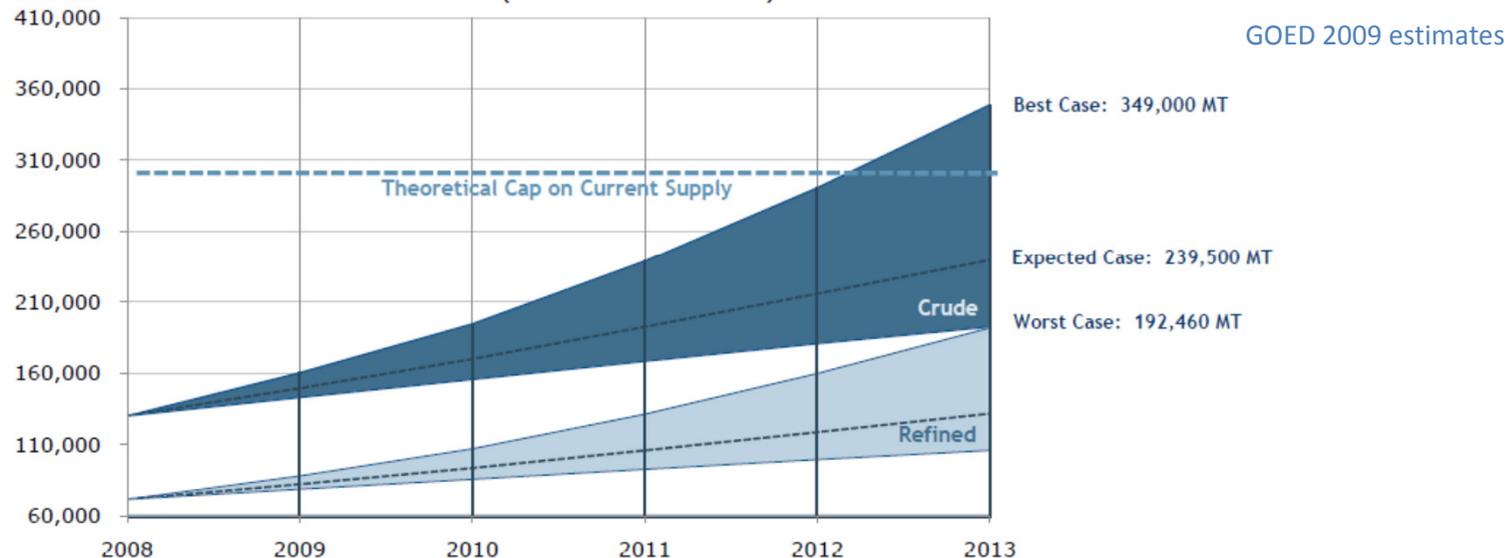


The easy replacement of fish oil by rapeseed oil in salmon diets has meant the price ratio of feed grade oil has slightly trended down although current ratio is around 1.2-1.3:1 (same for soy oil)



However, the growth of fish oil for direct human consumption is causing considerable concern in the salmon farming world

Projected Global Marine Omega-3 Market Volume  
(Metric Tons of Oils)



## Fish oil: huge shortage looming

 Geir Bjørn Nilsen

Published - January 21, 2011 - 06:08 GMT

Growing sales of omega-3 pills are on the brink of turning into a huge problem for aquaculture -- in 2020, fish oil supply for the industry will be short by 744,000 metric tons, says a new report.



## The result of the growing replacement of fish oil in salmon diets:

Salmon farming has been a tremendous deliverer of omega-3



The nutrient requirements of the salmon can be met by low dietary levels of fish oil (5%)



The final level of EPA/DHA in the fillets will be decreased

Salmon have been sold on their health giving properties and this will be increasingly challenged



## Professor: salmon becoming a floating vegetable

The Norwegian Directorate of Public Health recently listed which fish species provide the most long chain omega-3's which was as follows:

1. Summer herring, 4.5 gram/100 gram
2. Autumn mackerel 3.8 gram/100 gram
3. Farmed salmon 2.7 gram/100 gram
4. Wild salmon 1.9 gram/100 gram
5. Winter mackerel 1.0 gram /100 gram

However, the farmed salmon in the study by Professor Arnesen had levels of omega-3 varying from 0.7g/100g up to 2.1g/100g with an average of 1.3



## When purchasing fish oil the value chain has concerns over two critical areas



The need to demonstrate that any whole fish processed come from well managed fisheries and that there are no illegal, unreported or unregulated (IUU) fish included. Also that any fisheries by-products do not come from endangered or IUU fish



The need to demonstrate that production in the factory ensures pure and safe products. Also that the supply-chain then maintains the purity and identity of the products with a chain of custody demonstrating traceability



## Recent paper in FAO report (Wijkström 2010) stated:

*“Where feed fisheries are not managed sustainably, aquaculture today constitutes an important threat to world fish stocks because of aquaculture’s reliance on fishmeal and thus on reduction fisheries”*

- Most fisheries have been poorly managed at some stage
- Significant improvements have been made in the last ten years
- For example Peru now has some of the best managed fisheries in the world:

**Table 6. Average performance scores for the 53 countries.**

Country	Average score	Country	Average score
Peru	6.42	Sweden	3.82
Namibia	5.10	Pakistan	3.81
USA	5.10	Indonesia	3.80
Germany	4.90	Japan	3.78
Poland	4.82	Australia	3.78
Norway	4.71	Spain	3.77
Senegal	4.70	Taiwan	3.75
Chile	4.67	Thailand	3.74
South Africa	4.64	Viet Nam	3.70

**RANKING MARITIME COUNTRIES  
BY THE SUSTAINABILITY OF THEIR  
FISHERIES Mondoux *et al* (2008)**



## Responsible management of fisheries

World's largest feed fishery - the Peruvian anchovy – now well managed

Europe re-building its feed fisheries

Still concern over feed fisheries in Asia – mostly due to a lack of fisheries information

It is becoming increasingly important to be able to demonstrate responsible fisheries management of the raw material



# Reassuring the value-chain about fisheries management

FAO Code of  
Conduct for  
Responsible  
Fisheries is the  
only  
internationally  
recognised  
measure of good  
management

MSC standard  
certifies fisheries  
that are managed  
according to FAO  
Code

Currently small  
volumes of  
fishmeal & fish  
oil available from  
MSC approved  
fisheries – more  
under  
assessment

There is also FOS  
which is based on  
FAO Code of  
Conduct



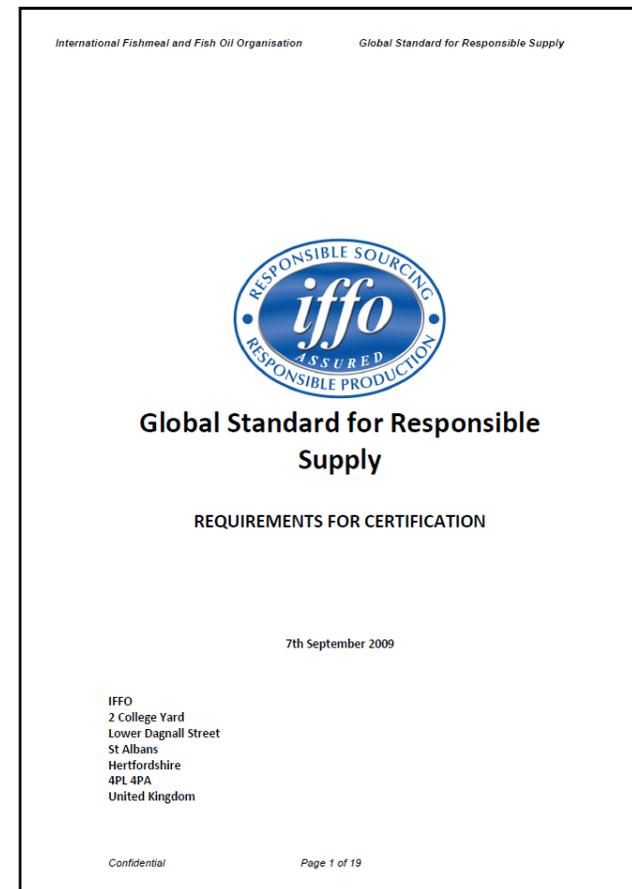
# IFFO recently launched its Global Standard for Responsible Supply (IFFO RS)

RS is a B-to-B initiative following the ISO-65 Standard

Standard developed by multi-stakeholder committee including producers, traders, feed companies, fish farmers, major retailers, standard setters & NGOs

A 3<sup>rd</sup> party Certification Body was appointed to conduct audits into each application

Currently undergoing ISO 65 Accreditation





To obtain IFFO RS a factory must be able to demonstrate to our Certification Body that it:



Sources its whole-fish raw material from fisheries managed according to the FAO Code of Conduct for Responsible Fisheries (including MSC)

Avoids the use of Illegal, Unreported & Unregulated fish IUU

Does not source fisheries by-products from IUCN red listed fisheries or IUU fish

Manufactures under a recognised quality control scheme to ensure product safety & purity (FEMAS, GRP+ or other HACCP+ scheme)



## IFFO-RS progress to date - 1

Launched  
to  
members  
in October  
2009

First factory  
was  
awarded  
certification  
in February  
2010

Country	Fishery	N° of companies	N° of certified factories	N° of factories pending certification
Peru	Peruvian anchovy ( <i>Engraulis ringens</i> )	8	44	8
USA	Gulf menhaden ( <i>Brevoortia patronus</i> )	2	2	0
Iceland	Blue whiting ( <i>Micromesistius poutassou</i> )	5	6	5
	Capelin - ( <i>Mallotus villosus</i> )			
	Summer spawning herring			
	Atlanto spring spawning herring ( <i>Clupea harengus</i> )			
Denmark	Norway pout ( <i>Trisopterus esmarkii</i> )	1	2	0
	Sandeel ( <i>Ammodytes marinus</i> )			



## IFFO RS progress to date - 2

This represents  
over 20% of  
world production  
of fish oil

There are more  
factories &  
fisheries in  
assessment

Factories utilising  
fisheries by-  
products can now  
apply for approval  
under a new  
extension to the RS  
standard

The IFFO RS  
standard is under  
continuous  
development e.g.  
Chain-of-Custody



## CRODA

World leaders in Speciality Chemicals

Currently developing a Chain of Custody standard for both fishmeal & fish oil

Working with Croda UK to pilot the C of C oil standard from fish oil plant to capsule





## MSC & IFFO RS are different things

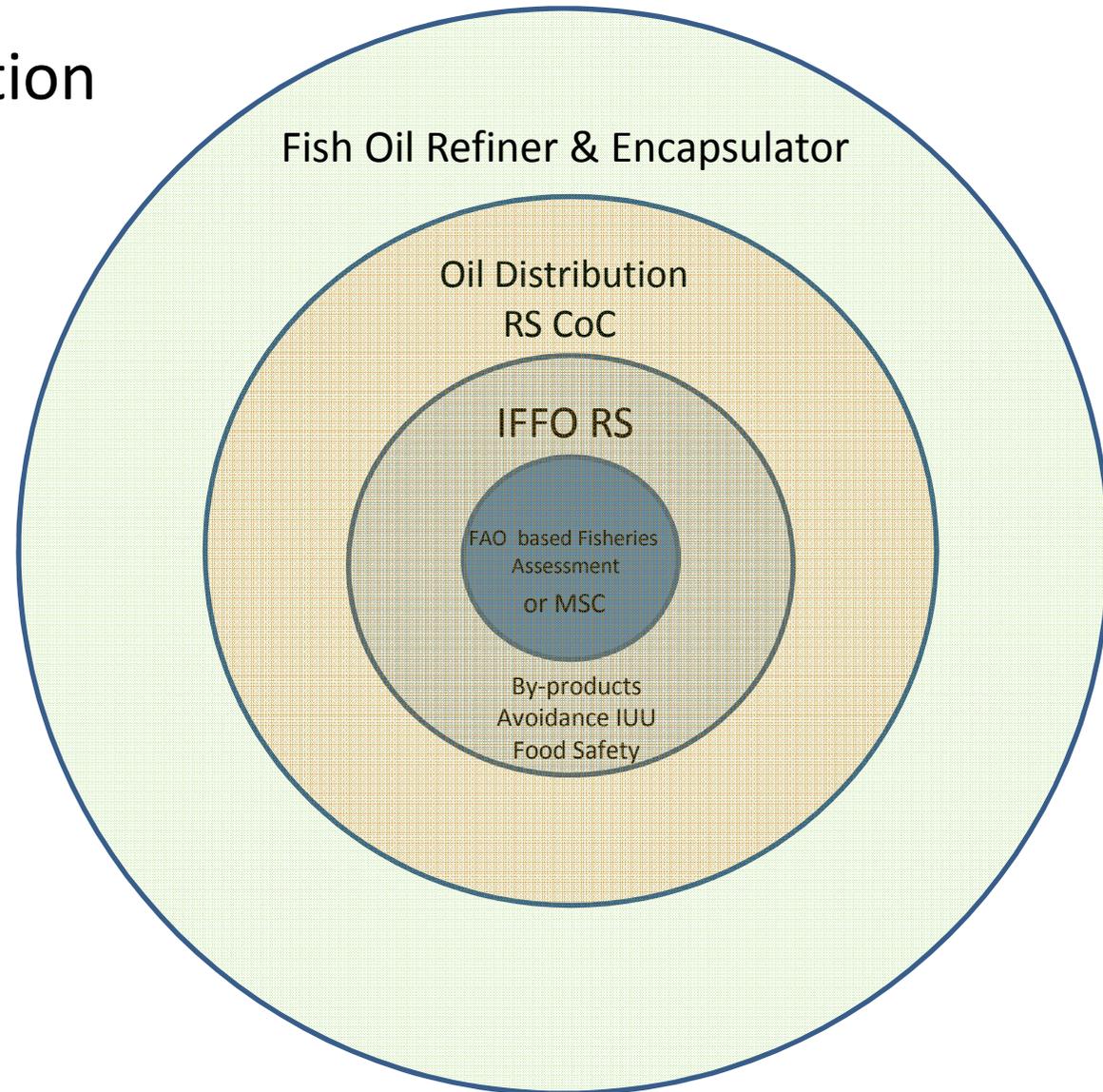
IFFO RS is a B-to-B certification programme that enables a compliant factory to demonstrate that it responsibly sources its raw material from well managed fisheries and responsibly converts that into pure and safe products.



The MSC's fishery certification program and seafood eco-label recognise and reward sustainable fishing.



# Responsible production of fish oil products



INTERNATIONAL FISHMEAL AND FISH OIL ORGANISATION

## Global Standard for Responsible Supply (IFFO RS)



Certification programme  
**for fishmeal and fish oil**

Supplies of fishmeal and fish oil from factories which have been independently audited and certified as complying with the IFFO RS, first entered the market in 2010. The IFFO RS programme assures the animal feed, food and nutraceutical value chains that these key ingredients are both responsibly sourced and responsibly produced.



"THE FIRST LINK IN A FULLY CERTIFIED AQUACULTURE SUPPLY CHAIN IS IN PLACE"

[www.iffonet.net](http://www.iffonet.net)  
for more  
information  
including a full  
list of approved  
plants

But is IFFO RS becoming recognised?



#### 4. To support independent standards

We will continue to support the development and widespread adoption of certification standards for responsible fisheries and aquaculture as well as a process for certifying producers who adopt the standards. Examples include:

- The Marine Stewardship Council
- The Aquaculture Stewardship Council the WWF Aquaculture Dialogues
- The International Fishmeal and Fish Oil Organisation Global Standard for Responsible Supply
- GlobalGAP
- The Global Aquaculture Alliance Best Aquaculture Practises
- The International Seafood Sustainability Foundation
- Icelandic Responsible Fisheries

AIPCE-CEP Recommendations

Principles for  
Environmentally  
Responsible Fish Sourcing



AIPCE is the EU Fish Processors and Traders Association.

The companies in AIPCE have sales in excess of 4 billion euros



**AIPCE-CEP**

EU Fish Processors and Traders Association  
Association des Industries du Poisson de l'UE



## Summary of the Aquaculture standards

	GlobalGAP	GAA BAP	WWF ASC
Food Safety	Yes	Yes	No
Environmental	Not much	Yes	Yes
B-to-B or Consumer facing	B-to-B	Both	Eco-label
ISO 65 or ISEAL	ISO	ISO	ISEAL
Recognition of IFFO RS	No need	Yes	Yes qualified

IFFO RS is becoming recognised as a useful tool to demonstrate responsible production in Aquaculture



## IFFO-RS Improvers Programme under discussion

Concern that factories in some countries will find the RS Standard difficult to achieve

No wish to dilute the current IFFO-RS standard

Desire to bring about fishery and factory improvement where required

May require government commitment in some cases

May require access to capital funds for investment in factory & fisheries management

Multi-lateral discussions are taking place with different parties including FAO, NGO's etc



## Conclusions

Volumes of fish oil in the future are likely to remain static or decrease

Marine ingredients are essential for the production of efficient & healthy aquaculture products as well as EPA & DHA products for direct human consumption

Increasing volumes are going for direct human consumption causing concern in the salmon farming industry

The market will increasingly demand responsible sourcing of marine ingredients with independent certification eg IFFO RS which now covers over 20% world supply