

Dr Brett Glencross  
IFFO TECHNICAL DIRECTOR



# Protein Sustainability Workshop

Sorrento, Grand President Hotel – 5<sup>th</sup> June 2022

# IFFO: A Global Trade Organisation

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- International trade organisation founded in 1959 to represent the fishmeal and fish oil industry worldwide
- ~55% of global production and
- ~75% of sector traded value within IFFO membership
- 3 offices in London, Beijing and Lima
- <https://www.iffocom.com/>



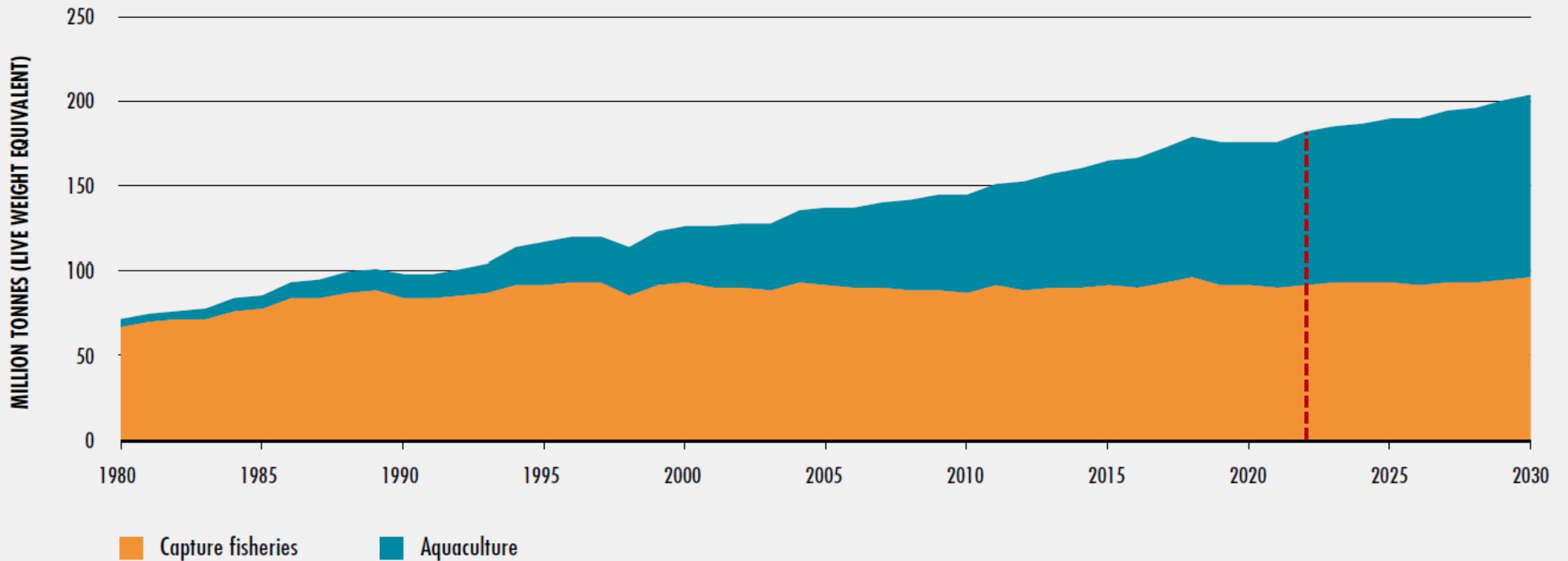
# Today's Line-up



Time	Who	What
0920	Brett Glencross	Welcome
0930	Richard Newton	How to Assess Ingredient Sustainability
1000	Carlos Mera	Global Protein Supplies
1030	Dan Lee	The Role of Certification Systems
1100	Coffee Break	
1130	Delbert Gatlin	Plant Proteins
1145	Luisa Valente	Animal Proteins (Avian / Insect)
1200	Johan Schrama	Novel Proteins (Algae/SCP/Yeast)
1215	Brett Glencross	Marine Proteins
1230	Sachi Kaushik	Workshop Discussion (All Speakers)
1330	LUNCH	

# Future Growth in Aquaculture

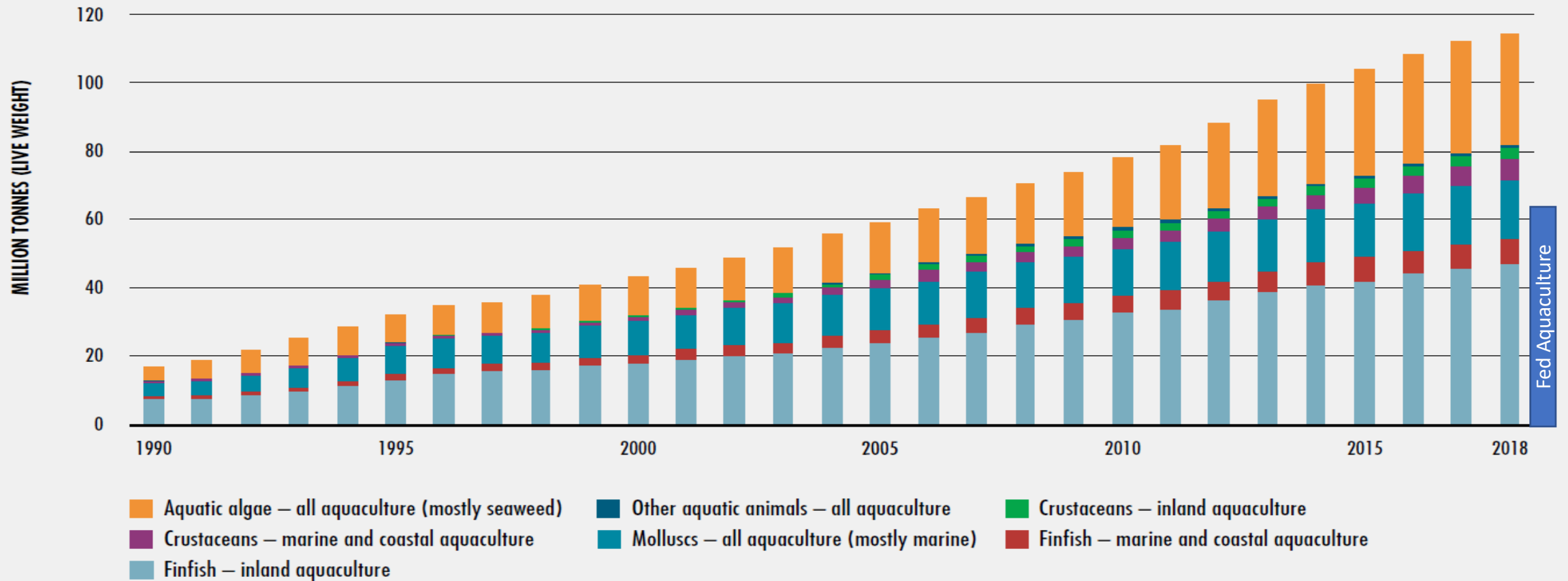
WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION, 1980–2030



SOURCE: FAO SOFIA-2020

# Feeding the Future Growth in Aquaculture

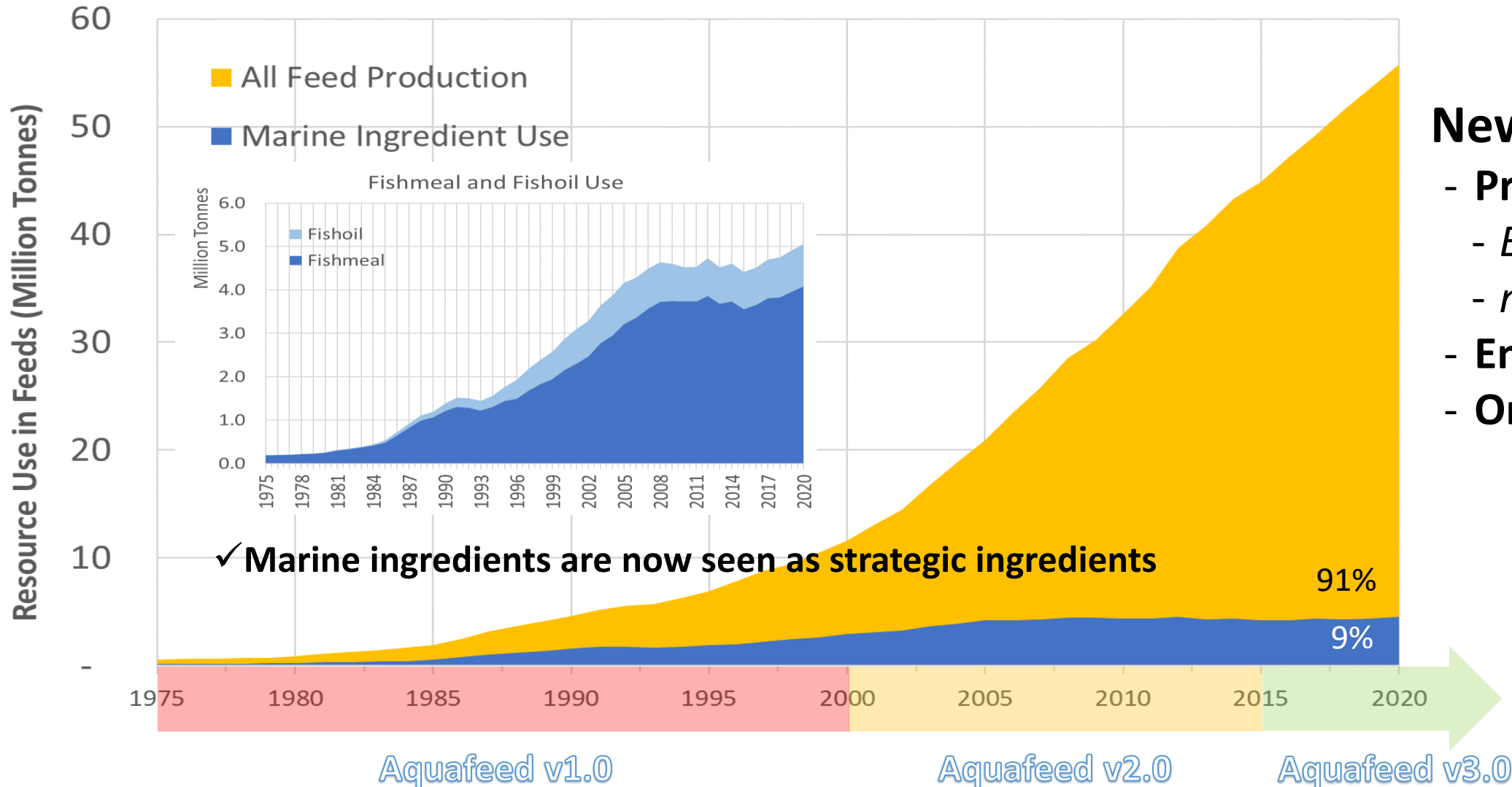
## WORLD AQUACULTURE PRODUCTION OF AQUATIC ANIMALS AND ALGAE, 1990–2018



SOURCE: FAO SOFIA-2020



# The Future WILL Need Additional Ingredients



## New Sources

- Protein
- EAA
- nEAA
- Energy
- Omega-3

# Changing Ingredient Base = Changing Issues

■ Vitamins/Minerals/Additives

■ Novel Oils

■ Novel Proteins

■ Land Animal Oils

■ Land Animal Proteins

■ Carbohydrates

■ Plant Oils

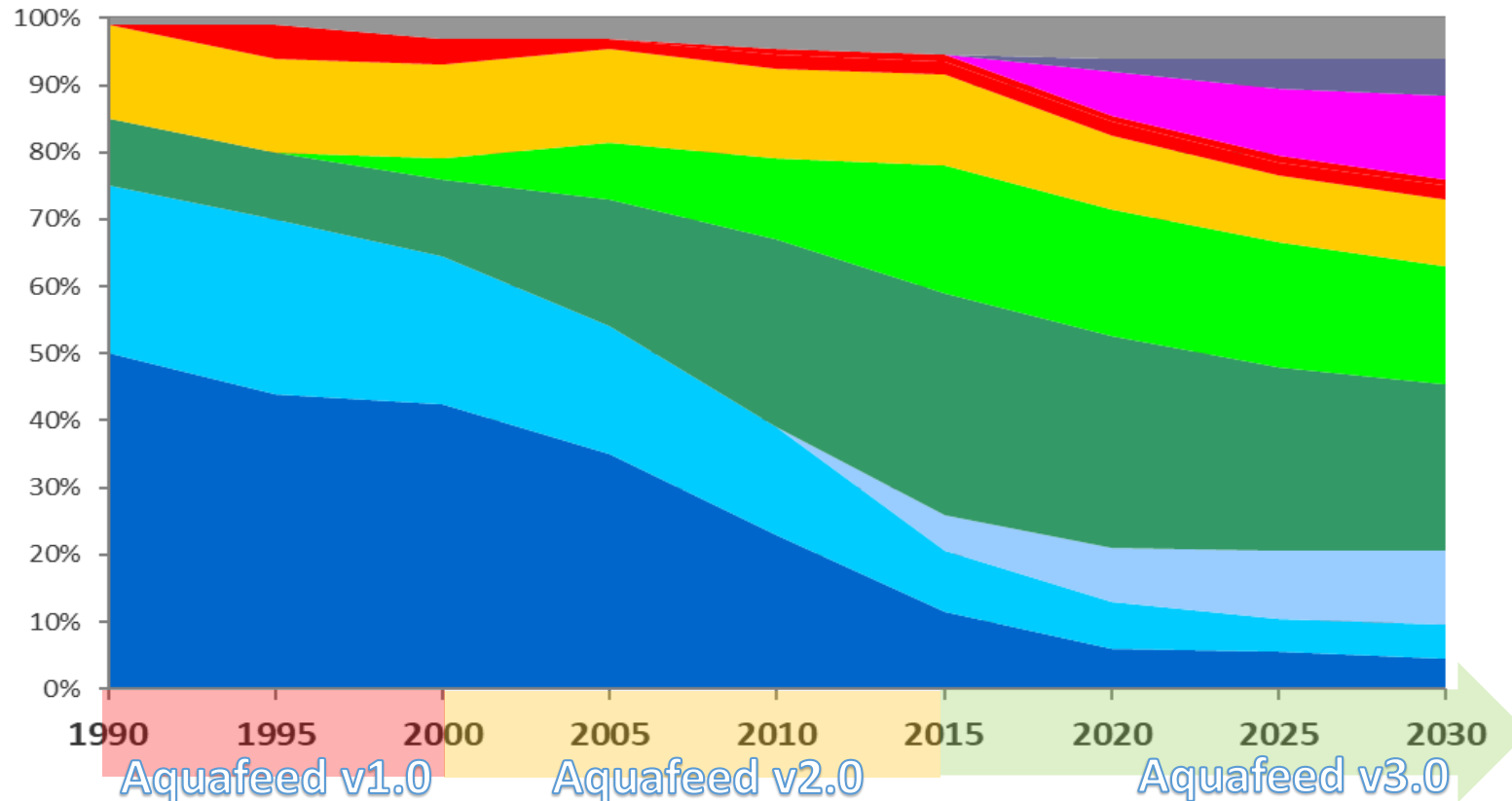
■ Plant Proteins

■ Marine By-Products

■ Fishoil

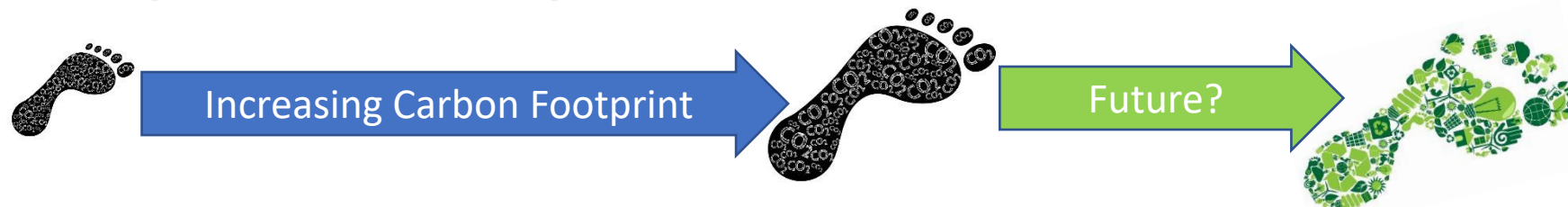
■ Fishmeal

## Raw Material Use by Salmon Feed Sector

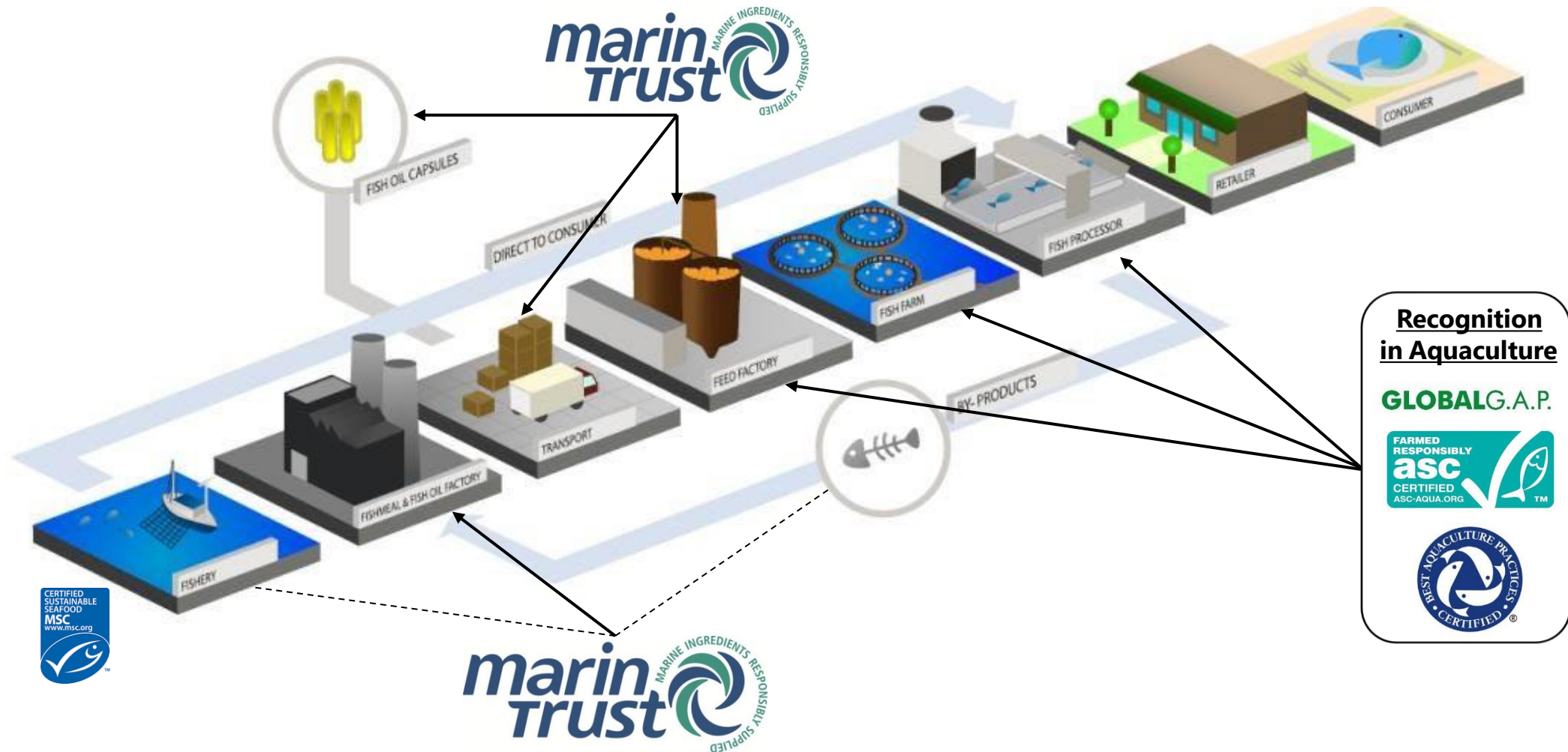


## Increasing Expectations

- Nutritious
- Enhanced Qualities
- Safe
- Low Cost
- Responsible

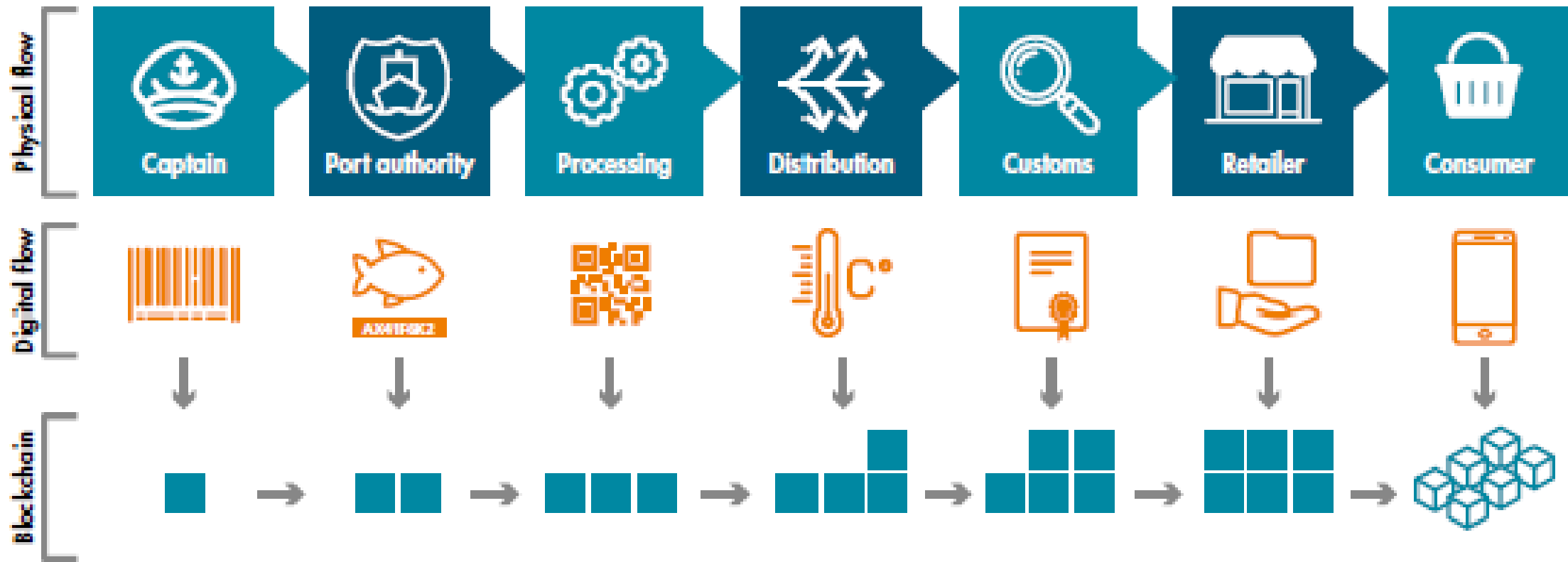


# The Role of Certification Systems





# Growing Role of Traceability



SOURCE: Inspired by a figure describing an agricultural supply chain in Tripoli and Schmidthuber, 2018.



## High-water mark

Global container-freight costs\*  
\$'000 per 40-foot container



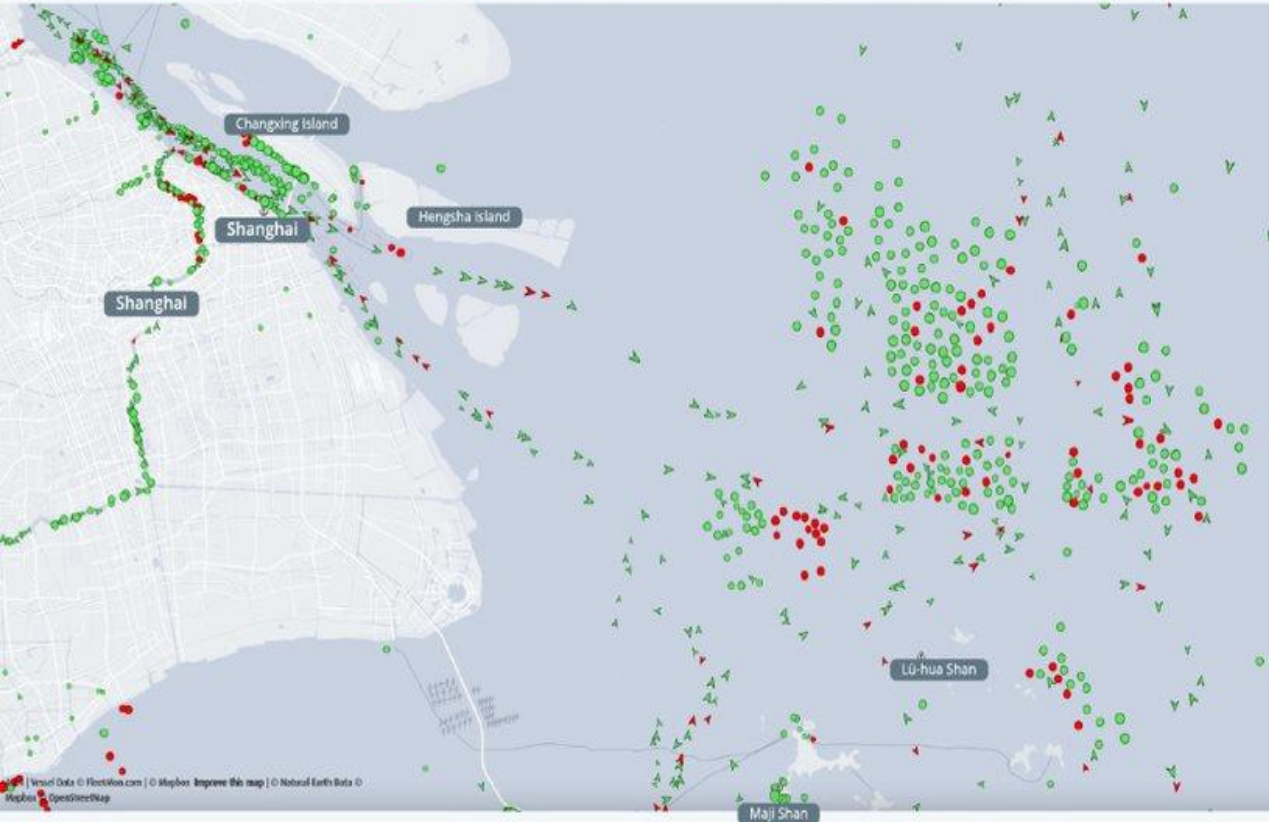
Source: Drewry

\*Based on eight major shipping routes

# Shanghai Ship Jam Spells Supply Chain Trouble

Cargo and tankers in Shanghai port area on April 28, 2022

● Cargo ships ● Tankers ○ Anchored/Moored ▶ On the move



Source: FleetMon



statista

## High-water mark

Global container-freight costs\*  
\$'000 per 40-foot container



Source: Drewry

\*Based on eight major shipping routes

The Economist



# *Living in Volatile Times*



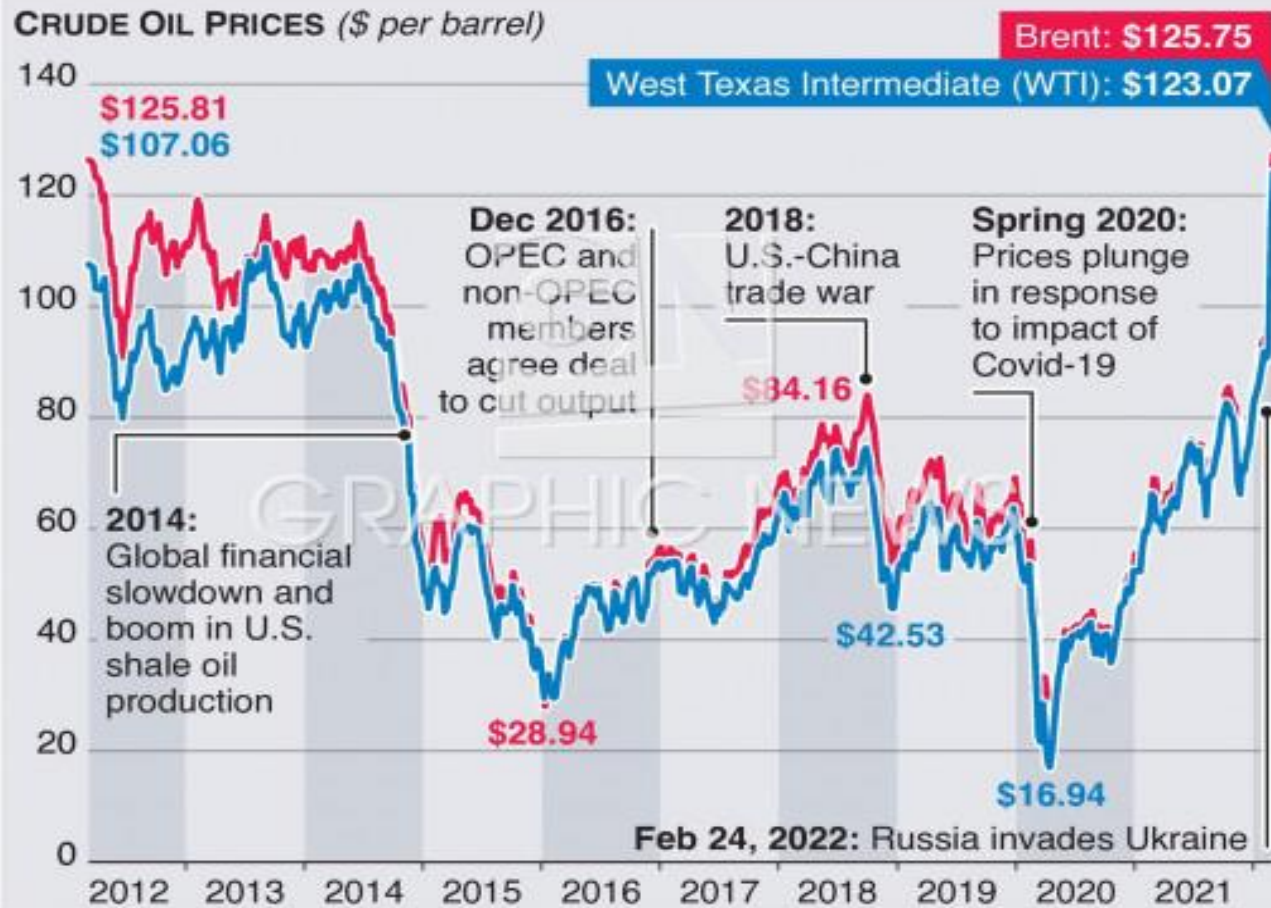
**FULL-FLEDGED WAR? RUSSIA ATTACKS UKRAINE CITIES AND MILITARY BASES**



# Living in Volatile Times

## Oil price soars after Ukraine invasion

Oil prices have surged to over \$125 a barrel as the United States and European allies explore a ban on imports of Russian supplies



Sources: BBC, Reuters, Trading Economics Data correct at 1030GMT, Mar 7 © GRAPHIC NEWS



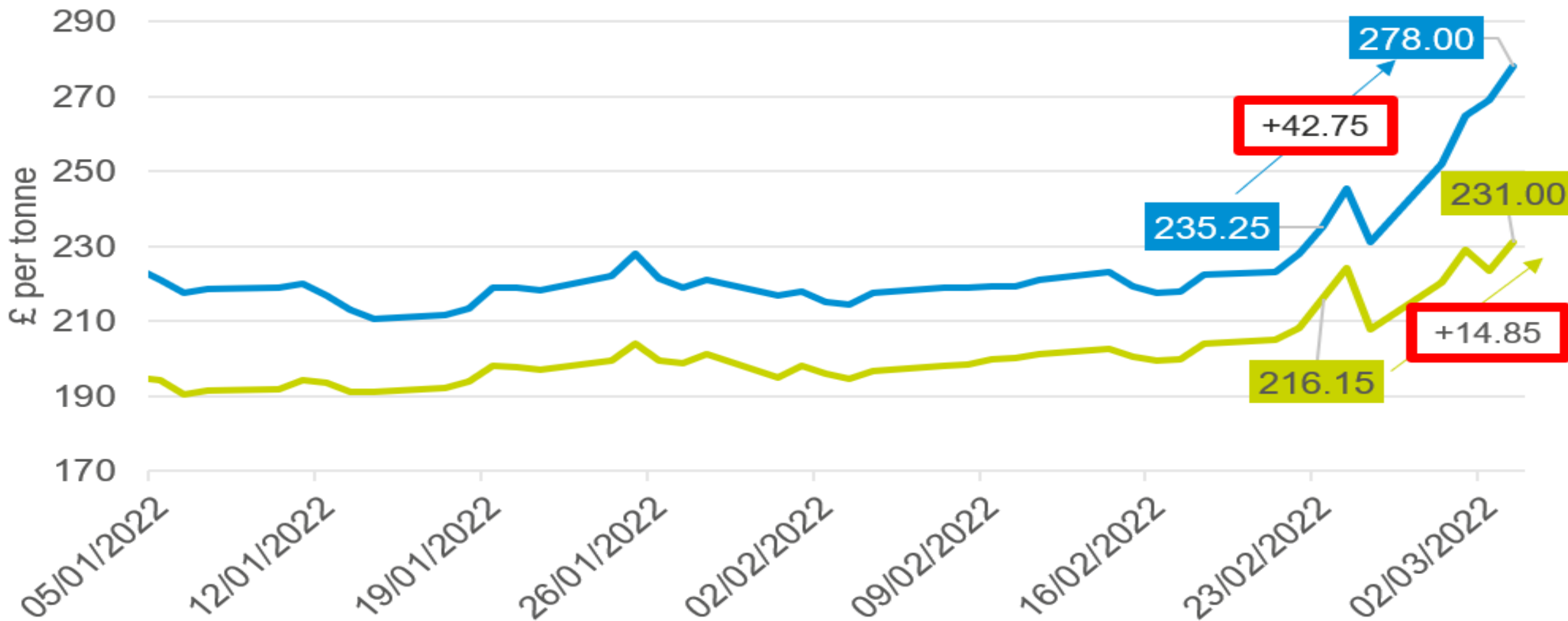
# RUSSIA ATTACKS MILITARY BASES



# UK feed wheat futures continue to rise due to the conflict in Ukraine



— May-22 — Nov-22



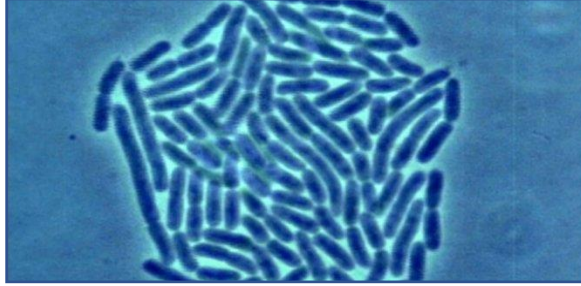
Source: ICE, Refinitiv



GMO Crops



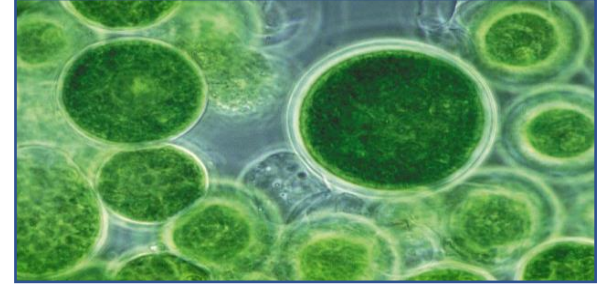
Bacterial



Macroalgae



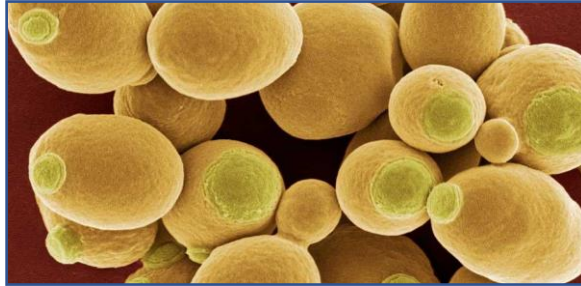
Microalgae



Insects



Yeast



Sunflower



Zooplankton



Poultry ByProducts



Rapeseed



Faba Bean



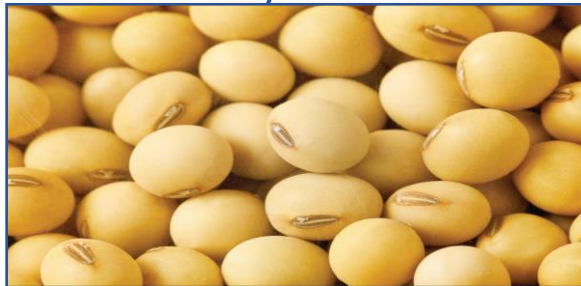
Fish ByProducts



Cereals



Soybean



Herring



Anchoveta





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