June 5 – 7
Laulasmaa
Estonia

Brett Glencross

Technical Director
IFFO

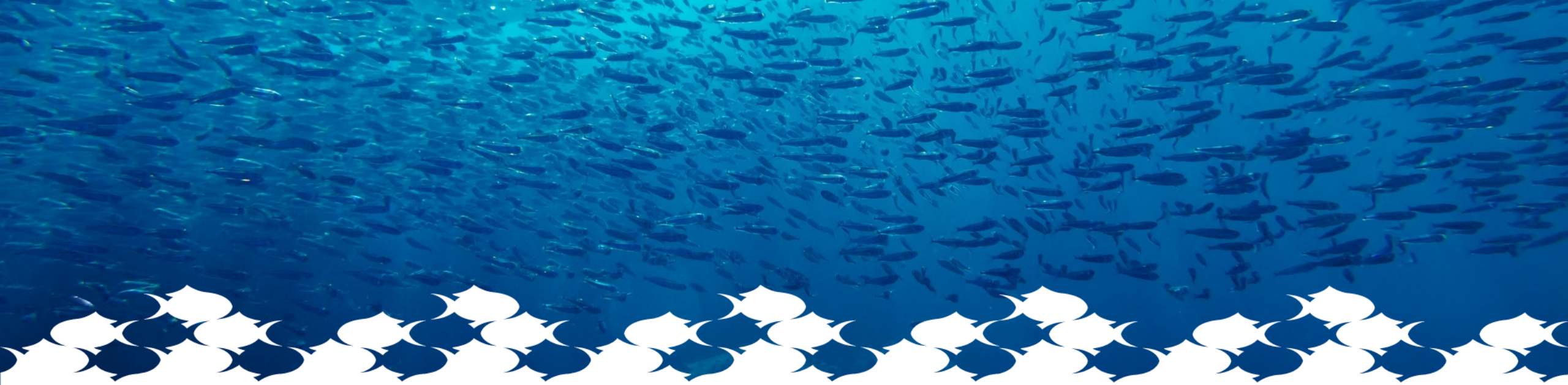
Lowering the carbon footprint of the industry

Thursday 6 June morning

EUROPEAN FISHMEAL AND FISH OIL PRODUCERS

EMFAF PROGRAMME 2021-2027

Co-funded by the European Union



Progress on the IFFO Life Cycle Assessment (GFLI) Project

Brett Glencross, Technical Director, IFFO

European Fishmeal and Fish Oil Producers Meeting – 5th - 7th June 2024

IFFO
THE MARINE INGREDIENTS ORGANISATION

WHO IS IFFO ?

THE MARINE INGREDIENTS ORGANISATION

- International trade (member) organisation founded in 1959 to represent the fishmeal and fish oil industry worldwide.
- IFFO membership accounts for ~60% of global production, and ~80% of sector traded value.
- Provide industry services on regulatory, technical and communication issues.
- Maintain a statistics unit that tracks trade (import/export), market trends and prices.
- Recognised observer/contributor in various UN organisations and EU agencies.

marin Trust — Marine Ingredients Responsibly Supplied

IMO — International Maritime Organization

ISO

CODEX ALIMENTARIUS — International Food Standards — World Health Organization — Food and Agriculture Organization of the United Nations

FEFAC — Experts in Animal Nutrition

FAO — Food and Agriculture Organization of the United Nations

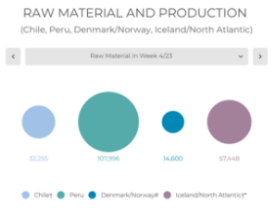
efsa — European Food Safety Authority

Prices >

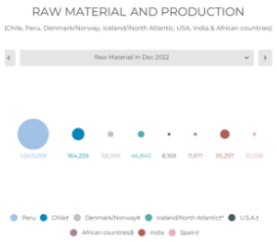
Peruvian Quotas and Catches >

Historical Quotas and Catches >

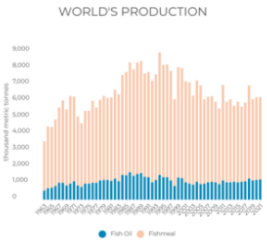
Weekly FishMeal and FishOil production data >



Monthly FishMeal and FishOil production data >



Annual FishMeal and FishOil production data >

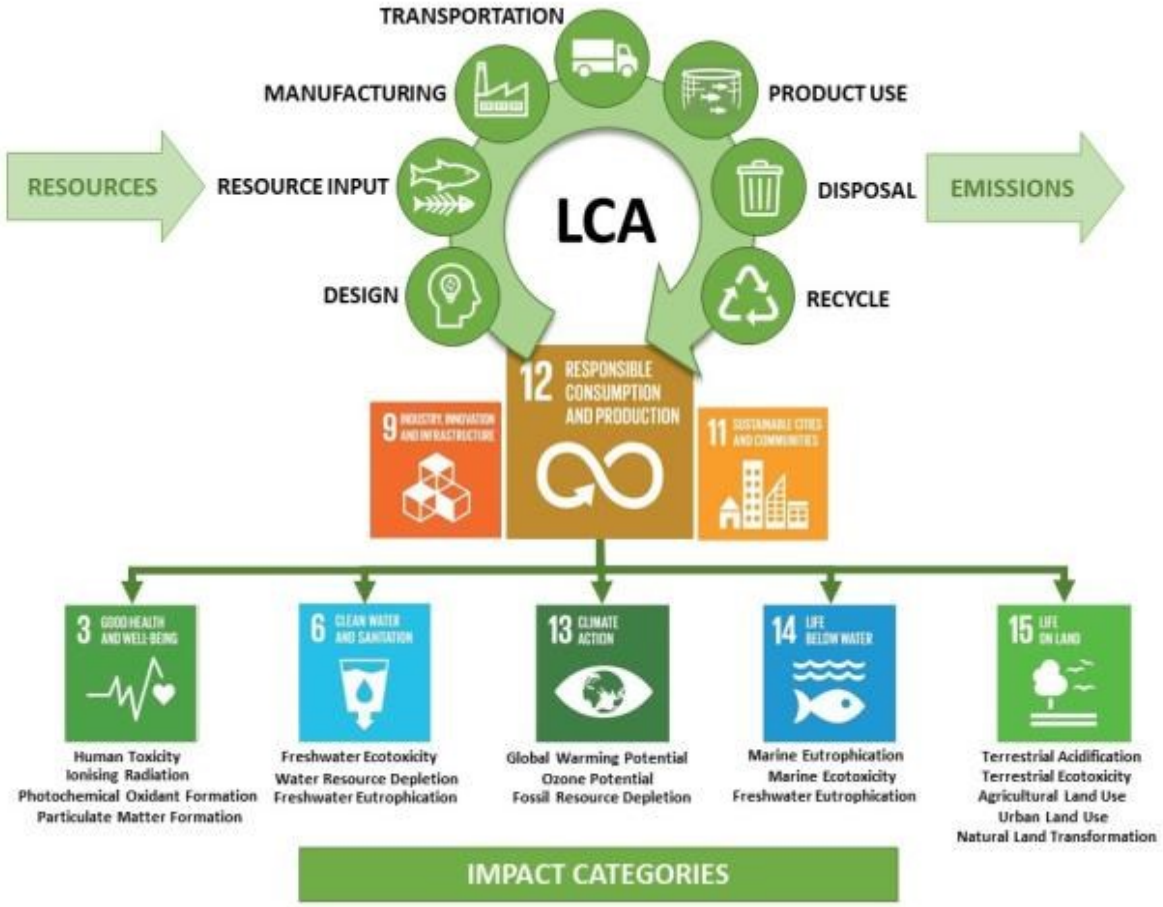


Measuring Sustainability…

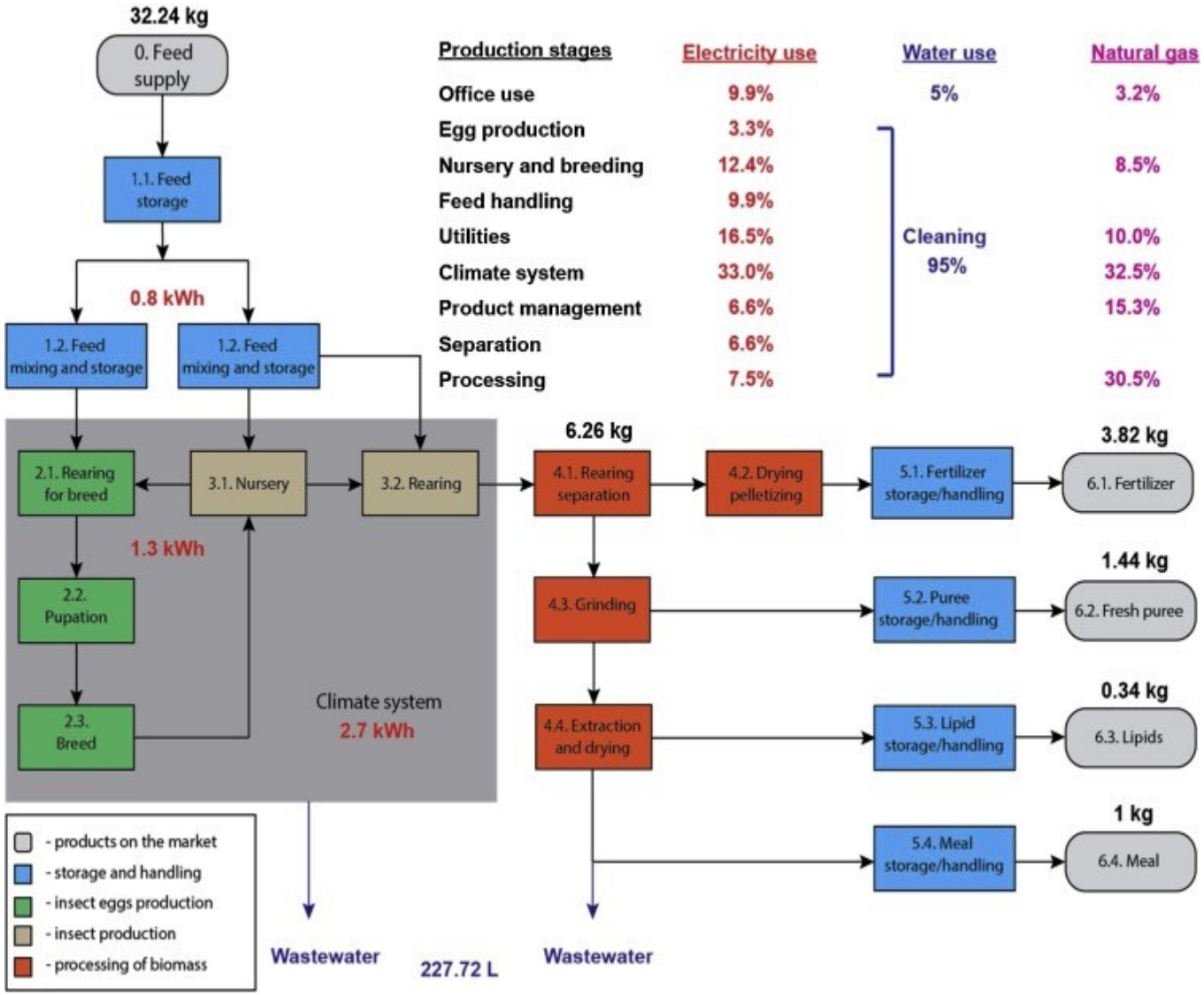
- For something to be managed though, you need an **effective means of measuring it**.

- Life Cycle Assessment (LCA) has emerged as the most **accepted method to objectively assess** the range of environmental effects assignable to products and services.

- It works on the basis of collecting data associated with:
  - Inputs (resource use) / Outputs (emissions)
  - Designated material flows
  - Assigned environmental costs



Using an LCA Approach…



Production stages	Electricity use	Water use	Natural gas
Office use	9.9%	5%	3.2%
Egg production	3.3%		
Nursery and breeding	12.4%		8.5%
Feed handling	9.9%		
Utilities	16.5%	Cleaning 95%	10.0%
Climate system	33.0%		32.5%
Product management	6.6%		15.3%
Separation	6.6%		
Processing	7.5%		30.5%

ELSEVIER

Resources, Conservation and Recycling
Volume 144, May 2019, Pages 285-296

Full length article

Sustainable use of *Hermetia illucens* insect biomass for feed and food: Attributional and consequential life cycle assessment

Sergiy Smetana [a], Eric Schmitt [b], Alexander Mathys [c]

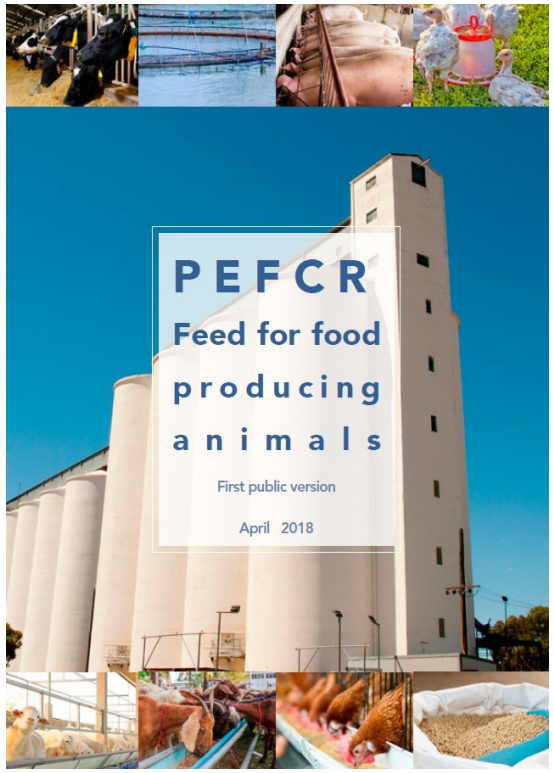
PROTIX

2.4. Assumptions

Despite the application of industrial data for the LCA model construction, the study still required some assumptions related to the attributional and consequential modelling approaches. For the allocation of the impact of insect diet components (by-products of food industry) we used economic allocation similar to the approach of the Agri-footprint database (Blonk Consultants, Gouda, The Netherlands). The prices for the products (and accordingly economic allocation factors) were provided by the industrial producer (Protix, Dongen, The Netherlands)

Making the LCA Process Transparent…

- How you plan and how you collect the data can have **important effects on the interpretation**.
- There have been various attempts to set some standards;
  - ISO initiated this (ISO 14040/14044), but the guidelines are not overly restrictive.
  - EU have taken a lead with the development of the Product Environmental Footprint Categorisation Rules (PEFCR).
- GFLI established to be an independent repository with standardised database and tools and now (v2.0) has close to 1500 ingredients.



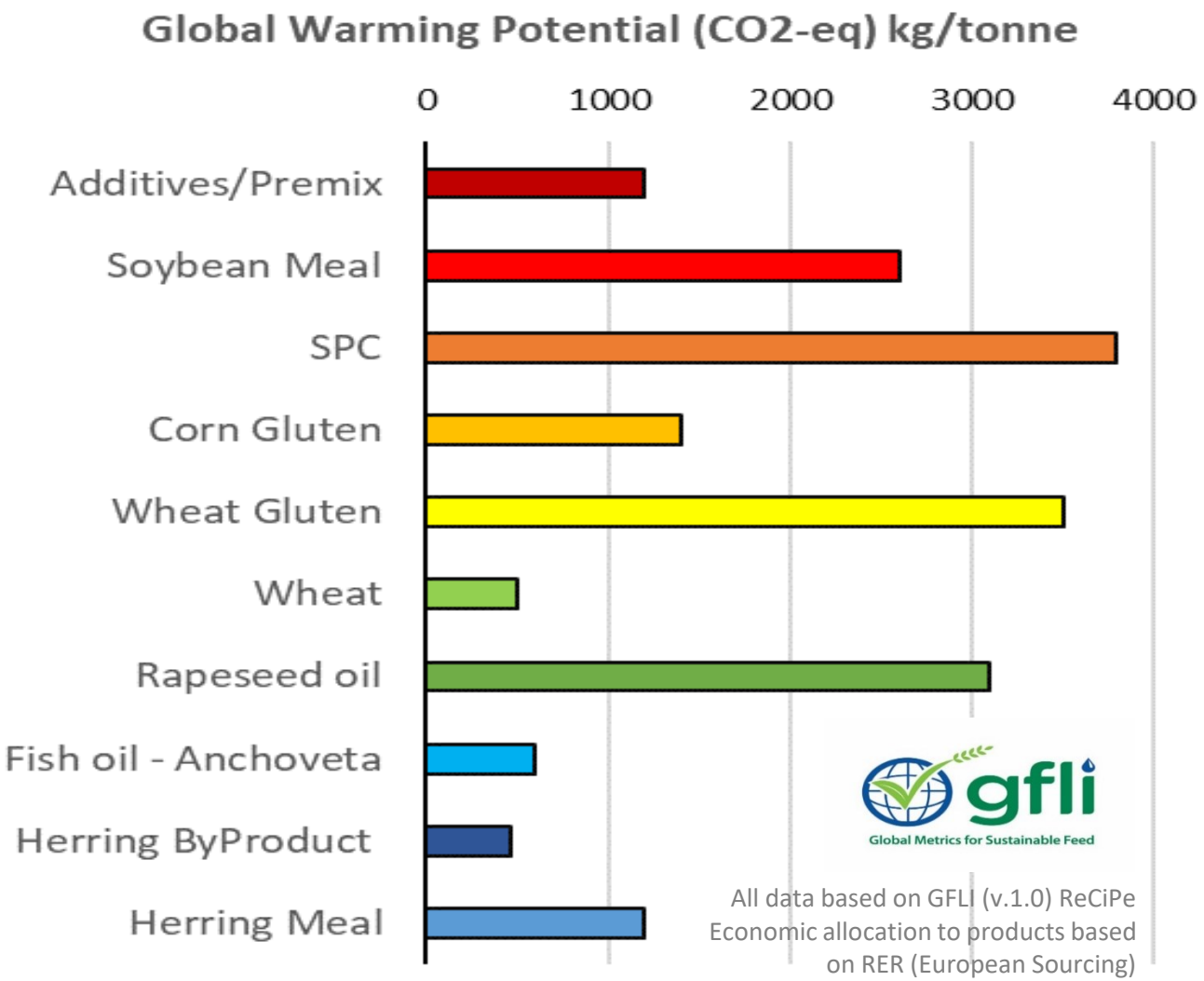
European Commission

PEF

gfli

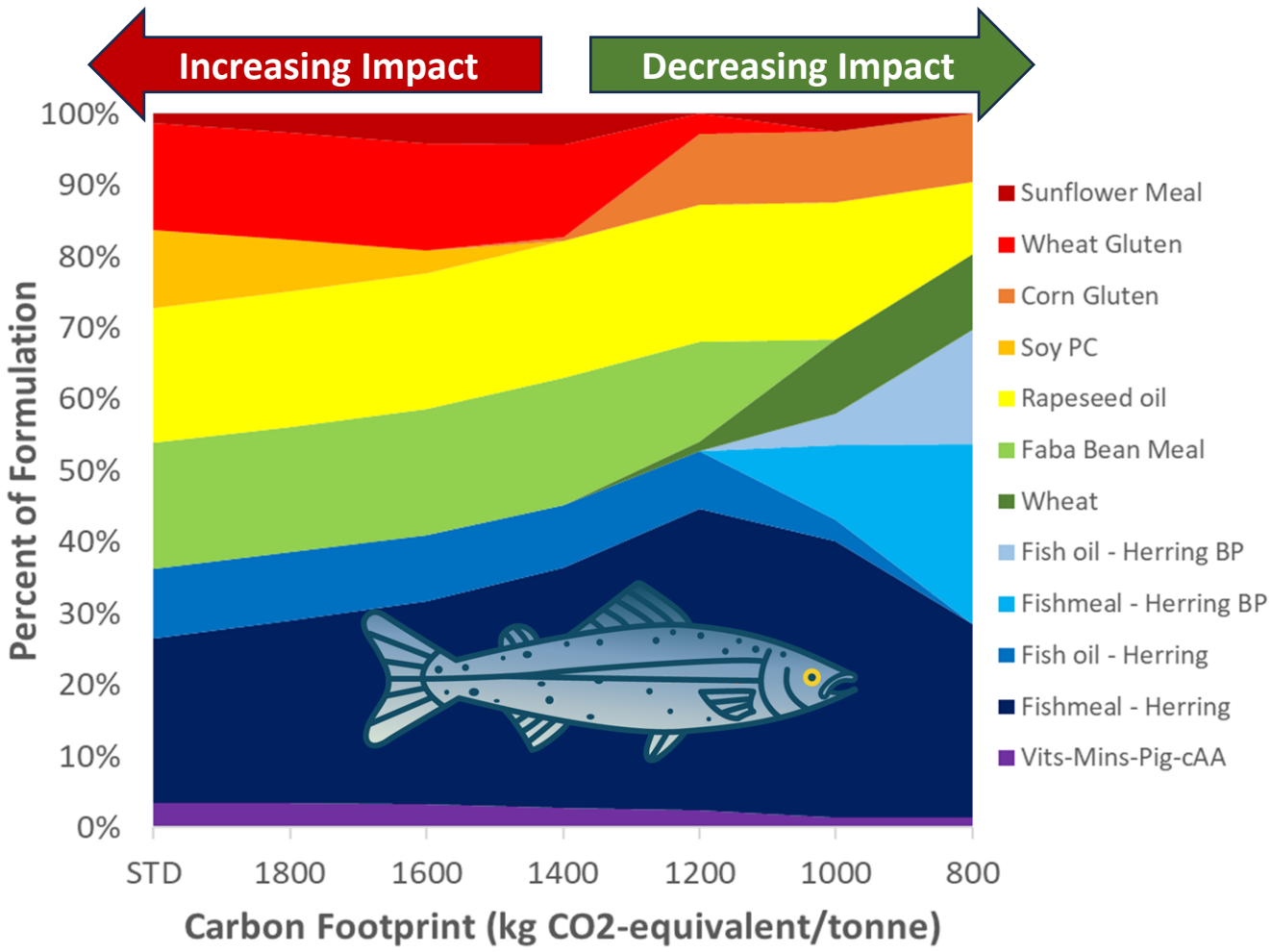
Global Metrics for Sustainable Feed

Everything Has a Footprint…



- GFLI database includes data on **country and region-specific** details for most ingredients.
- ALL ingredients being considered in aquafeed need to be in the database **following the GFLI rules.**
- When things are measured according to **standardised rules, then their utility escalates**.
- For example, **we all operate to agreed methods** on measuring protein, fat and omega-3, each of which are key value units….

Allows LCA Data to Become a Formulation Constraint



- A standard (STD) salmon feed has a Carbon footprint (CF) of about **1978 kg CO2.eq / tonne feed**.
- Including criteria to formulate on CF has some **clear effects on ingredient preference**.
- Reducing the CF to 1340 kg CO2.eq / tonne feed increases formulation **costs by 1.2% for a 33% decrease in CF**.
- **Primary data** from ingredient suppliers is increasingly being sought by the feed producers as values **can vary markedly**.

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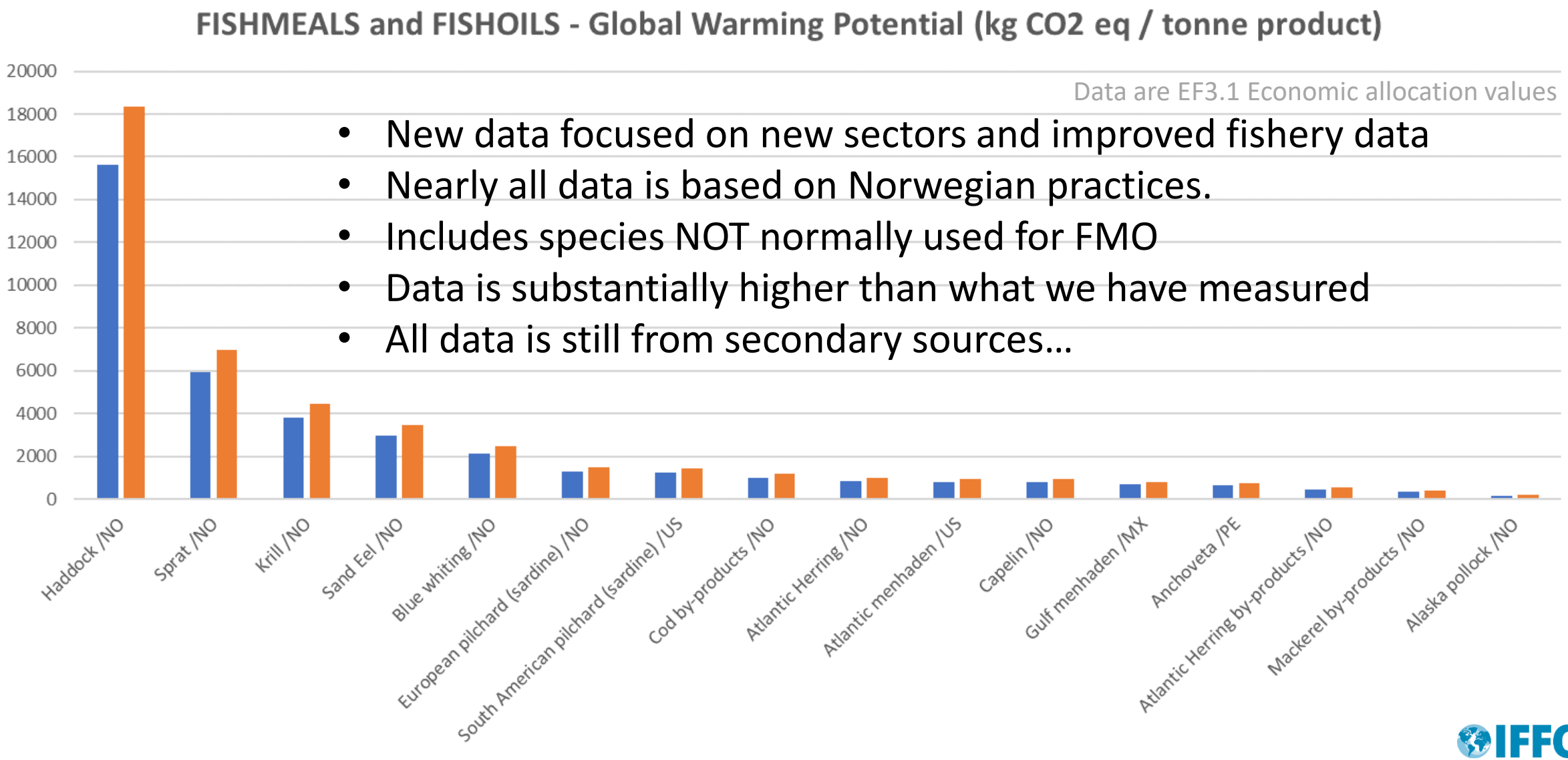
Existing (v2.0) GFLI Marine Ingredients Data



- New data focused on new sectors and improved fishery data
- Nearly all data is based on Norwegian practices.
- Includes species NOT normally used for FMO
- Data is substantially higher than what we have measured
- All data is still from secondary sources…

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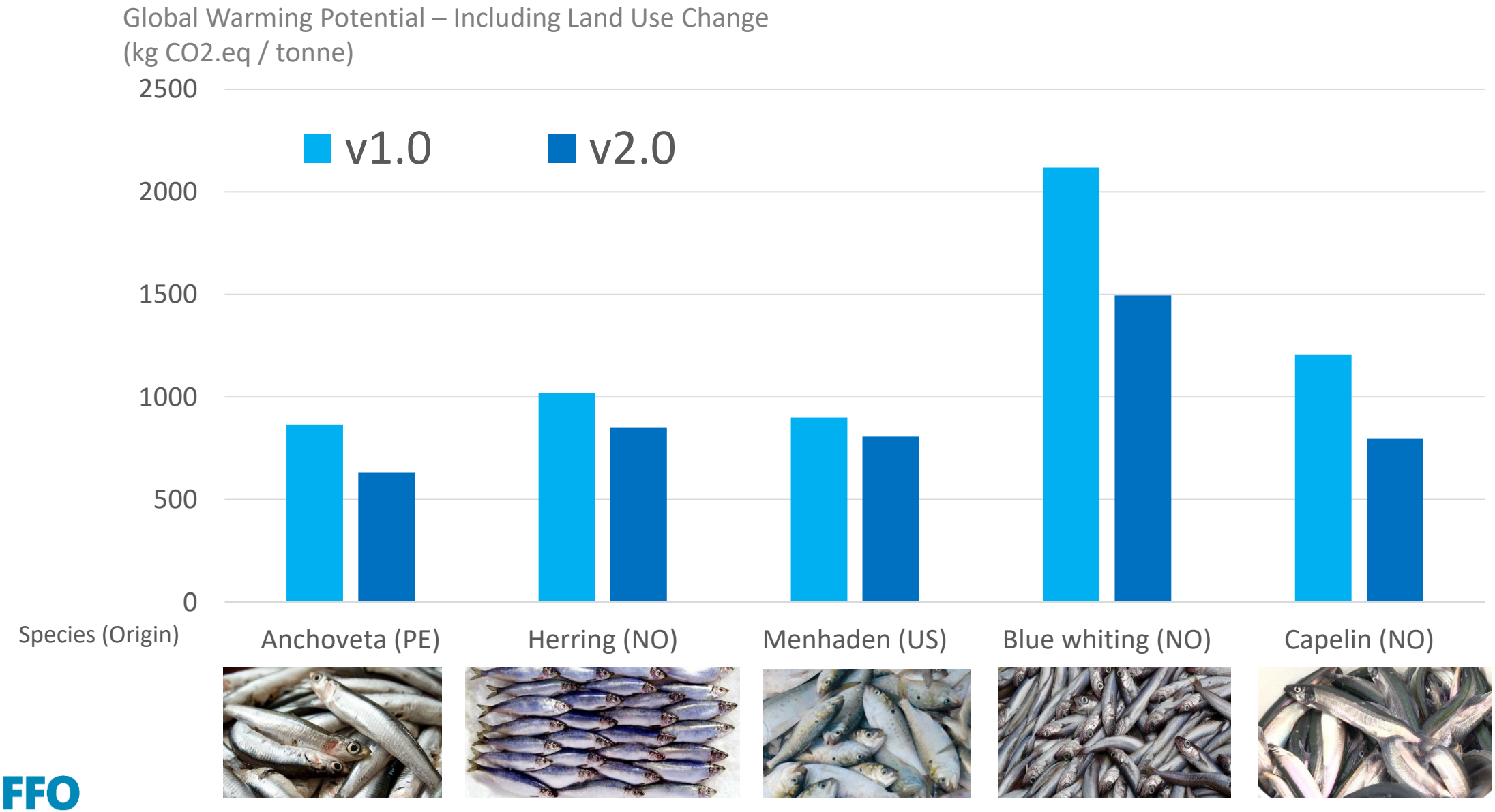
Updating of the Database : Some Example Fishmeals



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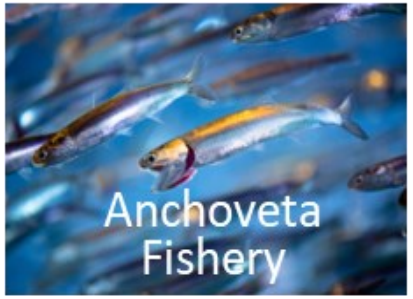
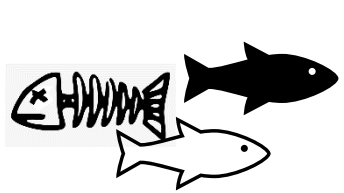
Increasing the Relevance of the Database

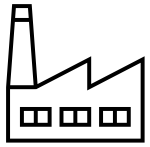
- **IFFO, on behalf of members has been developing a GFLI Data In Project to ensure marine ingredient data is up to date and representative.**
- **Focus of project will be to:**
  - Collect PRIMARY data and include data quality values.
  - Expand the regionalisation and include new species/sector datasets.



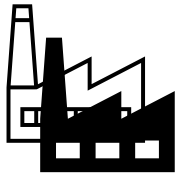
Data Collection Strategy



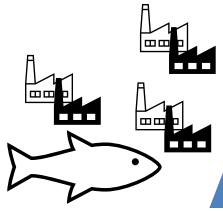
Raw Material with Facility



Overall Facility



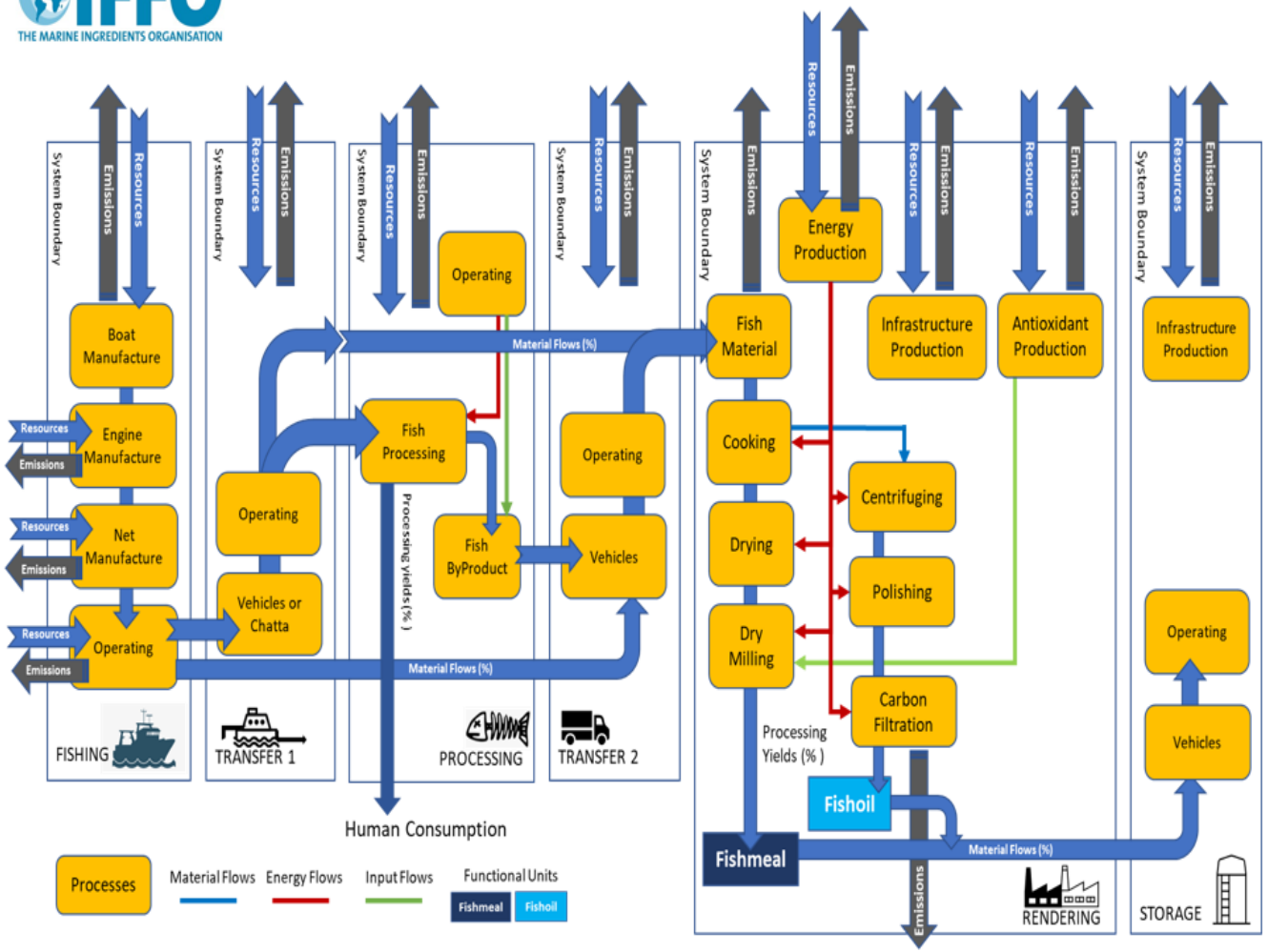
Company (Combined Facilities)



Raw Material within Country (Region)

Combined Country (Region)

Developing and Testing a Data Collection Template



Marine Ingredients Life Cycle Inventory (LCI) data template - Version 1.0

Introduction

Guidance regarding the marine ingredients template for GFLI:

- This template should be used by both the company's representative (**company**) and the IFFO project coordinator (**IFFO**) to collate data required for the GFLI 'data-in' project. The template serves as a guide on what data needs to be collected and works in combination with the data collection part decribed in the GFLI methodolgy handbook.

'-The different systems being considered for the development of a life cycle inventory (**LCI**) mean that a single one-size-fits-all approach is not appropriate for the marine ingredients sector. Therefore we have developed a ***systems boundary*** map (digram left) to identify which systems need to be considered for any particualr company/factory process. The analysis is based around the systems and processes underpinning a single factory, or even individual products within a factory if required.

'- The ***systems boundary*** map is at its simplest level design to incldue the '***Fishing***', '***Transfer1***' and '***Rendering***' systems as mandatory units/pages in the LCI. For products originating from by-products, additional systems of '***Processing***' and '***Transfer2***' may be required. For marine ingredient producers storing product off-site at different location, the '***Storage***' system is required.

'- Data is designed be collected on an ***absolute mass basis for each year*** of data collation. A minimum of three years of data is required. From this data IFFO, in conjunction with the company with calculate the mas-flow units of each parameter. This is done to standardise the units of each input and output relative to the prescribed '*flow unit*', which for our case is one (metric) tonne of fish. This *flow unit* is then used to link all relevant systems together so that the relevant allocations of any inputs and outputs can be standardised.

'- Once the standardised inputs and outputs have been collated and agreed between IFFO and the company, IFFO will input those values into the relevant life cycle assessment (LCA) software to provide emissions modelling and an LCA footprint from the data. IFFO will the report this data back to the company and retain data for consolidation as part the GFLI 'data-in' project.

'- Only add parameters in consultation with IFFO. The more detail we can add, the better or higher tier modelling will be able to be performed. We can only model emissions based on the information supplied relevant to each specific case.

Data ownership and use

The data provided through this template will be treated as described in any articles or agreements concerning confidentiality between the company and IFFO. The data may be shared under a Non-Disclosure-Agreement (NDA), for the sole purpose of independent validation as part of the GFLI requirements. This may mean that the completed template will be viewed by the contracted reviewer (under previsouly mentioned NDA arrangements). The data will not be distributed to any party not involved in this project and will not be shared with other participating companies.

The contributing company remains the owner of data, but IFFO as the 'data in' provider retains rights to use the data and remains the owner of any data derived from this data. This includes ensuring that no company specific data is visable to any third-party. This template is meant only for the use of the data collection process as part of a GFLI 'data in' project and IFFO remains the owner of this template.

CONTACT

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United Kingdom

IFFO THE MARINE INGREDIENTS ORGANISATION

gfli Global Metrics for Sustainable Feed

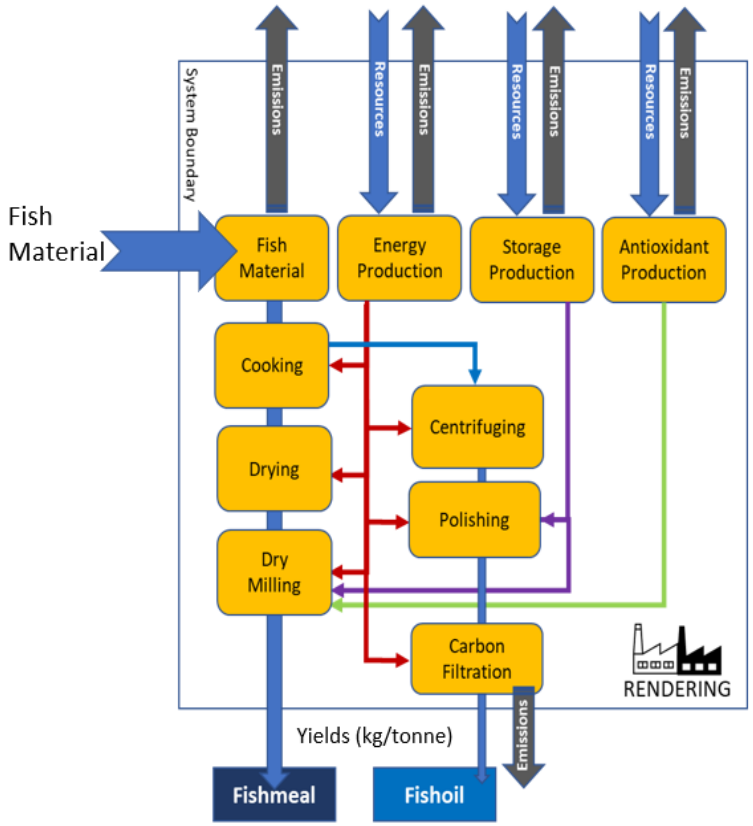
What Kind of Data We Are Collecting - Rendering

LIFECYCLE INVENTORY - RENDERING

Data that is critical for the LCI to work
Data that would allow a more thorough analysis
Data that would allow us to expand the assessment
<-- PRIORITIES ON THE DATA REQUIRED

Processes | Material Flows | Energy Flows | Input Flows | Infrastructure Use

	INPUTS			2018	2019	2020	2021	2022	MEAN	Data Source ID (drop down)	Comments
	FISH MATERIAL - INPUT	MATERIAL	per ANNUM								
1	Species 1		tonnes						#DIV/0!		
2	Species 2		tonnes						#DIV/0!		
3	Species 3		tonnes						#DIV/0!		
4	Species 4		tonnes						#DIV/0!		
5	Species 5		tonnes						#DIV/0!		
	TOTAL		tonnes	0	0	0	0	0	0		
	OUTPUTS										
	Fishmeal 1		tonnes						#DIV/0!		
	Fishmeal 2		tonnes						#DIV/0!		
	Fishmeal 3		tonnes						#DIV/0!		
	Fishmeal 4		tonnes						#DIV/0!		
	Fishmeal 5		tonnes						#DIV/0!		
	as linked to input materials		TOTAL	0	0	0	0	0	0		
	Fish oil 1		tonnes						#DIV/0!		
	Fish oil 2		tonnes						#DIV/0!		
	Fish oil 3		tonnes						#DIV/0!		
	Fish oil 4		tonnes						#DIV/0!		
	Fish oil 5		tonnes						#DIV/0!		
	as linked to input materials		TOTAL	0	0	0	0	0	0		
	DISCHARGES		per ANNUM								
	Waste Water Discharge		m3						#DIV/0!		
	Total Nitrogen Discharge		kg						#DIV/0!		
	Total Phosphorus Discharge		kg						#DIV/0!		
	BOD/COD Discharge		kg						#DIV/0!		
	Mineral Oil Waste		kg						#DIV/0!		
	Other Hazardous Waste		kg						#DIV/0!		
			other						#DIV/0!		
	OPERATIONAL INPUTS		per ANNUM								
	Freshwater		m3						#DIV/0!		
	Heavy fuel oil (burned in furnace)		UNITS - drop down list						#DIV/0!		
	Gas (burned in furnace)		UNITS - drop down list						#DIV/0!		
	Diesel (generators)		UNITS - drop down list						#DIV/0!		
	Electricity use		MWh						#DIV/0!		
	- electricity source 1		percent						#DIV/0!		
	- electricity source 2		percent						#DIV/0!		
	- electricity source 3		percent						#DIV/0!		
	CHEMICAL USE		per ANNUM								
	Sodium hydroxide		kg						#DIV/0!		
	Sodium chloride		kg						#DIV/0!		
	Nitric acid		kg						#DIV/0!		
	Sulphuric acid		kg						#DIV/0!		



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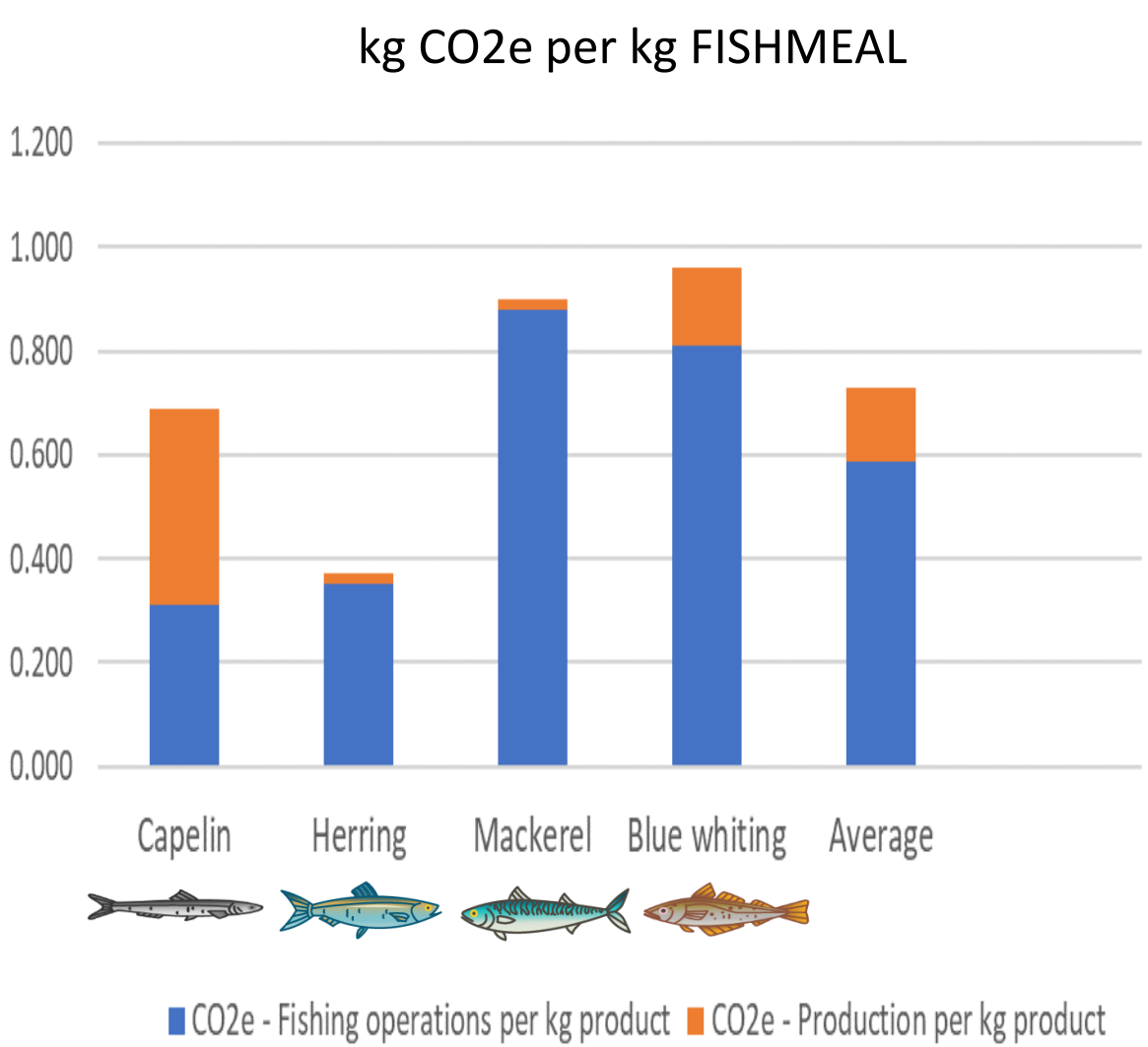
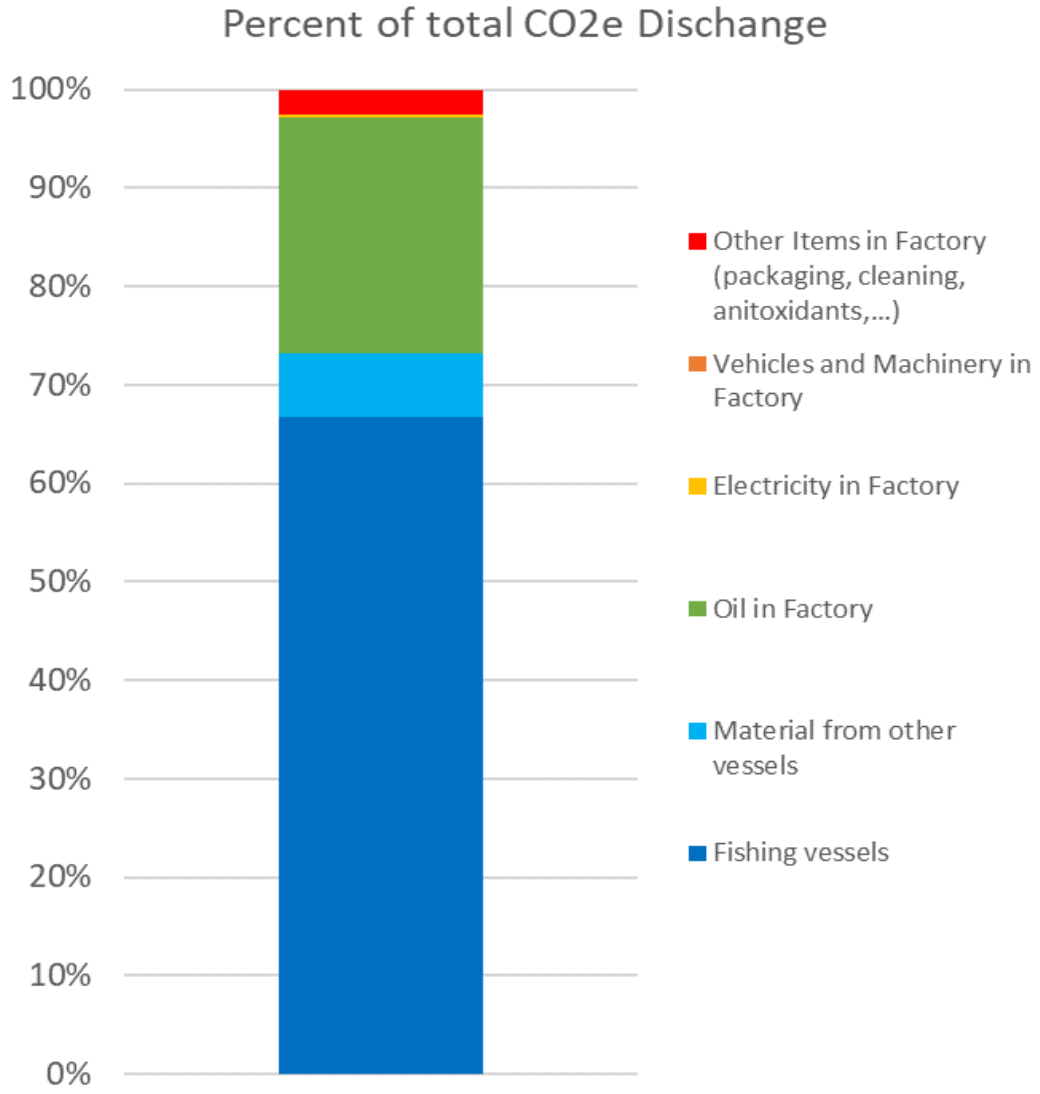
An Example of Primary Data LCA…





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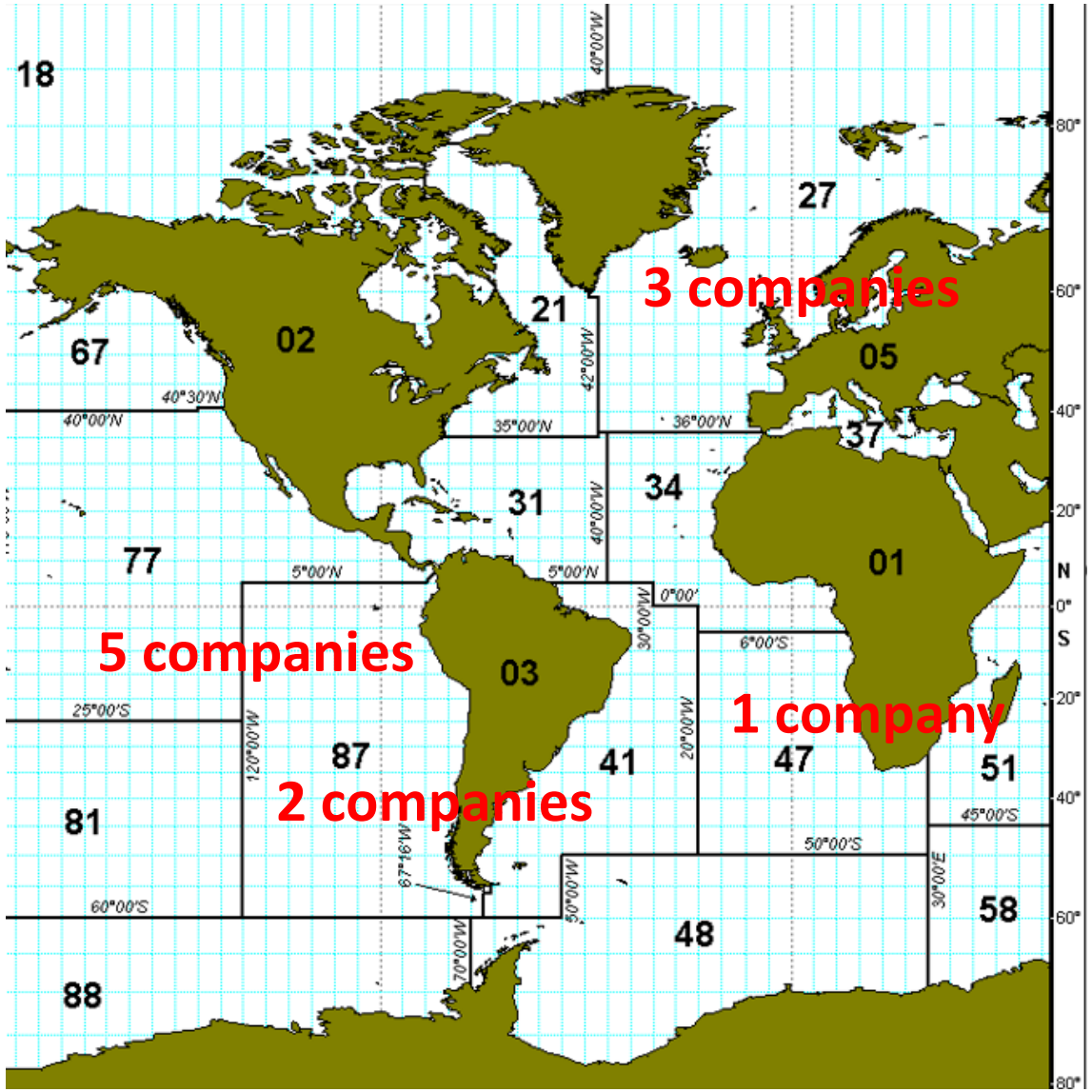
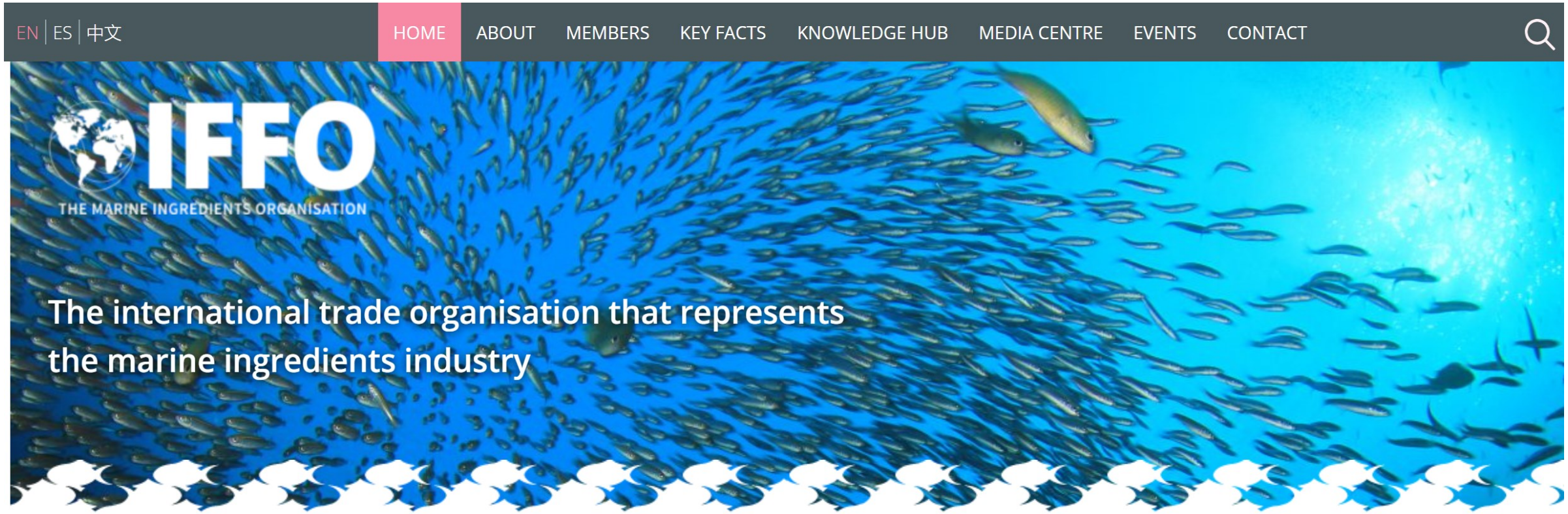
Progress So Far…



- All work being done commercial-in-confidence
- We aim to provide a simple report detailing the footprint of each product for participating companies.
- IFFO only planning to upload <u>Region</u> and <u>Species</u> data to GFLI (with member approval).
- Companies can potentially use data for BRANDED data upload if desired.
- Engagement so far has been much stronger from LATAM.

www.iffo.com



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