

2ª Reunião SCAR grupo-espelho  
FCT 05/02/2019



# Horizon Europe

THE NEXT EU RESEARCH & INNOVATION PROGRAMME (2021 – 2027)

Budget: €100 billion



**Pillar 2 € 52.7 billion**  
Global Challenges and Industrial Competitiveness

**Clusters**

- Health
- Inclusive and Secure Society
- Digital and Industry
- Climate, Energy and Mobility
- Food and natural resources

**SCAR**  
Standing Committee  
on Agricultural Research

**FISH**  Fisheries and Aquaculture Research



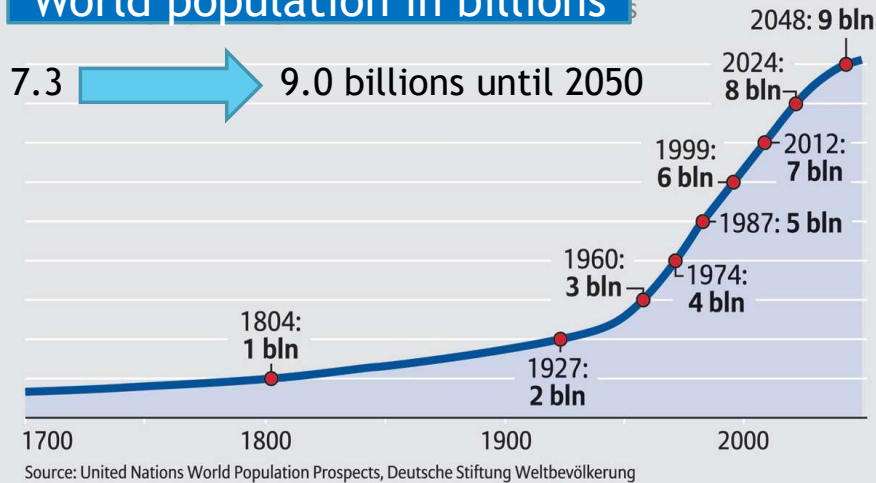
25<sup>th</sup> SCAR-Fish Meeting - 19 February 2019

Point 8. in Agenda:

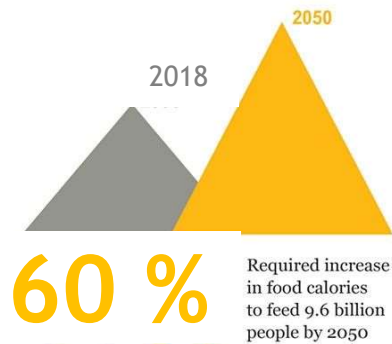
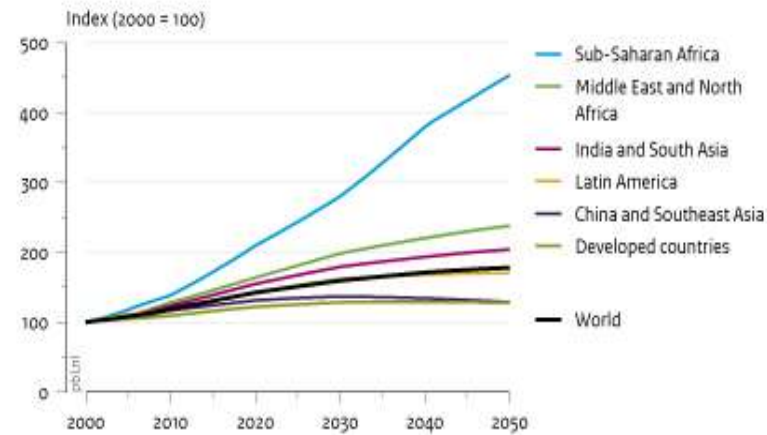
Discussion Non-paper : *Horizon Europe's cluster in Pillar 2 - Food and natural resources (€ 10 billion)*

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## World population in billions



## Food demand



## Fishing and Aquaculture

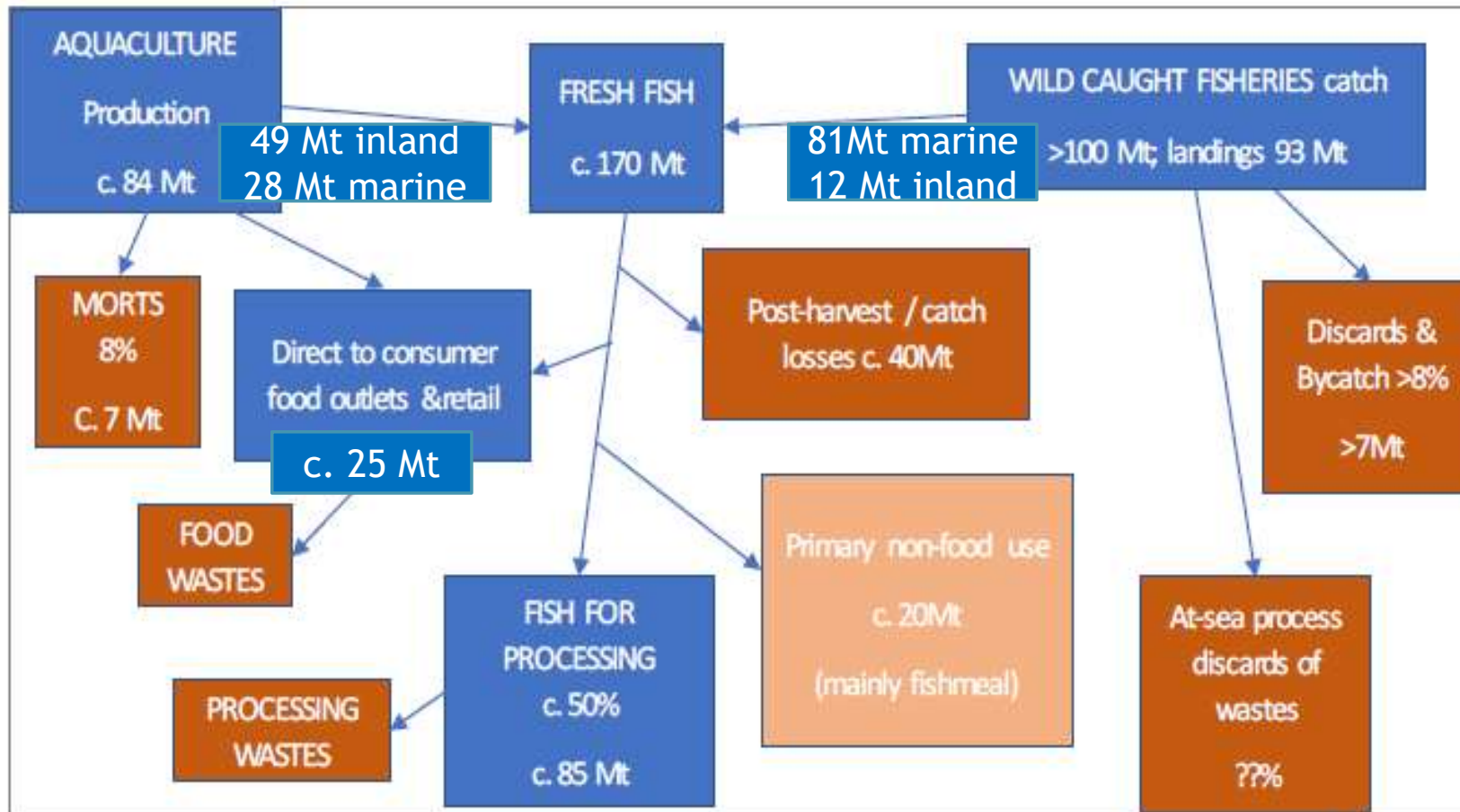
- 1/6 of animal protein
- 6.5% of all protein for human consumption

Table 1 - Production of fish and seaweed 2015

Type	Total Mt	Aquaculture Mt	Capture/wild harvest Mt
FSC total Mt	169.2	76.6	92.6
FSC inland Mt	60.5	48.8	11.5
FSC marine Mt	108.2	27.8	81.2
Seaweeds	30.5	29.4	1.1
Total Mt	199.7	106	93.7
Microalgae	?	?	?

Source: FAO (2017); FSC = Fish, shellfish and crustacea

Aquaculture and fisheries biomass profile – fish



Increase by 2050

30 Mt - better management, reduce discards

50 Mt - Seaweeds

20 Mt - krill + mesopelagics

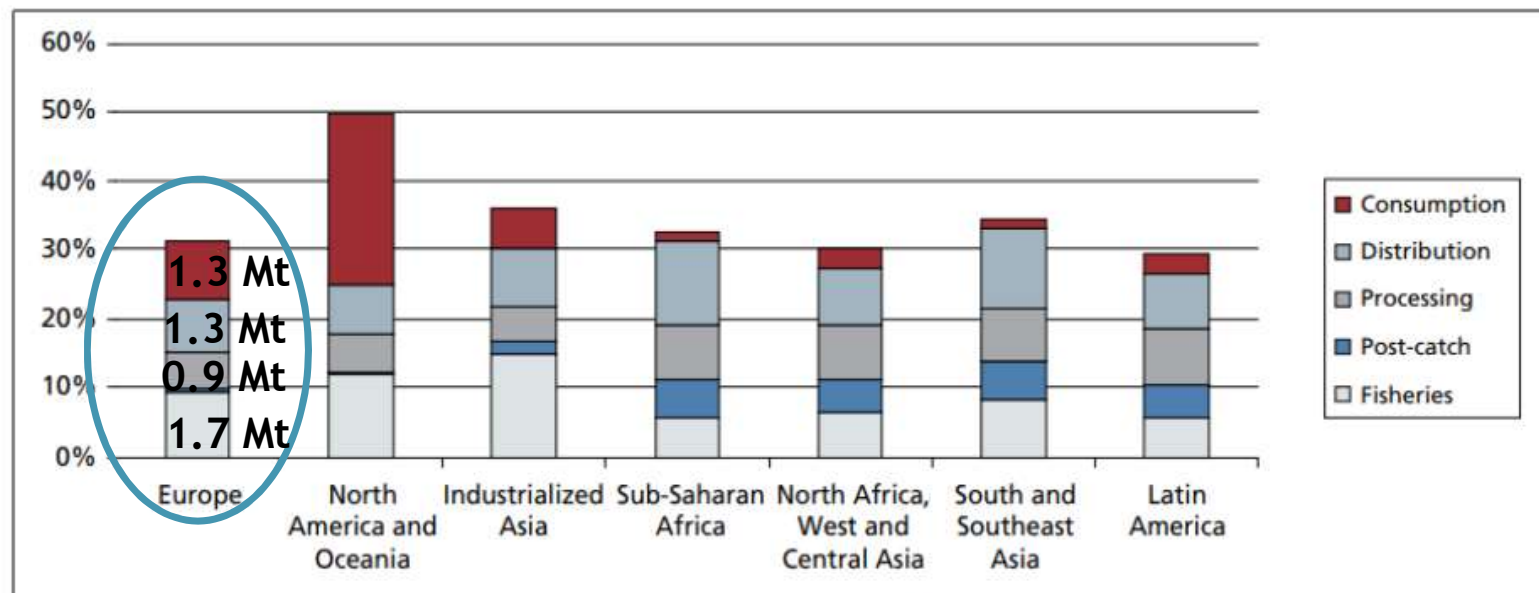
30 Mt - better utilization of waste

Source: FAO (2017), New Economics Foundation (2014); fish = finfish, shellfish and crustacea;   = biomass potentially available for food uses;   = biomass potentially available for non-food uses;   = biomass for fishmeal and fish oils, mainly for aquaculture and animal feed

EU	Production	Mt	% of world production
	Total production	17.1	c. 10%
	Capture fisheries	14.1	c. 14%
	Aquaculture	3.0	c. 4%

Source FAO (2017)

Figure 4 - Losses through the supply chain by discards, disposals and wastage by stage and region



Source: Gustavsson et al. (2011)

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## ***Discards : Management problem***



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## Presented at 23th SCAR-FISH meeting

- ▶ Aquatic research is more than Intervention Area 4. **Seas and oceans**
- ▶ Great demand for **Environmental observation** at sea as well as a better understanding of the marine **Biodiversity and Natural Capital** as input to future management systems
- ▶ Great potential in utilisation of aquatic resources in e.g. **Food systems, Bio-based innovation systems, and Circular systems.**

### **CLUSTER 5: Food and natural resources:**

#### **7 intervention areas:**

- Environmental observation
- Biodiversity and natural capital
- Agriculture, forestry and rural areas
- Sea and oceans
- Food systems
- Bio-based innovation systems
- Circular systems

# 1. Environmental observation

- ▶ New and efficient observation systems-ecosystem monitoring, including human pressures, forecasting (fish, weather, ecosystem changes, etc)
- ▶ Low cost, high quality data may be achieved through remote monitoring and autonomous sampling technology deployed by e.g. fishing vessels
- ▶ Address gaps in Earth Observations through GOOS, EuroGOOS together with GEOSS/EuroGEOSS

marinescotland

Real Time Closures

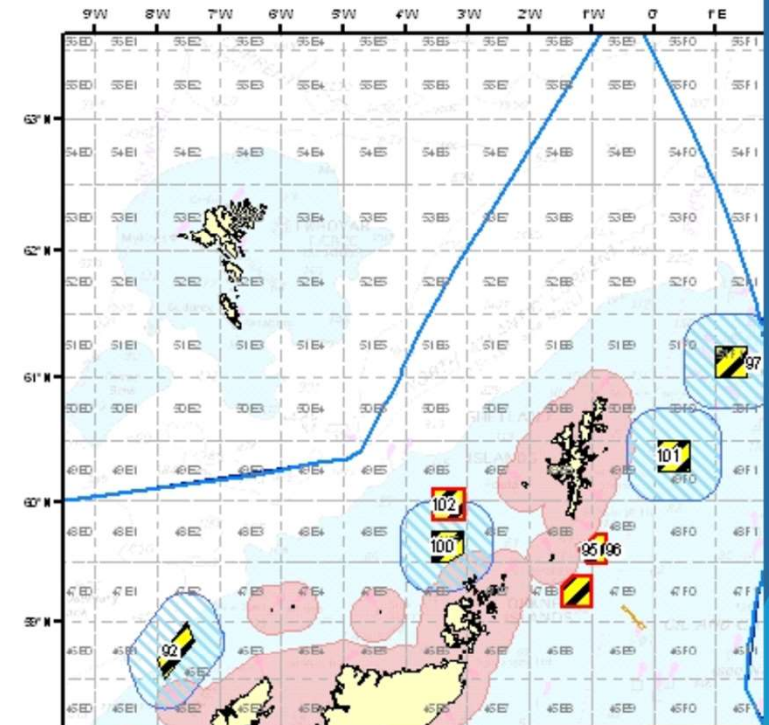
- Analytical RTCs
- Sample RTCs
- 15nm Buffer
- Juvenile RTCs
- Seasonal Closures
- 12nm Limit

Current RTCs  
 RTC 92-94 30/07/2010 00:01 to 19/08/2010 23:59  
 RTC 95 03/08/2010 00:01 to 23/08/2010 23:59  
 RTC 96 04/08/2010 00:01 to 24/08/2010 23:59  
 RTC 97 07/08/2010 00:01 to 27/08/2010 23:59  
 RTC 98-101 14/08/2010 00:01 to 03/09/2010 23:59  
 RTC 102 17/08/2010 00:01 to 06/09/2010 23:59

Current Juvenile RTCs  
 None in effect

Current Seasonal Closures  
 Long Holes  
 Closed: 01/01/2009 00:01  
 Opens: Subject to low Cod sampling

Coordinates  
 This map is for illustrative purposes only.  
 Coordinates for RTCs can be found at:  
<http://www.scotland.gov.uk/Topics/marine/Sea-Fisheries/17681/closures/closed>



## Fisheries control and monitoring

- VMS – Vessel Monitoring System
- E-logbooks
- CCTV– vídeo systems
- Integrated systems– gear performance, navigation, capture

SEA BIO DATA

Administration Campaign Observations Samples Summary

Art:

Species: COE - Conger cong

Time extent:

Aggregate by:

Refresh

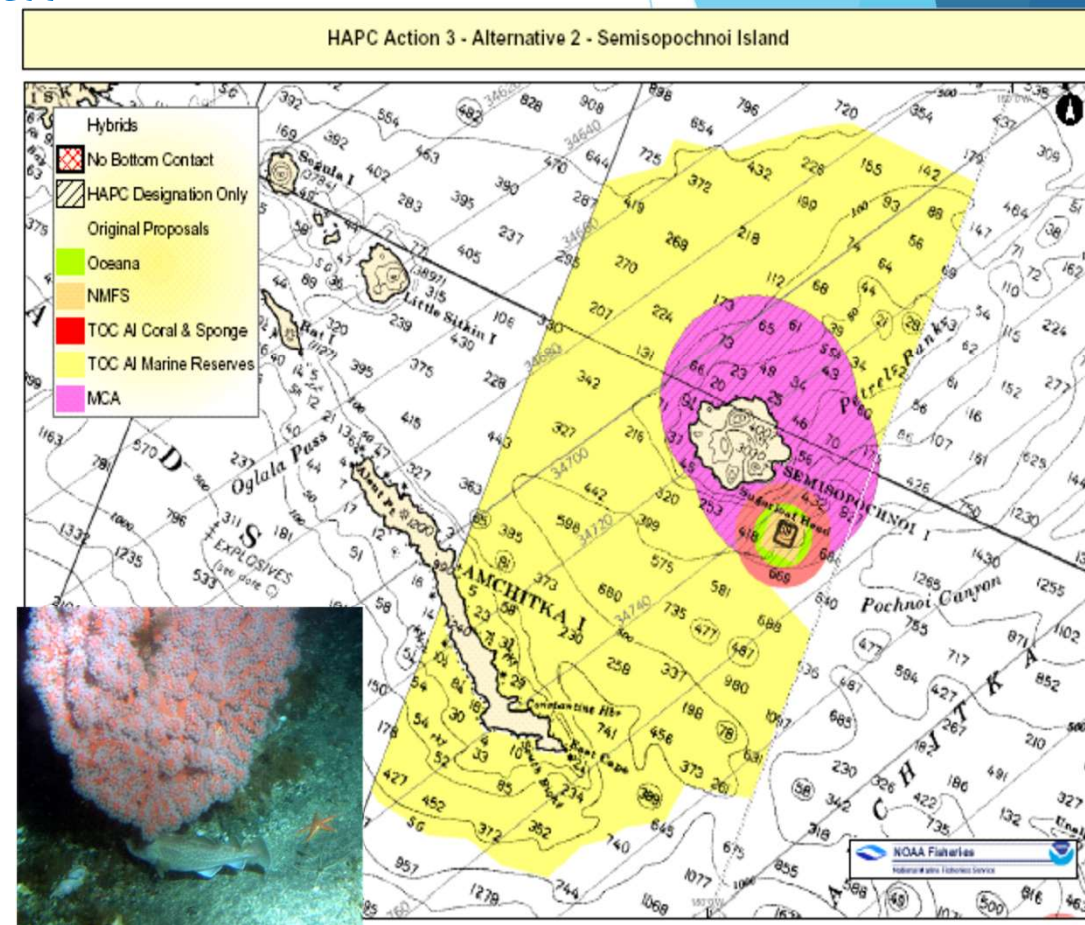
COE - Conger conger  
 CPL - Centrophorus lusitanicus  
 ENX - Centrolabrus exoletus  
 EPI - Epigonus telescopus  
 FOR - Phycis phycis  
 FOX - Phycis spp  
 GAG - Galeorhinus galeus  
 GFB - Phycis blennoides  
 GPW - Epinephelus aeneus  
 GPX - Epinephelus spp  
 GUN - Trigla lyra  
 GUP - Centrophorus granulosus  
 GUQ - Centrophorus squamosus



## 2. Biodiversity and natural capital

- To map marine natural capital and their associated ecosystem services, - to value them, assess their state and trends
- Spatial planning of maritime activities - e.g. fishing, aquaculture, wind farms, recreational uses of the coastal environment.
- Governance aspects of transition to sustainability require acknowledgement of the regional scale in marine areas
- Areas beyond EU jurisdiction i.e. international waters, represent important areas for parts of EU's marine and maritime sectors due to their richness in biological resources.

### Habitat protection (HAPC) – cold water corals Marine Closed Area



## 4. Seas and oceans

▶ Improve the ability of marine sectors to adapt their production both economically and socially to a changing world, facing increasing demand for food in a context of climate change

▶ Reduce discards - Support development of environmentally friendly & economically efficient fishing gear

▶ Understand the impact of management by carrying out performance analyses of e.g. the CFP and regional management plans.

▶ Assess how artificial structures, e.g. harbours, bridges, wind farms etc. can be eco-engineered to restore or enhance ecosystem services like e.g. spawning grounds, flood protection etc.

▶ ...

Innovación tecnológica: La anchoveta para el enriquecimiento de alimentos

Compartir:     

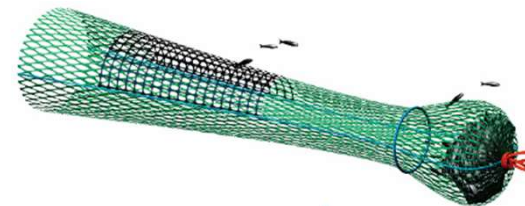


On-site compact protein processing plant.



**Insects in  
aquaculture  
feed with a  
mission**

**Selective fishing gear  
to avoid unwanted  
by-catch**



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## 5. Food systems

- ▶ New species and diversification of the food production would support food security.
- ▶ The development of protein-rich feed ingredients based on locally harvested blue biomass.
- ▶ Understanding the nutritional value of new and more climate friendly food and ingredients, such as algae.
- ▶ The allocation of e.g. marine space to production of new types of food, will, in order to secure local and national backing, demand proper **public discussions** which should be supported by relevant scientific institutions.



**Insects in aquaculture - feed with a mission**



**Grow forests in the ocean**



## 6. Bio-based innovation systems

- ▶ Adding value to the presently available blue biomass and waste materials from its value chain, should remain a core ambition, given its global availability and potential for scaling up.
- ▶ Value adding processing deployed at the source to support local development
- ▶ Strengthening circularity of the bioeconomy should be understood in the context of flows of e.g. nutrients, where the proper scale and system boundaries, should depend of the ecosystem and the resources in focus.

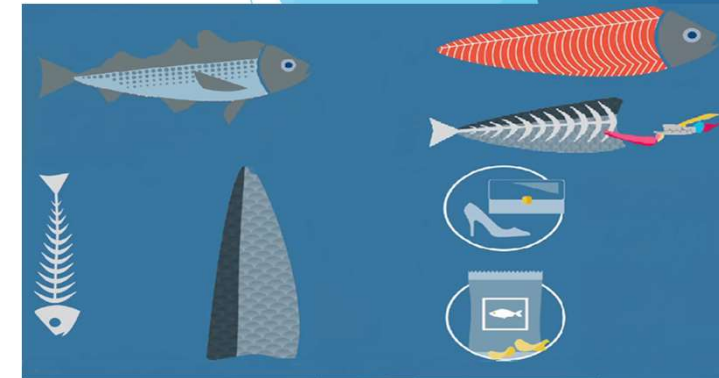


## 7. Circular systems

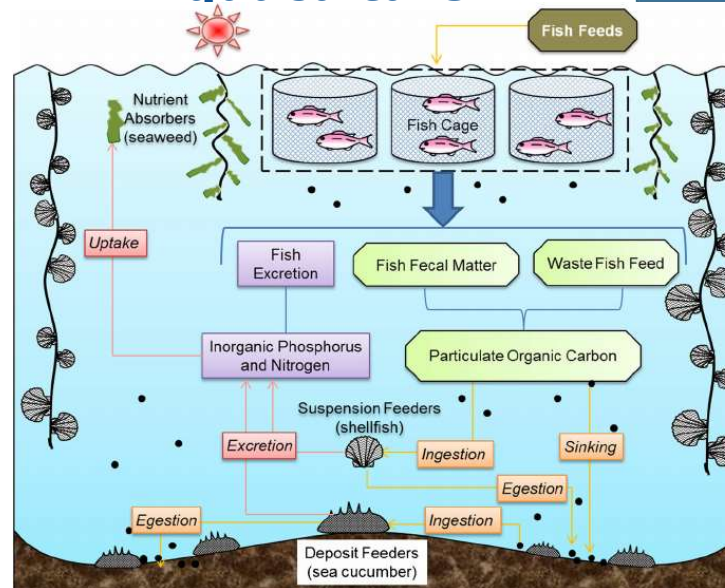
- ▶ Use of fisheries discard and waste products from processing provides an example of an under-valued resource, which should be optimised, to fill gaps in the present bioeconomy's demand
- ▶ Integrated multi-trophic aquatic production could provide a very attractive way of increasing production of food and raw materials in a circular ecosystem-based way.
- ▶ **Bioremediation** - To remediate environmental pollution through cultivation of macroalgae.



**Zero Waste: Use fish to its full potential**



### Multi-trophic Aquaculture



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### 1ST STAKEHOLDER EVENT OF THE EUROPEAN BLUE BIOECONOMY FORUM | AMSTERDAM, THE NETHERLANDS

07 December 2018



Location:  
Park Plaza Amsterdam Airport, Amsterdam, The Netherlands

Organiser:  
Directorate-General for Maritime Affairs and Fisheries (DG MARE)  
Executive Agency for Small and Medium-sized Enterprises (EASME)

### EU INDUSTRY DAYS 2019 | BRUSSELS, BELGIUM

05 February 2019 to 06 February 2019



Location:  
The Egg Congress & Meeting Centre, Brussels, Belgium

Organiser: European Commission

### CIVIL SOCIETY IN ACTION: EUROPEAN BIOECONOMY STRATEGY | BRUSSELS, BELGIUM

28 February 2019



Location: Room VMA3, Rue Belliard 99-101 Brussels

Organiser: European Economic and Social Committee (EESC)

**BLUE BIOECONOMY**  
Situation report and perspectives

**EUMOFA**  
European Market Observatory for  
Fisheries and Aquaculture Products

LAST UPDATE: 2018  
[WWW.EUMOFA.EU](http://WWW.EUMOFA.EU)

Maritime affairs  
and Fisheries

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**Obrigada pela vossa atenção!**  
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