

BLUE REVOLUTION:

How will consumers eat fish in the future?

Marija Banovic

e-mail: maba@mgmt.au.dk

MAPP Centre, Department of Management, Aarhus University, Denmark

FISH FOR THOUGHT

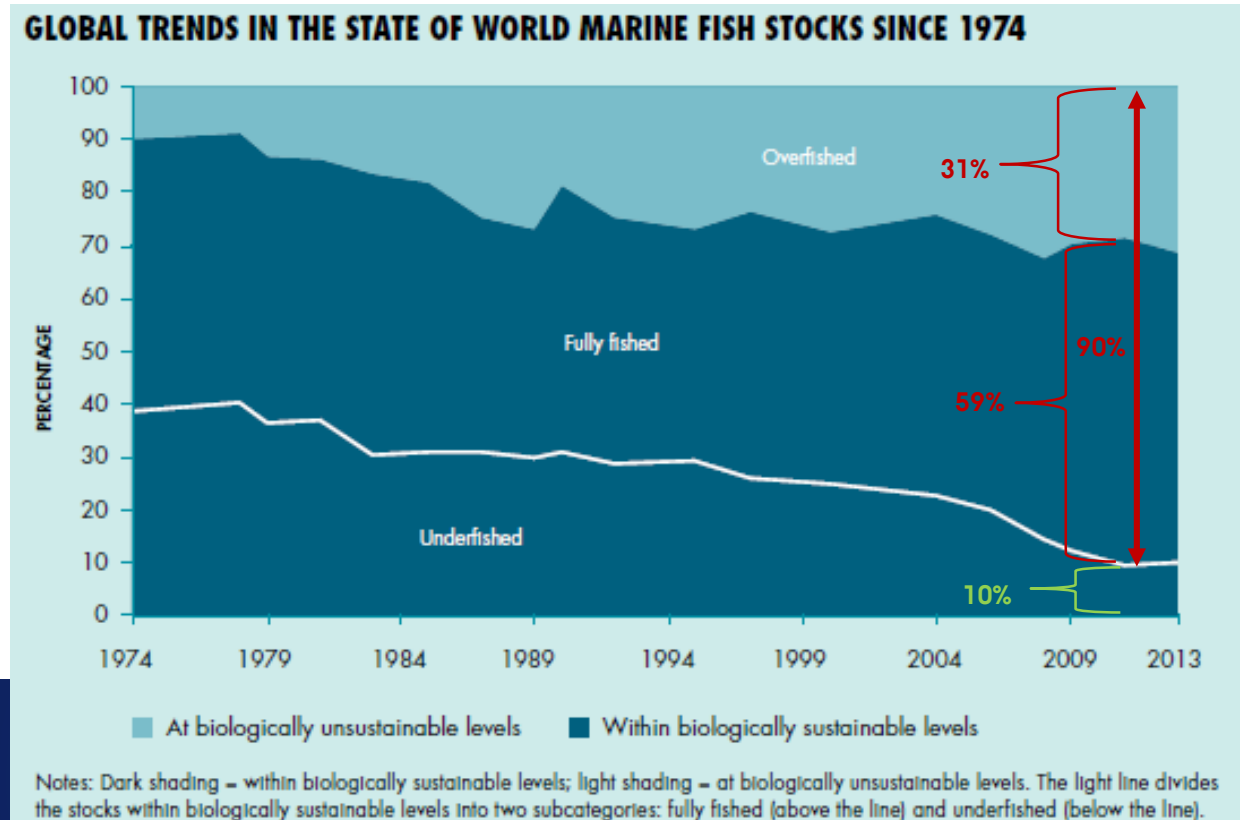
- ▶ How to address the needs of future consumers and migrate existing ones from the wild-fish products?
- ▶ What attributes play role in consumer acceptance of fresh and processed aquaculture products?
- ▶ How can we promote new aquaculture products?



www.diversifyfish.eu

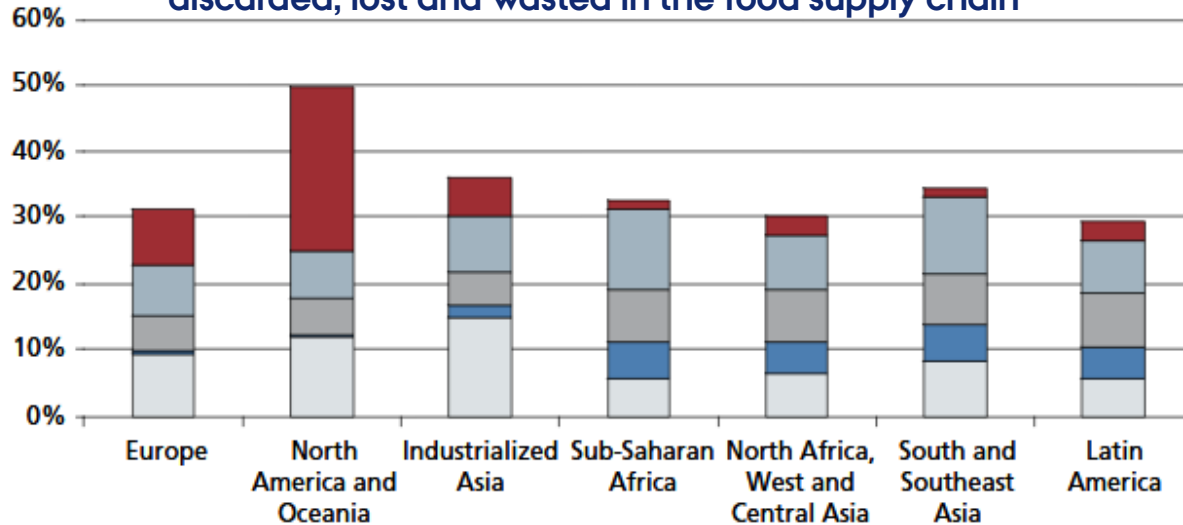
To develop culture, processing and marketing methods for 6 new/emerging finfish species.

'SO LONG AND THANKS FOR ALL THE FISH'



FISH WASTE OR MISUSE OF MARINE RESOURCES

Part of the initial catchings (fish and seafood harvested)
discarded, lost and wasted in the food supply chain



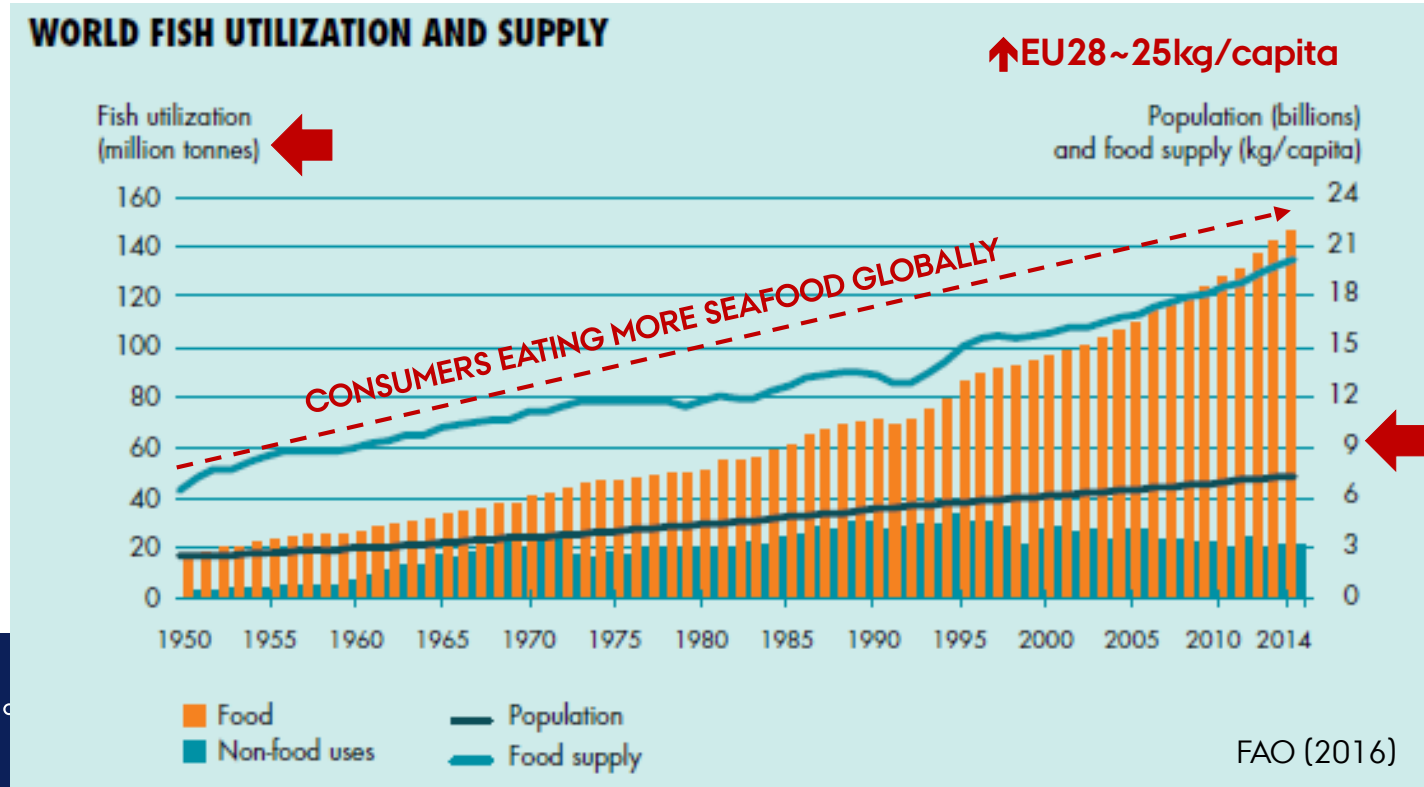
- Consumption
- Distribution
- Processing
- Post-catch
- Fisheries

25% used for
fishmeal and
fish-oil
production

(Shepard 2012;
Worldbank, 2013)

(FAO. 2011. Global food losses and food waste)

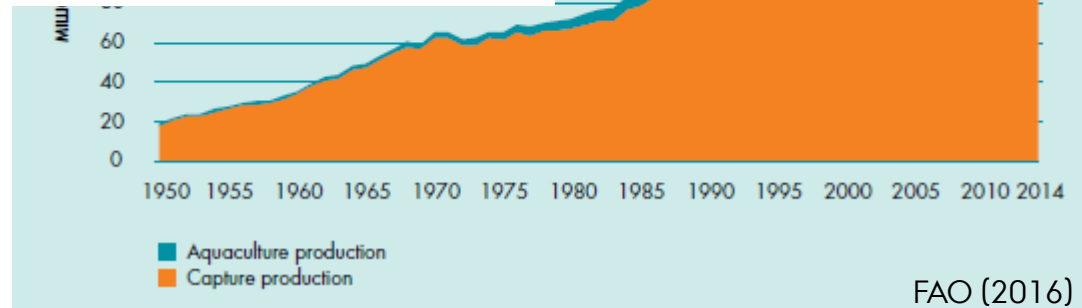
WHY BLUE REVOLUTION MATTERS?



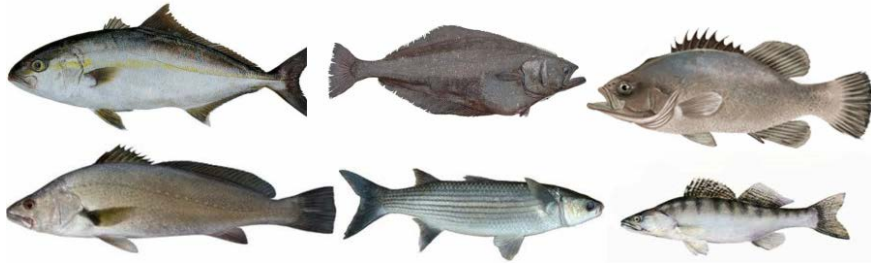
FOOD FROM DEEP BLUE TO FEED THE WORLD

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

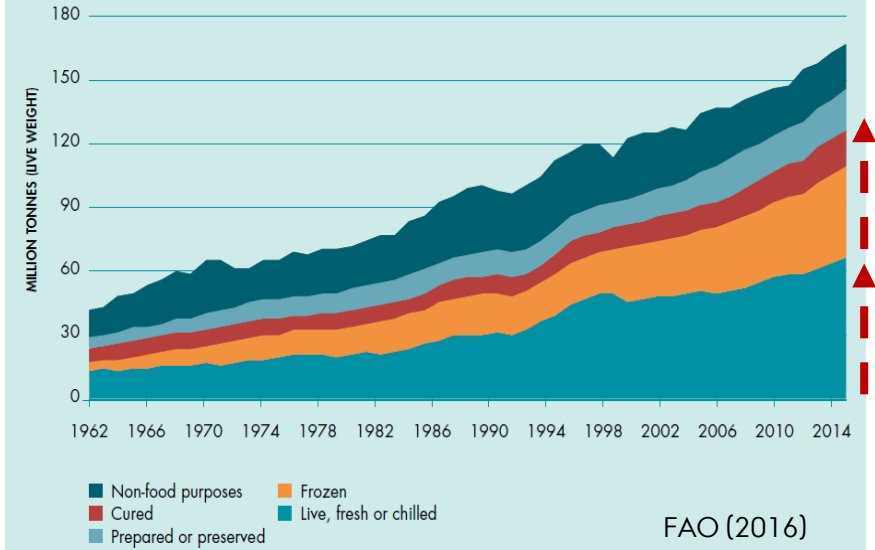
Type of food	Live weight (kg)	Edible portion (kg)	Yield	Spatial footprint (ha)	Remediation time (years)
Atlantic salmon	2,500,000	1,250,000	0.50	1.6	2
Angus beef cattle	2,976,190	1,250,000	0.42	6,982	>200 (Hartleb, 2014)



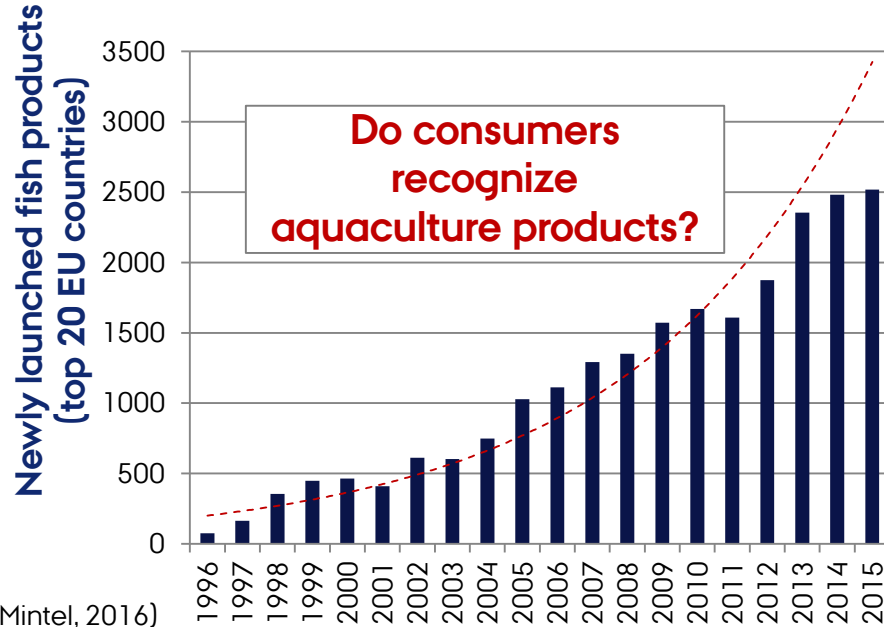
FISH *OR* FILLET?



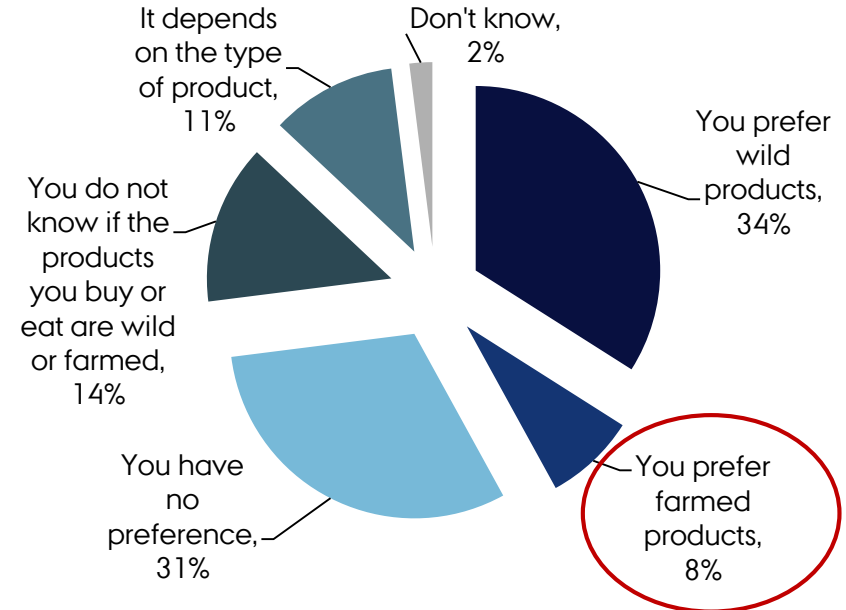
UTILIZATION OF WORLD FISHERIES PRODUCTION (BREAKDOWN BY QUANTITY), 1962–2014



AQUACULTURE PRODUCTS (IN)VISIBLE?

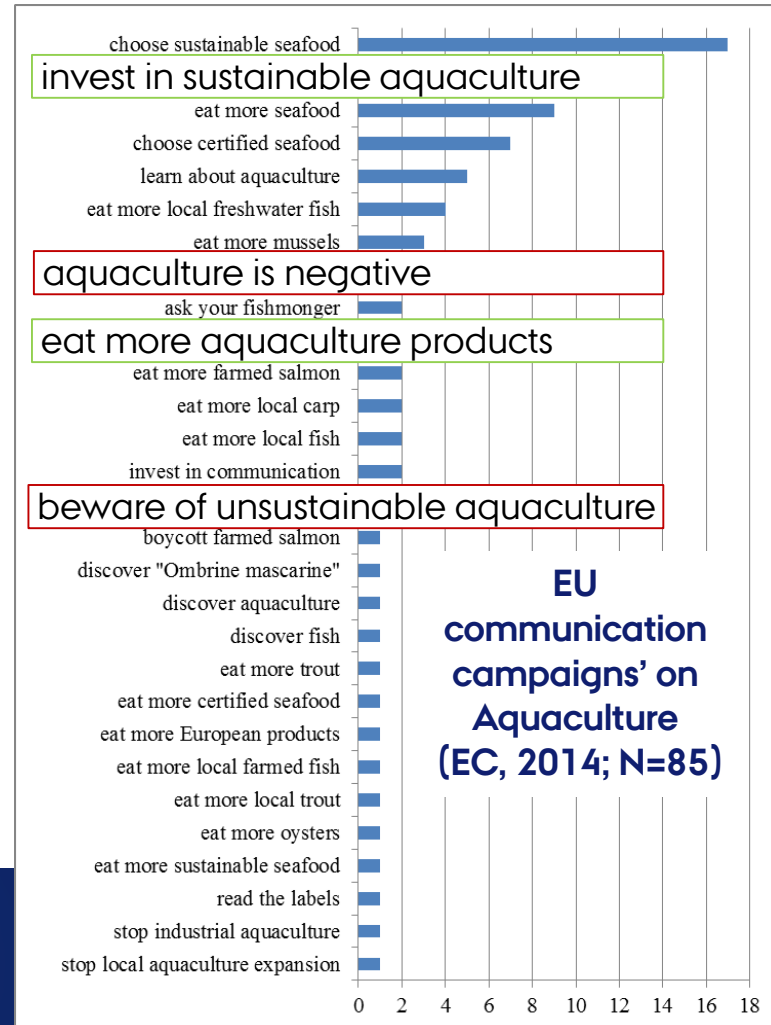


(Mintel, 2016)

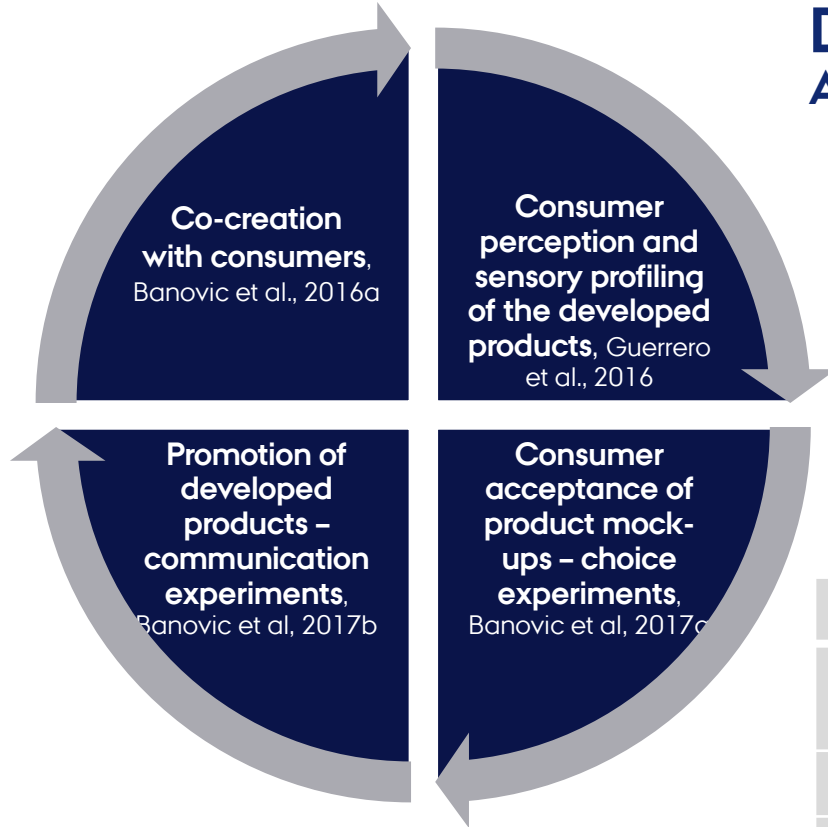


(Special Eurobarometer 450: EU28, N=24452; year 2017)

AQUACULTURE & LEGITIMATE DOUBTS



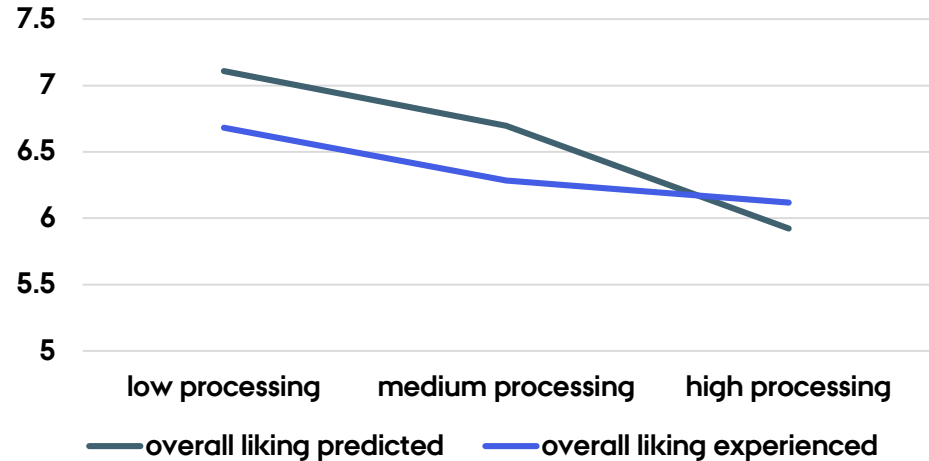
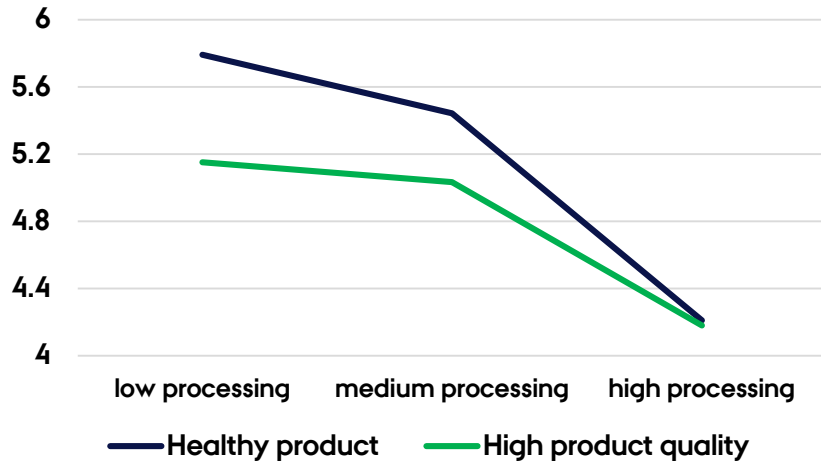
DIVERSIFY: ADDING VALUE TO AQUACULTURE PRODUCTS



Fish species	Developed DIVERSIFY product prototypes	
Meagre	Idea 6: Fish burgers shaped as fish	(HP)
	Idea 4: Ready to eat meal: salad with fish	(LP)
Pikeperch	Idea 9: Fish spreads/pate	(HP)
Grey mullet	Idea 2: Thin smoked fillets	(MP)
	Idea 33: Ready-made fish fillets in olive oil	(MP)
Greater Amberjack	Idea 34: Fresh fish steak for grilling in the pan	(LP)
(Diversify - D28.4, D29.4, CTAQUA, IRTA, HCMR)		

SENSORY STUDY: LOW PROCESSED PRODUCTS PREFERRED

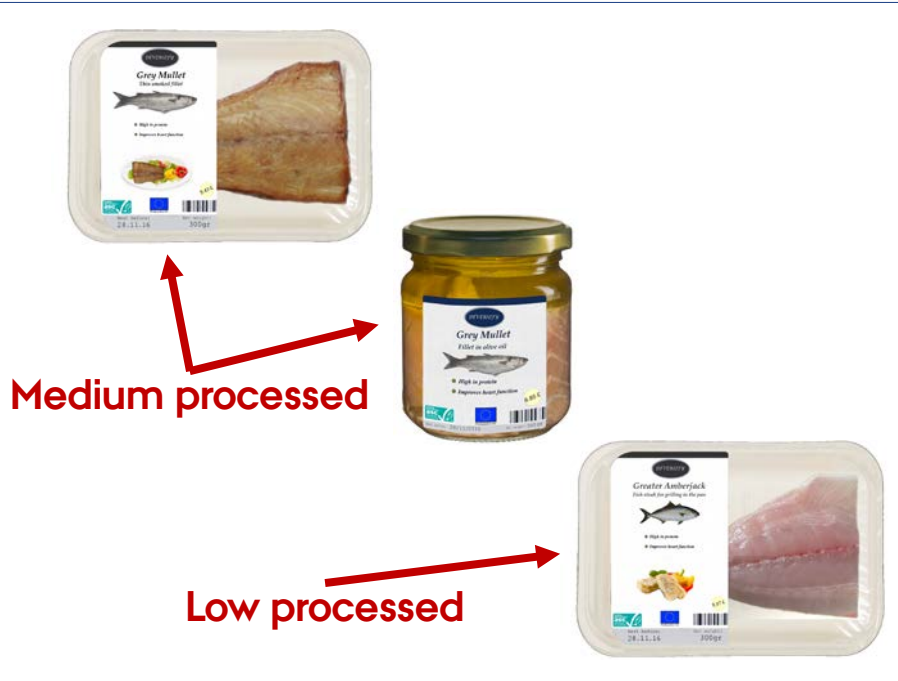
▶ N = 3060 (France, Germany, Italy, Spain, UK)



(Diversify - D29.4, IRTA)

CHOICE EXPERIMENTS

PRODUCT MOCK-UPS



ATTRIBUTE MANIPULATION



COUNTRY OF ORIGIN INCREASES WTP FOR A PRODUCT

▶ N = 1500,

France

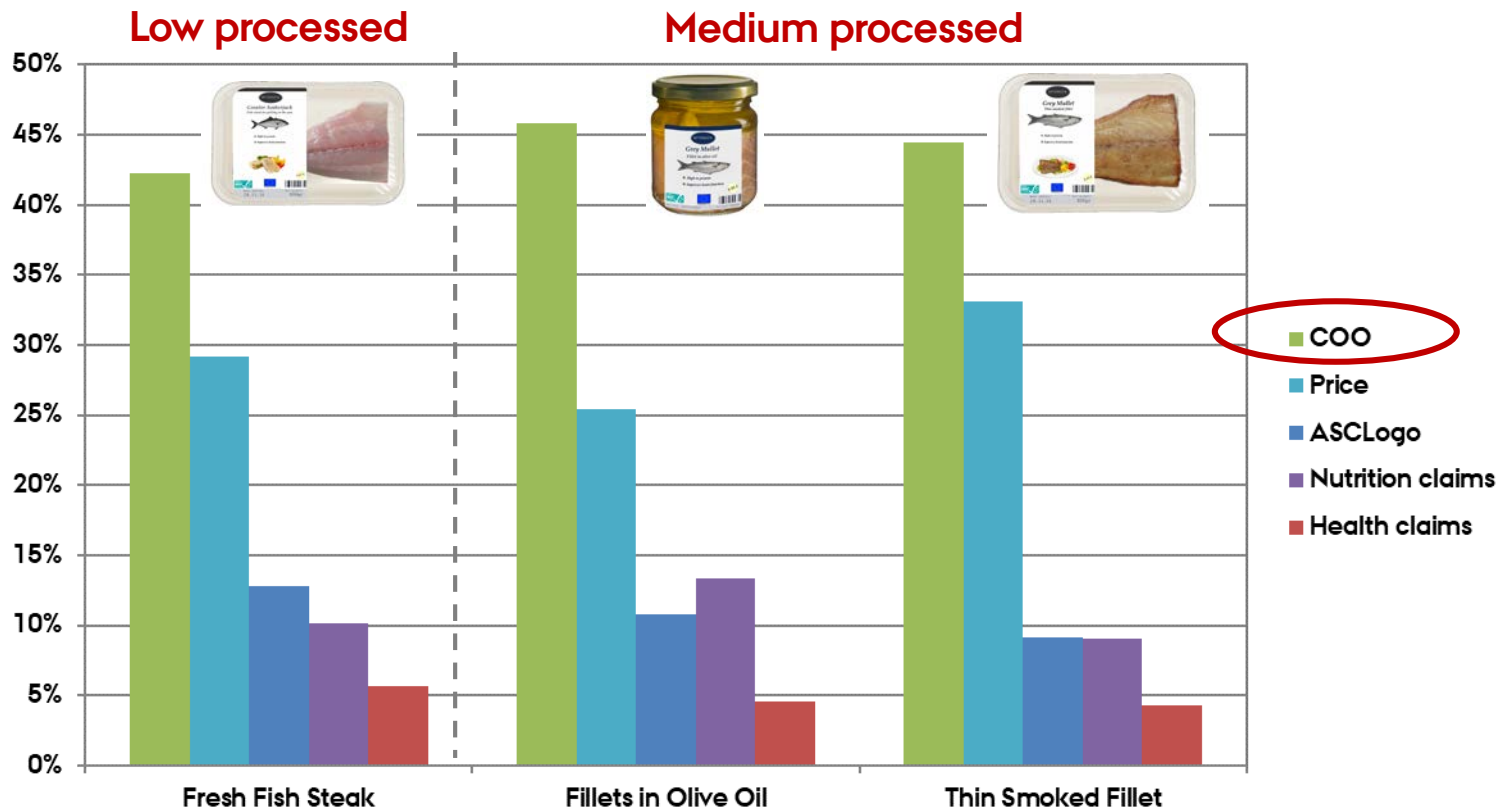
Germany

Italy

Spain

UK

Attribute importance



(Banovic et al., 2017a)

PERSUADING THE CONSUMER... MAKING 'PLEASANT' GOAL PURSUITS

- ▶ N = 1565 (France, Germany, Italy, Spain, UK)



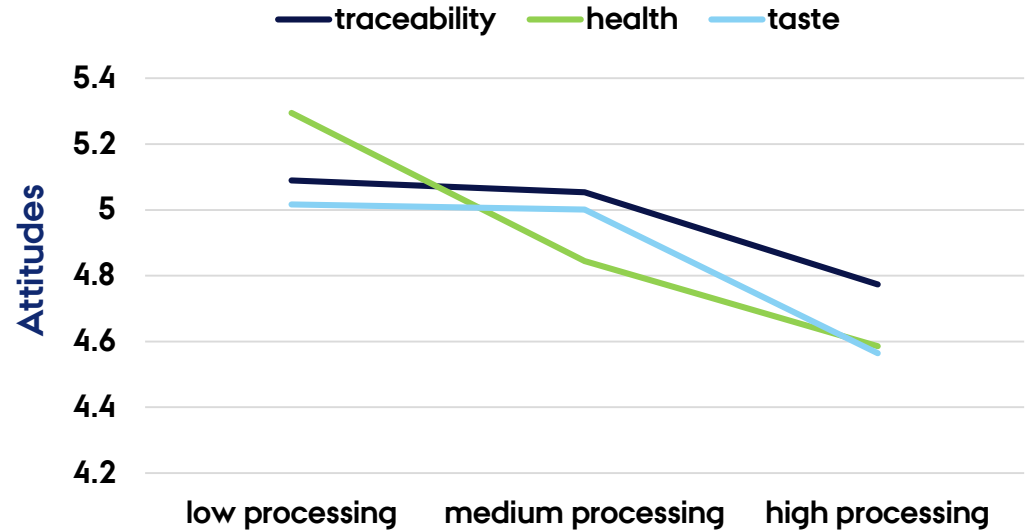
health



traceability



(Banovic et al., 2017b; D29.7; D29.8, AU)



BLUE REVOLUTION PROSPECTS FROM DIVERSIFY EXPERIENCE

- ▶ **Aquaculture** is on the stage in life when is already **too mature and diverse to have a general approach** to all its products
- ▶ **Consumers** *romantic notion of the nature should be explored* as aquaculture production highly influenced by ethical concerns related to environmental and fish welfare issues
- ▶ **Processed products could benefit** from emphasizing on *traceability* - producers could market sustainability aspects of production, transformation and transportation of the product
- ▶ However, **sensory aspects should not be neglected**

"[...]the wilderness is the salvation of the world."
(*Walden* by Henry David Thoreau, 1817-1862)

THE WAY FORWARD

Technologies and promotion to use not only fillets but also other parts of fish

- Decrease the fish waste at production/processing and consumer level...not only as fishmeal, fish oil... but new consumer products and other...biofuel?
- Learn from ocean's hot dog – fish stick, Josephson (2008)
- Processed – low cost - stable fish by products could boost food supply/decrease fish waste...
 - ▶ if accepted from...
organoleptic and cultural point of view



www.diversifyfish.eu

To develop culture, processing and marketing methods for 6 new/emerging finfish species.

This work has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration – DIVERSIFY (KBBE-2013-07 single stage, GA 603121)

<http://www.diversifyfish.eu/>



THANK YOU
FOR
YOUR ATTENTION!



MAPP CENTRE – RESEARCH ON VALUE CREATION
IN THE FOOD SECTOR
DEPARTMENT OF MANAGEMENT
AARHUS UNIVERSITY

Marija Banovic, PhD

e-mail: maba@mgmt.au.dk