



# CURRENT OPPORTUNITIES & CHALLENGES FOR CONSUMER ACCEPTANCE OF AQUACULTURE PRODUCTS

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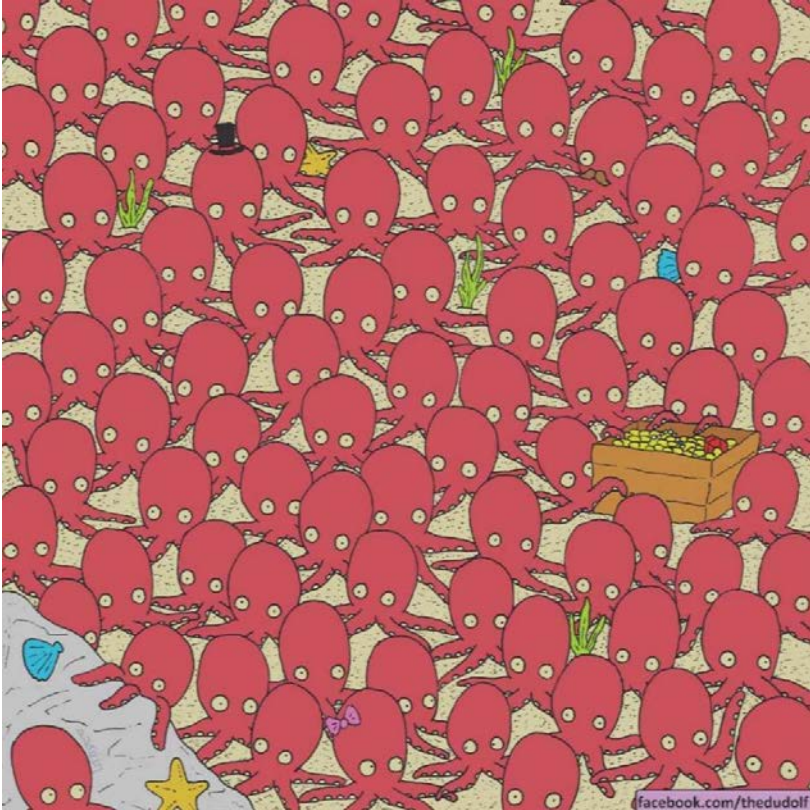
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# FIND THE FISH...

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Puzzle by cartoonist Gergely Dudás (2016).

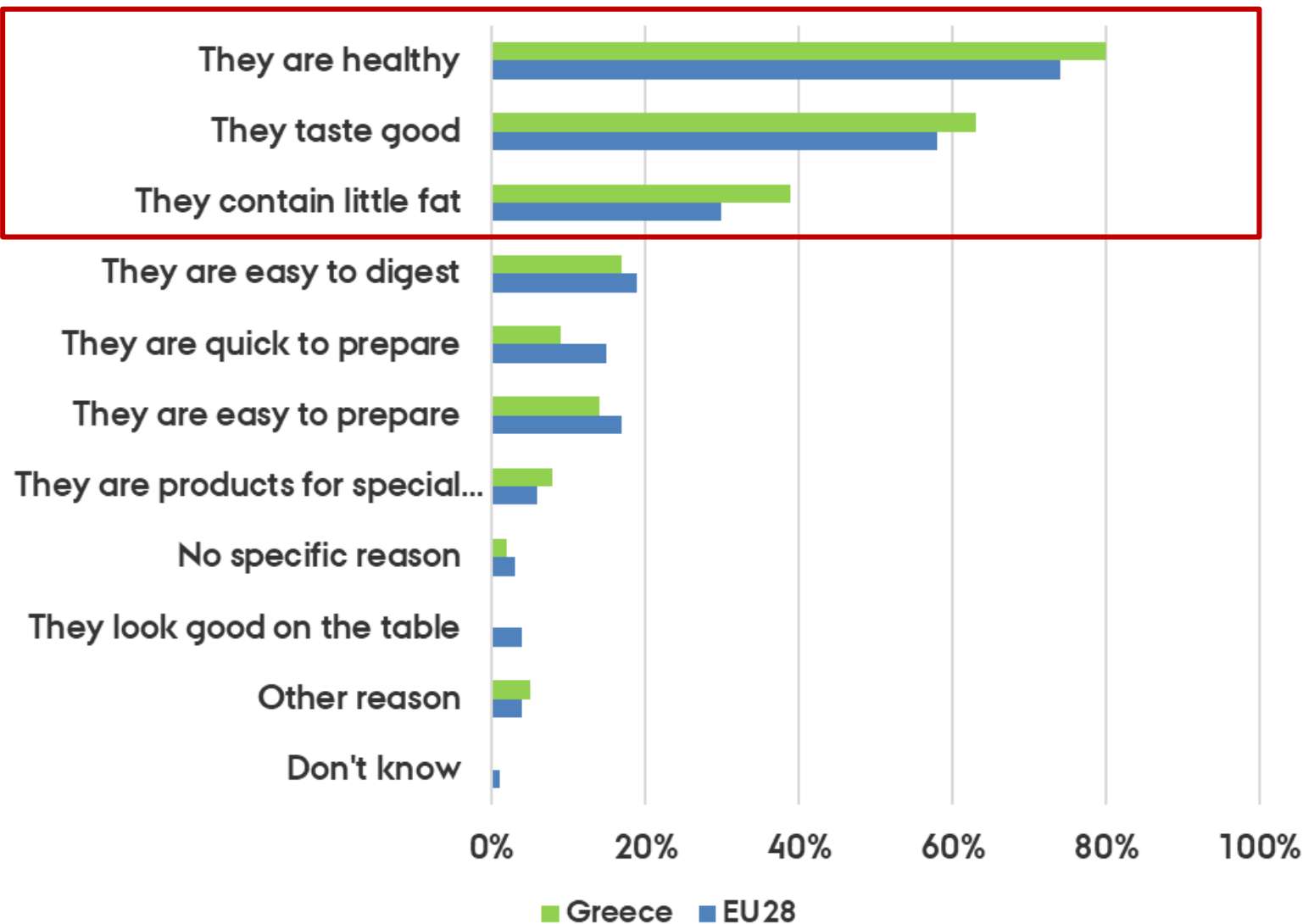
- How can we persuade consumers to migrate from wild-fish products to aquaculture products and address the needs of future consumers?
- How can we influence consumer's existing attitude and what would be the 'line of attack'?

# 'FISH IS OUR WORLD'

## CONSUMER MAIN REASONS FOR BUYING AND EATING FISHERY AND AQUACULTURE PRODUCTS...

FOREWORD BY  
PRESIDENT BILL CLINTON

THE  
PERFECT



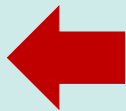
(Special Eurobarometer 450: EU28, N= 24452; Greece, N=946; year 2017)

# FISH FUTURE: 'RAISING MORE FISH TO MEET RISING DEMAND'



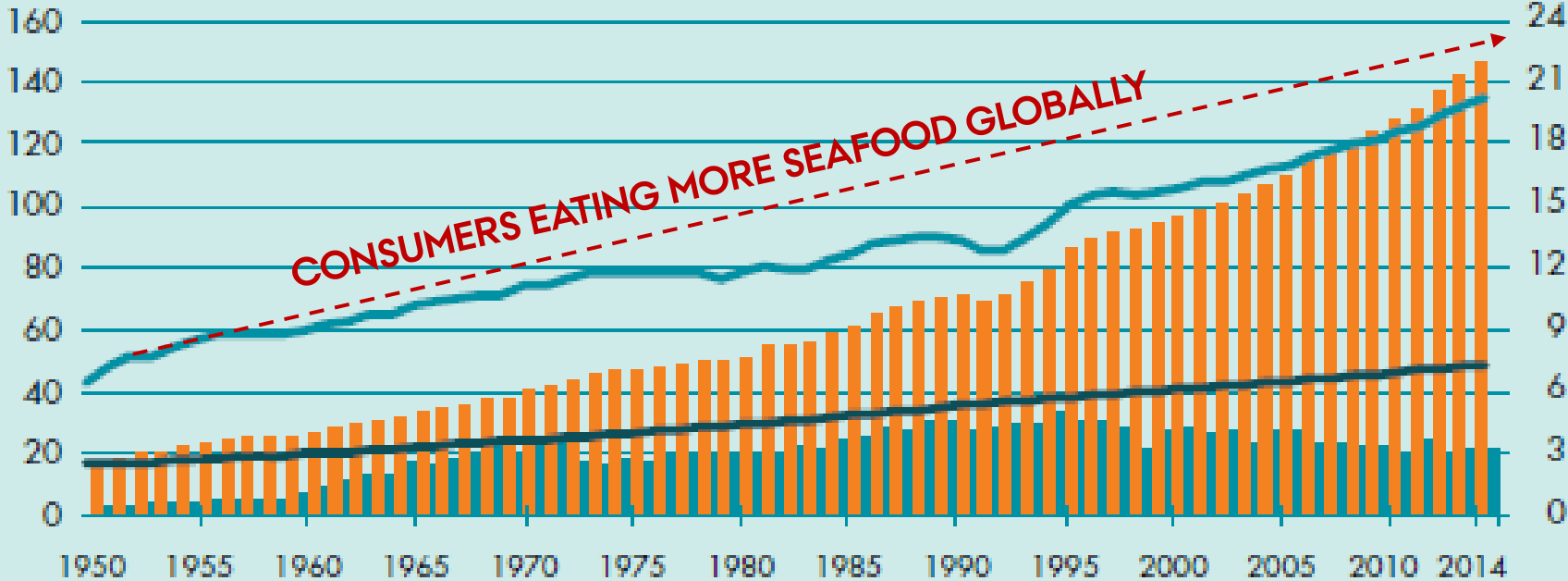
## WORLD FISH UTILIZATION AND SUPPLY

Fish utilization  
(million tonnes)



↑EU28 ~25kg/capita  
↑Greece ~20kg/capita

Population (billions)  
and food supply (kg/capita)



Food  
Non-food uses  
Population  
Food supply

FAO (2016)

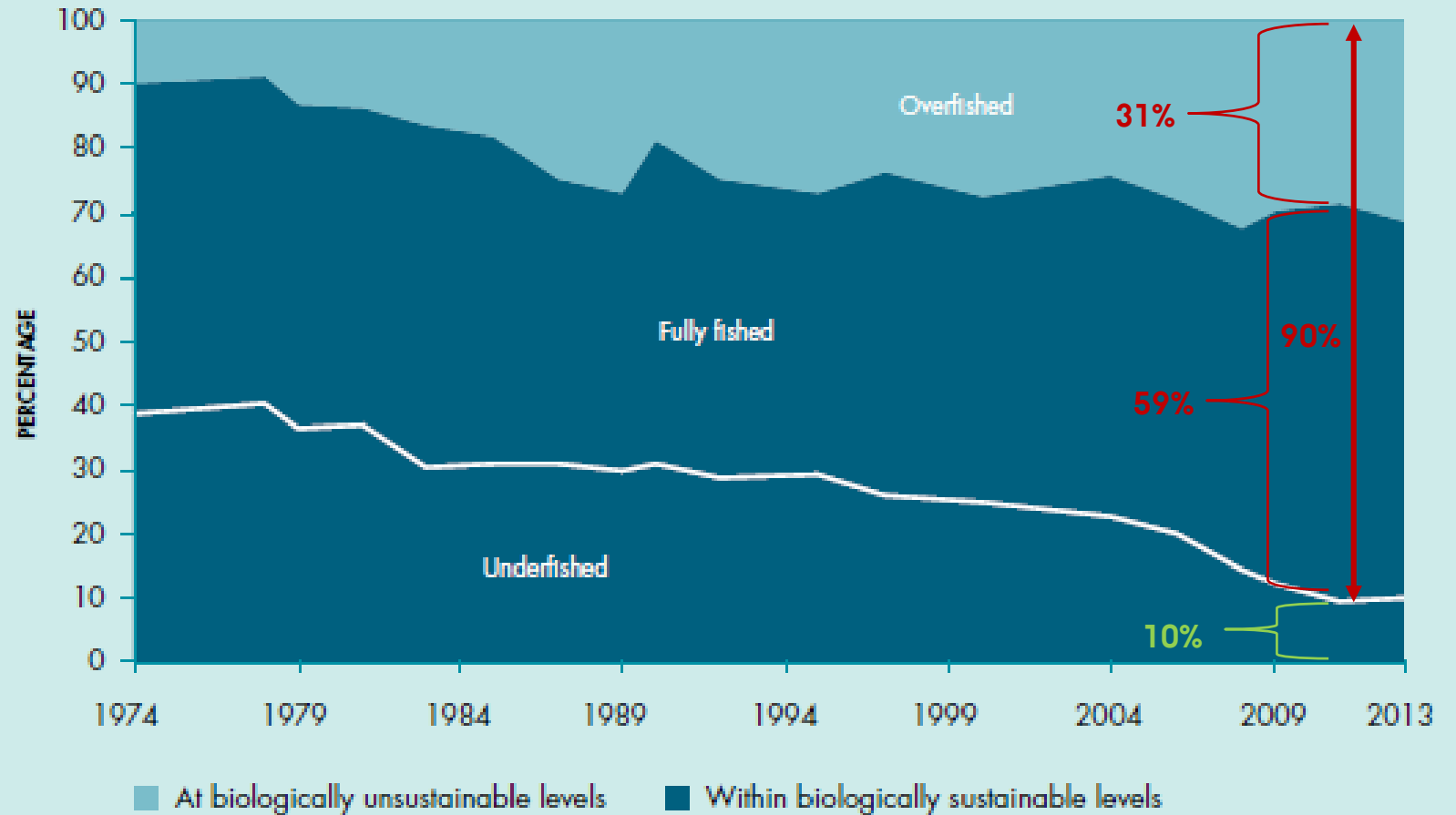


# 'SO LONG AND THANKS FOR ALL THE FISH'



Adapted from <http://www.fishisthedish.co.uk/seafood-stories/kitchen-talk/fish-is-the-dish-school-success>

## GLOBAL TRENDS IN THE STATE OF WORLD MARINE FISH STOCKS SINCE 1974



Notes: Dark shading – within biologically sustainable levels; light shading – at biologically unsustainable levels. The light line divides the stocks within biologically sustainable levels into two subcategories: fully fished (above the line) and underfished (below the line).

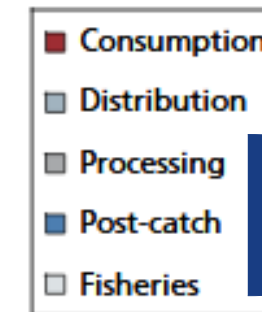
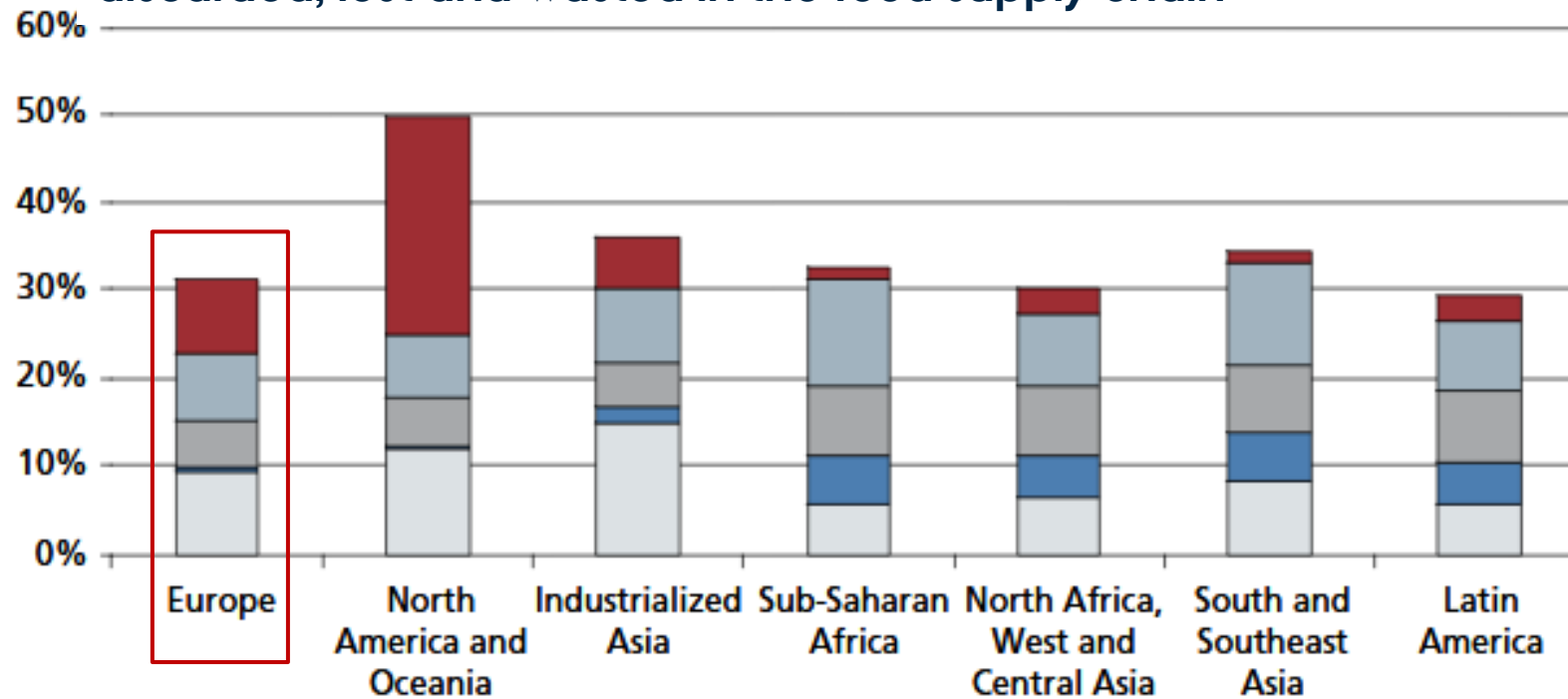
The State of World Fisheries and Aquaculture, FAO (2016)

# 'FISH WASTE NOT, WANT NOT...'



Photo by Joseph Robertia.

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

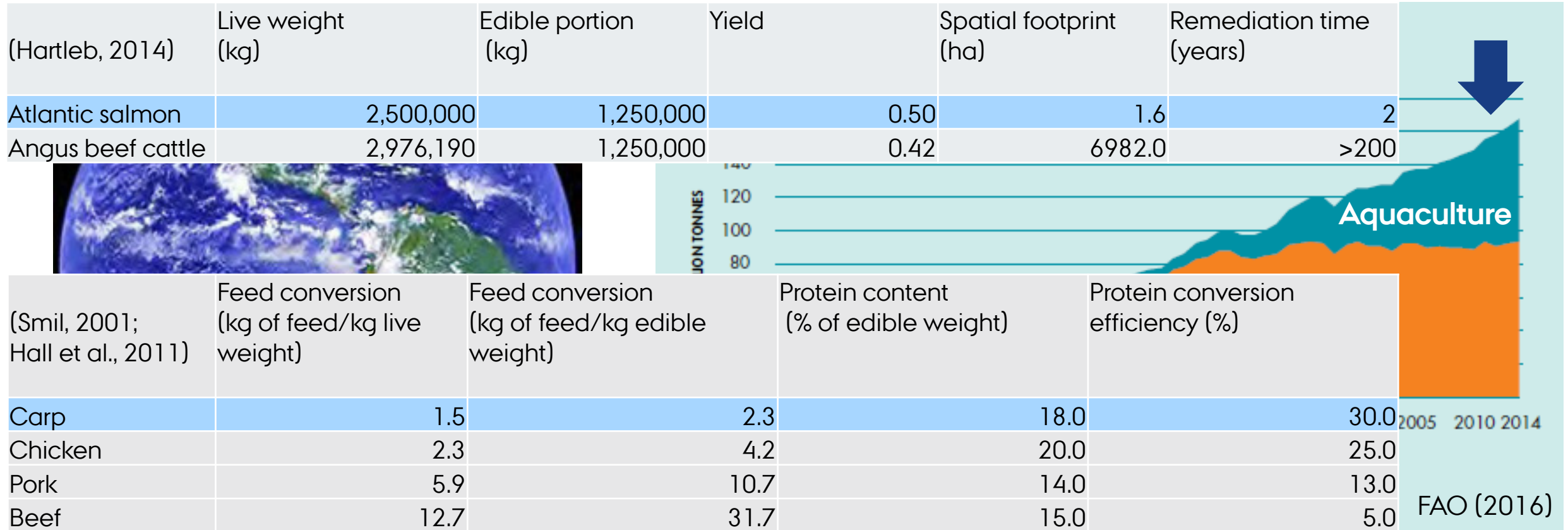


**25% used for fishmeal and fish-oil production**

(Shepard 2012; Worldbank, 2013)

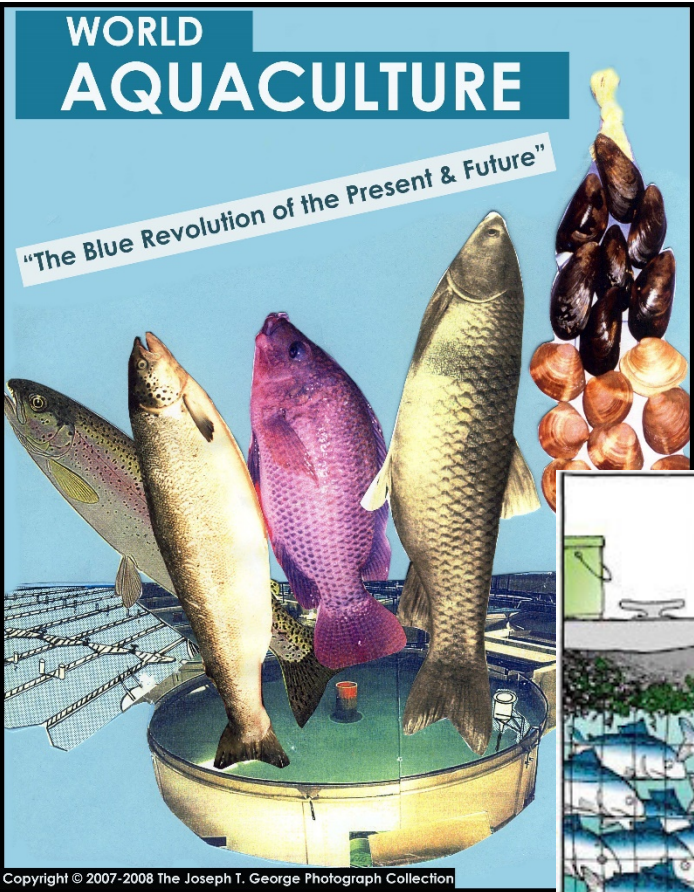
(FAO, 2011. Global food losses and food waste)

# BLUE REVOLUTION: AQUACULTURE WITH POTENTIAL TO FEED THE WORLD?

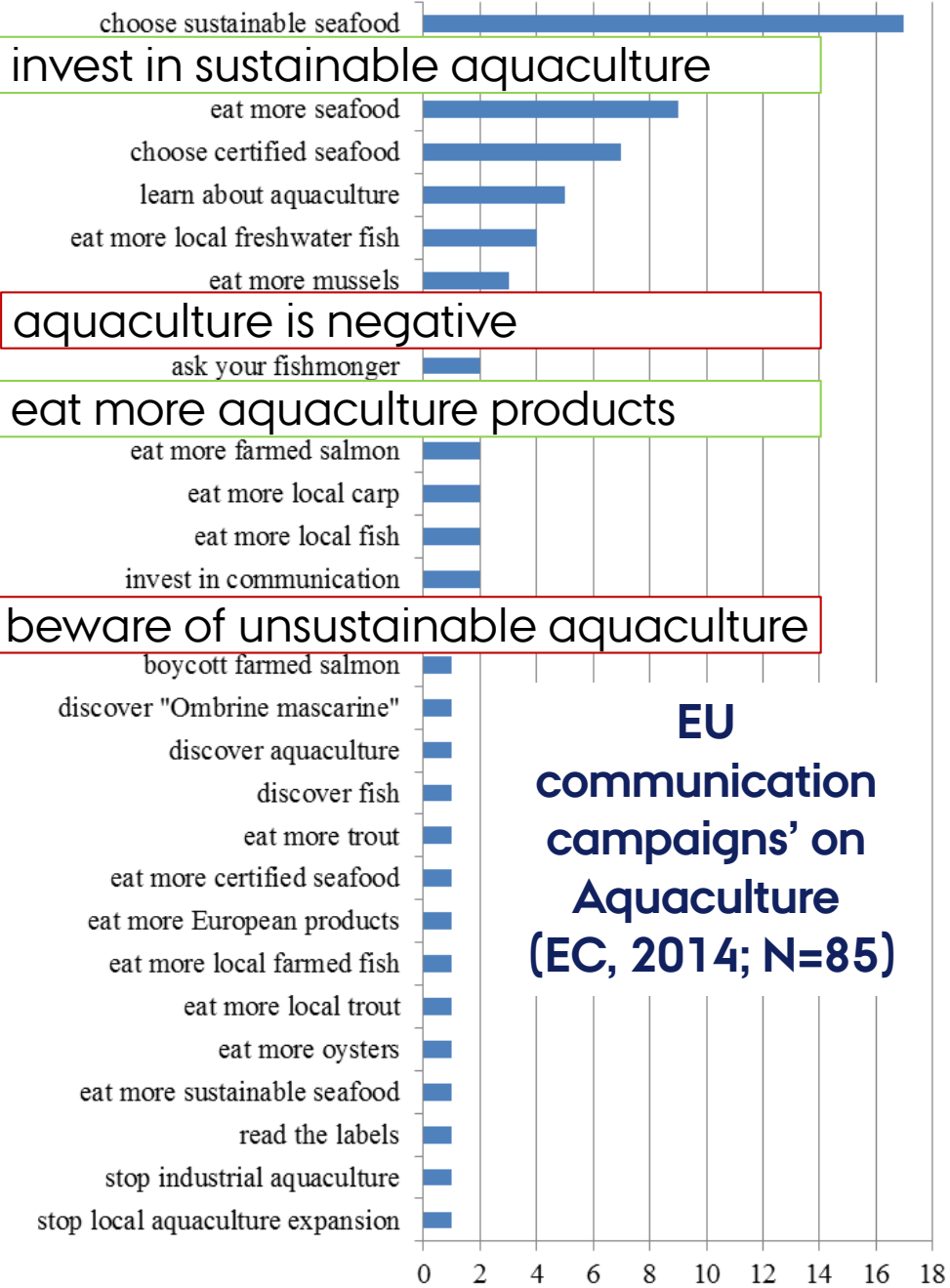




# MIXED MESSAGES



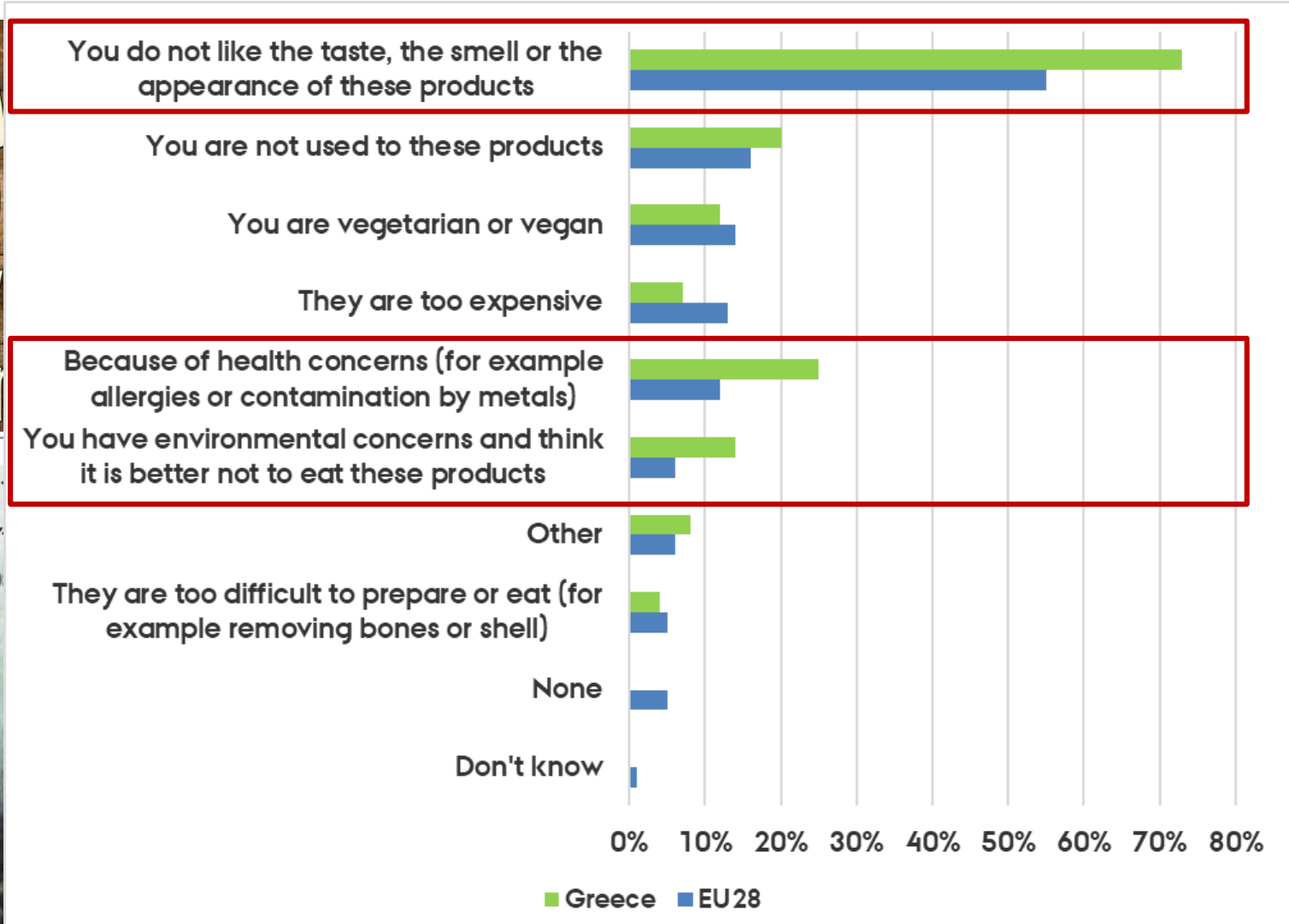
Adapted from <http://donstaniford.typepad.com/files/press-update-december-17-2012.pdf>





# 'NOWHERE TO RUN, NOWHERE TO HIDE'

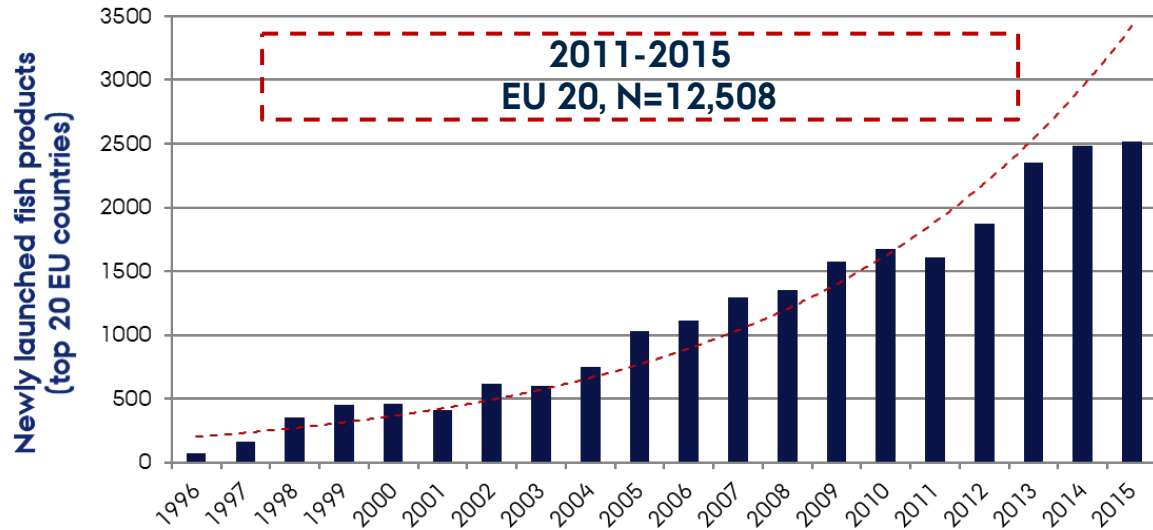
## CONSUMER MAIN REASONS TO NEVER EAT ANY FISHERY OR AQUACULTURE PRODUCTS



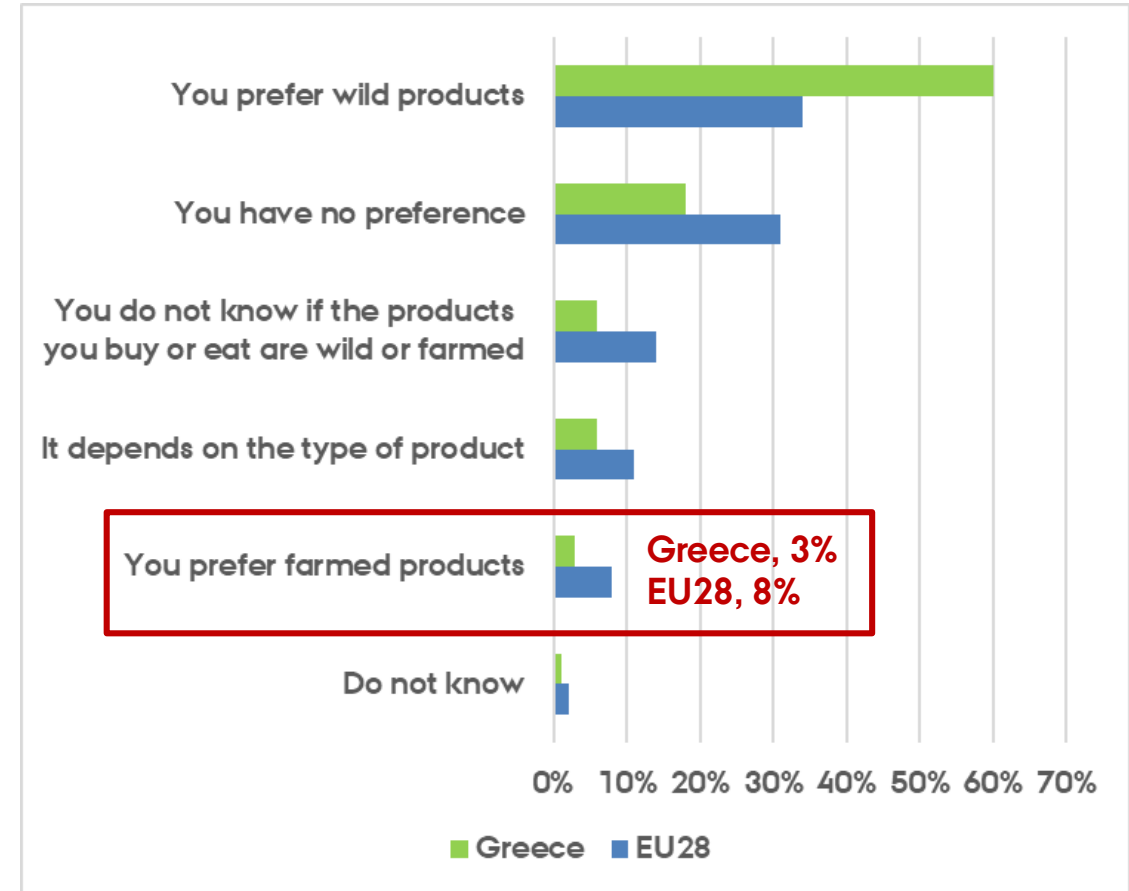
(Special Eurobarometer 450: EU28, N= 24452; Greece, N=946; year 2017)

# AQUACULTURE PRODUCTS (IN)VISIBLE?

**Do consumers  
recognize  
aquaculture products?**



(Mintel, 2016)



(Special Eurobarometer 450: EU28, N= 24452; Greece, N=946; year 2017)

# 'IF YOU BUILD IT THEY WILL COME'



Adapted from <https://serc.carleton.edu/eslabs/fisheries/1.html>

Wild  
fish



Adapted from <https://supermarketsinyourpocket.com>



Farmed  
fish



Adapted from <http://diversifyfish.eu>

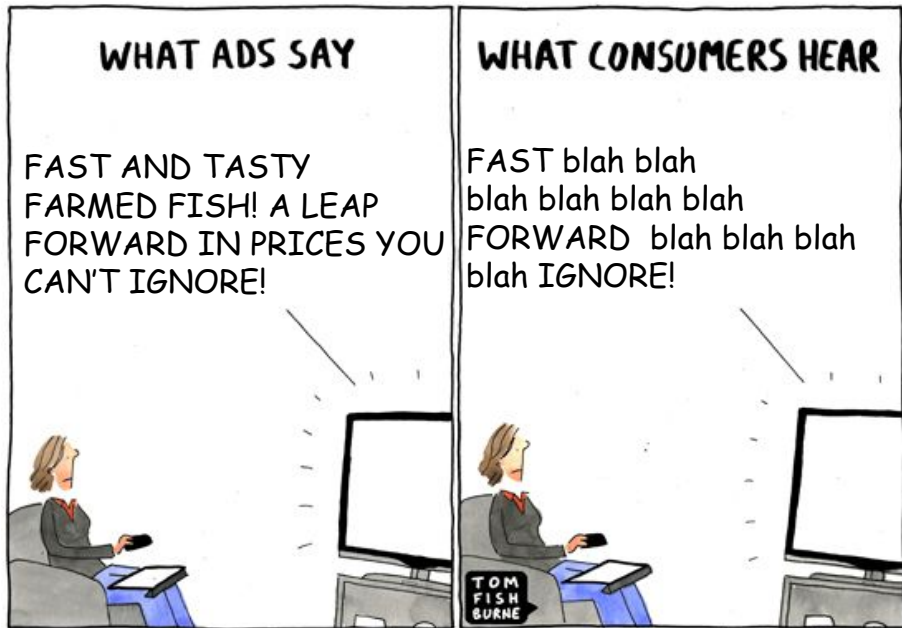


Adapted from <http://www.clipartpanda.com/>



# LIKELY TO IGNORE YOUR PRODUCT TOO...IF IT DOESN'T...

How can  
aquaculture products  
make a difference  
and persuade consumers?



Adapted from @marketoontist.com

Stand out  
in a crowd  
and  
...

**Feel familiar**

(Gigerenzer & Gaissmaier, 2011)

**Feel true**

(Oppenheimer, 2005)

**Feel good**

(Stepper & Strack, 1993)

**Feel effortless**

(Gigerenzer & Goldstein, 1996)

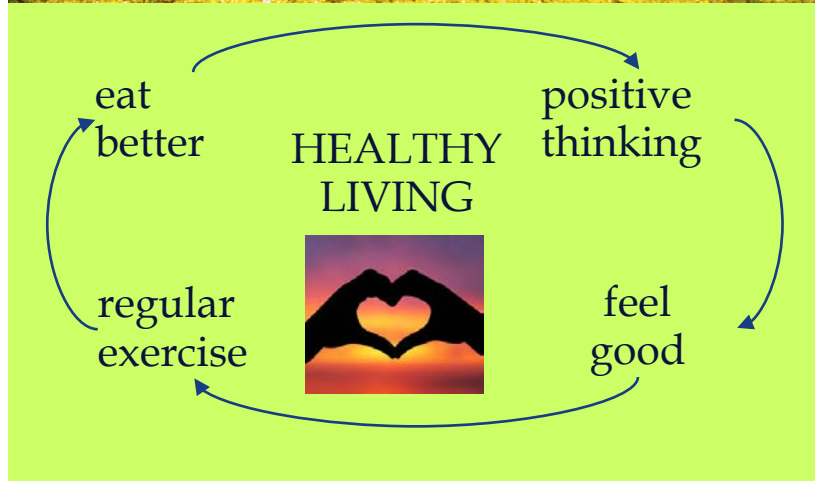
**Provide if...then plan**

(Gollwitzer, 1999)

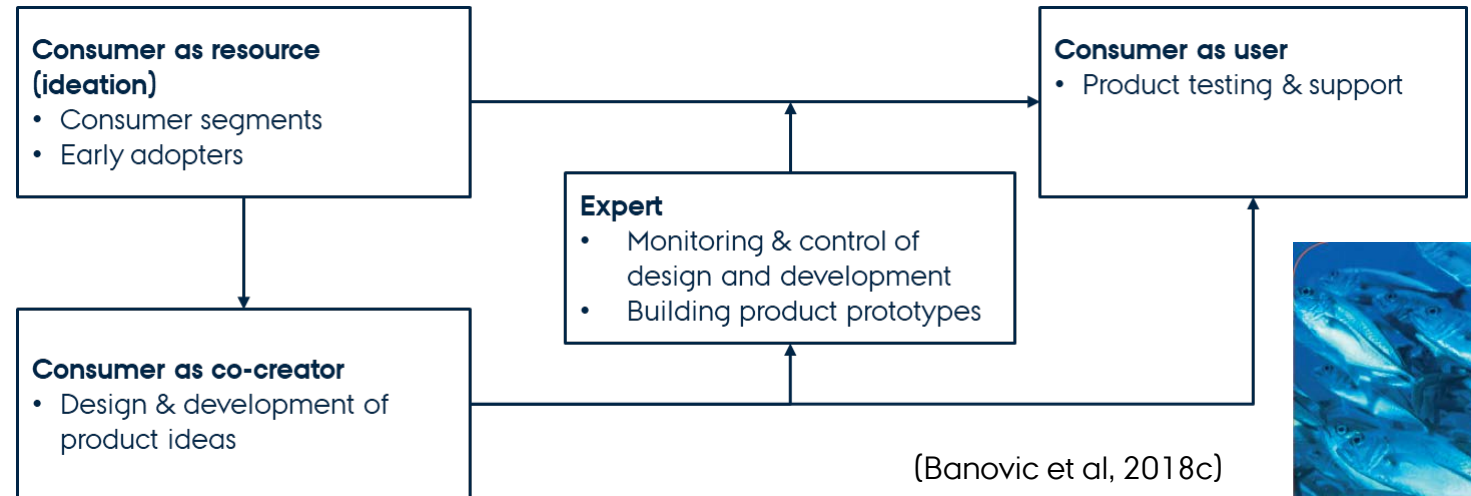
(Kahneman, 2003)



# ADDING VALUE TO AQUACULTURE PRODUCTS



Adapted from AboutLifez.com & MarkInternational.info



[www.diversifyfish.eu](http://www.diversifyfish.eu)

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

# CONSUMER AS RESOURCE & CO-CREATOR: 'IT ALL STARTED WITH THE CONSUMER'



**Early adopters** - Online survey (i.e. FR, GER, IT, SP & UK; N=2500)



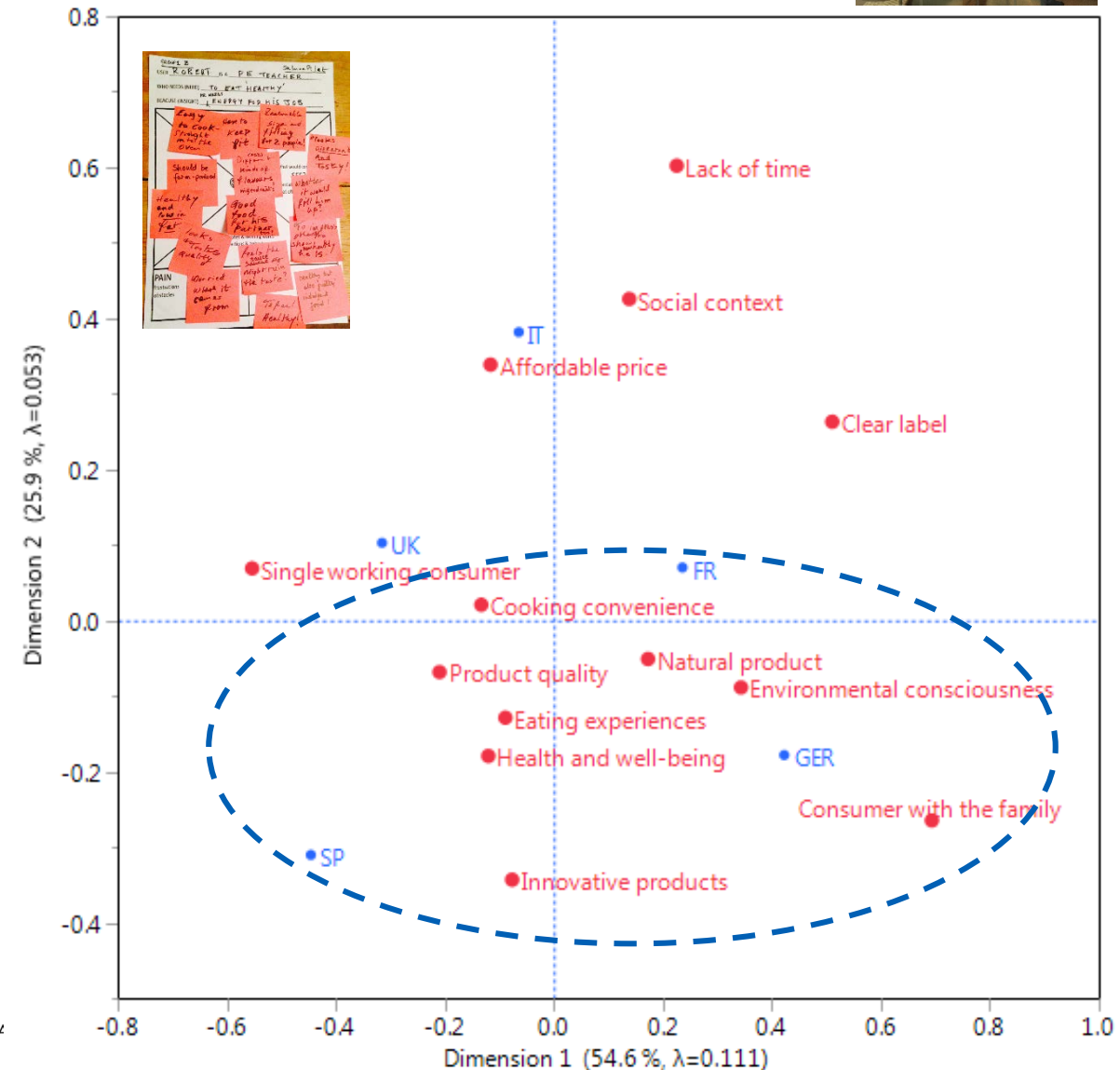
involved innovators (30%), involved traditional (36%), ambiguous indifferent (34%)

## Consumer preferences & product ideas

Ten focus groups with early adopters (i.e. FR, GER, IT, SP & UK; N=60)

- aquaculture products need to be **natural**, respect the environment and provide **good eating experience**
- benefits of the aquaculture products linked to the **overall feeling of health** and well-being
- preference for products that are **quick** and **easy to cook**

(Reinders et al, 2016; Banovic et al., 2016)



# PRODUCT PROTOTYPES

Fish species	Developed DIVERSIFY product prototypes	
Meagre	Idea 6: Fish burgers shaped as fish	(High processing)
	Idea 4: Ready to eat meal: salad with fish	(Low processing)
Pikeperch	Idea 9: Fish spreads/pate	(High processing)
Grey mullet	Idea 2: Thin smoked fillets	(Medium processing)
	Idea 33: Ready-made fish fillets in olive oil	(Medium processing)
Greater Amberjack	Idea 34: Fresh fish steak for grilling in the pan (Low processing)	



(Diversify - D28.4, D29.4, CTAQUA, IRTA, HCMR)



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

# CONSUMER AS USER: CHOICE EXPERIMENTS

## PRODUCT MOCK-UPS



## ATTRIBUTE MANIPULATION

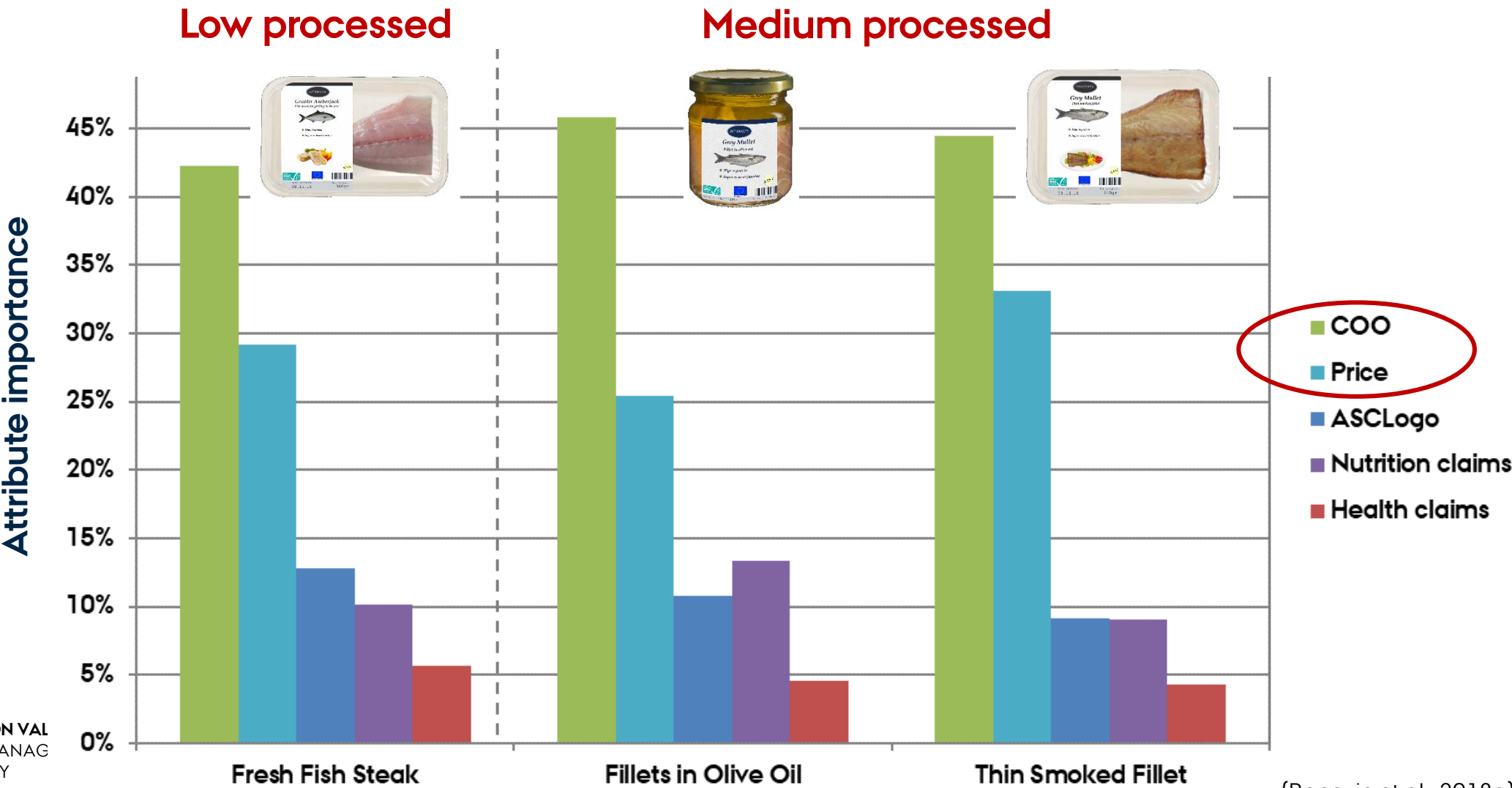


(Banovic et al., 2018a; D29.6, AU)



# CONSUMER AS USER: COUNTRY OF ORIGIN INCREASES WTP FOR A PRODUCT

N = 1500,  
France  
Germany  
Italy  
Spain  
UK



# CONSUMER AS USER: COMMUNICATION EXPERIMENTS

Between-subjects design; N = 1565 (France, Germany, Italy, Spain, UK)

1 (promotion - sustainability) x 3 (product processing) x 3 (goal message)

## CHOOSE PRODUCTS FROM DIVERSIFY AQUACULTURE!

All products are made with the same attention to quality

Diversify aquaculture fish products come from a carefully selected group of finfish species and a production method that allows for both greater diversity of fish species and new value-added products. The fish species, such as Greater Amberjack, is selected based on its growth, size and excellent product quality. Fish are grown in large cylinder-shaped pools that float on the sea surface and reach down up to 20 meters depth. This sustainable method is used for rearing finfish species in coastal and open waters, within areas sheltered from excessive wave action, but with sufficiently deep water and fast current speeds where the water flows freely through the pools, and allows the fish to grow in clean and highly oxygenated water.

Diversify aquaculture is renowned for its high quality, sustainability and consumer protection standards.

With Diversify aquaculture imagine the benefits for you and your family!

Low processed



Medium processed



High processed



## GET HEALTHY PRODUCTS FROM DIVERSIFY AQUACULTURE!

Super-healthy fresh fish steak from Diversify aquaculture  
for a healthier-happier day

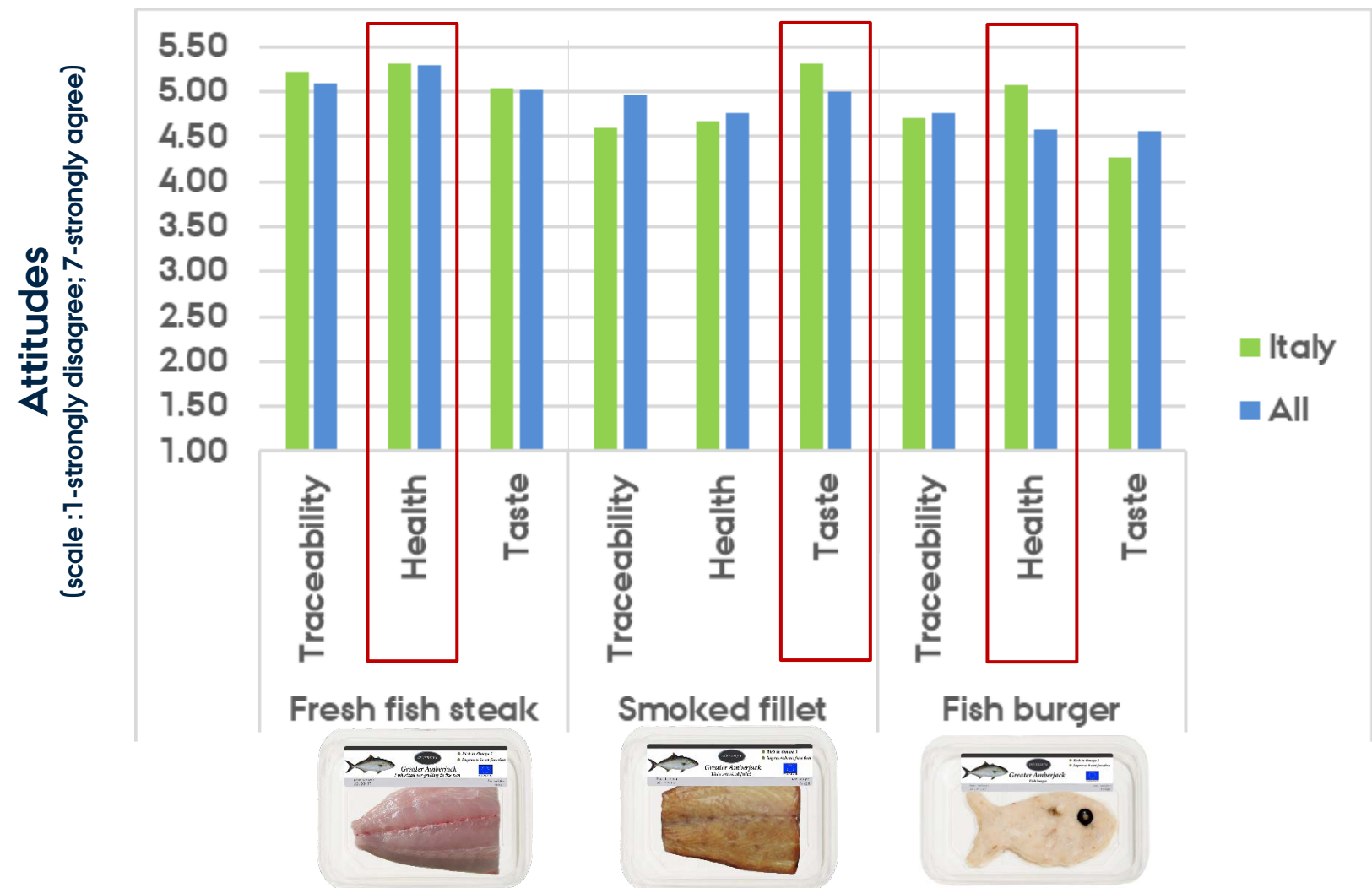
## GET TASTY PRODUCTS FROM DIVERSIFY AQUACULTURE!

Super-tasty fish burger from Diversify aquaculture  
for a great moment

## GET TRACEABLE PRODUCTS FROM DIVERSIFY AQUACULTURE!

Transparent journey of smoked fish fillet from Diversify aquaculture  
for a responsible tomorrow

# CONSUMER AS USER: PERSUADING THE CONSUMER



# WHAT DID WE LEARN FROM DIVERSIFY?

**Aquaculture products that...  
Stand out in a crowd...**

## Need to feel familiar

- Adapt information to the type of aquaculture (e.g. '...The fish species, as Greater Amberjack, is selected based on its growth, size...') and...
- Highlight the most valuable benefits and attributes (i.e. Country of Origin)

## Need to feel true (aquaculture overshadowed by legitimate doubts)

- Better link between production method, environmental concerns, responsible consumption and aquaculture (i.e. traceability, ASC logo)

## Need to feel effortless

- Less clutter - convenience at the purchase point and at home - branding, storytelling, recipes essential (e.g. Diversify, 'All the pleasure with little effort')

## Need to feel good

- Associations to healthy and tasty diet - invoking positive emotional states (e.g. 'Super-healthy fresh fish fillet from Diversify aquaculture for a healthier-happier day.')

## Need to provide if...then plan – goal directed action

- Facilitate product implementation – communicate what consumer should do ('where', 'when' and 'how') (e.g. 'Eating this product is an easy way to protect and improve your cardiovascular health.')



ON VALUE  
MANAGEMENT  
SYSTEM  
ITY



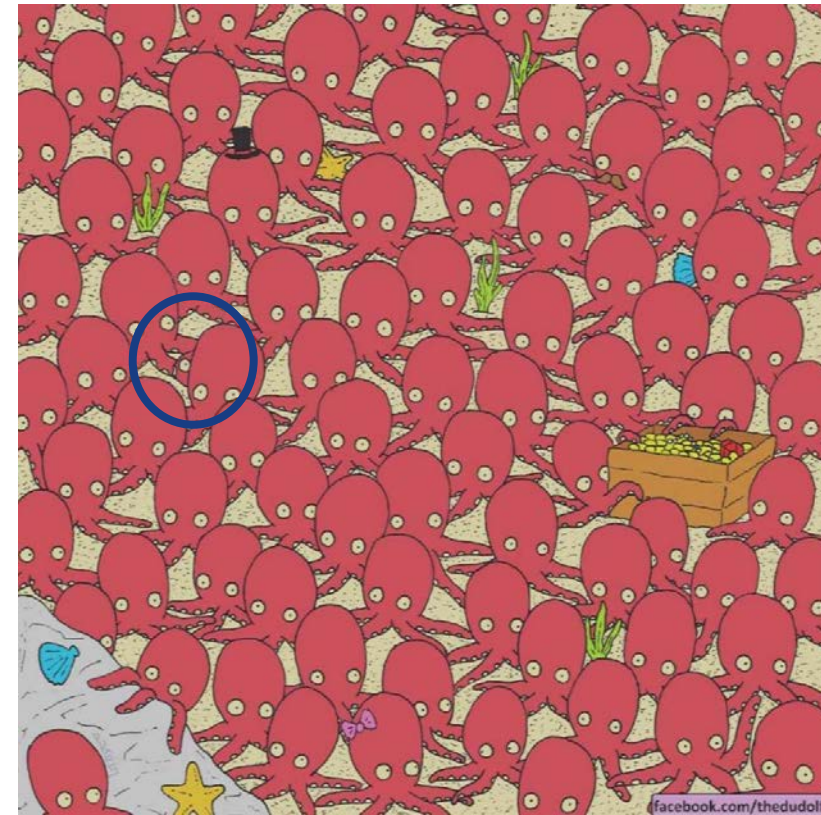


# KEY TAKEAWAYS

**Aquaculture** needs to engage/persuade consumers that their products **can constitute an excellent source of sustainable, healthy and quality food...**

**Legitimate doubts** and **mixed messages** about **aquaculture intensification** and its **concerns**, should be **overcome by...**

- **promotion through use of specific messages (not generic)**, that can stand competition/defend against bad word of mouth
- **promoting unique production process** and **increasing product visibility** as **traceable, healthy**, but also **tasty** alternatives for modern (protein) diets and responsible consumption



Puzzle by cartoonist Gergely Dudás (2016).

# THE WAY FORWARD? FROM FISH SKIN TO A HANDBAG....

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

- **Learn from** ocean's hot dog – **fish stick**, Josephson (2008)
- **Decrease the fish waste** at production/processing and consumer level...not only as fishmeal, fish oil... but **new consumer products** ... biofuel... composting... **handbags**...
- Processed -- low cost -- stable **fish by products** could **boost aquaculture production/ decrease fish waste**...

Van zalmhuid tot handtas. Carla van der Helm bij Galerie Zône.



Scientific American, March 1956; Magazine ad showing the quick-freezing seafood of the future

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!**



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