



Deliverable Report

Deliverable No:	D29.7	Delivery Month:	44
Deliverable Title	Development of the stimulus (i.e. written and broadcasted information material) that will be used in the communication experiments in the five countries investigated		
WP No:	29	WP Lead beneficiary:	P11. AU
WP Title:	Socioeconomics - Consumer value perceptions and behavioural change		
Task No:	29.4	Task Lead beneficiary:	P11. AU
Task Title:	Communication effectiveness in behavioural change		
Other beneficiaries:	P38. HRH	P3. IRTA	
Status:	Delivered	Expected month:	42

Lead Scientist preparing the Deliverable: Banovic, M. (AU)

Other Scientists participating: Krystallis, A. (HRH), Guerrero, L. (IRTA)

Objective: The main objective of D29.7 is the development of the stimulus (i.e. written information material) that will be used in the communication experiments in the five countries investigated within Diversify (i.e., Germany, France, United Kingdom, Italy and Spain). In addition to the product acceptance and optimal combinations of attributes actions (Tasks 29.1.1 to 29.3.2), the effects of different forms of textual communication are tested in Task 29.4 for their effect on consumer attitudes and buying intentions. Deliverable 29.7 selects single communication parameters (i.e. message and process) and their combinations that will be tested in Task 29.4.

Description: Deliverable D29.7 contains the following information: (i) the methodology to be used for the development of communication experiments, and (ii) the experimental design that further includes (a) the background and conceptual framework; (b) the message stimuli; and (c) the proposed experimental design itself.



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1. Objective

The main objective of this report is to develop the stimulus that will be used in the communication experiments in the five countries investigated (i.e., Germany, France, United Kingdom, Italy and Spain). The different forms of information frame are designed for the communication tests in Task 29.4. These different information frames will be tested further and reported in subsequent Deliverable 29.8 for their effect on consumer attitudes and buying intentions. Therefore, this report selects information frame based on Deliverables 28.1, 29.2, 29.4 and 29.6 and provides the experimental design that will be tested in Task 29.4.

2. Methodology

In order to develop the information stimulus that will be used in the communication experiments in the five countries investigated (i.e., Germany, France, United Kingdom, Italy and Spain) for the target consumer segments established in Sub-task 29.1.1 and collapsed in Sub-task 29.3.2 as one “high involved” consumer segment (see Deliverable 29.2, 29.4, and 29.6), this report follows a four-step approach:

- i) First, the most important findings from the previous Deliverables (i.e. D28.1, D29.2, D29.4 and D29.6) have been taken into account as the most important appeals and attributes that should be considered when developing the information to be communicated around Diversify project.
- ii) Second, a literature review of previous communication studies that involve different experimental set-ups with similar appeals and attributes, as well as their levels, has been undertaken to create optimal possible conceptual framework for the communication study, also taking into most important findings from Diversify (i.e. previous step).
- iii) Third, the selected results from Diversify and existing literature review have been validated with existing secondary data on communication around fish products using datasets from the Mintel¹ Global New Products Database (GNPD) portal and a recent report from the European Commission on *Communication Campaign on Aquaculture in the European Union* (EC, 2014).
- iv) Fourth, integrating the above, an experimental design for the communication experiments has been proposed.

By taking the previous steps, the validity of the current report is enhanced and the information frame is developed in a way that will ultimately contribute to the communication campaign around new fish products, when these products are placed in the European fish markets.

2.1 Important appeals from previous Diversify consumer studies

Based on the information from the previous tasks within WP28 and WP29 (i.e. Deliverables 28.1, 29.2, 29.4 and 29.6) several important aspects have been selected for the development of the information frame for the communication experiments (**Figure 1**).

Besides the fact that new fish products should have something original, intriguing and innovative in order to attract the consumer (Banović, Krystallis, Guerrero, & Reinders, 2016; Reinders, et al., 2016), the most often mentioned aspects and most important goals for searching and buying Diversify products, overlapping throughout consumer studies (i.e. Deliverables 28.1, 29.2, 29.4 and 29.6), were environmental consciousness, healthiness, and enjoyment while eating. Specifically, it was found that the main discourse behind the new fish products’ story should be the concerns in relation to the environment and certain constant obstacles and difficulties that are mainly related to human activity (i.e. environmental

¹ The Mintel Global New Products Database (GNPD) (<http://www.gnpd.com/>) monitors product innovation and retail success in consumer packaged goods markets worldwide. GNPD offers unrivalled coverage of new product activity for competitor monitoring, category awareness, opportunity identification and inspiration for new product development.



consciousness). Further, it was found that the discourse should promote healthy lifestyle (i.e. healthiness) and enjoyment while eating (i.e. experiences while eating) (Banović, et al., 2016; see also Deliverable 28.1). The most important values and beliefs distinguishing between consumer segments that are involved with new farmed fish products were ethical values (i.e. environmental consciousness), hedonic values (i.e. enjoyment while eating), and beliefs that healthiness of farmed fish is higher (Reinders, et al., 2016; see also Deliverable 29.2). Moreover, the most important parameters affecting consumer sensory expectations is the taste of the product (i.e. enjoyment while eating), as well as health and well-being related issues. The environmental friendly character of the farmed fish products did not emerge as significant factor due to the fact that all products carried in their description claims such as “sustainably produced” or “produced in an environmentally sustainable way”, which may have minimized the impact of environmental concern (see Deliverable 29.4). Finally, it was reported that target consumers are willing to pay more for a product that carries an “ASC certification logo” and claims “Omega 3” and “improves heart function”, related to environmental and health issues (see Deliverable 29.6).

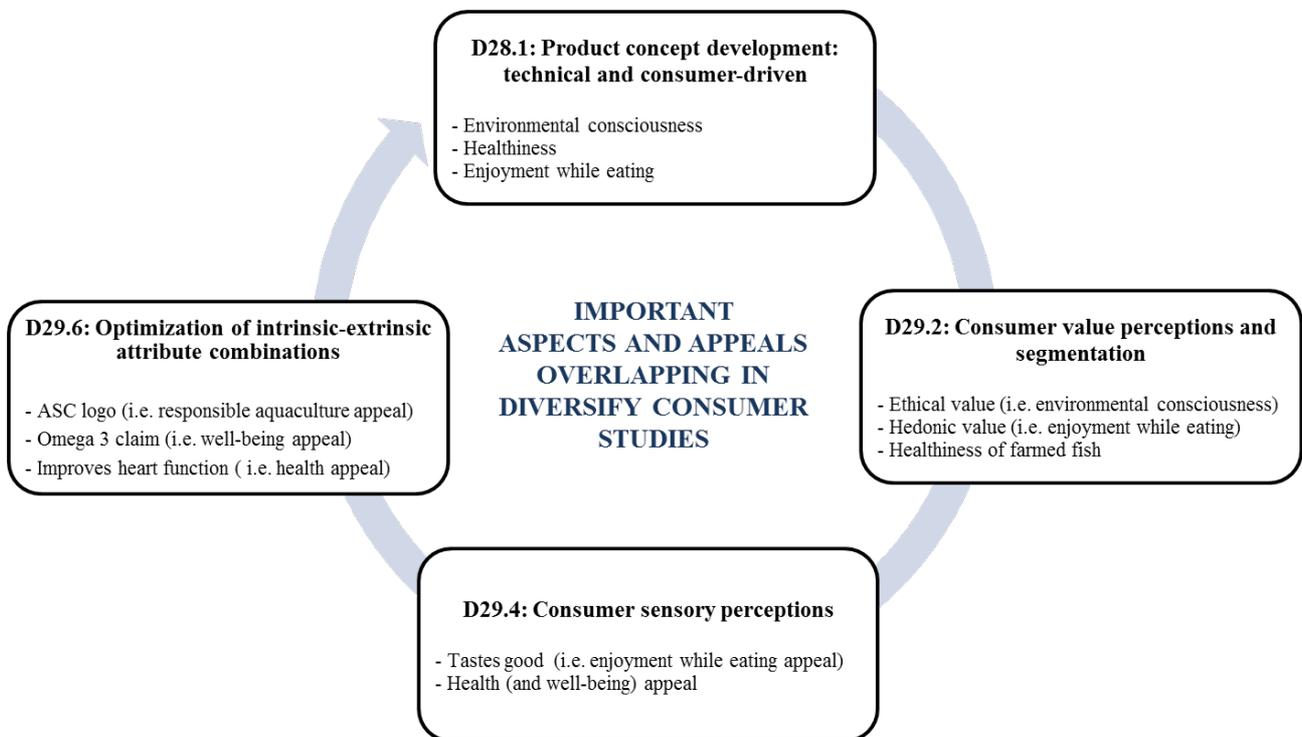


Figure 1. Important aspects and appeals overlapping in Diversify consumer studies.

2.2 Review of relevant communication studies

Review of the relevant communication studies with similar appeals found in the Diversify consumer studies may assist in building and selecting most appropriate way of information framing and frame type (**Tables 1 and 2**). Table 1 and 2 provide summary of the most recent communication studies with a main focus on those that have employed messages with environmental and health appeal. To our knowledge there are no studies employing ‘enjoyment while eating’ as a goal framing. It should be also stressed here that no study



until now has employed in its experimental design the promotion of the aquaculture production method or fish product attributes. Most of the reviewed studies used between-subjects experimental design as it is common practice in framing experiments (Levin, Schneider, & Gaeth, 1998). All reviewed experiments have been conducted through either print or online media and within a limited geographical region (**Table 1 and 2**). The dependent variables that have measured the persuasive effectiveness of information framing vary in the studies, depending on the message. For example, when a message was a product advertisement, the persuasive effectiveness was measured through purchase intention, attitude towards the ad, and attitude towards the brand (Lee & Aaker, 2004); whereas when the message was from public authorities (to promote certain practices), the dependent variable was mostly intended to change a certain behaviour (e.g. engage in environmentally friendly practices) (Evans, et al., 2013).

Persuasive messages often focus on the *self* and *others* who may *gain* or *lose* as a result of a given behaviour (Evans et al., 2013; Loro, 2007). Since the use of the *self vs others* as a reference point is a common practice in pro-environmental related messages, Loro (2007) examined if the interaction effect of the reference point (*self vs self-other*) and the valence (*positive vs negative*) of the frame can have an impact on the appeal effectiveness. The premise behind this research question was that the cognitive demand required for the mental representation of the *self* and the process of the *negative frame* are both high, in contrast to that required for the mental representation of *others* and the process of the *positive frame*.

Similarly, Kareklas, Carlson and Muehling (2012) examined the interaction between the primed *self-view* (i.e. independent) vs *others* (i.e. interdependent or meta-personal) using regulatory focus theory. They found that independent goals are more promotion-focused, while interdependent goals refer to the effort of an individual not to deviate from the norms and therefore are more prevention-focused. The goal compatibility between independent *self-view* and regulatory focus enhances the understanding of the message for both environmental or health related messages.

Newman, Howlett, Burton, Kozup and Heintz Tangari (2012) investigated the influence of consumer concern about global climate change on framing effects for environmental sustainability messages. They found that a recipient who is highly concerned about the issue of the message (i.e. climate change) would engage in a higher information processing and thus be less prone to be influenced by the framing effect. On the other hand, if the recipient is low-concerned about an issue (i.e. climate change), he or she will probably be more impacted by the framing effect.

White, MacDonnell and Dahl (2011) examined a possible match between the construal level and gain vs loss frame, and its impact on consumer efficacy and conservation behaviours. The authors reported that matching low construal level with gain frame, and high construal level with loss frame enhances the processing fluency of the message. The effectiveness of the matching was confirmed by the findings as well as the model with the particular mediators.

Chang, Zhang and Xie (2015) also questioned the interaction effect between message framing and the construal level (as temporal distance) and how this is moderated by environmental concern. In other words, they tested previous findings from studies developed by Newman et al. (2012) and White et al. (2011). The results from Chang et al. (2015) suggest that the pairing of construal level and message frame enhances the persuasive effectiveness, but only under high-concerned conditions (i.e. higher level of consumer environmental concern).

For further description of the reviewed communication studies and operating procedures see **Tables 1 and 2**.



Table 1. Studies including messages with pro-environmental appeal

References	Focus	Experimental design	Task domain	Frame type and key findings
Loroz et al. 2007	The interactive effect of role of reference point and the moderating role of appeal type (environmental vs health)	1st study: 2 (negative vs positive) x 2 (self vs self-other) between subject 2nd study: 2 (negative vs positive) x 2 (self vs self-other) x 2 (behavioural vs environmental appeal) between subject	1st study: Recycling 2nd study: Recycling, prevention of sexually transmitted disease	<ul style="list-style-type: none"> Negative frames were more persuasive with self-referencing appeals Positive frames are more persuasive with self-other referencing appeals
Kareklas et al. 2013	The interactive effect of self-view and regulatory focus and how it is moderated by the appeal type	1st study: 2 (promotion vs prevention) x 2 (independent vs interdependent) between subject 2nd study: 2 (promotion vs prevention) x 2 (independent vs interdependent) x 2 (health vs environmental appeal) between subject	1st study: Purchase of organic cow milk 2nd study: Purchase of organic cow milk	<ul style="list-style-type: none"> In the independent self-view condition, the prevention-focused are more persuasive. In the interdependent self-view condition, the promotion-focused appeals performed as well as or better than the prevention-focused appeals.
Newman et al. 2012	The moderating role of environmental concern framed either with regulatory focus or positive vs negative	1st study: 2 (negative vs positive) x 2 (low vs high concern) between subject 2nd study: 2 (promotion vs prevention) x 2 (low vs high concern) between subject	1st study: action to force legislation for sustainability 2nd study: environmentally sustainable behaviours	<ul style="list-style-type: none"> The level of issue-concern moderates the strength of the framing effect; effects are larger when concern about climate change is low. When concern is low, more negative framing and a prevention focus have more positive persuasion effects.
Chang et al. 2015	The moderating role of construal level (conceptualized as temporal distance) in the effects of gain vs loss frame	1st study: 2 (loss vs gain) x 2 (recipient present-oriented vs future-oriented) between subject 2nd study: 2 (loss vs gain) x 2 (recipient present-oriented vs future-oriented) x (high vs low concern) between subject	1st study: purchase of environmentally friendly dishwashing liquid 2nd study: purchase of hybrid cars	<ul style="list-style-type: none"> Congruency between loss frame and present orientation, as well as the match between gain frame and future orientation, leads to higher persuasive effectiveness. The salience of the congruency effect varies in line with the level of consumer environmental concern
White et al. 2011	The moderating role of construal level (conceptualized as how you achieve something vs why you achieve- or prevent- something)	1st study: 2 (loss vs gain) x 2 (how vs why) between subject and a baseline condition Dependent variables: Measured recycling behaviour and participation in recycling program over time 2nd study: 2 (loss vs gain) x 2 (temporal construal proximal (clean city today) vs distant (clean city tomorrow) between subject 3rd study: 2 (loss vs gain) x 2 (how vs why) and mediating variable Processing fluency (Difficulty to understand the message), perceived efficacy (Belief that by acting someone can achieve/avoid) between subject	1st study: recycling 2nd study: recycling 3rd study: recycling	<ul style="list-style-type: none"> In the long run, matching frame with construal level can lead to more positive recycling behaviours. Loss (gain) frames work best when the consumer activates a mind-set at a low (high) level of abstraction The processing fluency mediated the indirect effect of the interaction (between message framing and construal level) on efficacy as an outcome The efficacy has significant impact on the Behavior intention



Table 2. Studies including messages with health-related appeal

References	Focus	Experimental design	Task domain	Frame type and key findings
Kees et al. 2011	The interactive effect of time orientation and the temporal or regulatory focused frame	1st study: 2 (present framed vs future framed) x 2 (oriented to future vs oriented to present) between subject 2nd study: 2 (promotion vs prevention) x 2 (oriented to future vs oriented to present) between subject	1st study: Avoid consumption of fat fast food 2nd study: Adopt healthy life-style	<ul style="list-style-type: none"> • Present-oriented consumers can be more persuaded by messages that emphasize proximal rather than distant consequences of unhealthy food choices. • Messages focused on promotion strategies result in higher behavioural intentions for present-oriented consumers.
Chang et al. 2007	The influences of message framing and perceived product characteristics	1st study: 2 (loss vs gain) x 2 (product function preventive vs product function detecting) x 2 (product perceived familiar vs product perceived innovative) between subject 2nd study: 3 (loss vs gain vs mixed) x 2 (high perceived risk vs low perceived risk) x 2 (product familiar vs product innovative) between subject	1st study: purchase of a new oral hygiene product 2nd study: purchase of a new travel health care products	<ul style="list-style-type: none"> • For familiar products messages are more persuasive when they are framed differently depending on perceived product functions, but for innovative products messages should be gain-framed irrespective of perceived product functions • Mixed-framed messages could increase persuasive effectiveness only for experienced recipients • Product perceived risk moderates the framing effects
Levin et al. 2002	Distribution of effect Sizes, Individual Differences, and Independence of framing effects for different types of framing	Attribute Framing Effect within subjects, Goal Framing Effect within subjects, Risky choice Framing Effect within subjects Independent variables : Personality inventory, Extraversion-Introversion, Rational-experiential, Demographics	Purchase of lean meat	<ul style="list-style-type: none"> • Reliable framing effects for attribute framing and risky choice framing, but not for goal framing • The majority of individuals showed framing effects • No significant interdependencies between the three categories of framing effects • Individual differences in framing effects varied across the personality traits as well as the Faith in Intuition scale
Kees et al. 2010	The impact of chronic regulatory focus (perceived ability to “ <i>get what you want</i> ”) and temporal orientation on messages framed with different Goal pursuit strategy	1st study: 2 (Goal strategy Eager vs Goal Strategy Vigilant) x 2 (recipient oriented to present vs recipients oriented future) between subject AND variable of Perceived risk was measured as possible mediator 2nd study: 2 (Goal is to achieve healthiness vs Goal is to avoid disease) x 2 (recipient oriented to present vs future) x 2 (recipients’ Median split recipients of Measured Chronic regulatory focus) between subject	1st study: Adoption of healthy life-style (diet and exercise) 2nd study: Adoption of healthy life-style (diet and exercise)	<ul style="list-style-type: none"> • A significant main effect of Goal Pursuit Strategy manipulation on consumers’ attitude toward the ad was found • An interactive effect between Goal Pursuit Strategy and Temporal orientation on consumers’ attitude toward the ad was found • Consumer risk perceptions mediates the Goal Pursuit Strategy and temporal orientation • A significant interaction effect between Goal Pursuit Strategy and Chronic Regulatory Focus increases the effectiveness of the advertisement, but this effect is moderated by temporal orientation

2.3 Analysis of the secondary data related to communication campaigns on fish products

Analysis of existing secondary data related to communication campaigns on fish products can additionally assist in the selection and fine tuning of the most important appeals for the communication experiments, as well as to provide a clear picture of the existing campaigns in the marketplace and what could possibly work for consumers in terms of better message effectiveness. Based on the analysis of secondary data, conclusions can be drawn about the optimal messages for the communication experiments. This is done in order to obtain additional information on the communication campaigns around fish products at the EU marketplace, with emphasis on the developed fish products within the Diversify project and the five countries investigated (i.e. France, Germany, Italy, Spain and the United Kingdom). The possible design is presented in the subsequent section. Thus, in order to have a clear picture of the communication campaigns around fish products in the European countries,

- First, an extensive search has been undertaken in Mintel GNDD Database to pinpoint the most important messages used around newly launched fish products²;
- Followed by the analysis of the report on existing 85 communication campaigns related to aquaculture products (EC, 2014).

Some of the most often-used messages around newly launched fish products are summarized in **Table 3**. A review of these existing messages demonstrate that most of the information used in the communication around fish products relate to promotion and prevention frame and three major goals: (i) environmental - production method, (ii) health-related lifestyle, and (iii) enjoyment while eating – taste.

Table 3. Example of messages used around newly launched fish products, Mintel, 2016.

	Environmental/ Production method	Health-related lifestyle	Enjoyment while eating/ Taste
PROMOTION (positive/gain)	‘At Bird’s Eye we care about future generation as much as we do about you and your family today. That’s why we only bring you fish that comes from responsibly managed fisheries.’ (quote from Bird’s Eye brand)	‘Eat fish and live better! Looking after ourselves and those we love is easier than it might appear; it’s simply a question of a few good habits! (...) Fish is an essential food for good nutrition because it is a protein source that also brings ‘good’ fats into our diet.’ (quote from Rio Mare brand)	‘All the flavour of tuna and much more, this spreadable product offers you a soft, creamy concentration of taste in a practical tube. Easy to measure, it closes with a cap for perfect storage in the refrigerator.’ (quote from Rio Mare brand)
PREVENTION (negative/loss)	‘Discover Rio Mare’s journey of quality, from the fishing grounds to the first processing stage which takes place in the same places where the fish are caught. It’s a transparent journey where every detail is available to you. (...)’ (quote from Rio Mare brand)	‘Omega-3 fatty acids are most abundant in deep-water fatty fish and in some plant oils. They have anti-inflammatory effects on the body and may be helpful in the prevention and treatment of numerous conditions.’ (quote from Royal Greenland brand)	

Cross-comparison of previous secondary data provided from the Mintel GNDD portal with a report on 85 existing communication campaigns regarding aquaculture products (EC, 2016) allowed further for a more effective generation of messages and communication experimental designs that will be subsequently tested within Task 29.4. More specifically, EC (2014) reports that even though existing messages try to promote

² The search of messages used around newly launched fish products has been carried out during 2016 on new fish products launched between 1st of January 2011 and 31st of May 2016. Additionally, the search has also been restricted to the products similar to those from Diversify project (see Deliverable 29.4 and 29.6) and the five countries investigated (i.e. France, Germany, Italy, Spain and the United Kingdom).



aquaculture products, there is still a lack of general awareness. Main messages behind the aquaculture communication campaigns are adapted from EC (2014, Figure 8) and presented in **Figure 2**.

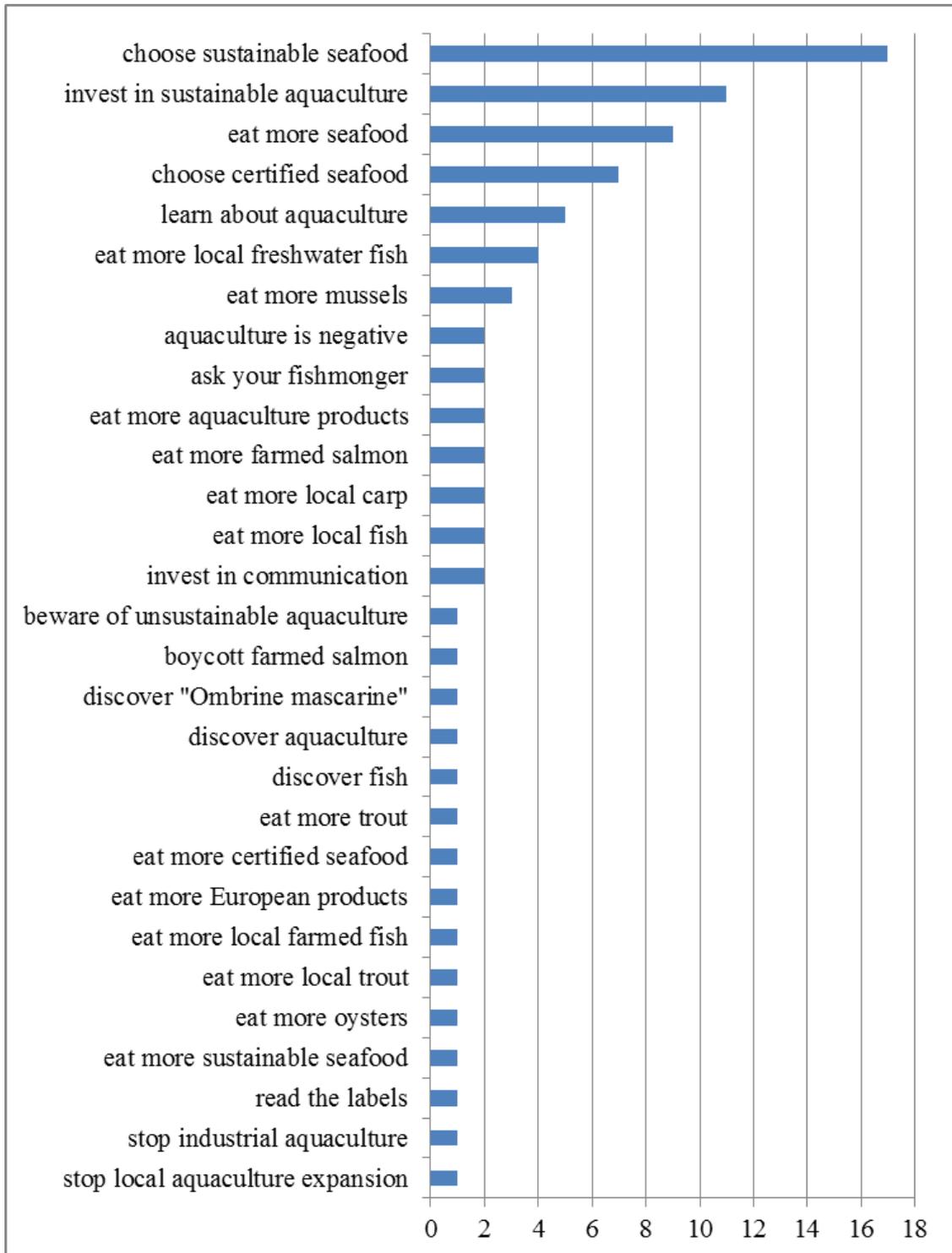


Figure 2. List of communication campaigns on aquaculture in the European Union, main messages (N=85), adapted from EC (2014).



The most frequent messages are related to sustainability and the production method (such as ‘choose sustainable seafood’), and health-related choices (such as ‘eat more...’), which seek to engage consumers in certain environmentally friendly or health-related behaviours. Thus, there are two major areas when communication campaigns regarding aquaculture products are concerned, and both are related to a promotion frame:

- The first area is related to increase of **fishing sustainability and production method**, and
- The second area is related to **healthy diets and responsible consumption**.

Even though communication around seafood and fish products in general includes the “enjoyment while eating” (i.e. taste) goal framing (see previous section), strangely this is not used in aquaculture promotion campaigns, it thus is worth exploring. Further, another major problem as expressed by EC (2014) is that communication efforts in aquaculture are mainly directed to presenting aquaculture as a unified sector (e.g. “European aquaculture is fresh, local and healthy.”), which on the other hand provokes contradictory and not clear-cut communication. Therefore, campaigns around aquaculture are too generic, not clear and unique enough to promote specific production method and product(s), having in mind the diversity of production methods (e.g. extensive brackish water farming, intensive sea farming) and products (e.g. low vs mild-processed products). EC (2014) further reports that these generic messages are not able to promote concrete products from aquaculture against the competition. One of the additional drawbacks reported are NGOs’ negative communication campaigns and warnings about some of the negative aquaculture practices (e.g. “boycott farmed salmon”, “fight against industrial aquaculture”).

One of the possible solutions suggested is that communication efforts should be adapted depending on the type of aquaculture to be promoted. Consequently, by highlighting the most significant and objective benefits of aquaculture production methods used (e.g. Diversify finfish farming method; product traceability) and its products’ consumption benefits (i.e. enhanced taste experience, rich in Omega 3, lack of parasites, etc.) with regards to production method, health benefits and/or taste of the products can ultimately help these products to be distinguished from other aquaculture products sold in the EU and the ones to profit from messages focusing on the production method, healthiness, and taste. With this in mind, the Diversify aquaculture method should be distinguished for its qualities and not allowed to be associated with previously mentioned aquaculture communication malpractices.

3. Development of the experimental design

In order to prepare experimental set-ups for the communication experiments to be deployed in Task 29.4 in the five countries investigated, the framing and appeals-to-be-communicated must be carefully chosen, in order to increase public awareness of Diversify aquaculture products, reduce possible negative media effect of some existing campaigns (see previous section) and highlight the most significant and objective benefits that may persuade consumers to buy the newly developed fish products from Diversify. In particular, the developed appeals should embrace the most relevant benefits and persuade potential consumers to buy Diversify products. Thus, different types of framing have been considered herein, together with their effects in order to enhance the messages in a best possible way.

3.1 Background and conceptual framework

Consumers’ concerns about environmental and health issues have increasingly become hot topics (Naylor, et al., 2000; Schlag & Ystgaard, 2013; Thurstan & Roberts, 2014). These concerns have pushed consumers to look for more sustainable products (such as fish products from certified aquaculture systems) that can support and justify future human consumption patterns (Claret, Guerrero, Gartzia, Garcia-Quiroga, & Ginés, 2016; Stefani, Scarpa, & Cavicchi, 2012; Verbeke, Sioen, Brunsø, De Henauw, & Van Camp, 2007). This on



the other hand, resulted in the formation of attractive and profitable market segments for food companies to pursue (FAO, 2016; World-Bank, 2013). In line with these consumer concerns and relevant market growth, an extensive body of literature looking into theoretical and empirical issues related to environmental and health topics has emerged, exploring the relationship between these concerns and more sustainable marketing practices (de Boer, Hoogland, & Boersema, 2007; Verbeke, Vanhonacker, Sioen, Van Camp, & De Henauw, 2007; Young, Brugere, & Muir, 1999).

Even though this previous research has contributed to the marketing discipline with valuable insights into the sociodemographic and psychographic profiles of a sustainable consumer, none of the previous studies have attempted to explore consumers' enjoyment while eating as driver of aquaculture and fishery products' choice. Furthermore, only a few studies have examined the impact of message framing (specifically in the area of aquaculture production), using regulatory focus theory in particular, and how framing relates to consumer response to sustainable and health communication. According to the regulatory focus theory (Higgins, 1997, 1998) individuals have two self-regulatory orientations in their goal pursuits: promotion – focused, i.e. approaching desired end-states (e.g. gain situations) and prevention–focus, i.e. avoiding undesired end-states (e.g. loss situations), which on the other hand can impact message persuasiveness. A quick search through the communication campaigns in aquaculture in the EU reveals that marketers often use message strategies that either use 'promotion' goal focus (e.g. “promote sustainable practices”) or emphasise 'prevention' focus (e.g. “invest in sustainable future”) (EC, 2014; Mintel, 2016). These messages stress what could consumers either gain or lose by purchasing certain aquaculture products. The question is, which of these communication strategies is more effective? Should we use different goal framing (i.e. production method vs health vs taste) and emphasize the objective benefits of the products? Could it be that the relative impact and bias of these different strategies is prone to certain boundary constraints as type of the product (i.e. low vs medium vs high processing)?

This report aims to answer the above questions by examining the effectiveness of message framing in the context of emphasising the potential benefits of Diversify aquaculture and its products, see conceptual framework in **Figure 3**.

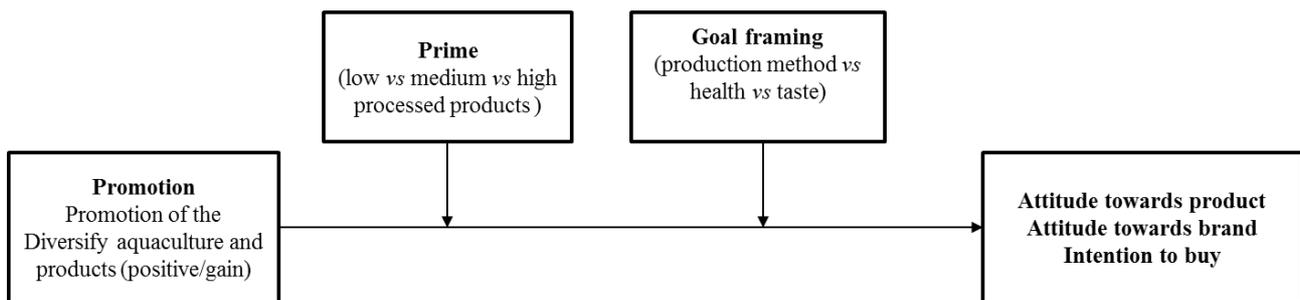


Figure 3. Conceptual framework

This framework recognizes that goal framing (e.g. production method vs health vs taste) may moderate these relationships. That given, communication campaigns in the proposed framework could focus on production, distribution and disposal of the products, which are compatible with *self-transcendent* – societal goals (i.e. investing in sustainable future and beneficial production method), as opposed to *self-interest* – personal goals (i.e. eating Diversify fish is appetizing and promotes healthy lifestyle). Previous research has shown that individuals focusing more on *self-transcendent* goals (i.e. environmental information) vs *self-interest* goals



(i.e. financial information) are more prone to involve themselves in pro-environmental behaviour (Evans, et al., 2013). Other research reported that independent self-view individuals (i.e. self-interest goals) are more persuaded by promotion-focused information, as opposed to interdependent self-view individuals (i.e. self-transcendence goals) who are more persuaded by prevention-focused messages (Aaker & Lee, 2001; Lee & Aaker, 2004). Based on all the previous, our expectation is that goal framing (e.g. environmental vs health vs taste) will impact in different manners regulatory focus, and subsequently consumers' attitudes and intention to buy aquaculture products.

Finally, the identifiability of the communicated message through a product image prime (i.e. whether the message is 'identified' with low vs medium vs high processed product) may also impact the effectiveness of message framing (Small, Cohen, Daniels, & Eyal, 2015).

3.2 Message stimuli

All the information frames tested are developed based on the most significant and objective outcomes found within the Diversify project (WP28 and WP29, see section 2.1) and after considering of existing secondary data (see section 2.3), as well as upon consultation with collaborating partners of the Diversify project³. It was chosen that the appeals should describe possible benefits of Diversify production method-, health- and taste-related outcomes resulting from consuming Diversify fish products, see listed messages in Appendix 1. To support priming, three products have been chosen to reflect Diversify aquaculture products:

- i) Fresh fish steaks – low processed products;
- ii) Smoked fillet – medium processed product; and
- iii) Fish burgers – high processed product.

The selection of the products has been based on the previous studies done within Diversify, but also on the rationale that the different processing methods should be further explored in light of the above proposed communication campaigns. Fish burger was chosen as the best representative among high processed product, as previous Deliverable 29.4 has shown that this product was preferred over fish pate (also high processed product (for more information see D29.4). The labelling on the product was in line with labelling in Deliverable 29.6 (for more information see D29.6). Example of products as images are presented in **Figure 3**.



Figure 3. Example of products as images.

³This consultation took place on a physical meeting on 18th of May 2016 to finalize and adjust the experimental set-ups before the final experiments realization.



3.3 Experimental design

The experiment is a 1 (framing: promotion) x 3 (prime: low vs medium vs high processed product) x 3 (goal: production method vs health vs taste) between subjects design. Participants in all five countries will be randomly assigned to the nine experimental conditions. The proposed design is presented in **Table 4**.

Table 4. Experimental design

Promotion information frame with Prime/Goals	Production method traceability	Health - wellness	Enjoyment while eating - taste
Promotion			
Fish steak –			
low processed product	Message promoting Diversify aquaculture production method and its traceability, consumers primed with image of a low processed product	Message promoting Diversify aquaculture product healthiness, consumers primed with image of a low processed product	Message promoting Diversify aquaculture product taste, consumers primed with image of a low processed product
Smoked fillets –			
medium processed product	Message promoting Diversify aquaculture production method and its traceability, consumers primed with image of a medium processed product	Message promoting Diversify aquaculture product healthiness, consumers primed with image of a medium processed product	Message promoting Diversify aquaculture product taste, consumers primed with image of a medium processed product
Fish burger –			
high processed product	Message promoting Diversify aquaculture production method and its traceability, consumers primed with image of a high processed product	Message promoting Diversify aquaculture product healthiness, consumers primed with image of a high processed product	Message promoting Diversify aquaculture product taste, consumers primed with image of a high processed product

The dependent variables to be measured after exposure to the experimental stimuli will be: ‘attitude towards the product’ (i.e. ‘Taking this product is ...’ measured on a 7-point scales anchored by bad/good, dislike/like, strongly against/strongly for, points); ‘attitude towards the Diversify brand’ (i.e. ‘This brand is ...’ measured on a 7-point scales anchored by negative/positive, unfavourable/favourable, bad/good, points), and ‘intention to buy’ (i.e. ‘If you were in the market for [Diversify product], how likely is it that you would choose [Diversify brand]?’ followed by three sets of bipolar adjectives: likely/unlikely, possible/impossible, and probably/improbable, on 7-point scales).

To respect the promotion framing the “Diversify aquaculture” will be explained to the participants before the task begins. The extent of goal message impact on promotion of Diversify products will be also measured through the use of items developed for each goal (e.g. ‘The Diversify aquaculture’ product has a positive impact on health’ measured on 7-point scale with strongly agree/disagree end-points).



The priming effect will be measured by asking the participants how much they like the overall appeal of the presented product (1 = not at all, 7 = very much). Beliefs about farmed fish and demographics will be measured at the end of the survey. By assessing these dependent variables, the effectiveness of different message appeals will be better understood and this will ultimately contribute to the more successful launch of newly developed fish products within Diversify project at the European fish markets.



Appendix 1. Example of messages for the communication experiment

Same introduction appeal to everyone – promotion

Choose products from Diversify aquaculture!

Diversify aquaculture products come from a carefully selected finfish species and 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 fast growth, large size and excellent flesh quality, to cover the whole Mediterranean region. Fish are grown in large cylinder-shaped cages that float on the sea surface and reach down up to 20 meters depth. This method is used for rearing finfish species in coastal and open waters, within areas sheltered from excessive wave action, with sufficiently deep water and fast current speeds where the water flows freely through the cages.

With Diversify aquaculture and responsible fish consumption, imagine the benefits for the preservation of wild fish in the oceans, for your children and future generations.

Recently products from Diversify aquaculture came to the market.

Imagine that you are browsing the internet searching for aquaculture products, in order to learn about the product quality and its effects on your health. Seeing the information and finding the product reminds you that you have to purchase [adapt to product].

In the following pages you are asked to study the presented information as if you were going to purchase a [adapt to product] from Diversify aquaculture. Consider information about the product quality and effects, so you can make well-informed evaluations.



Manipulation based on the experimental design (see Table 4)

1. Promotion x Production method – traceability goal x Image(s)

Transparent journey of products from Diversify aquaculture for responsible tomorrow!

Diversify aquaculture refers to the cultivation of farmed fish, such as greater amberjack, where it's all clear and transparent. It is a traceable meal choice, with the product's history from the fish species, including the rearing site, the rearing technique and the processing method of the final product. Eating this product is a clear and transparent journey where even the smallest detail is available to you. The product from Diversify aquaculture that comes to your table has always a calling address, its name and surname!

We are proud to say that products from Diversify aquaculture meet the very highest standards for good and responsible production practices.

Get traceable products from Diversify aquaculture!

2. Promotion x Health goal x Image(s)

Super-healthy products from Diversify aquaculture for a healthier-happier day!

Diversify aquaculture refers to the cultivation of farmed fish, such as greater amberjack, that is beneficial to your everyday healthy eating habits. It is a healthy meal choice due to the high amount of Omega-3 fatty acids that benefit your heart and boost your energy levels. Eating this product is an easy way to protect and improve your cardiovascular health. The product from Diversify aquaculture that comes to your table always brings healthiness and wellness!

We are proud to say that products from Diversify aquaculture meet the very highest standards for healthiness. The high standards that your body deserves!

Get healthy products from Diversify aquaculture!

3. Promotion x Taste goal x Image(s)

Super-tasty products from Diversify aquaculture packed-full of goodness!

Diversify aquaculture refers to the cultivation of farmed fish, such as greater amberjack, that will please your taste buds, whether is it is an everyday enjoyment or a special occasion. It is a tasty meal choice from a carefully chosen fish species that has firm texture and delicious flavour. Eating this fish offers original and gourmet experiences for a great moment. The product from Diversify aquaculture that comes to your table is packed-full of goodness!

We are proud to say that products from Diversify aquaculture meet the very highest standards for a great taste. The high standards that you want on your fish dish!

Get tasty products from Diversify aquaculture!



References

- Aaker, J. L., & Lee, A. Y. (2001). "I" seek pleasures and "we" avoid pains: The role of self-regulatory goals in information processing and persuasion. *Journal of Consumer Research*, 28, 33-49.
- Addelman, S. (1962). Orthogonal main-effect plans for asymmetrical factorial experiments. *Technometrics*, 4, 21-46.
- Banović, M., Krystallis, A., Guerrero, L., & Reinders, M. J. (2016). Consumers as co-creators of new product ideas: An application of projective and creative research techniques. *Food Research International*, 87, 211-223.
- Chang, H., Zhang, L., & Xie, G.-X. (2015). Message framing in green advertising: The effect of construal level and consumer environmental concern. *International Journal of Advertising*, 34, 158-176.
- Cheng, F.-F., & Wu, C.-S. (2010). Debiasing the framing effect: The effect of warning and involvement. *Decision Support Systems*, 49, 328-334.
- Claret, A., Guerrero, L., Gartzia, I., Garcia-Quiroga, M., & Ginés, R. (2016). Does information affect consumer liking of farmed and wild fish? *Aquaculture*, 454, 157-162.
- de Boer, J., Hoogland, C. T., & Boersema, J. J. (2007). Towards more sustainable food choices: Value priorities and motivational orientations. *Food Quality and Preference*, 18, 985-996.
- De Martino, B., Kumaran, D., Seymour, B., & Dolan, R. J. (2006). Frames, biases, and rational decision-making in the human brain. *Science*, 313, 684-687.
- EC. (2014). Communication Campaign on Aquaculture in the European Union: Analysis of International Campaigns on Aquaculture. In *MARE/2012/12-Lot 1: Information and communication activities*. European Commission, Directorate-General for Maritime Affairs and Fisheries.
- Evans, L., Maio, G. R., Corner, A., Hodgetts, C. J., Ahmed, S., & Hahn, U. (2013). Self-interest and pro-environmental behaviour. *Nature Climate Change*, 3, 122-125.
- FAO. (2016). The state of world fisheries and aquaculture: Contributing to food security and nutrition for all. Rome. 200 pp. In. FAO website (www.fao.org/publications).
- Hair, J. F. (2009). Multivariate data analysis.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American psychologist*, 52, 1280.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. *Advances in experimental social psychology*, 30, 1-46.
- Kahneman, D. (2002). Maps of bounded rationality: A perspective on intuitive judgment and choice. *Nobel prize lecture*, 8, 351-401.
- Kareklas, I., Carlson, J. R., & Muehling, D. D. (2012). The role of regulatory focus and self-view in "green" advertising message framing. *Journal of Advertising*, 41, 25-39.
- Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: the influence of regulatory fit on processing fluency and persuasion. *Journal of personality and social psychology*, 86, 205.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational behavior and human decision processes*, 76, 149-188.
- Loroz, P. S. (2007). The interaction of message frames and reference points in prosocial persuasive appeals. *Psychology & Marketing*, 24, 1001-1023.
- Mintel. (2016). Ethical and Environmentally Friendly Food Product Claims in 2015 for Europe. In.
- Naylor, R. L., Goldburg, R. J., Primavera, J. H., Kautsky, N., Beveridge, M. C., Clay, J., Folke, C., Lubchenco, J., Mooney, H., & Troell, M. (2000). Effect of aquaculture on world fish supplies. *Nature*, 405, 1017-1024.
- Newman, C. L., Howlett, E., Burton, S., Kozup, J. C., & Heintz Tangari, A. (2012). The influence of consumer concern about global climate change on framing effects for environmental sustainability messages. *International Journal of Advertising*, 31, 511-527.
- Reinders, M. J., Reinders, M. J., Banović, M., Banović, M., Guerrero, L., Guerrero, L., & Krystallis, A. (2016). Consumer perceptions of farmed fish: A cross-national segmentation in five European countries. *British Food Journal*, 118, 2581-2597.
-



- Schlag, K. A., & Ystgaard, K. (2013). Europeans and aquaculture: perceived differences between wild and farmed fish. *British Food Journal*, 115, 209-222.
- Small, D. A., Cohen, I., Daniels, N., & Eyal, N. (2015). On the psychology of the identifiable victim effect. *Identified vs. statistical lives: An interdisciplinary perspective*, 13-23.
- Small, D. A., Loewenstein, G., & Slovic, P. (2007). Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational behavior and human decision processes*, 102, 143-153.
- Stefani, G., Scarpa, R., & Cavicchi, A. (2012). Exploring consumer's preferences for farmed sea bream. *Aquaculture International*, 20, 673-691.
- Thurstan, R. H., & Roberts, C. M. (2014). The past and future of fish consumption: Can supplies meet healthy eating recommendations? *Marine Pollution Bulletin*, 89, 5-11.
- Train, K. E. (2009). *Discrete choice methods with simulation*: Cambridge university press.
- Verbeke, W., Sioen, I., Brunsø, K., De Henauw, S., & Van Camp, J. (2007). Consumer perception versus scientific evidence of farmed and wild fish: exploratory insights from Belgium. *Aquaculture International*, 15, 121-136.
- Verbeke, W., Vanhonacker, F., Sioen, I., Van Camp, J., & De Henauw, S. (2007). Perceived importance of sustainability and ethics related to fish: A consumer behavior perspective. *AMBIO: A Journal of the Human Environment*, 36, 580-585.
- White, K., MacDonnell, R., & Dahl, D. W. (2011). It's the mind-set that matters: The role of construal level and message framing in influencing consumer efficacy and conservation behaviors. *Journal of marketing research*, 48, 472-485.
- World-Bank, T. (2013). Fish to 2030: Prospects for Fisheries and Aquaculture. In *World Bank Report number 83177-GLB*.
- Young, J. A., Brugere, C., & Muir, J. F. (1999). Green grow the fishes - oh? Environmental attributes in marketing aquaculture products. *Aquaculture Economics & Management*, 3, 7-17.



Co-funded by the Seventh
Framework Programme
of the European Union

