



Feed-X Social acceptability risk assessment Summary

March 2019



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methodology

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Although the utmost care has been taken to identify and correct all typographical errors, some may still exist and if found write to info@projectxglobal.com.

UK spelling is used in most cases.



Executive Summary

Executive summary

Research Objective 1 To understand current consumer perception, understanding and engagement with issues relating to the food chain in salmon and shrimp farming

Consumers have a low knowledge and interest in the food chain of salmon and this is even lower in shrimp. There is some awareness of the idea of farmed vs wild salmon and shrimp, but this goes no further. To engage with the idea of what the salmon and shrimp are fed is a step too far, and consumers feel that this should be left to the expert farmers and monitored by retailers. This is no different from feed for animals that are produced for meat.

Having said that, there is evidence from marketplace trends and also this consumer research that the origin of food is a growing topic. People are interested to know where food comes from, and indeed responsible sourcing of salmon and shrimp is one of the higher scoring features in the survey that drives consumer choice. Currently, however, they don't make the link to feed.

Consumers are becoming more informed about the health of their food, with behavioural trends such as the shift away from red meat and towards healthier, leaner, high protein poultry and fish. In China, more nutritional knowledge around vitamins and protein creates an appetite for imported, higher quality, safer food. There is a mistrust (even if misguided) in local food being as safe to eat.

Consumers want their food to be natural, and are nervous about scientific intervention and the impact that this might have on the health and safety of their food. Salmon (and shrimp to some extent) are seen as natural, healthy and coming from an emotionally appealing place- pristine nature, large, deep oceans that are clean and pure. So nature is a critical frame for the any new claim about feed.

Sustainable issues in general are becoming more important, with for example much higher awareness about plastic in the ocean, although this is yet to translate to mass consumer behaviour change. NGOs play an important role in raising public awareness, with for example the idea of line-caught tuna still a topic that consumers mention and look out for (even if in fact it is no longer the most sustainable wild fish option). Consumers are also more open to the idea of better food waste recycling, especially in Europe, although they have a basic understanding of this, largely about throwing less away.

Having said that, when it comes to factors that drive consumer choice of salmon and shrimp, these are most likely to be freshness, ease of use and value, so they are highly unlikely to want to pay more for fish fed on sustainable feed.

Executive summary

Research Objective 2 To explore consumer and societal acceptance of potential new ideas for new more sustainable salmon food and shrimp food

Overall, consumers are not against the idea of more sustainable salmon and shrimp food, but they are just not very interested. Expert stakeholders, on the other hand, are extremely interested

Rules of success for the most appealing claims:

- Sound like they are naturally part of the food chain- seaweed, insects (for some)
- Deliver a nutritional benefit to the end consumer
- Help the fish stay healthy
- Don't sound too 'yucky' i.e. would be something you could imagine eating
- Safe to eat- antibiotics is a big topic

Barriers

- Topics which sound too scientific and unnatural
- Technology - needs to be handled with care
- Anything too far from human consumption- e.g. industrial waste
- High 'yuk' factor- chicken feathers, insects to some extent

Of the seven categories explored and measured, some had more appeal and relevance than others

- **Cia Nutritional solutions creating net positive environmental effects using waste streams-** good to average appeal .The more natural sounding the better. Some ideas in this bucket are too technological and lack appeal
- **Cib Nutritional solutions creating health effects.-** largely good. All those with clear health benefits resonated well as long as natural sounding (ie not GM)
- **Cic Nutritional solutions using inputs that create environmentally restorative effects.-** good to average, as long as not too technical. Plays to desire for natural environment
- **Ciid Technology solutions creating net positive effects-** poor appeal. Too technical and indirectly linked to feed ingredients
- **Ciiie Technology solutions increasing health, survival and growth.** Good to average, depending on how technical it sounds. Antibiotics the single biggest topic
- **Ciiif Integrated information systems increasing feed waste efficiencies.** Poor appeal- less relevant to consumers, as are largely very technical though experts more interested
- **Ciiig Innovations moving the whole farm production footprint off the land.** Poor appeal- an issue for environmentalists not consumers

Executive summary

Research Objective 3 To understand current barriers to engagement, and identify ways to communicate the ideas positively and influence purchase behaviour

Need to build a story over time to make any new initiative relevant- currently does not solve a problem

	TODAY: No awareness or engagement	Step 1 : Explain the problem	Step 2: offer some solutions
For consumers	<p><i>Barrier: don't know, not interested in salmon and fish production</i></p> <p><i>Response:</i> Broad brush level e.g.</p> <ul style="list-style-type: none"> • Sourced more sustainably • 'We're on a journey towards making salmon and shrimp even more natural, sustainable as well as being more nutritious for you.' • Detail there if you need or want to know (e.g. online) 	<p><i>Barrier: don't believe there is a problem with salmon and shrimp production</i></p> <p><i>Response</i> Land some truths about salmon & prawn farming e.g.</p> <ul style="list-style-type: none"> • Carnivorous- do eat insects and small fish • Wild salmon and prawn running out • Soy as an issue • Feed is 70% of the cost of rearing salmon 	<p><i>Barrier: don't want to hear anything too technical or un-natural sounding</i></p> <p><i>Response</i> Introduce idea of new type of feed as a solution</p> <ul style="list-style-type: none"> • Healthier for us • As natural as possible • Respects and protects the planet's natural resources • Can be technology-led but needs to ladder back up to health/nature
Countries	<p>US, UK, Brazil marginally more pragmatic- feed story needs to ladder back up to health and value</p> <p>Germany, France, China need marginally more reassurance on origin, naturalness and safety (Chi)</p>		

Executive summary

- **Research Objective 4** To understand the barriers to acceptance of new types of salmon food in the supply chain by expert retailers and food service, and to explore ways of overcoming these barriers, through communication, evidence and so forth, (inc ASC/MSC standards)
- Overall, retail experts are much more likely than consumers to be receptive to new areas of investigation around sustainable feed. They are particularly drawn to more technical solutions such as microalgae, as well as more natural solutions around seaweed or insects. GM still make them nervous even though they 'get' the rationale.
- **The key barriers for retailers** relate to costs and safety. They are under pressure to secure more supplies of good value healthy fish to their customers, so any future solution must deliver good value and safety. They also have sustainability commitments so they are always looking for more sustainable solutions but want a level playing field for is, via bodies such as the ASC/GAA. They know they have to lead customers, but there are some areas that may be a step too far in social acceptability terms, most strikingly, animal waste and GM
- **The standard setters, ASC, and the farmers**, are looking for sustainability solutions that still offer value and help farmers product better quality fish more efficiently. Their barriers, similar to the retailers, are around cost and efficiency- they want to ensure their salmon and shrimp stay healthy and can be farmed in a cost-efficient way.
- Several of the experts interviewed are **reluctant to rule out soy altogether**, as long as it is sourced sustainably, because it is affordable and has a good protein conversion ratio of protein to protein for fish
 - Maintain dialogue to develop trust
 - Progress the category ideas that deliver value and safety to their customers
 - Work with global standards for a level playing field in sustainability
 - Technology as enabler but not to the detriment of human health and customer acceptability

Results Summary

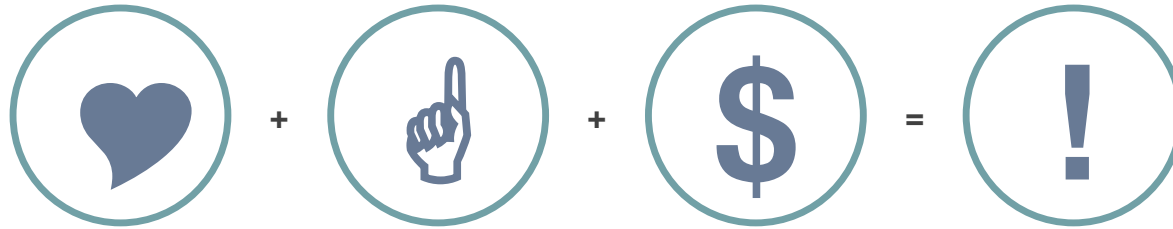


Social risk assessment objectives

1. To understand **current consumer perception**, understanding and engagement with issues relating to the food chain in salmon and shrimp farming
2. To explore **consumer and societal acceptance of potential new ideas/claims** for more sustainable salmon and shrimp food
3. To understand current **barriers to engagement**, and identify ways to **communicate the ideas positively** and influence purchase behaviour
4. To understand the barriers to acceptance of new types of salmon and shrimp food in the supply chain by **expert retailers and food service**, and to explore ways of overcoming these barriers, through communication, evidence and so forth, (inc ASC/MSC standards)

Category criteria

For the quantitative survey among 3000 consumers, a claim score was derived from three key measures as follows:



Q7. APPEAL

A broad emotional reading of how likeable the claim is.

Q8. RELEVANCE

A measure of how well the claim resonates with the respondent

Q9. PURCHASE

A measure of how likely the respondent would be to buy the product with this claim

CLAIM SCORE

The proportion of respondents who passed the claim through all three of the evaluation filters (acceptance + relevance + purchase).

For the expert interviews, a red amber green ranking was allocated based on their views on whether this was a relevant and value-adding route to progress



Their view of the general public's likely reaction was also a factor, albeit secondary

Category a) could be progressed 'behind the scenes'- too high a 'yuk' factor for consumers in general

Category	Claim	Consumer	Expert
Cia Nutritional solutions creating net positive environmental effects using waste streams	Cia PS1 Feed made from secure and safe unused food products	5.6	
	Cia PS1 Feed made from unused food e.g. vegetable peelings or fruit pulp	3.9	
	Cia PS1 Feed produced local to the salmon/prawn farm using local ingredients	5.3	
	Cia PS2 Feed made from insects, a sustainable source of protein	4.3	
	Cia PS2 Feed made from insects, the natural source of protein for wild salmon and prawns	6.1	
	Cia PS2 Feed sourced from sustainable protein rather than soy so it's better for the planet	5.2	
	Cia PS4 Feed made by extracting protein from chicken feathers or chicken beaks and feet	1	
	Cia PS4 Feed made from the leftover trimmings of whole fish or prawn preparation	1.6	

Categories b) and c) have both natural and health benefits that consumers can perceive, making them more acceptable, unless they are too technical. Experts are more open.

Category	Claim	Consumer	Expert
Cib Nutritional solutions creating health effects.	Cib Feed which is high in DHA, one of the major building blocks of the brain	5.6	
	Cib PS5 Feed made from seaweed and rich in Omega 3	10.6	
	Cib PS5 Feed made from GM plants protein to increase the higher levels of Omega 3	2.8	
Cic Nutritional solutions using inputs that create environmentally restorative effects.	Cic P6 Feed from ingredients harvested from managed areas so that oceans are kept healthy	7.3	
	Cic PS6 Feed made from seaweed carefully harvested from natural kelp forests	5.5	
	Cic PS7 Feed made from insects fed on seaweed	3.2	

Categories e) and f) were more polarising among consumers who were in favour of human health benefits but concerned about manipulating fish health. Experts more open in general

Category	Claim	Consumer	Expert
Ciie Technology solutions increasing health, survival and growth.	Ciie Balanced feed that avoids the need for antibiotics	13.6	
	Ciie PS10 Feed that is free from antibiotics	25.6	
	Ciie Feed that has balanced nutrients strengthening their immunity	6.5	
	Ciie PS10 Digital monitoring of fish health so they get exactly the nutrient balance they need	4.4	
	Ciie PS10 Feed which improves the health and strength of the fish	7.3	
Ciif Integrated information systems increasing feed waste efficiencies.	Ciif PS11 Feed that salmon and prawns digest easily, so they naturally grow faster and are cheaper	3.2	
	Ciif PS11 Feeding system that naturally self-cleans the water, for healthier fish and environment	12.5	

Categories d) and g) were not progressed to the quantitative stage because when they were researched in the qualitative phase they were not felt by the public to address the sustainable feed issue directly.

Challenges and Barriers

Overall, consumers are not that interested in how the feed of their salmon or shrimp is produced

This is consistent across all six end use markets explored, with only marginal differences

The reputational risk will have to be managed first and foremost through the stakeholders: retailers and their suppliers/ farmers, and NGO specialists and respected standards such as ASC/GAA

Having said that, there are some rules of thumb going forward which will mitigate any potential social risk

Rules of success for the most appealing claims:

- Sound like they are naturally part of the food chain- seaweed, insects (for some)
- Deliver a nutritional benefit to the end consumer
- Help the fish stay healthy
- Don't sound too 'yukky' i.e. would be something you could imagine eating
- Safe to eat- antibiotics is a big topic

Barriers

- Topics which sound too scientific and unnatural
- Technology - needs to be handled with care
- Anything too far from human consumption- e.g. industrial waste
- High 'yuk' factor- chicken feathers, insects to some extent

Recommendations for categories going forward (1 of 2)

Cia Nutritional solutions creating net positive environmental effects using waste streams	<ul style="list-style-type: none">• Progress some areas behind the scenes, but manage communications carefully.• Look for more natural protein alternatives where possible, ideally with positive nutritional benefits to end consumer• Including some sustainable soy still acceptable to experts• Insects could be socially acceptable tomorrow, especially if it is explained that insects are a natural food for salmon and shrimp. However, to say that insects feed on waste is a detail too far for consumers• Treat 'waste' with care and avoid anything that sounds too scientific or unnatural.• Animal waste to be avoided. Could pursue yeast or algae but not a public comms story
Cib Nutritional solutions creating health effects.	<ul style="list-style-type: none">• Any feed that has a direct value on the nutritional value of the fish is very positive, especially mentions of omega 3• However, the description needs to avoid becoming too processed or scientific.• GM still raises a red flag for consumers, though experts are more open
Cic Nutritional solutions using inputs that create environmentally restorative effects.	<ul style="list-style-type: none">• Overall positive reaction, especially when the claims convey the sense of looking after the natural world, the ocean etc.• Seaweed association is strong- part of the current food chain

Recommendations for categories going forward (2 of 2)

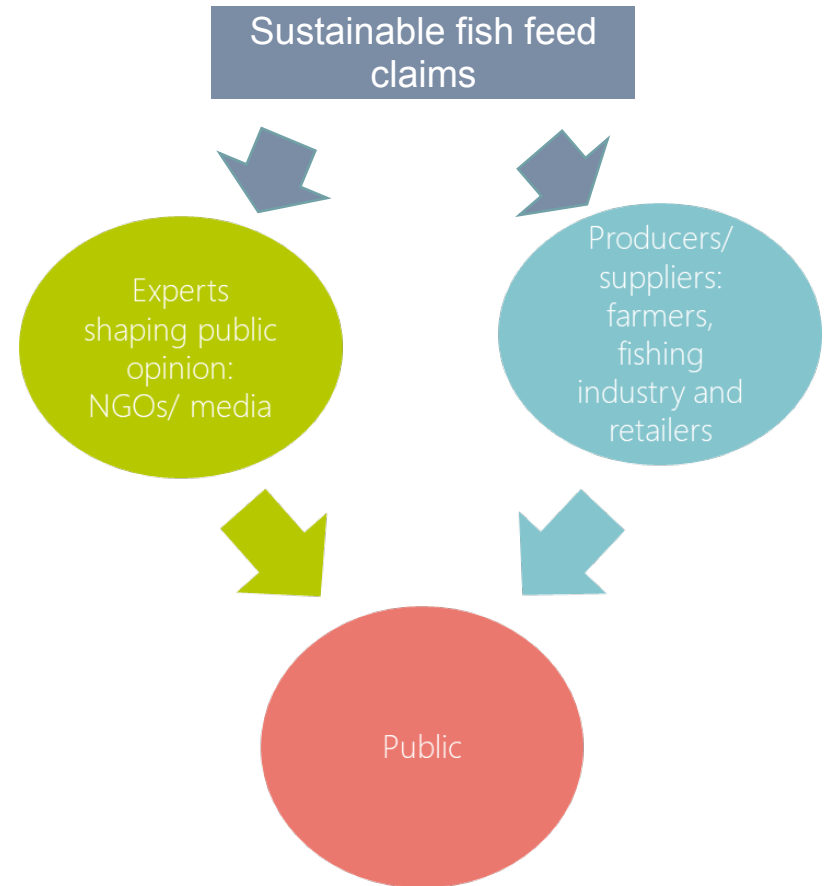
Ciid Technology solutions creating net positive effects	<ul style="list-style-type: none">• Ideas put simply – like using solar and wind power, or minimising plastics – are hard to disagree with and are seen as very positive initiatives, but don't appear to be directly related to solving the real issue
Ciie Technology solutions increasing health, survival and growth.	<ul style="list-style-type: none">• Use of antibiotics is not hugely associated with fish, but is a massive issue for the meat industry, so consumers very keen to avoid or minimise• Looking after the health of the fish in a natural way is seen as positive, especially if it makes the fish more nutritious and safer to eat
Ciif Integrated information systems increasing feed waste efficiencies.	<ul style="list-style-type: none">• Claims that detail the overall benefit to the health and strength of the fish are acceptable, though avoid too much technology• The idea of a self-cleaning environment is appealing- sounds natural, free of chemicals and more balanced
Ciig Innovations moving the whole farm production footprint off the land	<ul style="list-style-type: none">• Difficult to grasp by consumers who are not farming or ecology experts, even if it is the right thing to do

In sum: the social risk needs to be managed via the expert stakeholders

With consumers, they don't want to think about what their fish is eating, so make it as natural, simple and safe as possible for them.

With the new feed sources, it's the farmers and stakeholders that have it on their radars

(Expert)



Objectives and methodology



Specific Research Objectives

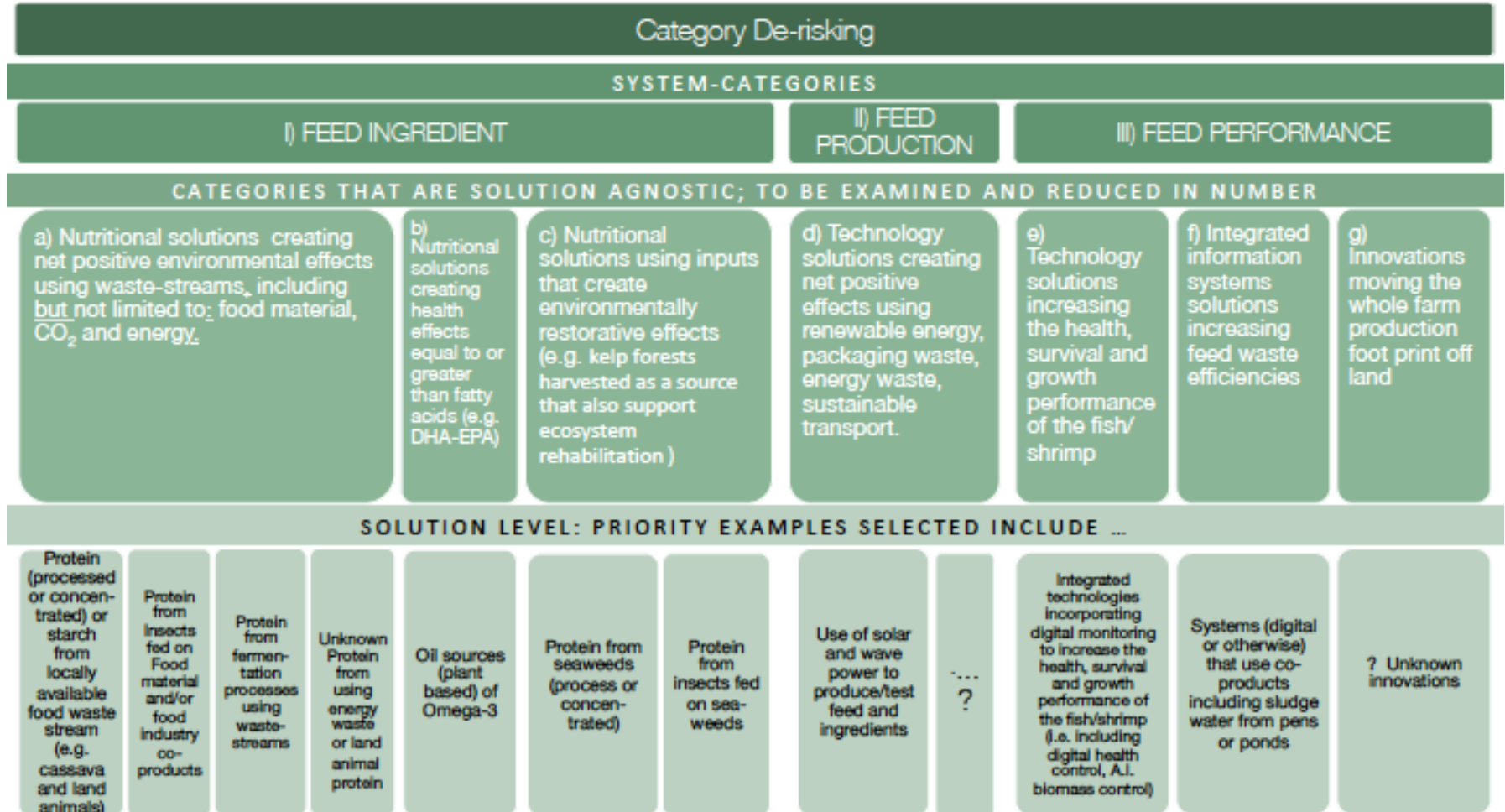
With consumers

- To understand current consumer perception, understanding and engagement with issues relating to the food chain in salmon and shrimp farming
- To explore consumer and societal acceptance of potential new ideas for new more sustainable salmon food and shrimp food
- To understand current barriers to engagement, and identify ways to communicate the ideas positively and influence purchase behaviour

With retail, hospitality, wholesalers and other stakeholders

- To understand the barriers to acceptance of new types of salmon food in the supply chain, and to explore ways of overcoming these barriers, through communication, evidence and so forth, (inc ASC/ MSC standards)
- To understand the likely timetable for acceptance of these new ideas

Startpoint: the categories to be derisked from a social acceptability perspective



Overview of the approach

Stage 1 Generating claims and insights for research	Stage 2 Qualitative research exploration	Stage 3 Quantitative research	Stage 4 Experts and Recommendations
<p>In this stage, the ideas under each category were simplified so that they would be 'researchable from a social acct In order to test the social acceptability perspective</p> <p>With core team, 39 possible claims were developed around fish feed for salmon and prawn/shrimp that described the various solutions identified in feed ingredient, production and performance.</p> <p>5 insights were also identified: possible opinions and beliefs that consumers might hold in regard to sustainable feed- to frame the problem in everyday language</p> <p>Both of the above- -claims and insights were developed as stimulus in the stage 2 research</p> <p>Desk research also allowed us to select the key markets for both stages of research</p>	<p>In this stage, qualitative research was conducted to speak directly to relevant pre-recruited consumers to get a first interpretation of the social acceptability of the claims, to sense check meaning and to review the list to avoid overlap</p> <p>2 x face to face moderated research discussion groups of 90 minutes were conducted with 5 consumers in each who purchased and consumed fresh, frozen or smoked salmon and shrimp in the last three months in London and Shanghai (detailed sample overleaf)</p> <p>Within these groups the moderator explored salmon and prawn purchase behaviour, hierarchy of choice, reviewed the insights and the possible relevance and risk of new claims. Reduced the claims list from 39 to 21</p>	<p>In this stage, quantitative research was conducted to measure response to the various statements and measure social acceptability</p> <p>The samples was composed of 500 respondents x 6 markets: US/UK/CHI/FR/DE/BRZ.</p> <p>Interviews among demographically balanced sample of household shoppers who have eaten fresh, frozen or smoked salmon and/ or prawns/ shrimp in the past three months.</p> <p>Self-administered online questionnaire with 13 questions measuring appeal and likelihood to drive purchase of :</p> <ul style="list-style-type: none"> • Salmon and prawn purchase and consumption behaviour • Current drivers of choice • Appeal, relevance and likelihood to drive purchase of 21 claims 	<p>In this stage, the results of both phases of research were analysed and recommendations on the social risk of the various categories were made. In addition, stakeholder interviews were conducted with retail buyers and opinion formers</p> <p>c. 6 face to face and telephone interviews were conducted with retail buyers and opinion formers, exploring the category claims and their perceptions of advantages and risks</p> <p>Recommendations covered Insights and recommendations into claims and categories that are most socially acceptable and least</p> <p>How to shape the categories going forward so that they are more socially acceptable, identifying, insights and guidelines on how to frame a new narrative around fish farming & feed</p>
<p>October</p>	<p>November</p>	<p>December</p>	<p>January/ February</p>

Stage 1: Selection of markets for research

:

The PwC Market opportunity report for feed X identified the most important end markets for salmon worldwide: this fact *'The US is by far the largest consumer market for salmon, thereafter France, Germany, the UK and Brazil, with a total consumption of 1.07 million tonnes (whole fish equivalent)'* (p20)

For the research, therefore, the following markets were selected

Qualitatively, the UK and China, for a representative view of both current and future potential markets

Quantitatively, US, France, Germany, UK, Brazil and China, to measure the risk factor in the largest end-use markets, and to get a read on China as a future market with high potential



Stage 2: Qualitative Methodology

Approach Overview

- 2 x 90 minute group discussions in UK and China with 5 people in each
- Consumers pre-recruited by professional local recruiters according to a set of tailored criteria
- Groups in each market run by a skilled local moderator, following a discussion guide specifically designed to cover the following topics:
- Purchase consideration drivers when it comes to fish, and salmon and prawns specifically, and where sustainability fits in the hierarchy of choice
- Exploration of insights into the challenges facing the feeding of farmed salmon and prawns
- Exploration of a range of possible new claims that could be made around sustainable feed innovation

Recruitment Criteria Overview

Group 1: Family

36-50 yrs old

All with at least 1 child aged

5 – 18 living in the family home

Group 2: Pre family

25-35 yrs old

All salmon and prawn purchasers and consumers

A mix of male and female in each group

All recruited to be moderately interested in food and sustainability issues via a set of attitudinal statements to encourage a more engaged discussion

All BC1

(B: Middle management executives in large organizations, with appropriate qualifications

Principle officers in local government and civil service

Top management or owners of small business concerns, educational and service establishments

C1: Junior management; owners of small establishments; and all others in non-manual positions.

(Jobs in this group have very varied responsibilities and educational needs)

UK- London area

China- Shanghai

20th November

28th November

Stage 3: Quantitative Methodology: Six Countries

Online interviews in six countries among demographically balanced samples of respondents sourced from Lightspeed Research global panels.



Sample:

Grocery shoppers who have eaten salmon and / or shrimp in the past three months.



Coverage:

Six countries identified in PwC report: UK, USA, Germany, China, Brazil and France. 500 respondents per country, totaling 3000.



Questionnaire:

Self-administered online questionnaire, 13 questions covering preferences and choices. Full questionnaire in appendix.



Outputs:

Hierarchy of benefits and assessment of the relative attractions of concepts. Each country has equal representation in the final data.

The quantitative research provides results from a sample size robust enough to offer reliable and robust conclusions and standardised comparable results between countries and sub-groups.

Stage 3: Quant methodology explained: Generating A Hierarchy Of Features

Developing a hierarchy of salmon and shrimp general features

The hierarchy of salmon and shrimp features is established using a comparative trade-off exercise which asks respondents to choose the most important of three randomly presented needs.

Respondents select the feature from each group that was most important when choosing which product to use. Every respondent sees each feature three times in different combinations. By the end, all features have been compared with each other:

Easy to eat	<input type="checkbox"/>	Great tasting	<input checked="" type="checkbox"/>	Healthy option	<input type="checkbox"/>
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The results are shown as a total % of all those instances on which each feature was selected as a proportion of the instances on which it was shown.

This is more discriminating than asking about features on a 5-point scale because it forces respondents to make choices between the features rather than allowing them to give all needs a similar score. The resulting hierarchy is more distinct and expanded.

Stage 3: Quant methodology explained: Claims Evaluation Criteria

Concepts are evaluated across three key measures:



Q7. APPEAL

A broad emotional reading of how likeable the claim is.



Q8. RELEVANCE

A measure of how well the claim resonates with the respondent



Q9. PURCHASE

A measure of how likely the respondent would be to buy the product.



CLAIM SCORE

The proportion of respondents who passed the claim through all three of the evaluation filters (acceptance + relevance + purchase).

The Claim Score is the proportion of respondents who answer “very appealing” or “extremely appealing” at Q7 AND “very relevant” or “extremely relevant” at Q8 AND “very likely to buy” or “extremely likely to buy” at Q9.

Stage 4: Experts interviewed

- Ikea- Christophe Mathiesen
- Sainsbury's- Ally Dingwall
- Tesco- Laurence Webb
- ASC- Contessa Kellogg-Winters
- ASC: - Michiel Fransen
- Msingi East Africa- Cor Roest, Aquaculture director
- MSC- Richard Stobart

