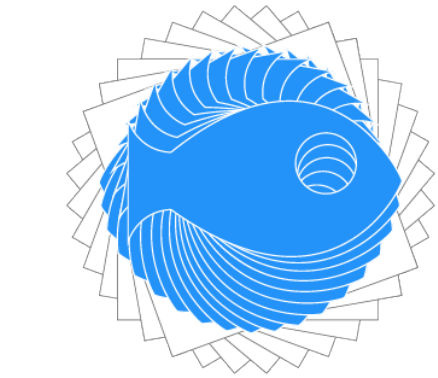

Deliverable D[4.21]
Deliverable title: [Report from Seafood Processing stakeholder conversation]

Due date of deliverable: [M35] Actual submission date: [M40]

Name of lead beneficiary: [MATIS]
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Dissemination level:

PU	Public (must be available on the website)	[X]
PP	Restricted to other programme participants (including the Commission Services)	[ ]
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Specified group (if applicable):
[Name]

Sub-Task 4.21 Seafood Processing

Arnljotur B. Bergsson
Dennis Lisbjerg
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Executive summary - Main findings

In the COFASP Project – Strengthening cooperation in European research on sustainable exploration of marine resources in the seafood chains – ERANET, Work package 4 Dissemination and capacity building, the Task 4.2 Case Studies has the Sub-task 4.21 Seafood Processing. Led by RANNIS and executed by Matis on behalf of RANNIS in form of Stakeholder Conversation that took place on April 23rd in Brussels in connection with the Seafood EXPO in Brussels 21st - 23rd of April 2015.

Securing supply,
As self-sufficiency of EU in terms of seafood is not foreseeable and increased competition on limited raw material is anticipated, securing supply for seafood processing is of interest for European processing industry, through increased production and increased competitiveness of European seafood processing.

Efficiency,
Europe's answer to increased competition relies partly on increased/maximized/optimized efficiency or efficiency of water and energy usage or efficient logistics within Europe, working with tying consumers and producers geographically.

Product integrity or traceability,
Need for Product Integrity highlighted in order to supply the consumers what they demand and expect, DNA based documentation of proof of product mentioned. However, consumers interest in traceability was highly questioned as usage of exposed information on traceability seem to be limited.

Value,
Value creation needed for economic performance of seafood processing and its future growth. Demand for higher value products might challenge food security balance if food processing offer primary harvesters lower value than new products producers.

Consumer knowledge on health,
All new additional documentation of health benefits of seafood consumption seen to be helpful for marketing of seafood, interest in more thorough and holistic results of clinical trials to back up assumptions previous limited findings. Health effect of consumption of cultivated species after alteration in feed of a widespread interest.

Product development
Salmon has been leading in terms of innovation and introduction of new products. Desire to aim for more activities in relations with other species.

Utilization,
With respect for the raw material, one needs to make the most out of it, as well to limit environmental impact of the processing avoid post-harvest losses and minimizing food waste.

Product development from previously discarded species wasted material,
Discard ban and fight against IUU demand better utilization of harvested from the ocean, demands efforts in product development, presenting now discarded species in appealing way to the European Consumers.

Shelf life
Extension of shelf life of product is always of interest for the food processing industry

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Introduction

European Seafood processing challenges Stakeholder Conversation
The objective was to identify the European seafood processing industry needs for research. The focus was on Sustainability, logistics, optimisation of processes, markets and consumer aspects. Accomplishing this through stakeholder conversation.

A unique opportunity presented itself as Funding Agencies and RTD organizations had a direct dialog with key industrial stakeholders of the European seafood processing industry in Brussels on April 23rd 2015. The parties discussed to sharpen the outline of future RTD efforts in order to maximize its impact for the industry. In order to secure improvement in the performance of the industry through research and innovation. As well to focus the attention of funding Agencies on issues that have the potential to have a widespread positive impact on the European Seafood processing industry.
COFASP partners that fund seafood processing research and innovation participated. Key stakeholders in seafood processing, represented by European Organizations like the AIPCE, FEAP and EUfishmeal as well as representatives from National organizations and single companies were invited together with stakeholders that market seafood products and witness consumer perspectives first hand participate as well as representatives of the fishing industry.

Research and development provide the knowledge and knowhow for industries to improve their performance and to create more value for society. Seafood processing has benefited and will benefit from research and development. Control of the production process, ecological and environmental sustainability is necessary but not sufficient alone to ensure the economic sustainability of European seafood processing enterprises. European Fisheries and processing face fierce competition in the global marketplace. The key challenge is to maximize the yield of catches while minimize energy consumption and optimize all value chain processes. European seafood often comes from sustainable stocks, is healthy to eat and preliminary studies show that it is associated with comparatively low environmental impact. In an ideal world, this would give these products a competitive advantage and higher price in the market, but currently this is not necessarily the case. Therefore, it is necessary to disseminate relevant value chain improvements information to all stakeholders in an innovative way.

Minutes from the Stakeholder Conversation April 23rd 2015

13:00 Welcome and Background of COFASP - European Efforts towards enhanced research and development to improve European Fisheries, Seafood Processing and Aquaculture

Opened by Mr. Niels Gøtke, Danish Agency for Science Technology and Innovation who explained the composition of the COFASP collaboration and the coming up events within the COFASP as well as the progress of the calls within COFASP

http://cofasp.eu/system/files/2015_04_13_COFASP_April_Agenda_Brussels.pdf

13:15 COFASP Foresight report in relation to seafood processing
Mr. Luc van Hoof, Wageningen University & Research Centre

Luc van Hoof gave extensive presentation on the methodology of the Foresight report. The presentation included explanation on grouping perspectives of future development of system drivers, key elements (e.g. population, purchasing power, consumption etc.), increased, similar or decreased in micro scenarios that added up to form macro scenarios to observe possible similarities. If similarities were observed crossing through different macro scenarios it present need for tackling the challenges independent from the development. The

similarities show need for research agenda indicating chance to improve European Fisheries, Seafood Processing and Aquaculture by enhanced research and development.
Main findings of the Foresight report regarding Seafood Processing included (Slide 38 – COFASP Foresight):
Diverse and seasonal production, multiple **market segments** and multipurpose processing units as Europe Seafood Processing moves towards more flexible production units.
Maximization of fillet yield optimization, utilization of all harvested fish produce and optimization of use of all co-products for high **value** products in order to maximize processing efficiency. Development of production technologies for underutilized (new) resources (e.g. for production of biodegradable packaging materials) and reduction of waste and environmental impacts of processing as part of innovative solutions.
Discussion included consumer aspects indicated as drivers in many scenarios, though not determined how big influence retailers have on consumer behaviour. Importance of correct information to counteract common misbelieves through producers educating consumers. Reliability of labels and their cost.

Stakeholders Presentations

13:40 Urgent matters and priorities in seafood processing. Stakeholder view on guidelines for research and development benefiting seafood processing.

The Presentation from the Stakeholder Conversation have been made available http://cofasp.eu/node/875

Mr. Guus Pastoor

President of AIPCE European Fish Processors Association & Dutch Fish Processors and Traders Federation
Pleased with the report of Luc
AIPCE-CEP Represents fish processing and trade sector in EU (+Norway & Morocco) with combined turnover of 27 billion €, consist of 3500 companies with 120.000 employees that annually supply 13.7 million tons consumption including 5.6 million tons import into the EU.
Europe is not self-sufficient in terms of supplying the consumption with European seafood.
Priorities for the organisation (slide 4 Guus Pastoor):
1) Ensure supply – import concessions regime. Trade, Issue FinFish Study annually (for 20 years). There is constant need to be efficient
2) Improve the regulatory environment – CFP, market reform, Food-law rules, "highly over regulated" - EMFF
3) Promote a positive image – sustainability, traceability (IUU and control regulations)
Research needs are in 1) and 3)
Challenges for the Market include: increased competitiveness, protection of European interests in the International market EU market is whereas 35% is of EU recourses & 65% from third countries
Fish consumption grows 0,5%/year that opens up new opportunities
Additional 1.4 million tons needed in 20 years, which result in higher dependency on external sources. Aquaculture is not going well in EU due to cost (i.e. need to be more cost effective)
Fish market is segmented by countries – E.g. Holland and Portugal are not the same
Growing competition for resources from other markets, e.g. Africa will have a growing demand (Slide 5 Guus Pastoor)
In near future EU will not be the no1 market
Ensure resilience and diversity of supply monitoring supply with FinFish Study.
Now fish caught in Europe are being sent to Asia to be cut/processed and send back to EU where it is sold and consumed, that practice will reduce if there is a higher demand in the future for FRESH fish.
Big topic for the last 2 years: what information do the consumers really need – data comes with a cost, if data need to follow the fish in the chain
Competition for protein. Consumer may chose a chicken instead of fish…

Working for a Shared vision for sustainable European Fisheries - with AIPCE, EuroCommerce, EuroCoop, WWF etc.
Principles for Environmentally responsible fish processing – guidelines and for Fish souring (Slide 6 Guus Pastoor)
What should R&D focus on
Secure the Resource,
Including improving fishing technology - selectivity is very important. The first part of the chain is where most can be saved
Still have data-poor stock in EU – would like to see quick scanning methods – might not utilize the stock optimally maybe too much or too little
Product integrity
On the image, consumer studies, what is the consumer's interest in traceability?
Consumers want healthy food: so why are they not buying fish? – do they know how to cook it? Animal welfare is an issue, traceability (efficient and fast throughout the chain) – need to know more about consumer needs and wants
Water and Energy Efficiency.
Extend shelf live. Waste. Longer shelf life is attractive for retailers (a lot of products are wasted)
Logistics– we have efficient logistics in EU – but traceability is a challenge.
Market. Competition.
By-products valorisation

Mrs. Anne Mette Bæk Jespersen

Director of Marine Ingredients Denmark & Head of Secretariat of EUfishmeal
In DK 150k tons fish meal 50k tons oil, 300 million €. In EU 500k tons fish meal, 190k tons fish oil 1 billion € - All sourced sustainably – direct landings and by-products (sandeel, sprat, etc.)
EUfishmeal's members from 6 European Countries & Faroe Islands with Emphasis on Sustainability
Sustainability is key for the sector: all fishmeal are based on fish that are regulated by quotas. Has its own standard (globally) "IFFO RS assured"
Add **value** to otherwise unused raw material (by-product from filleting process, raw material for meal and oil – up to 60% of the processed fish!)
Change from 1990 to today if fish oil is made from whole fish or from by-products (Slide 5 & Slide 10 Anne Mette Bæk)
Aquaculture has gone from 3,2% share to 47% share of global fish production from 1950 to 2011
Need to ensure healthy fish i.e. Rich in omega 3
Fish oil is a lower content in fish feed
Research and innovation needs:
What is the impact of reducing the inclusion of fishmeal and fish oil in feed, downward trend, replaced with plant protein and oils
"the unknown growth factor" provided by fishmeal (has never been documented but the sector wish to)
Fish meal production processes (optimization), handling of the proteins and other components of the raw material that may have a high **value**,
Use of antioxidants is required for transportation – industry is concerned - research is towards other antioxidants is going on but still of high interest….
Better use of the fish oil – perhaps as food (not only feed) – EU has now very strict rules. – Fish in capsules are imported to a large degree (more a regulatory issue)
Key issue: access to raw material, volume of fishmeal)
Improve the robustness of the biological assessments and regulation of fish stocks (feel a data gap so the stocks are not being utilized enough…) and regulation of stocks.
Selectivity is also important for the processing industry and for traceability
Where to go in future collaboration: EU Advisory Councils: Baltic, Pelagic, North Sea, Aquaculture, Market, University (DTU), Innovation funds, H2020

Mr. Jens Garðar Helgason

Chairman of Fisheries Iceland

Sustainable Value of Seafood Important for the economy. Triple helix of sustainability of seafood processing relies on economic, ecological and social foundation, value is the baseline for economic performance, jobs baseline for social stability and responsible utilization of limited natural resource baseline for ecological sustainability - In Cod they trust. Catching 1,2 mio tons in Iceland. Selling cod to UK (largest market).

Federation that consist of 130 member companies (including innovation). Due to Individual transferable quotas, Iceland is now using fewer ships generating more **value**. The industry has changed and fewer hands are doing the hard work, more machinery and atomization. 9000 people directly involved –but 20000 jobs in service around it.

Have had a focus on generating **value** from the fish, through collaboration with research and development providers in Iceland, somewhat paid for through Innovation vouchers (Slide 10 Jens G Helgason).

Value creation reached worth of 680 mio USD from 180k tons of cod in 2011 compared to 340 mio USD from 460k tons in 1981 (Slide 11 Jens G Helgason) **Value** creation through implementation of research results, process modifications and traceability.

On several niches there are by-products that have potential like enzymes against the common cold, band aids, and supplements for people with diabetes, and interest in cosmetics

Export of fresh fish fillets has exceeded export of whole and gutted fish, exported with either ship or flight cargo (Slide 12 Jens G Helgason)

Icelandic fishing industry is a net contributor to Icelandic society. Governmental financial transfer: the industry is not subsidized in any way (Slide 13 SFS-JGH-COFASP) – and face increasing taxation.

Mr. Terje E. Martinussen

Managing Director of Norwegian Seafood Council (NSC)

Norwegian Seafood 100% financed by the industry through a levy on all Norwegian seafood exports. Promote Norwegian Seafood worldwide.

Today **value** is 5 billion euro – goal of increase x5 until 2050! Through strong position.

See possibilities in Offshore, new species, algae, ingrediens

Huge potential SINTEF report - FOU strategi for en havnasjon av format HAV21 made in 2012

http://www.forskningsradet.no/servlet/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition%3A&blobheadervalue1=+attachment%3B+filename%3D%22HAV21-strategiweb.pdf%22&blobkey=id&blobtable=MungoBlobs&blobwhere=1274499756714&ssbinary=true

Priorities of The *Norwegian Fishery and Aquaculture Industry Research Fund* include Verification of connection between seafood and health, Environmental friendly technology in catching – discussion of impact on habitats, Fish factory of the future (in Norway) Better use of raw materials, Bio-prospering,

Trade barriers for Norwegian Seafood and Research on markets and consumer behaviour (Slide 7 Terje E Martinussen).

What is expectable impact?

NSC is working on developing high price market for cod in China

Norway consumption > 8 kg/capita/year, has increased from 1.5k ton to 11k tons 2001-2013, increased with high PR/Marketing of fish portions in packages (Slide 8 Terje E Martinussen)

Norwegian brought salmon into the sushi industry 30 years ago which made it possible to introduce sushi to larger audience outside Japan.

Important to have to make stories to consumers and products that go with the stories, like *Skrei*: a Norwegian expression – for seasonal cod. Cod is the most eaten fish in Norway.

Market strategy includes advertisements in Norwegian with subtitles for the intended markets.

NSC do a lot of consumer analysis – e.g. do they eat fish on weekdays in weekends, at home/restaurants, only/party (Slide 11 Terje E Martinussen)
NSC Looks at drivers for consumers: taste, perception of health, safety, sustainability in each country (or regions e.g. in US) (where there is a lot of export) (Slide 12 Terje E Martinussen)
Project: Norwegian Cod to China: testing with 1) chefs 2) consumers 3) retail and restaurants 4) industry and **value** chain. Has acclaimed high acceptance, on reputation, taste, and (consistence) (Slide 13 Terje E Martinussen)

Panel Discussions with stakeholders

Q: Is there interest in participating in H2020 among processors or more is their interest short-term focus than researchers?
Differences to go into research & innovation efforts in countries/regions (size of companies, traditions)
Q: How has the anticipated growth been divided between species, the 1.4 million tons in the FinFish Study?
Guus: Everything increases apart from pelagic species in EU. EU is net exporter of pelagic, though Mackerel is in good shape in some EU markets. Growth from imported products.
Q: Is there a synergy in the bioeconomy, focus in the coming years are blue bioeconomy.
Anne Mette: **bioeconomy – this sector has a relevance to bioeconomy**
Focus shall remain on seafood. Supply challenge (if **value** of fish for enzymes is higher than fillets, and if demand is high in e.g. Africa). Though by-products into cosmetics and medicinal product, interesting trend. Demand for higher value products might challenge food security balance if food processing offer primary harvesters lower value than new products.
Q: **Health benefit**s & Health claims. Look into how we need more background to prove the benefits is the information available do we make it acceptable.
Terje: Very interested in **documentation**s – not only omega3 but also proteins
Guus: Make regulators aware that fish with high fat content is not negative!
Lacking info from scientists on e.g. pangasius – should be available – e.g. in google – should be accessible – sometimes the information exist but is not available
Terje: fatty fish for pregnant women, a study that showed no problem…
Anne Mette: sales dropped that there was a false claim of cancer from fish oil
Q: Did increased salmon consumption in Norway take clients from other species
Terje: Salmon was competing with cod but now it is taking market share from meat - chicken and beef
Need to study feed components and allergy causing compounds. There is a good space for growth of salmon market in EU and salmon is the easiest to grow in production.
Germany is eating 2 kilo/year
Fish Factory for the future is a new concept: modern technology (water, electricity)
Q: Is there a possibility for increased cooperation between the Industry and RTD
Guus: Norway and Iceland have accumulated money and knowledge as it is big business (and high dependence on seafood) It takes close cooperation with good partnership. Not much collaboration inside EU, possibilities for more collaboration in Companies but they are not focused on it – when driving the business. Size an issue, many SMEs cannot undertake long and expensive research and development projects - do not have capacities to organize it. Fisheries & seafood processing account for within 1% of most of the countries' GDP, unlike Iceland and Norway. SMEs do not have money – they can provide knowledge, experience and other in-kind contributions
Do not see that collectively in EU not in the public domain. The EU's sector characterized by **SME**s
Q: **Product development**?
Guus: trading companies are drivers in making new products
High Research emphasis on primary production in order to service the SME's indirectly. Money not so much on the secondary layer in the chain. Salmon has succeeded due to great effort in product development, unlike other species. Extending **shelf life**. Traceability the validation on the info that goes in to the system is important.

Q: Trend on going towards bigger companies?
Guus: Yes, companies need to do all the new regulation stuff - as labelling etc. require larger companies those who cannot do it will disappear Need for research on consumer interest in traceability, as use of available information on traceability is limited. Does the consumer really want it? Because it has a cost! Was there Research executed to support policy?
Q: Do the industry see the same need for going into research – if they are able to sell all their products…
Guus: might be. Norway been able to make **different products** from salmon – but it is all the same **species**!
Q: Shall we go down and investigate consumer behaviour or shall we study health effects. Health claim controversy in omega-3 - New knowledge from the research sector is important. **Product integrity**: Are you getting the right spices. Is there water exceeding the standards? Or other things added to the product? Is it coming from the right place (or traced correctly)? Speed test 4 - 5 parameter online test. Great need for this, including DNA based distinction tests instantly at the processing plant or other methods of testing the product….
Q: What impact will discard ban have on RTD
Comment: Have had a large campaign in DK to see if consumers could be interested in other species….
It had only limited success
Comment: there is a H2020 project called DiscardLess (lead by DTU) – looking at bycatch products
Opportunity for developing methods of getting previously no desired species on consumable format, Increase consumption of species we do not eat, by products, taking over from whole fish in the fishmeal sector. Best tasting species may not be the traditional fish!
Comment: discard ban could boost research on new species and other uses
Q: Is there something to gain from cooling/prevent bacteria etc.
Guus: yes extending shelf life is key at the retail.
Q: Need to work on traceability:
Guus: yes, market is demanding it, Schemes etc. are fine – but the validation/control of the data is key!
John West have a traceability system that allow consumers to see the vessel catching the can of tuna. However, hardly no one is doing it.
There is hardly any research behind traceability and what consumers want (willingness to pay)
Q: A global label.
Guus: there was a survey showing that people preferred wild fish but people bought aquaculture fish
Q: Consumers are very many and their conditions attitudes vary things (cultures, wealth) – should it be consumers that decide?
Guus: Health aspects are worthwhile and look at why people DON'T eat fish
Q: Is regulation lacking scientific backup
Guus: regulations, some of them seem to built on unsubstantiated assumptions rather than scientific research results, do the consumers really care for the traceability info is it just a play? Not many hits on these sites, if this is unnecessary cost it can harm many SME's
There is more data and new knowledge that can be used and have more influence
Associations have their own agendas: so, it may be difficult for consumers…. – problem of communication
IFREMER has no relations with associations prefer to work directly with fishermen…
What about outside EU. At the expo, many companies from e.g. China, Vietnam – Companies are much bigger - How should we tackle it? – There is a lot of import from China - Is it necessary to have the focus on health, safety, vaccine and welfare of fish in EU? – The quality from Asia may be different - in South Korea a city around seafood, is being built with branding to attract companies. Not due to regulation but working on image… - e.g. top quality tilapia! When production is moving – so is brain - So we need to take it seriously what they do in Asia - should we play with them? - They are here to stay! – And aquaculture

is NOT growing at all in EU! - Need to bring about that food production is from both water and land –as there is hardly any more land to sustain a meat production.
51 million capture and 59 million cultivated in Asia, compared to 13 million captured, 3 million cultivated in Europe, out of 92 million captured, and 67 million cultivated worldwide in 2012. (Slide 19 http://www.sjavarutvegsradstefnan.is/files/Kristjan2014.pdf)
EC wish to come up with a EC strategy for Food, nutrition, security
link to the EC discussion paper and a link to the live stream
Comment: We could go the way of atomization to minimize cost
Need to discuss alignment of needs – do we need to look at the foresight topics on seafood processing to serve the industry better?
Traceability, consumer knowledge, health, securing supply, integrity, efficiency was key issues raised & "clever **utilization**" of previously non desired (discarded) fish with **product development**
Q: Do we look at close circuit and offshore aquaculture/ deep-sea aquaculture considered in COFASP (technology, space)?
In France there has been looking at optimal places for windfarms – need to do something similar to aquaculture
Comment: cooling is a constant issue, even though it has improved (in Iceland)
Q: Can food waste from the shelf be used for something?
Could we do more to extract proteins etc.??? e.g. in Marine Biotech ERA-NET???
Comment: Products loosing **value** by the packaging in plastic – but is it a marine issue or a general food market issue? (Wrapping can be made from seaweed or biodegradable proteins question of profitability)
Waste / food safety
Comment: The use of plastic is definitely going to increase in Asia… - could be a EU selling point…
Comment: Food safety: starting to use gut etc. of fish e.g. for cosmetics – but is it safe?
Food safety is a prerequisite for all new products and **value** creation in the food industry
Waste stream is very interesting aspect

Epilogues

The stakeholder conversation consisted of representation of the value chain of seafood processing. President of AIPCE's participation secured fair representation of European Seafood Processing Industry and the conclusion of conversation, to be found in the Executive summary, reflect that. Unfortunately, the Secretary General of Federation European Aquaculture Produces was excused at the last minute. The panel discussion was fruitful and with wide participation of COFASP partners present.

Acknowledgement

The authors would like to thank all those who participated in the stakeholder conversation for their valuable contribution whether it was in form of presentation, questions, comments or answers. The authors would like to thank the European Commission for the support to the ERA-NET project COFASP. The Authors would like to thank RANNIS for entrusting them with the task of reporting the stakeholder conversation on seafood processing challenges into the COFASP cooperation.

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Registered without attending

Antonios Stamoulis	Institute for Agricultural and Fisheries Research (ILVO Fisheries)	
Courtney Hough	Federation of European Aquaculture Producers	Excused
Despina Symons	European Bureau for Conservation and Development (EBCD)	
Anna Boulova	Conexmar	

Appendix 1 List from SCAR FISH discussion of research topics

17 Research to document the quality characteristics of seafood is vital for marketing and sales. The relationship between seafood consumption and human health is very important from a public health perspective and must be documented better.

28 Fisheries in a full ecosystem context - Valorization of currently underused components of the catch – Develop measures to optimally use all the current catch waste for human benefit, not only for direct human consumption but also for utilization in the production of meal, pharmaceuticals and medications or other applications.

34 New seafood products from fish, shellfish, algae and other bio-resources. Develop new and diverse products from fishery and other bio-resources for food (e.g. novel or functional foods and ingredients) and non-food (e.g. pharmaceuticals and nutraceuticals) uses, securing the competitiveness of the fisheries and aquaculture industries.

35 Consumer Health - Investigate and document the human health benefits of eating safe seafood, advancing knowledge on contamination and infection in seafood (e.g. chemical pollution and biological agents), and providing risk- benefit analyses for seafood consumption. Develop advance control measures (e.g. assays for toxins and contaminants) and strategies to support the provision of healthy seafood products at all price ranges to meet a broad range of consumer demands.

36 Traceability - Address the scientific challenges necessary to allow for complete traceability of seafood. This is essential for underpinning consumer confidence that seafood is safe and is supplied from known and approved sources and harvesting/processing methods and to facilitate full control through the supply chain. Numerous research and technology problems must be solved concerning methodology, practical implementation and validation.

37 Seafood - Certification and Branding - Support research required to permit the establishment and verification of certification schemes (e.g. eco labelling; organic production) and standards to attain sustainable practices for fisheries and aquaculture. Such schemes can offer market information to show that products are harvested from sustainable sources, are healthy, safe and of high quality, and promote good animal health and welfare standards.

38 Animal Welfare - There is growing evidence that fish and shellfish can experience "pain" although the definition of pain in this context is contentious. Further research on this issue is required from an animal welfare perspective to inform on whether improvements are needed in how animals are handled in the fisheries, recreational fisheries, aquaculture and in fisheries research.

43 Seafood Processing - Food Safety - Developing fish processing methodologies in sea food products for (1) the elimination of parasites, and to reduce the allergenic processes generated by parasitism and (2) to reduce the pollution by metals and dioxins etc. microbial load in shellfish. Processing - Developing processes for the reutilization of discards and by catch biomass for the industry (animal feeders, cosmetics, etc.). Food and Health - Stimulate studies to determine the influence of seafood consumption on health.

66 Seafood Processing - The main challenge in the seafood processing industry is the increased need to more rapidly adjust to changes in production and demand. Towards more flexible production units - Maximising processing efficiency - New products and new production technologies