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Aquaculture High Level Event Report

"Tapping into blue growth: the way forward for European aquaculture"

24 May 2016, Square Brussels meeting centre

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The event was hosted by DG MARE of the European Commission in cooperation with the Netherlands presidency of the Council of the EU[1].

OPENING SPEECHES

***Mr. Karmenu Vella**, European Commissioner for Environment, Maritime Affairs and Fisheries* welcomed participants on behalf of the European Commission and the Netherlands presidency of the Council of the EU. He noted that the EU accounts for less than 2% of the volume of fish farmed worldwide, but is a world leader in terms of quality and sustainability. He suggested that quality and sustainability in the EU should provide a competitive advantage, and that production should be increased without lowering standards. He was optimistic that this is possible and that the EU can sustainably increase the value of the sector over the next 10 years by 30%, in line with the objectives defined in the Member States' Multiannual National Plans, and that sector growth can reduce EU dependence on fish imports and contribute to reviving the EU's regions. The Commissioner launched "EU Aquaculture online"[2], a one-stop-shop information source for businesses on EU rules and Member State's strategic priorities to encourage investment in the sector. He stressed that sustainable growth needs to be based on: i) business certainty, which can be created through more efficient administrative frameworks,

[1] All presentations can be found on the event website (http://euaquacultureconference2016.eu/index.html) and on EU aquaculture online at http://ec.europa.eu/fisheries/cfp/aquaculture/index_en.htm

[2] http://ec.europa.eu/fisheries/cfp/aquaculture/index_en.htm

improved transparency and good planning, exchange of good practices, the availability of guidance documents, and the creation of the Aquaculture Advisory Council; and 2) adequate financial support. He noted that the European Maritime and Fisheries Fund (EMFF) provides EUR 1.2 billion for sustainable development of EU aquaculture, and that other sources of funding such as Horizon 2020 are also available.

***Mr. Hans Hoogeveen**, Director General Vice-Minister for Agriculture, Ministry of Economic Affairs, The Netherlands* observed that globally one in nine people lack adequate food, that there is growing global demand for seafood products, that guidelines for healthy living stress the need to consume fish, and that fish is an important source of animal protein. He noted that with global wild fisheries production having stagnated at around 90 million tonnes a year, increases in aquaculture production can contribute to meeting demand for fish in the future. However, while production in Asia continues to grow rapidly, aquaculture production in the EU has stagnated. He suggested that some important actions to support growth in the EU could include: better communication to consumers about the low ecological footprint of most aquaculture; innovation, especially on aspects of marketing through cooperation throughout the value chain and new technology; the need to share knowledge, best practice and expertise; and promotion of marine protected areas (MPAs) and their use for aquaculture so as to combine environmental protection with development. He stressed the need for all stakeholders (e.g. private sector, administrations, NGOs, researchers, etc.,) to work together, and for funding (from both public and private sources) to support the sector.

***Ms. Linnéa Engström**, MEP, Vice Chair of the Committee on Fisheries of the European Parliament*

Ms. Engström's remarks centred on the need to identify the 'building blocks' of sustainable aquaculture. While noting the benefits of the Strategic Guidelines for the Sustainable Development of EU aquaculture[3], she questioned whether these guidelines were in themselves sufficient to ensure sustainability. She suggested instead that the core building blocks of sustainability include: improved facts, data and knowledge (noting that the new EU aquaculture portal is a positive step); a common definition of what constitutes sustainable aquaculture, with clear criteria and performance indicators (commenting that while much has been achieved in recent years by the industry to improve sustainability, voluntary measures are unlikely to be sufficient); streamlined governance at EU, national and regional/local levels, based on the precautionary principle and using marine spatial planning to focus on the best areas for aquaculture development; and the use of consumer power and eco-labelling. She also urged for investment in quality and improved standards (recognising that high quality EU products should not be undercut in the market by imports of lower standards), and noted the potential interaction between farming of carnivorous species and pressure on wild

[3] http://ec.europa.eu/fisheries/cfp/aquaculture/official_documents/com_2013_229_en.pdf

fish stocks used in the production of fish feed based on fish meal/oil. She suggested that solutions to this interaction may lie in research into non-fish ingredients to fish feed, and priority being given to the farming of non-carnivorous species in the EU so that aquaculture production can be a net producer of fish protein. She also recognised the role of farmed sturgeon in alleviating pressure on wild sturgeon for caviar production, but argued for research and evidence into the proposition that an increase in aquaculture has, or could, reduce pressure on other wild fish species.

OPENING PANEL. ***Moderator: Ms Katrina Sichel****, Wit and Word Communications*

Mr. Arnault Chaperon*, President of the Federation of European Aquaculture Producers (FEAP),* informed participants that FEAP is the official representative of the finfish farming sector in 22 European countries, with 26 associations and federations. Members of these associations and federations have a combined production of 2.3 million tonnes valued at EUR 8 billion (farm-gate value) and EUR 16 billion in added value products, and more than 100,000 direct jobs and close to 200,000 jobs when including upstream and downstream sectors. He provided compelling reasons for growing the sector in terms of its contribution to the trade balance, nutrition, and rural employment, but noted that constraints to growth include: a high administrative burden; the time-lag between investments and first sales which discourages new investors; difficulties in obtaining finance; the lack of a level-playing field with non-EU producers; and poor communication with both consumers and local public administrations about the benefits of the sector. He suggested that if such problems are successfully addressed (for example through a European Financing Warranty Fund for aquaculture producers) then the EU aquaculture sector can increase products farmed in the EU.

Mr. Giuseppe Prioli*, President of the European Association of Mollusc Farmers,* noted that the future of the sector is dependent not just on economic and technical feasibility but also on the willingness of different stakeholders to understand the complexity of the sector and to work together to understand the views of others. The Aquaculture Advisory Council (ACC) should be very beneficial in this regard and a key tool for the future. He highlighted some of the environmental benefits of the mollusc sector in terms of nitrogen and phosphorous removal and carbon sequestration, but suggested that in some Member States environmental protection measures place more constraints on the sector than on

other sectors competing for the same coastal space. He noted that the EMFF provides for measures supporting positive environmental services, but suggested that difficulties in identifying indicators of performance may have a negative impact on the uptake of such measures. He argued that representative associations are critical in supporting producers, who are usually small and medium-sized enterprises (SMEs), as they can assist with the implementation of collective action, encourage the participation of farmers in decision making, improve market competitiveness, and improve technical capabilities. In common with the previous speaker, he also highlighted the potentially harmful effect of a high administrative burden on the sector, and argued for a single common system for all producers throughout the EU so as to provide a level playing field.

***Ms. Ann Dom**, Deputy Director, Seas at Risk,* observed that a common understanding of what sustainable aquaculture means is still lacking. She referred to a joint NGO paper[4] which covers a range of issues and recommendations aimed at improving sustainability and minimising the negative environmental impacts of aquaculture, and suggested that what is needed is clarity over what we mean by sustainable aquaculture, and a clear long-term vision that is tangible and measurable in economic, social and environmental terms with indicators and targets. She argued that data are lacking (at EU, national, and regional/local levels), and that there are still many gaps in knowledge which could be addressed if aquaculture was better covered by the EU Data Collection Framework. She also commented that EU sustainability safeguards, for example in the form of the Water Directive, are often poorly implemented, and that MPAs are frequently characterised by lack of active management. She referenced a recent Court of Auditors report[5] on the effectiveness of European Fisheries Fund (EFF) support for aquaculture, summarising some of its main messages as being the historical need for better focus in the allocation of funding, the need to set a better framework as to what sustainability means, and a requirement for more data for monitoring. She concluded by urging for more visionary thinking about the sector, and more data for measurable assessment of sector performance and impacts.

[4] Seas at Risk, 2014. Priorities for environmentally responsible aquaculture in the EU.

[5] http://www.eca.europa.eu/Lists/ECADocuments/SR14_10/QJAB14010ENC.pdf

Discussion

The plenary was then opened up for discussion, comments and questions. Comments included: the significant contributions that the sector in the EU can make to employment; the need to consider the welfare of fish and for relevant standards covering husbandry and slaughter; and that in some cases there may be a conflict between growth of aquaculture and environmental protection (for example a potential prohibition in Germany of aquaculture in Natura 2000 areas).

STAKEHOLDERS' ENGAGEMENT IN THE AQUACULTURE AGENDA. ***Chair: Ms Marianne Wenning, Director, DG Environment, European Commission***

Stakeholder engagement at the EU level. ***Mr. Jean-Claude Cueff****, Interim Chairman, Aquaculture Advisory Council* noted the wide range of production types and methods of aquaculture in the EU, and provided some history of the development of a dialogue between the European Commission and the fishing industry, NGOs and the aquaculture sector. This development in the dialogue has culminated in a legal foundation for the establishment of the Aquaculture Advisory Council (AAC). He informed participants about the structure of the AAC with a General Assembly (40 seats for representative organisations and 20 for other interests, which will decide on annual programmes and budgets), an Executive Committee (20 members) to which working groups will report, and an Executive Secretary who will be supported by scientific and technical experts as required. Mr. Cueff highlighted that the objectives of the AAC reflect those as expressed in Article 34 of Regulation (EU) 1380/2013 on the Common Fisheries Policy, and that its main tasks will be to focus on: recommendations on management of EU aquaculture to the Commission and Member States; information/advice to the Commission and Member States on management and socio-economic issues and problems; and collection and analysis of scientific data. He suggested that some key challenges and actions for the AAC are likely to be: building mutual confidence and trust between its members, between sectors and other interest groups; obtaining sufficient competence and expertise to advice the Commission and Member States and to be recognised as a trusted body by policy makers; developing European networks for the exchange of knowledge and technology, establishing a database on social/economic results, and sharing information on production systems and market outlets; and contributing to overcoming the main constraints to aquaculture development in the EU in the form of access to sites, the administrative burden, production costs, feed availability, and global competitiveness.

Stakeholder engagement at national and regional level: the experience of Spain. *Mr Ramón de la Figuera Morales*, *Deputy Director of National Fishing Grounds, Union Waters and Aquaculture, DG Recursos Pesqueros y Acuicultura, Secretaría General de Pesca, Spain*
Mr. Morales noted that the natural conditions in Spain are generally good for development of the sector, that there is good technical capacity, and a ready market with high consumer demand. He presented the legal framework and background for coordinating aquaculture in Spain, which provides for a high level of decentralisation under the overall supervision and guidance of the National Advisory Board. He also outlined the process for developing Spain's national strategic plan for aquaculture, and reported that following widespread stakeholder engagement in its development the plan includes four strategic objectives, 8 lines of work, 37 national actions, and 321 regional actions (for implementation by 'autonomous communities'). The plan is overseen by a Monitoring Committee and working groups. He informed participants that stakeholders have been very involved at different stages in the development of an Aquaculture Act, with the text of the Act to be finalised shortly, and articulated a number of pre-conditions for good stakeholder involvement, the benefits of such involvement, and some ways to increase stakeholder engagement for maximum input.

Engaging the industry and NGOs in the definition of technical standards: the experience of Scotland. *Mr. Willie Cowan*, *Head of Performance, Aquaculture and Recreational Fisheries, Marine Scotland, United Kingdom*
Mr. Cowan provided concrete examples of how aquaculture in Scotland is contributing to EU blue growth aspirations, in terms of production volumes and values, employment creation, and economic activity in rural and coastal communities. He informed participants that prevention of the escape of fish from fish farms was a key driver for the development of technical standards in Scotland, and resulted in the government working with industry and stakeholders at a number of stages in the process to deliver an appropriate and robust Technical Standard for Scottish Finfish Aquaculture (published in June 2015)[6]. The standard relates to farming of all fin fish species in Scotland, covers the design, construction, materials, manufacture, installation, maintenance and size of farms, and all sites will be required to meet the standard by 2020. Even though the standards are not statutorily in place yet, good stakeholder consultation during their development has increased awareness and meant that many farms are already complying with them, resulting in real benefits. For example reported numbers of escaped fish are down from 900 000 to 15 000 (the lowest in 2015 since statutory reporting was introduced in 2002), the risk of escapes has been reduced, and the standard has helped to reduce costs and increase business certainty.

[6] http://www.gov.scot/Publications/2015/06/5747

Discussion

In response to questions, Mr. Cueff confirmed that the AAC will become operational from June 2016 when the first meeting of the General Assembly will take place, and noted that AAC elevates the level of stakeholder engagement and potential for bridge-building at EU, national and regional/local levels through its General Assembly[7], and through it being a dedicated forum for dialogue on aquaculture compared to aquaculture just being a working group under the old Advisory Committee on Fisheries and Aquaculture. Mr. Morales responded to a question about NGO involvement in the consultation process to develop the Aquaculture Act in Spain by noting that there are not many NGOs active in the aquaculture sector in Spain, but that the government is open to their involvement in stakeholder dialogue.

Discussion then focussed on how the speakers see the role of consumer organisations and retailers impacting on the aquaculture sector, given the importance of consumer purchasing decisions on the sector. The hope was expressed that consumer representation will play a constructive role in the AAC, but perhaps also more importantly in the Market Advisory Council[8], and that Member State administrations are increasingly aware of the need to engage with and educate consumers. Many Member State administrations work closely with retailers, and retailers play a critical role in auditing suppliers and the farming sector and in ensuring that the industry responds to consumer demand and concerns.

CREATING A POSITIVE ENVIRONMENT FOR INNOVATION. ***Chair: Mr. John Bell****, Director, DG Research and Innovation, European Commission*

Promoting innovation in Swedish aquaculture. ***Ms. Malin Skog****, Senior analyst, Swedish Agency for Marine and Water Management, Sweden*

Ms. Skog reported that in Sweden innovation is supported through: EMFF funding (under Union Priority 2 and 5); a national action plan with a strong emphasis on innovation; three regional aquaculture centres bringing together researchers, entrepreneurs and

[7] The AAC's the Executive Committee will only be formed of EU-level representative organisations, as its members are more limited in number than the General Assembly.

[8] http://ec.europa.eu/fisheries/partners/advisory-councils/index_en.htm

regional governmental bodies; and funding for innovative research from national funding sources. Research is being conducted into: culture of lobster and wolffish and sustainable feed sources; culture, processing and potential uses of brown, red and green macroalgae; producing mussels for nutrient uptake and animal feed in the Baltic; and recycling low-grade waste heat from the European Spallation Source being built in Lund to culture a number of different organisms. Examples of successful innovation already in practice include: recirculation systems for *tilapia* and catfish (*clarias* spp.) farming and successful branding/marketing; the culture of giant prawns in closed systems using low-grade waste heat from energy production and collaboration for this venture with Findus (one of the largest Swedish food brands); and using failed mussel rigs that were overgrown with sea squirts (*Ciona intestinalis*) to establish sea squirt culture for biogas production.

Single law on aquaculture in Greece. ***Ms. Angeliki Kallara****, Director, Directorate of Aquaculture and Products Utilisation, Ministry of Rural Development and Food, Greece*
Ms. Kallara provided some history of the sector's development in Greece, highlighting that the main revolution took place in 1980's with the development of the seabass and seabream industry which helped aquaculture become an important strategic pillar of the Greek economy. She presented on the introduction of a single law for aquaculture in Greece (Law 4282/29.08.2014), which includes all the aquaculture rules and procedures which were previously scattered across several legal instruments, thus providing a more efficient institutional framework for aquaculture development. The law has also introduced The National Aquaculture Development Programme, The National Council for Aquaculture (representing all stakeholders and an important tool for taking political decisions), and a single licensing authority (i.e. a 'one-stop shop') to facilitate and simplify licence applications.

Innovation in traditional pounds: experiences from Hungary. ***Mr. Péter Lengyel,*** *Head of Aquaculture Unit, Ministry of Agriculture, Hungary*
Mr. Lengyel noted that pond aquaculture is the dominant type of aquaculture in Eastern Europe, and has many benefits in terms of: not being dependent on fishmeal/fish oil for feed; being low in inputs; incorporating polyculture; having a high landscape value; and being important in contributing to rural livelihoods. He highlighted that drivers of innovation in Hungary have included increasing fish consumption, and have centred around increasing efficiency and compliance. He suggested that fish farmers often know what the problems are but need innovative research to solve them, and that innovation needs to be enabled by communication platforms to share the outputs of research, and an appropriate regulatory and financial environment. Such an enabling environment should be comprised of: administrative simplification; clear aquaculture legislation; easy access to funding; appropriate tax policies; product certification; and better information to farmers. He concluded by noting that knowing how to motivate farmers to innovate is a key challenge, but that the EMFF provides a huge opportunity for innovation, for example in pond construction and restoration, energy and resource efficiency, reducing environmental impacts, provision of environmental services, diversification, and processing and marketing.

Innovation and education. ***Ms. Margriet Drouillon****, Aquaculture Business Developer, University of Ghent, Belgium*

Ms. Drouillon's presentation focussed on three main areas: de-risking new ventures when bringing new aquaculture technology to the market; education (and building mixed competences, for example in technology and business); and transnational cooperation. For de-risking new ventures she provided examples of public-private partnerships investing in integrated aquaculture in the North Sea when it is too early for the industry to invest itself on its own, and incubation and coaching support for new ventures. She suggested that education can be supported through integrating business and entrepreneurial skills into undergraduate and graduate aquaculture programs, the creation of international Masters programs and a global alumni network, and online short-term courses tailored to the needs of individual trainees. Transnational cooperation can be supported through sharing and complementing regional competences, networks and contacts, through bringing together industry and researchers from different regions, and by focussing not just within the EU but also on cooperation further afield e.g. in Asia.

Discussion

Discussion included the role of innovation in unlocking the potential of sustainable aquaculture, and potential increases in production that might be achieved through innovation-led expansion of land-based re-circulation, urban aquaculture, aquaponics, and offshore developments, even if some of these developments are only at an early stage. It was also suggested that public authorities need to think carefully about how to communicate to the public about innovation in the sector in a way that is easily understood and doesn't scare the public. Useful in this context may be specialist communications expertise, and full transparency with the public about the sector. It was then suggested that improved information, communications messages, and transparency with the public about innovation and data on the sector may be difficult if the aquaculture sector is not fully covered under the Data Collection Framework, and with data provision being mandatory. Some industry participants informed the meeting that they have lots of good data, while representatives from Member State authorities also highlighted the availability of national level data published on an annual basis. This suggested that a challenge may be to access and consolidate data at all levels across all Member States so as to provide full EU coverage.

Participants generally agreed that the sector needs to improve its reputation in the minds of many members of the public, and that innovation is also thus needed in ways to better educate the public about the positive aspects of the sector in terms of protein provision, nutrition, employment etc. It was concluded that innovation is critically important in shifting aquaculture from being seen as part of the problem to being part of the solution.

EXPLOITING OPPORTUNITIES: SUCCESS STORIES. ***Chair: Mr. Ernesto Penas Lado,*** *Director, DG Maritime Affairs and Fisheries, European Commission*

Implementing the blue growth strategy: the Dutch approach to multi-use of offshore platforms. ***Ms. Marieke Mossink****, Deputy Director European Agricultural, Fisheries and Aquaculture Policy and Food Security Department, The Netherlands*

Ms. Mossink highlighted that given the many competing demands on marine space, innovation and cooperation are proving important in 'smart' use of available space, and that good planning and 'blue growth' offers opportunities for 'multi-use' of spaces. Feasibility studies and research is underway for example for the use of offshore windfarm energy parks for sea-ranching turbot, submerged mussel spat collection, and seaweed production. Successes so far have involved the productive collaboration of relevant stakeholders in establishing these feasibility and research activities, and it is expected that within a couple of years viable commercial projects may be underway.

Providing for high value niche markets. ***Mr. Michael Berthommier****, Producer and Agricultural Engineer for sturgeon, l'Esturgeonniere, France*

Mr. Berthommier highlighted that research and public funding in the EU was a key factor in the growth of the farmed sturgeon industry in the early 1990s, with the first developments taking place in the Departement of La Gironde in France. He described the dramatic decline in wild caviar production from the Caspian Sea from the early 1970's and how farmed production of caviar overtook wild production in 2006 and has since successfully reduced pressure on wild sturgeon. He provided data to show that the EU is the largest global producer (with Italy, France, and Germany accounting for 80% of EU production) with China second in terms of global production after the EU. Even though the forecast is for world farmed production of caviar to increase to over 500 tonnes by 2020 this will still represent only half of historical wild production. He reported that risks to the success story of farmed sturgeon in Europe include: the potential listing of some sturgeon species under the USA's Endangered Species Act (as North America is the second largest market globally after the EU); and low priced imports of caviar production to the EU from China. Looking to the future he identified the main challenges as being: to identify and access new markets; provide a level playing field *vis a vis* imports of caviar to the EU; and to prepare a reference standard for sturgeon caviar which will allow the consumer to identify different qualities and preparation methods.

Research and development in aquaculture. ***Mr. Tamas Bardocz****, Senior Consultant Aquaculture Development, AquaBioTech Group, Malta*

Mr. Bardocz introduced participants to the activities of the AquaBioTech Group, and in particular to the research activities of ABT Innovia. These research activities include: veterinary aspects; aquatic nutrition; ecotoxicology; hatchery technology and production, biomedical/nutraceutical developments; antifouling; water quality; and culture of larvae and specific species. He highlighted that the group as a whole tries to bridge the gap between research on the one hand and industry and policy on the other, and to support mixed use of marine space and sustainable aquaculture through innovative solutions.

Growing exports and diversifying the business model. ***Mr. Richard Donnelly****, Business planner, Bord Iascaigh Mhara (BIM), Ireland*

Mr. Donnelly presented the 'Taste the Atlantic' initiative, set up by BIM and the Tourism Ministry in Ireland, to create a tourist trail ('A Seafood Journey') so that tourists can meet with fishers and aquaculture producers and taste locally produced food. He reported that even though the aquaculture sector in Ireland is low in volume terms it is high in terms of quality, and that various media (e.g. publications, social, video [with a video shown to participants] https://vimeo.com/134927244) have been successful in promoting the trail. This has helped producers change their marketing from a reliance on low value wholesale, non-brand export markets, to increased local sales of high quality and recognisable products at higher values.

Discussion

Comments on the presentations in this session included the observation that success stories in terms of local, small-scale aquaculture production and sales are possible even within the context of trends towards globalisation and large-scale production methods. It was observed that successes in sustainability should focus not just on environmental successes, but also to the costs and benefits of aquaculture and to financial sustainability. It was noted that these elements of sustainability can be mutually reinforcing, for example with higher feed efficiency increasing both financial and environmental sustainability. It was also suggested that given the various examples of combining offshore energy production with aquaculture, it would be useful to document/summarise the current state of knowledge about what is possible and the extent of such blue growth initiatives. DG MARE urged participants to share other success stories about EU aquaculture which could be posted on the DG MARE website.

WHAT DO WE EXPECT FROM EUROPEAN AQUACULTURE? ***Moderator: Ms Katrina Sichel,*** *Wit and Word Communications*

Mr. Malcolm Beveridge, *Head of the Aquaculture Branch, Fisheries and Aquaculture Department of the Food and Agriculture Organisation of the United Nations, Italy*

Mr. Beveridge informed participants that fish has a special place in global nutrition and health due to its contribution as a source of protein and micronutrients, but in order to ensure that global supply meets demand, global aquaculture production (72 million tonnes in 2014) needs to increase in the future. Despite the fact that the global fisheries and aquaculture sector is now a US$ 1 trillion industry and creates 20 million jobs, fish supplies are falling in many regions of the world where they are most needed to meet nutritional demand and rising population. He highlighted that fish are highly efficient converters of food into flesh compared to other types of protein products such as chicken, pork, and lamb, and noted that this is a strength of the sector given the global need to produce more food from less resources. He reported that FAO is supportive of EU approaches to reducing environmental costs, increasing standards and efficiencies, and would like to see the following from European aquaculture: leadership – leading by example; partnerships – partnering with FAO to grow aquaculture sustainably; investment – investment in sustainably developing world aquaculture growth; innovation – sharing technologies and knowledge; capacity building – facilitating access to the best research and teaching facilities; markets and trade – applying high ethical standards and transparency in business; quality – production of safe, nutritious and environmentally sound farmed aquatic foods.

***Mr. François Simard**, Deputy Director and Senior Advisor for Fisheries, International Union for Conservation of Nature, Switzerland*

Mr. Simard stressed that the definition of sustainable aquaculture is complex but that it is nevertheless important to have an agreed definition and one which incorporates elements of environmental sustainability, economic sustainability, and social sustainability in an ecosystems approach. He suggested that it is important to better understand how ecosystems work, to identify and value ecosystem services, and to consider whether aquaculture activities are compatible with the relevant ecosystems and with clear conservation objectives. He also informed participants about IUCN work to analyse and evaluate different types of protein in terms of a range of criteria (e.g. acceptability, efficiency, environmental and biodiversity impacts, sanitary security, technical feasibility, etc.,), which found that different types of protein all have strengths and weaknesses compared to each other. Mr. Simard argued that an emphasis on the production of non-carnivorous fish may not be necessary, as sources of food without negative environmental impacts for carnivorous fish can be found. He also suggested that a key for the future is the need for improved communication between stakeholders and strong political will, with measures for aquaculture focussing on the ecosystem, the landscape, marine spatial planning, and nature conservation.

***Mr. Hyacinthe Cloarec**, Global Director Fish Management, METRO Group, France*

Mr. Cloarec reported that for commercial companies such as the METRO Group (operating in 25 countries and with a sales value of EUR 1.2 billion), sustainability relates to the whole value chain and is about securing access to resources and securing markets. The Group's vision is to work on and improve multiple factors across the value chain including products, logistics, training, stores, innovation, and packaging. He outlined METRO Group's sustainable fish and seafood strategy which identifies some endangered species that are not sold at all or only under carefully prescribed circumstances, and assesses their 12 most important species against sustainability criteria with targets and key performance indicators. He informed participants that staff bonuses are paid partly based on the achievement of sustainability objectives as measured against indicators. In considering challenges for the future he suggested these principally relate to: improving the consumer image of farmed fish, which is often focussed on the intensive nature of some production and on environmental problems; the competitive and price sensitive-nature of markets; and poor communication between stakeholders in the supply chain. Opportunities correspondingly lie in innovation in production and improved communication, improvements in certification quality and labelling, and value chain transparency.

Discussion

In considering who should take the lead in trying to bring customers to new products and in educating consumers about the positive aspects aquaculture, it was suggested that all stakeholders need to work together but that commercial retailers need to play a key role. It was noted that it may be difficult to educate consumers with simple messages about the complex issues associated with fish feed, and that few other sectors feel the need, or face pressures, to do so (even those that also use fish meal and fish oil in animal feed). Nevertheless sustainability issues in capture fisheries associated with fish meal and oil inputs to feed used in aquaculture remains a critical issue to be addressed, so that the

aquaculture sector can increase production without negative impacts on capture fisheries resources.

Discussion then reverted to a number of topics which had been raised briefly in earlier sessions. On the question of aquaponics, participants were informed about some reports by FAO which are available for download from the FAO website[9]. However it was noted that while there is a lot of interest, no large businesses have yet entered into aquaponics and there are a range of challenges, including high energy-use. On the question of the welfare of fish, it was noted that there is still an
imperfect understanding about best husbandry and managing stress prior and during slaughter so as maximise the welfare of fish but that improvements are being made. Comment was also made about the potential role of aquaculture in meeting the global food gap; it was observed that there are estimates that more than 30% of all food production is wasted/thrown away, and so efforts to reduce wastage and to utilise other sources of protein and micronutrients (such as insects) could also be important as part of future scenarios along with growth in aquaculture production.

The conversation also returned the question of education and consumer awareness, highlighting the potential/importance of educating school children, and of careful thought about the use of different communications channels and methods. This led to a key conclusion from the session about the importance of communication to: change consumer perception about the sector and to ensure stakeholders in the sector work better together, ii) share innovation coming out of the EU with the rest of the world, iii) enhance an eco-systemic approach to the sector with improved participation and shared decisions for better governance.

[9] e.g. http://www.fao.org/3/a-i4021e/i4021e00.pdf

CLOSING REMARKS. ***Ms. Gabriela Matečná,*** *Minister for Agriculture and Rural Development of the Slovak Republic*

Ms. Matečná concluded the high level event by noting that the reformed Common Fisheries Policy is an important turning point for the sector in the EU, and that the aquaculture sector can contribute to demand for food and economic growth through the provision of a safe, secure and sustainable supply of fish. She suggested the potential to expand global exports from the EU of high value niche products and urged that funding available from the EMFF, Horizon 2020, and other sources be utilised. She noted however that funding is not the only answer to increasing sustainable production, and that all stakeholders need to fulfil their respective roles, with Member State administrations and partners bringing national strategies and plans to life, with the Commission providing a supporting role, and with the AAC providing the basis for improved communication and decision-making. Ms. Matečná closed the high level event by thanking participants for their valuable contributions.