



## Workshop on Plastics and the Seafood Supply Chain

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## CLEAN OCEANS – HEALTHY FISH – HEALTHY PEOPLE

Opening by Guus Pastoor, Chair of the Executive Committee, MAC

[Presentation](#)



This workshop is a joint cooperation between the MAC and the NWWAC, a promising formula in which the ACs are linking their work, providing a good opportunity for all stakeholders to connect as well as delivering a basis for the future work of the ACs around the issue of plastics in the seafood supply chain.

Today there are a number of relevant consumer questions for the value chain which will drive consumer behavior. A large amount of research into consumer behavior and attitudes is available and while it is varied, the top three consumer concerns have been identified as:

- Climate change;
- Plastic waste;
- Water pollution.

Consumers associate a variety of things connected to today's topic and believe that it is the businesses that have to take care of this as well as governments with the consumers themselves only engaging to a lesser extent.

A number of important points:

- The MAC would like to highlight the positive health claim that seafood can make.
- If sustainably harvested and cultured, seafood is an essential protein for feeding the world's population.
- Seafood is tasty and easy to prepare.

The issue of plastics in the sea and in the oceans affects all of these points and solutions must be a joint effort via non-competitive action in the value chain.

## If we don't act now then by 2050 there will be more plastics in the ocean than fish.

Keynote speaker: MEP Giuseppe Ferrandino, Vice-Chair, EP PECH Committee



This workshop comes at a very timely and crucial moment in the fight against plastic pollution of the oceans. Recycling has become the standard around Europe but more needs to be done.

This year the EU adopted two important Directives:

- Directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment (“Single Use Plastics Directive”, Directive (EU) 2019/904) addresses the top ten plastics items found on European beaches as well as fishing gear containing plastics and aims at reducing the impact of plastics on the environment and ensuring an internal market.
- Directive (EU) 2019/883 of the European Parliament and the Council on port reception facilities for the delivery of waste from ships,

amending Directive 2010/65/EU and repealing Directive 2000/59/EC sets measures to ensure that waste from ships and in nets during fishing operations is returned to land. Here, waste should be collected, separated and recycled.

As of now many fishers are complaining that they are not being given the right incentives to participate in waste management. There is still no complete regulation regarding the collection and recycling of marine litter in all European waters. It is the task of the new European Commission to continue with this priority topic. The success stories presented here today will inspire policy makers to be more active and in a better way.

It will be interesting to see how the ACs will contribute to collection and removal of marine litter and improve recycling in the most sustainable way.

## MARINE MICROPLASTICS IN THE INTERNATIONAL CONTEXT

Amy Lusher, Researcher Scientist, NIVA/FAO

Presentation



In 2017 the FAO published its report *Microplastics in fisheries and aquaculture. Status of knowledge on their occurrence and implications for aquatic organisms and food safety* ([link](#)).

Just two weeks ago, the Norwegian Scientific Committee for Food and Environment (VKM) published their new report *Microplastics; occurrence, levels and implications for environment and human health related to food. Opinion of the Steering Committee of the Norwegian Scientific Committee for Food and Environment* (VKM Report 2019: 16; [link](#)).

Plastics are present in our everyday life which is generally unproblematic. The problem starts when they are released into the environment in the wrong way.

Plastics have become the world's most used material since 1976 with an average of 70% of single use plastics, 55% of which go straight to landfill, and only 9% go to recycling. The global recovery rate is only 6%.

Once plastics are in the environment they are exposed to the elements and start breaking down through mechanical, chemical and biological influences producing fibers and fragments (microplastics) as well as smaller particles called nano plastics.

Studies have found that 58% of commercially targeted species contain microplastics with most studies focusing on microplastic ingestion. There is currently very little knowledge of how plastics affect fish, and if and how they are passed along the trophic line.

It is important to note that most of these study methods are not comparable and the quality of studies regarding data has been questioned.

There is a growing body of knowledge regarding uptake of plastics in shellfish which make a good indicator for microplastic pollution. Effects can be reduced by depuration and removal of digestive tract.

*“Microplastics are found in all parts of the environment and in food, but the scientific quality of the knowledge available is insufficient to conclude with certainty about consequences microplastics have on the environment and on health.”* (VKM Report 2019: 16).

Microplastics from seafood consumption only contribute in a very minor way to the exposure of humans.

In summary, there are many different sources of microplastics related to fisheries and aquaculture. However, there is limited evidence that microplastics ingestion has negative effects on populations of wild and farmed aquatic organisms. Seafood safety will need to look more towards nano toxicity over physical effects. Development is needed regarding analytical methods for detection and quantification especially of particles >150 µm. More research should be carried out on microplastics as a source of pathogens and chemicals and the interactions between nutrient uptake and MP presence.

Communication needs to be efficient and effective, as there often is a disconnect between researchers, policy-makers, advisers and the general public. Clear communication is vital.

# THE EUROPEAN PLASTICS STRATEGY & SINGLE USE PLASTIC DIRECTIVE

Werner Bosmans, Policy Officer – Circular Economy, DG ENV C2

[Presentation](#)



To be included soon...

## EU ACTIONS TO TACKLE MARINE LITTER FROM SEA-BASED SOURCES

Magdalena Andreea Strachinescu Olteanu, Head of Unit, DG MARE A1

[Presentation](#)



Marine pollution is more than plastic, it also includes eutrophication, contaminants, underwater noise, ocean acidification and other types of marine litter.

DG MARE contributes to the implementation of EU rules.

DG MARE has launched a study to examine challenges and seek for best practices and solutions for fishing gear recycling to further prepare a request to the European Committee for Standardisation (CEN) for the development of a standard on circular design of fishing and aquaculture gear (Art. 8(9) SUP Directive). There is no formal deadline, but the aim is to submit the request to CEN by end of 2020.

By 3<sup>rd</sup> July 2020 the Commission shall adopt an implementing act on reporting of fishing and aquaculture gear placed on the market and waste fishing and aquaculture gear collected (SUP Art. 13(4)). The implementing act will provide a methodology and a format for reporting, calculation and verification of the amounts of fishing and aquaculture gear placed on the EU market and collected in ports.

The revised Port Reception facilities Directive requires all vessels, including fishing and recreational craft, to deliver their waste to adequate port reception facilities, so it can be properly managed. The Directive provides for a 100% indirect fee for garbage as a maximum financial incentive for ships to deliver their waste to the port irrespective of the amounts delivered.

This fee gives the right to deliver all plastic waste, including waste fishing gear and passively fished waste.

The Fisheries Control Regulation is currently under revision and negotiations will continue under the new Parliament and Commission regarding new provisions on reporting and retrieval of lost gear, as well as marking requirements for the fishing gear.

The European Marine Observation and Data Network ([EMODnet](#)) collect, aggregate, standardize and check the quality of marine litter data and develop new services to share information and products including display services and maps.

Under the current EMFF shared management, only seven Member States have spent resources under the Operational Programmes (OPs) on Fishing For Litter actions representing only 2% of all measures foreseen under the various measures in support of the EU fishing fleet.

Fishers are part of the solution!

Solutions regarding plastics that are degradable in the marine environment are coming but not operational yet. Cooperation with startups is needed, as is a need to identify more sustainable solutions.

**Q:** What is the definition of micro and nano plastic? Micro- and nano plastics have been discovered in foods but what testing methods are being applied? What about harmonization?

**A:** DG ENV is working with ECHA in relation to testing methods and harmonization.

**Q:** The industry is very concerned about how consumers are perceiving this problem as it seems that they think that the fish is the problem, not the plastic. It is important to have messages and tools to communicate correctly.

**A:** For consumers, plastics are a much more tangible topic than ecosystem losses which is why there is a bigger interest by the general public. The Commission is not using shock tactics and saying all plastics need to be banned, but work needs to be done to implement circular economy.

**Q:** There is quite a lot of misinformation in the public domain. Is there anything that can be done in relation to papers that have not met the quality requirements as they will continue to be quoted?

**A:** The VKM report looked at papers from 2016 to 2019 excluding papers that were not including the best data. Issues looked at were for example data exaggeration ([link](#)). Papers that were discounted are not necessarily all wrong but cannot be used for risk assessment. A lot of validation is still required.

**Q:** Is this a bit of scaremongering regarding fishing being the bad guys? Is collection not at the heart of the situation and clear communication?

**A:** Scaremongering gets results. Accurate data needs to be used and presented. Marine pollution is not only about plastics. Communication is at the heart of everything. Fishers are contributing in a voluntary way to solve a lot of problems.

**Q:** Does the term 'fisheries' include both commercial and recreational?

**A:** The proposal for the revised Fisheries Control Regulations foresees the marking of fishing gear to be extended to recreational gear. The Council and Parliament have to agree actions. Commitment is also needed from the Member States. One single player in this issue cannot solve all problems.

**Q:** Plastic is a vital material for the food industry contributing to quality, shelf life, labelling etc. Most food packaging is almost by design single use but does not come in on the top 10. When it comes to recycled content, there are strict rules for food safety reasons for food contact materials. Polystyrene and Extended Polystyrene are very important when transporting fish especially due to its thermal qualities. The Industry want to get it right to satisfy consumers. This is a joint effort but still quite a lot of work needs to be done.

**A:** The recycling of food packaging is better than that of general plastic (at 74% currently at the highest). The industry is also mobilising and looking at replacing plastic, so this does not seem to be a big problem. While the input for food packaging to recycling may be high, there are also still high losses. Targets are legal and binding, and Member States have to implement and execute these targets. The Commission recognises issues related to food contact plastic, but this is not the main issue.



### EFFECTS OF PLASTIC POLLUTION ON THE MARINE ENVIRONMENT

Richard Cronin, Chair, OSPAR

[Presentation](#)



OSPAR is the mechanism by which 15 Governments & the EU cooperate to protect the marine environment of the North-East Atlantic. OSPAR does not have competency in relation to fisheries but does work on marine litter.

OSPAR's expert group on Environmental Impact of Human Activities (EIHA) deals with marine litter amongst other topics and is guided by ecosystem-based approach.

OSPAR monitors and assesses the marine environment of the Northeast Atlantic and takes measures and actions to manage human activity based on this work. There is overlap and synergy between the work of OSPAR and the EU (for example, the Marine Strategy Framework Directive (MSFD)) OSPAR's 10-year strategy is nearly coming to an end and is being assessed for effectiveness. Its new one is being developed for 2020-2030 for launch at the OSPAR Ministerial in July 2020. It will address the challenges facing the marine environment including biodiversity, the effects of climate change and marine litter.

OSPAR beach littering monitoring also meets the EU MSFD obligations. At a global level the UN are considering a global legal framework to tackle marine litter.

The only solution to microplastic is controlling the input via pollution reduction, and it is the same issue around the world. The production and consumption cycle is leaking with waste management not keeping up with the growth of production and consumption.

The speed at which society values are changing and the discounting of scientific evidence and it being replaced with peer to peer information of value system is a challenge to policy making to take the right actions.

In January 2019, the Science Advice for Policy by European Academies (SAPEA) published an Evidence Review Report with the aim of informing the

forthcoming Scientific Opinion from the European Commission's Group of Chief Scientific Advisors on the issue of microplastics ([link](#)). This became scientific opinion in April 2019.

It concluded that at present ecological risks from microplastics are rare but constant or increasing emissions will lead to ecological risks within a century. Human decision and behaviour are the cause of microplastics in our environment. Influencing behaviour, values and norms are a way to reduce pollution, but experts and society must agree on the size of the risk and response required.

There is no confirmed risk to human health at present, but more work is required to draw robust conclusions. The predominant harm is currently socioeconomic.

Nano plastics are a greater concern as they can pass through the membranes in humans and animals, however, very little is known about them.

Clear communication about uncertainty and risk is required and behavioral and personal values need to be considered, for example some people now believe that plastic is "evil" despite the many benefits society has derived from it.

The issue has snowballed and resulted in a large number of policy responses over the last few years. These policy responses will lead to sectoral changes.

The key challenges for the seafood sector include how the sector is dealing with the challenge of marine litter, is the sector in front of the issue and ready for the changes that may come? How is the sector coping economically with the changes, are any subsidies available and are they adequate? Can the small units of production in fisheries and aquaculture cope with the new demands placed on them? Can the sector deal with potential market shocks? Is the business as usual model fit for purpose? How do the different silos communicate?

Dialogue at EU level is needed with colleagues from fisheries with Marine Directors!

## THE CLEAN OCEANS INITIATIVE IRELAND

Catherine Morrison, Certification & Sustainability Manager, BIM

[Presentation](#)



The Clean Ocean's Initiative brings together all of the work that the seafood sector is doing around the issue of marine litter. When it comes to the issue of plastic pollution, BIM has run initiatives since 2007, mainly along two strands for both aquaculture and fisheries:

- Retrieving
- Effective recycling

One main target of the Clean Oceans Initiative is 100% participation of Irish trawlers in Fishing for Litter (FFL) by the end of 2019. And while there are only 234 trawlers in the fleet the logistics are still really difficult.

Materials that are being collected are mixed and very dirty at times which makes them very difficult to recycle. It is important is to "stop the tap", stop the material entering the oceans in the first place.

Additionally, materials that are being collected must be categorised. Education is key.

Fishing nets are much more difficult to deal with when it comes to recycling than for example cups or straws. Nets need to be deconstructed prior to recycling as many different plastics are involved in the making up of one net with nylon easier to recycle than PET and PP.

It IS important that recycling systems are economically viable otherwise the plastic industry is not interested.

Some community-based projects were also trialed, for example 3D printing to provide social license but so far this has not provided any real solutions.

EPR schemes exist in agriculture, could those be used as a model for fisheries and aquaculture?

## PROJECT CleanAtlantic

Patricia Pérez, Project Officer, CETMAR

Presentation



The INTERREG project CleanAtlantic aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent, and remove (macro) marine litter. The project will also contribute to raising awareness and changing attitudes among stakeholders and to improve marine litter managing systems ([link](#)).

It has five different work streams, namely

- (1) assessment of all the information on the status of marine litter in the Atlantic area and the initiatives addressing this environmental problem;
- (2) improvement of the existent monitoring methodologies and the current management of data;
- (3) development of numerical models to predict the localisation of hotspots of marine litter;
- (4) improving waste management in ports and on board and removing marine litter; and
- (5) raising awareness.

As a result of this work, CleanAtlantic will deliver: technical reports and interactive maps on the status of marine litter; case studies on its economic impact; user-friendly databases; apps for recording and managing data; improved monitoring protocols; studies on the environmental impact of certain debris; a lagrangian modelling tool and maps of hotspots; fishing-for-litter actions; and awareness-raising activities and materials.

Although still in progress, a sample of lessons-learnt derived from their experience on FFL activities was included in the presentation. The need to direct awareness raising actions to all the actors in the fishing sector was a case in point. Having a sense of ownership towards the project consolidates their commitment to actively participate in initiatives tackling marine litter, and eventually contributes to stop the flow of plastic into the oceans from this source. Very importantly, fishers should receive indirect benefits for their role as guardians of the sea (e.g. public recognition).

The Commission praised the Member States that are involved in Fishing For Litter. The main issue is that only seven Member States are using the EMFF Fishing For Litter money. Maybe the Commission could showcase best practices to encourage other Member States to use EMFF money to implement Fishing For Litter schemes. The reporting of gear lost at sea has been in place for ten years already but is not working very well. It is important to look at cost effectiveness of active Fishing For Litter schemes compared to passive Fishing For Litter schemes.

**Q:** Legislation for this complex issue is welcomed but needs to be targeted. Is there a need for more classification of the type of plastics that are being landed? Contamination of gear is a major problem to recycling of gear and presents a massive economic impediment to recycling of gear.

**A:** In Ireland FFL material is being categorised to be able to address the source. Currently, FFL material is going straight to landfill due to mix and contamination. Port reception facilities and segregation are also being worked on at the moment in Ireland. A large number of actors is involved in this area and finding consensus is not easy.

**Q:** Has OSPAR done much work regarding nano plastics and their sources, for example waste waters? Is the development of a liquid magnet a sensible solution? Are there any other developments? When it comes to subsidies in agriculture and fisheries, there is no direct subsidy in fisheries.

**A:** Currently no work is being carried out at OSPAR level regarding nano plastics that are coming from the breakdown of microplastics. Work on nano particles is mainly coming from atmospheric research. The Commission is reviewing the Urban Waste Water Treatment Directive. Currently physical screening and settlement processes are taking out majority of particles, but the spreading of sludges may pose a risk to the environment. The development of a liquid magnet is good but removing particles at source is more important, for example fibres from clothing. End of pipe solutions force everyone and not just the polluter to pay.

**Q:** Misinformation is going out to the public which needs to be rectified. There is no better sector for being involved for bringing litter ashore than the fishing industry.

**A:** A certain amount of marine litter is coming from activities at sea and affecting a change of perception is really important. Society is not waiting for science to make decisions, and the sector needs to influence the quality of values. Traditionally, the sector has been very resistant to change, but it needs to lead the narrative on marine litter not only regarding its own action but being part of the voices of wanting clean oceans. That voice is mainly coming from actors that are not working at sea.

**Q:** The fishing sector has responded but not all boats have the capacity to pick up materials. Over 250 tonnes of Fishing For Litter are being collected from the North Sea every year. Fishing gear that is being retrieved is over 30 years old. Fishers are really proud of this scheme. Communication and awareness raising needs to be improved for example with fishers when cleaning quay side after mending nets. What is the best way to engage with fishers to change all the mentality?

**A:** Highlighting and valorizing the work that fishers are doing is vital. They are part of civil society and have a role to play and they want to play that role. It is also important to link up with community groups. Fishing is still one of the biggest economic parts in a lot of coastal communities. Starting with children activates the pester power so that kids are making their parents aware. Providing facilities to make participation easier and allowing this work to be publicized as well will help. Livelihoods are depending on the clean environment.

## On Land – Packaging & Processing: minimising the impact along the production chain

### SUSTAINABLE PACKAGING AND NEW DIRECTIONS IN PLASTIC PACKAGING – RETAILER’S PERSPECTIVE

[Presentation](#)

Pedro Lago, Sustainability and Circular Economy Projects Director, SONAE / YPACK Project



Sonae is a multinational company managing a diversified portfolio of businesses in financial services, technology, shopping centers, telecommunications and retail, with Sonae MC as the food retail market leader in Portugal.

Sonae’s plastic strategy is based on three main pillars:

- Act - identifying and reducing the amount of plastic that is used in the operations and products;
- Mobilise - strengthening the principles of circularity in Sonae’s actions, replacing plastic with alternative materials with less environmental impact;
- Influence - raising communities’ awareness of the responsible use of plastic by promoting behaviours that fosters the reduction, reuse, repair and recycling of plastic

Sonae’s strategy and commitments are set out until 2025, with a global commitment by Sonae at the Ypack project in place.

Under the motto Fighting Food Waste & Plastics, this project aims to develop a new generation of biodegradable packaging that simultaneously increases the shelf-life of critical products.

The circular bioeconomy approach of the YPACK project is taking waste material, feeding it to microorganisms that make plastic out of it, and once it has been used it gets fed to the same microorganisms again ([link](#)). The project aims to scale up and validate two innovative food packaging solutions based on polyhydroxyalkanoates (PHA) with active properties and passive barrier to reduce food waste by prolonging food shelf life. PHA is 100% biodegradable and compostable in natural conditions, not just in industrial conditions.

The project includes a communication package over three years to educate consumers to distinguish between a normal plastic and a bioplastic.

### PROJECT OCEANWISE

Rebeca Arnedo, Co-Founder, Sustainn

[Presentation](#)



Sustainn is a consultancy firm that helps companies develop more sustainable products and processes.

Plastic foam products made of expanded polystyrene (EPS) and extruded polystyrene (XPS) are amongst the top 10 items of marine litter found on European beach litter surveys. The OceanWise project is looking for solutions to reduce this type of marine litter by involve all the stakeholders in developing and implementing the aims of the project ([link](#)).

As part of the project, the Living Labs will test the different alternatives that have been proposed in relation to how they behave as marine litter but also how they behave in their desired function.

The challenge is how to implement the principles of circular economy at the design stage.

It is important to measure not only the environmental impact but the triple impact, including the economic and social dimensions!

## EFFECTS OF MICROPLASTICS ON HUMAN HEALTH

Prof Brian Quinn, Professor, University West of Scotland

[Presentation](#)



There is currently no available data or information which provides evidence of the potential human health effects of ingested or inhaled microplastics.

There are three routes to human exposure to microplastics:

1. Ingestion (via food and water)
2. Inhalation (Air)
3. Dermal contact

Is it possible to quantify the amount of microplastics in fish? Research examined halibut and rainbow trout and found none in the latter and very little in the former.

Microplastic pollution in mussels was also examined which found that samples collected closest to marina contained the highest content of microplastics compared to the ones at the aquaculture site.

While microplastics do originate from aquaculture facilities this is seemingly only a small amount when compared to other influences, e.g. marina.

*“Concerns of human exposure to MPs via shellfish ingestion need to be placed into context, since their potential for ingestion is minimal when compared to exposure to MPs via household dust fallout.”* Low levels of microplastics in wild mussels indicate that microplastic ingestion by humans is minimal compared to exposure via household fibres fallout during a meal, Catarino *et. al.*, Environ Pollution 2018 Jun;237:675-684, [link](#))

Important questions are: What is the impact? How is it defined? What level is assessed, cellular, individual?

There is a big discrepancy between the magnitude of this debate and actual scientific findings - it is important to stop the alarmism!

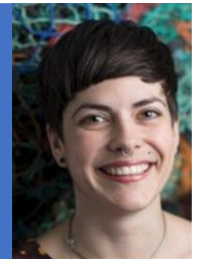
If there is a potential health risk, a 4-step risk assessment needs to be carried out including

1. Hazard identification
2. Dose-response assessment
3. Exposure assessment, and
4. Risk characterisation.

## REDUCING THE IMPACT OF PLASTIC PACKAGING IN THE SEAFOOD SUPPLY CHAIN

Christina Dixon, Senior Ocean Campaigner, Rethink Plastic Alliance

[Presentation](#)



Across the EU, three in four people (74%) are worried about the impact on their health of everyday products made of plastic. 87% agreed they are concerned about the impact of plastic products on the environment, including 45% who 'totally agree'. Attitudes towards the impact of plastic products on the environment are generally consistent across Member States.

There are a number of plastic risks in the seafood supply chain including a rising concern about 'ghost gear' and its intersection with illegal, unreported and unregulated (IUU) fishing, food security and plastic contamination. Quite often it is not the legitimate fishers that dump gear and there is a proven link of dumped gear to illegal, unreported and unregulated

fishing. Brand evaluations regarding plastic pollution have shown that Coca-Cola is the No 1 plastic polluter brand in the world.

It is important to shift consumer behaviour to reduce single use packaging, but a system change is also required to rethink supply chain models and prioritise reusable and refillable packaging, shifting away from single use and hard to recycle items. A priority for the seafood sector is to phase out the most problematic plastics such as EPS and to embed best management practices to mitigate the risks of other plastic losses, for example from lost gear. A key recommendation is also to avoid replacing plastics with non-conventional materials (e.g. bioplastics) which can create other problems and focus on reuse and reduction.

## PANEL DISCUSSION

Moderator Georg Werner, Campaigner, Environmental Justice Foundation



**Q: Who is going to give the message to the policy makers that we need to communicate and cooperate?**

**A:** At EU level/NE Atlantic level the best solutions are co-designed solutions. One player may have identified the problem but does not necessarily have the skill set to develop solutions. Dialogues are needed with other stakeholders. A strong involvement is needed from the fisheries sector on how to deal with pressures on habitats, protected areas, and marine litter which are not necessarily caused by the fishing sector. Conversations are necessary between various policy makers to identify if there is a common approach.

The NWWAC and MAC are perfectly positioned to propose this institutional dialogue.

**Q: Did the study on microplastics in bottled water show that particles from recycled bottles were significantly higher than from virgin plastic bottles?** For a lot of polymers recycling is not an infinite process, at some stage it will lose functionality as a bottle.

**A:** The study was looking at reusing plastic bottles, not using recycled plastic bottles. There is a problem with comparability of tap and bottled water studies as they looked at different sizes of microplastic particles. But a significant higher number of particles is found in reused water bottles, however, volume is important. Overall, there are not a lot of studies looking at plastic leaching from bottles. It is also not clear if the water was tested prior to being put into the bottle. This should not lead to the assumption that it is bad for human health to reuse plastic bottles. It is important to look at proportionality – this is very much a first world issue; globally the big issue is access to drinking water.

**Q: Are studies peer reviewed, and what about contradictions regarding results?**

**A:** An evaluation of quality of research is being carried out. Quality is not always a fault of the researcher because not all methods are validated. But if studies are published then the quality must be considered before publishing. Maybe there is something in the editorial process prior to publishing.

Without proper controls studies can be nonsense.

**Q: Who owns the intellectual property of the material being developed by YPACK?** The process is tackling two issues: food waste and packaging which is commendable. A lot of policy decisions are being based on existing solutions and structures which creates issues. Technology is developing which could change the approach to problem solving. Companies are not really trying to delay a process of change but are honestly looking at new research to provide holistic solutions and avoid unintentional consequences.

**A:** The project is financed by H2020 with the idea to make it open technology and to make it accessible to the market. Uncertainties include the price and the scalability of the process.

**Q: Part of the current Marine Stewardship Council (MSC) certification process is the requirement to monitor the impact of gear loss on marine habitats.** The Fisheries Standard review is ongoing. Any new separate ghost gear

indicator needs to be evaluated and assessed. It is a very complex issue which is currently under review phase. The MSC is exploring best practice with GGGI to develop options and a response including public consultation.

If the MSC is going to include ghost gear, then there may be fishers who while following all the rules may still have a problem with MSC certification which means there are overall issues with the accreditation itself.

**A:** Dumping of gear can be linked to avoiding capture and gear conflicts for example. The IUU link is under-researched and needs quantification.

**Q: Communication is skewed if global numbers for marine litter are put into context with EU activities.** There is a need to get fishers on board and when fishers and their organisations are doing their utmost to contribute to the solutions we should not make the fishers a culprit. Thermal recycling is better than landfill. If messages from Asia and the Caribbean pour in it is difficult to motivate EU fishers. It is important to distinguish between messaging.

**A:** Acknowledging and rewarding good initiatives and communicating on this is really important.

**Q: In terms of the overarching strategy of SUP and marine pollution, what is the level of cooperation between DG MARE and DG ENV? Will there be changes in the future with the new Commission?**

**A:** There is still no new cabinet in place, close cooperation with DG ENV and DG MOVE regarding the recycling of fishing gear. Fishing gear is being looked at by DG MARE in relation to reporting and standard. Reporting is needed to build baseline. DG ENV is looking more at marine litter from land-based sources.

**Q: DG MARE is predominantly concerned with sea-based sources, DG ENV land based. This division is problematic as a lot of material is coming down the rivers.** The MSFD addresses marine litter whereas the Water Framework Directive does not look at litter. A large amount of research is going into marine litter instead of into freshwater – though we need to look at “turning off the tap”. If we do not monitor what is coming down the rivers we do not know how effective the turning off of the tap is. It is important to protect the seafood sector and widen the communication about the connections – the plastic may be in the marine environment, but it is coming down the stream. Scientists need to be allowed to be scientists, but their findings need to be communicated properly and not every scientist is a good communicator.

**A:** The division is not official and there is collaboration between the DGs, with projects across a range of funding mechanisms including H2020, EcoInnovation, Life etc. A bottom up process is coming from the scientific communities and businesses in the Member States to help identify where research is most needed and where monies should be allocated. Opportunities are there but the Commission should not really use the top down approach. Overall the approach is already getting much broader than before. It is not the Commission that is running the research.

**Q: Fishing gear and recycled fishing gear is mixed up with litter at the moment.** But it's not marine litter, it is returned gear. Gear is very expensive and modified to fit each vessel and does not get discarded. As legislation changes, gear gets adapted. The life span of gear can reach 10 to 15 years with modification.

**A:** “Turning off the tap” means that a hole in the bucket needs to be fixed. Plastic is a utility and not just a waste. It is important not to demonise plastic! Retailers have reacted by stating they are removing plastic which may reduce shelf life for example – plastic around cucumbers extends the shelf life significantly. If that plastic is managed responsibly the impact is far less than greenhouse gases from semi used cucumber.



**Q: In the Baltic most recently, it is gill nets and not trawl gear that is found. Even if this is only a small amount it still has an impact.**

**A:** It is not that fishers are not engaging. Fishers agree with the policies, however, the message that is presented outside is incorrect. Yes, there are difficulties for example weather conditions. In the EU, abandoned, lost or disposed fishing gear amounts to approx. 11,000 tons per year compared to approx. 640,000 tonnes globally.

## Final messages from the panel

**Communication** is really important on a lot of different levels, between scientists and everyone, consumers and sector, sector and regulators. To arm the seafood sector with knowledge industry and civil society need to tell scientists what questions they want answered.

It is important to think about as we rush to find **solutions** not to rush to false solutions and quick fixes which may have unintended consequences.

Solutions must be **economically viable** and must keep business in business.

**Raising awareness, communication and education** are the basis to increase knowledge about plastics and the relevance of the work that is being carried out. This can be led by NGOs as well as Commission as well as by bringing together scientists, researchers, policy makers, and locals to discuss what information can be provided and what is actually needed to ensure adequate information can be

Society is combining a lot of linear systems and that needs to be changed. Design has been happening in a linear approach, now training has to be provided to **design in a circular approach**.

## From the Commission's point of view

This workshop is showing great **collaboration and complimentary actions**. Avoid duplication and work together. The Commission would like to see that the bottom up approach from the ACs continues.

The Commission's approach itself is also changing. The European Plastics Strategy is not a top down approach and contains a **call for voluntary actions**, for example the Circular Plastic Alliance, signed already by more than a 100 of public and private partners.

In the next EMFF funding period (2021-2027), the Commission would like to see the number of Member States joining FFL at least doubled (currently only 7 Member States use the scheme). The Commission would like to receive suggestions on how to achieve this, and also on the implementation of the new Port Reception Facilities. **Please make suggestions** to the Commission on how to collaborate and increase participation.

## CONCLUSIONS

Emiel Brouckaert. Chair of the Executive Committee, NWWAC



This workshop has brought together members of several Advisory Councils with experts and scientists to explore in both broader and greater detail the impact of plastics on fisheries and market actors.

We have heard from the European Commission outlining future policies and a roadmap for the implementation specifically of the Single Use Plastics Directive.

We have listened to experts from the FAO, OSPAR and the University of the West of Scotland discussing the pathways of plastics into the marine environment and their impact on marine biota as well as exposure and effect of microplastics on humans.

We have been given insight into national and EU projects on curbing plastic litter in the marine environment, on removing plastic from the marine environment and on new developments in the world of packaging.

It has been acknowledged and must be emphasised again that at the forefront of all this work is the seafood industry itself despite being only a minor contributor to the problem on a global scale. Fishers and fish farmers are taking a proactive role in contributing to the cleaning up of our seas. Seafood processors are looking into waste reduction and changes in packaging materials.

The seafood industry along its entire supply chain is not only fully aware of the issues relating to plastic pollution in the marine environment but is part of the solution.

Important conclusions from the various expert presentations include:

- Plastic is the most widely used material on the planet.
  - Nearly 80% of plastics entering the oceans comes from land-based sources.
  - Plastics are widely used in the seafood sector which is also a source for plastics to enter the marine environment either intentionally or unintentionally.
  - Microplastics have been shown to be present in organisms and products across the entire food chain.
  - Microplastics from food products and beverages likely only constitute a minor exposure pathway for plastic particles and associated chemicals to humans with consumption of seafood representing a miniscule part.
  - The EU is actively pursuing a circular economy strategy including tackling the issue of single use plastics and marine litter via its existing and proposed legal framework as well as through EMFF funding for blue economy projects.
  - Prevention and removal of marine litter are vital with awareness raising and education being key to solving the pollution problem.
  - Packaging solutions must be assessed for their true circularity to avoid replacing one problem with another.
- Nevertheless, challenges remain, a few which were identified in the panel discussion:
- More research is needed on the human health risks of microplastics, nano plastics and their compounds as there is currently not enough scientific evidence.
  - Communication and collaboration are key to solving marine litter problem. How do we achieve a higher level of both?

- How can the seafood sector get ahead of the narrative of plastics in the seafood supply chain and right the skewed public discussion?

The information and discussions from this workshop will be collated in an advice document providing information to the members of the various Advisory Councils as well as recommendations to the European Commission regarding the implementation of the Single Use Plastics Directive and the requirements the seafood sector is facing.

This workshop is the first in a series of workshops in which the Advisory Councils are addressing the challenges placed on the seafood sector with the introduction of the SUP Directive, the Port Reception Facilities Directive as well as the EU Circular Economy Package overall.

This work will result in detailed consensus advice to the European Commission on practicalities of the implementation as well as in showcasing best practice and the enormous contributions made by the sector in safeguarding the marine environment from plastic pollution.

**All presentations are available on the [MAC](#) and [NWWAC](#) websites.**

## **Speakers' Biographies**

### **Guus Pastoor – Chair of the Executive Committee, MAC**

Guus Pastoor is the Chair of the board of AIPCE, the European Federation of Fish Processors and Importers and has over 25 years of experience in the fish sector. He is also the Chairman of the Market Advisory Council's Executive Committee, the General Assembly of the North Sea Advisory Council and the North Atlantic Seafood Forum. At the national level, he chairs the Dutch Fish Federation (Visfederatie), the Inter-branch Organisation for Brown Shrimp Fisheries, and is vice-chair of the Dutch Fish Marketing Board. Born in Rotterdam, he graduated at Rotterdam's Erasmus University with a degree in business and fiscal economics. Prior to his work in the fish sector, he worked as a manager and business consultant in the dairy industry for several years as well as the logistic sector.

### **Keynote Speaker**

#### **MEP Giuseppe Ferrandino, Vice-Chair, EP PECH Committee**

From 2007 to 2017, MEP Giuseppe Ferrandino was the Mayor of Ischia, an island in the Gulf of Naples. In that capacity, he has always worked to ensure the social, economic and environmental sustainability of the fisheries sector and of the entire supply chain and paved the way for Ischia to become plastic-free in 2019 (no single use plastic allowed anymore). Since 2018, he is a Member of the European Parliament and since 2019 he is Vice Chair of the Fisheries Committee.

### **Setting the Scene**

#### **Amy Lusher, Researcher Scientist, NIVA / FAO**

Dr Amy Lusher is an influential researcher in the field of marine pollution. Having been at the forefront of microplastic and marine pollution research in past seven years, she has authored and co-authored over 20 peer-reviewed publications and book chapters and contributed towards several international technical reports. Currently, she works at NIVA, the Norwegian Institute for Water Research in the section for Environmental Contaminants. Her research focuses on the distribution, interactions and potential effects of microplastics in the marine environment, with a focus on polar environments. She has been involved in the development of numerous methods for the identification of microplastics from different environmental matrices including sediments, water column and biota. Dr Lusher developed an underway sampling regime to filter microplastics from the water column of the North Atlantic and the Arctic (Lusher et al. 2014; Lusher et al. 2015). She also developed methods for sampling fish (Lusher et al. 2013) and marine mammals (Lusher et al. 2015b). She led a critical review of the methods used in the identification of ingested microplastics by wild and laboratory exposed biota (Lusher et al. 2017) and most was a leading contributor to a Food and Agricultural Organization (FAO) report focusing on microplastics in fisheries and aquaculture (finfish and shellfish). She has been involved in several international working groups including GESAMP and AMAP focusing on harmonization of monitoring methods.

## **At Sea – Fisheries & Aquaculture**

### **Richard Cronin, Chair, OSPAR**

Richard Cronin is the Principal Adviser on Marine Environment in the Irish Government. He is responsible for the implementation of the Marine Strategy Framework Directive including measures to reduce the effect of marine litter; supporting the development and implementation of actions under other policy streams and ensuring alignment with MSFD and OSPAR objectives. He is leading Ireland's participation in the OSPAR Commission and its subsidiary bodies for the delivery of the Northeast Atlantic Environment Strategy and supporting regional implementation of the MSFD. He is responsible for the ongoing development of a coherent and representative network of marine protected areas. He is also chairman of the OSPAR Commission.

### **Catherine Morrison, Certification & Sustainability Manager, BIM**

Catherine Morrison's background is in salmon farming and quality and environmental certification schemes. She currently has responsibility for managing all of Bord Iascaigh Mhara's sustainability programmes including the Clean Oceans Initiative, Fishing For Litter and net re-use and recycling projects.

### **Patricia Perez, Coordinator, CETMAR**

Patricia Pérez has a PhD in Marine Science and her work experience is mainly related to marine pollution. Specifically, her PhD dealt with the effects of chemical pollutants on marine microalgae and she is the author of 8 scientific papers. Out of the university, during 3 years she contributed to the regional implementation of the Water Framework Directive in Spain. In the last 10 years she has been working in CETMAR (Vigo, Spain) as a technical coordinator of EU-funded projects on maritime pollution (ARCOPOL and MARINER), and, since September 2017, she is fully dedicated to the technical management of the CleanAtlantic project on marine litter. Additionally, she is a lecturer at the Master in Management of Sustainable Development organised by the University of Vigo, where she teaches about the importance of aquatic ecosystems and the main risks they are facing.

## **On Land – Packaging & Processing: minimising the impact along the production chain**

### **Pedro Lago, Sustainability and Circular Economy Projects Director, SONAE / YPACK Project**

Pedro Lago is an engineer with over 25 years' experience in IT and Innovation management, as well as in retail, projects and team management. Over the last years, he has taken responsibility in a totally different area - managing sustainability and circular economy projects at Sonae MC. Sonae MC's ambition and strategy, combined with the nature of the function, are a unique opportunity to carry out truly impacting initiatives in Portuguese society.

### **Rebeca Arnedo, Co-Founder, Sustainn**

Rebeca Arnedo studied law specialising in environmental law. She has been working since 2007 helping various types of companies to fulfill their environmental legal requirements, implementing environmental management systems, and promoting continuous improvement in order to reduce negative environmental impacts. In 2015 Rebeca and her partner Carlos founded Sustainn, a consultancy firm specialising in the implementation of the circular economy principles to generate a positive impact, designing and developing sustainable business models, products and services.

### **Prof Brian Quinn, Professor, University West of Scotland**

At present Professor Brian Quinn's research is focusing on the development of new methods to assess fish health in aquaculture, which is being commercialised under the Scottish Enterprise High Growth Spinout Programme (HGSP). Prof Quinn is currently PI on a BBSRC (Biotechnology and Biological Sciences Research Council) project (BB/S004467/1) to develop methods to investigate anaemia in salmon aquaculture (started in March 2019). He is also the academic lead on an Innovate UK Knowledge Transfer Partnership (KTP) with Kames Fish Farming Ltd. and has previously been lead academic on two industry focused projects supported by the Scottish Aquaculture Innovation Centre (SAIC). After graduating from the University of St. Andrews, Professor Quinn successfully completed his PhD at Trinity College Dublin. He has received fellowships from both the Canadian (NSERC, visiting fellowship to Environment Canada) and Irish (Irish Environmental Protection Agency (EPA) Developing Environmental Research Potential) governments.

### **Christina Dixon, Senior Ocean Campaigner, Rethink Plastic Alliance**

Christina Dixon is the Senior Ocean Campaigner at the Environmental Investigation Agency in London, which is part of the Rethink Plastics Alliance. For the past six years she has been focussed on abandoned, lost and otherwise discarded fishing gear, working internationally with the Global Ghost Gear Initiative, on projects with the Food and Agricultural Organisation of the United Nations and in collaboration with several major seafood companies. She has undertaken fisheries field work in Vanuatu, Indonesia and the UK, in addition to having broad experience on corporate and government policy related to fisheries and plastics.

### **Georg Werner – Chair of Working Group 3, MAC**

Georg Werner has been a campaigner for the past three years at the Environmental Justice Foundation (EJF). He studied political science in the UK, France and Germany, and is based in EJF's Hamburg office

His current work includes IUU fishing vis-à-vis German and EU policy-makers; the goal to harmonise import controls for fisheries products in the EU, Japan and the US; making EU citizens aware their consumption choices have an impact on producing--often developing—countries among other topics.

### **Emiel Brouckaert – Chair of the Executive Committee, NWWAC**

Emiel Brouckaert started his career as a Merchant Navy Officer. After his career at sea and in the management of a shipping company, he joined Rederscentrale in 2007 as Chief Executive. Rederscentrale is the only Belgian recognised Producers Organisation and Fishing Vessel Owners Federation. In 2016 Emiel was nominated as Chair of the NWWAC Executive Committee.



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