



MARINE LITTER IMPACT ON OCEANIC ECOSYSTEMS Problems & Solutions

**Wednesday 1st July 2015
European Parliament, Brussels**

Policy makers, academic researches and representatives from the civil society got together on Wednesday July the 1st in the European Parliament, to discuss the issue of marine litter in the event entitled “**Marine Litter Impact on Oceanic Ecosystems – Problems & Solutions**”, chaired by **MEP Ricardo Serrão Santos**.

Ricardo Serrão Santos MEP, Chair of the “Biodiversity and Ecosystem Services” Working Group of the Intergroup opened the meeting by stating that pollution of the oceans is an issue of global environmental concern that was initially identified in scientific literature in the ‘60s. The production of plastic has been constantly increasing, and a considerable part of it now ends in the seas, showing a market failure in this domain. Marine litter has conquered the deep sea and constitutes danger and concern for its organisms. He explained that sea birds, fish & marine mammals suffer greatly from marine litter items through digestion and entanglement, but knowledge of the implication of marine litter is still limited for less charismatic species. Plastic in the seas is not only a mechanic threat to marine fauna. It is also a mean of transport of invasive species; a danger for marine food webs as microplastics can enter it, causing chemical contamination that can reach humans; and a physiological problem since nanoparticles from plastics can enter organisms’ cells and disturb their functioning. He argued that marine litter issue requires the collaboration of many sectors (citizens, NGOs industries, sciences, and policies). He added that the United Nation Environmental Assembly, the Convention on Biological Diversity, the Convention on Migratory Species, and the G7 have recently decided to take action against marine litter, and plastic industries now also want to take part in the solutions.

Marianne Wenning, Director “Quality of Life, Water & Air”, DG Environment, European Commission presented the current European policies and actions to fight marine litter impact on oceanic ecosystems. She explained that marine litter is now ubiquitous in marine and coastal ecosystems throughout the world, either on beaches, in deep seas, or on water surfaces. It is mainly composed of plastic waste but also glass, construction material, textile, rubber, etc. and the majority of marine litter in the oceans comes from land based activities. Ecosystem and health impacts



are severe: bioaccumulation of toxic substances, habitats destruction, and entanglement are some of the dangers associated with marine litter. The number of species affected has grown from 267 to 557 among all groups of wildlife, with 100% for turtles, 66% for mammals, and 50% for sea birds affected, according to recent research. Marine litter has also economic costs (beach cleaning, damages, economic loss for tourism, and degradation of marine and coastal ecosystems services). The Marine Strategy Framework Directive sets the legal framework to control marine litter at EU level. It has 11 descriptors to look at sea contaminants, food web, fish conservation, eutrophication, marine litter quantities and properties, etc., and helps understand where we stand with the quality of our marine environment and improve it. This Directive has a 6 years implementation cycle: it considers the assessment of the marine environment, the definition of good environmental status and the environmental targets to be achieved. A report from 2012 showed that there were shortcomings in the implementation of the Directive but Member States agreed with the Commission the way forward for improving the situation. In 2014, Member States produced their monitoring programs, while in 2015 Member States have to establish programs of Measures. Member States will implement those measures and in 2018 the policy cycle will start again. The objective is to have good environmental status in EU marine waters by 2020. The Packaging Directive has been amended recently to limit consumption of light-weight plastic carrier bags. The 7th Environmental Action Program (EAP) has asked to produce a quantitative reduction target for marine litter. Limited land filling and limiting energy recovery to non-recyclable waste are 7th EAP principles that can contribute to reduced marine litter. The planned next steps are: the establishment of a baseline for marine litter quantities in the EU marine regions in order to monitor progress towards reduction target; the consideration of marine litter and microplastics in the forthcoming Circular Economy Package; to bridge knowledge gaps with a view to tackling sources or forms of marine litter of concern, such as microplastics; the implementation of regional plans against marine litter. In conclusion, she added that many aspects of marine litter effects on the sea are not yet well known, and since it a global issue a joint response is needed. Regional conventions adopt and implement encouraging action plans on marine litter, and a collective commitment is growing to address marine litter as a waste of materials and a threat to biodiversity and human health.

Dr. Christopher Pham, MARE – Marine and Environmental Sciences Centre, University of the Azores, giving an overview of the problem of marine litter, stated that by definition it is *“any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment”* (cit. UNEP), and plastic is the dominant material. Its presence started in the 60s and has rocketed to 300 millions tons. 12,7 millions ton/year (5% of total production) end up in oceans through sewages, rivers, landfills located on the coasts, and impact the environment all around the planet. Microplastics (<5mm) come from synthetic fibres (direct source) and degradation of large plastic items (indirect source). These particles sink to the floor or end up in gyres, and eventually end up in the deep sea.



Marine litter impacts all species that interact with it through digestion or entanglement, from planktonic animals to mammals. Numerous populations are under threat, such as fulmars (95% of individuals have plastic in their stomach). Another impact is the spread of invasive species; the rate of dispersal can be up to 3 times faster and the number of species spread can double. Socio-economic impacts include direct losses (cleanliness, tourism, or property damages) and indirect losses that have to do with ecosystem services degradation. He mentioned that a problem is represented by the lack of good baselines, so the objective of significantly decreasing marine litter by 2020 might be a bit optimistic, but it is an ambitious and positive goal.

Dr. Arlete Sogorb, President of the European Association for Aquatic Mammals (EAAM), Lisbon Zoo, presented the work done by the Association. There are 20 zoological parks in 10 EU members, as well as in a few members out of EU. They are accredited by EAAM and some also are accredited members of the European Association of Zoos and Aquariums (EAZA). EAAM cooperates closely with the Alliance of Marine Mammal Parks and Aquariums (AMMPA). The Zoo Directive obligations are (1), Appropriate facilities and care; (2) Conservation, including research and breeding; (3) Public education and awareness about species exhibited and their habitats. Together, EAAM and the Alliance have 61 million visitors/year and thus can reach a large population to increase awareness for endangered species and motivate positive conservation behaviour. In Lisbon Zoo, work on marine litter in EU seas is carried out, through social awareness, education programmes and co-responsibility. The EAAM-Alliance initiative of the World Ocean Month 2015 is a collective public education and engagement campaign to clean up and help prevent marine debris for the benefit of marine mammal species. Using the hash tag #DebrisFreeSea, the campaign uses social media to reach teenagers and others with education messages. Education programs (especially with children) are organised about the nature and the origin of marine debris, how it impacts marine mammals, and what initiatives AMMPA and EAAM are carrying out (such as cleaning up, disentangling, rescuing, releasing), and what can citizens do against it: limit waste by “reduce, reuse, recycle”; cut the loop of rubber bands and six-pack-rings before putting them into waste; cleaning activities and spreading information).

Mr. Bernard Merx, Co-Founder of Waste Free Oceans Foundation reminded that there is hope to improve the situation, although there are still challenges ahead, *“Doing nothing is not an option”*. He argued that Litter is seen as a problem but it can be seen as a challenge and an opportunity. Marine litter issues start mainly on land, in the cities, at everyone doorsteps, which is why we need quick and adequate solutions for top 20 most littered items. Adding values to the waste will decrease their presence in the environment. Under the WFO umbrella multi Stakeholder experts work together to find pragmatic solutions. The challenge is to combine poverty eradication with improved environmental behaviour, and give local populations a better future, with cleaner (drinking) water and less rubbish. The



technologies to do it exist, so they have to be exploited. No extra funding may be needed, but existing funding need to be used in a more clever way. Potential solutions are not implemented. Penalties should be applied when agreements or targets are not respected. More investment for WFO fishing for litter projects (active, passive, and ghost net retrieval) is needed, as well as adequate management of the collected litter. He recalled that Benelux has the top 4 dredging industries in the world, next to other strong maritime industries, like ship owners, and they should be added to Fishing for Litter schemes following Belgian example. The key would be to add value to waste and use it as a resource by introducing real producer responsibility schemes (polluter-pays-principle), which will automatically boost eco design. Circular economy has to be implemented for marine litter as well, but the present package is lacking on closing the material loop, with a mandatory use of recycled content for any products. Concluding, he stated that co-operation is vital to make the world a cleaner place.

Discussion with the audience

MEP Pavel Poc asked about microplastics if there is actually evidence or not that plastic are converted to nanoparticles, and if marine animals can be infested by those nanoparticles. Is there evidence that this can end up in our food chain?

Dr. Christopher Pham replied that this is a new field of research, and research has been done in the laboratory, while nothing has been found in the wild yet. There is no evidence for now of ingestion by animals. However, it's quite evident that it is happening: it is simulated in the lab but there is no technology to do the monitoring in nature.

A representative from the **Ministry of the Environment of Austria** pointed out that the International Convention on the Regulation of Whaling also has workshops on marine litter.

The Regional Secretary for the Sea Science and Technology of the Azores Regional Government stated being pessimistic on the efforts done at the multilateral level. It is a many-sided problem because plastic and litter in general come from all sectors in the economy. What technologies are needed to find substitute to litter materials? He stressed the importance of targeting the problem at his source by tackling the 3 Rs. He also asked what are the hopes of having solar boats to clean the oceans.

Marianne Wenning joined the debate by saying that replacing all plastics will not happen in the near future. Plastics should be used efficiently, and this will be dealt with the circular economy package. Yet, new technologies sill can open up other ways. Another part of the technology development is related to monitoring what is happening in the environment. A lot can be done to improve the technology to help monitor and understand the problem. There are business opportunities that we tend to forget and that should be looked at more closely.

Bernard Merckx said that solar boat technology exists and can be used for clean ups but we should rather look at technologies on land to stop the flow of waste into the waters. By applying the technology available today, more than 80% of the problem



could be gone in a couple of years. Much more should be done with what is available today; the source of the problem should be addressed instead of focussing only on cleaning, which goes back to the concept of adding value to waste. Legislators have a key role to play to drive the necessary change

Christos Theophilou, DG MARE, European Commission, mentioned “Guardians of the Sea”, a pilot action of DG MARE, through which fishermen are asked to withdraw permanently their boat and devote crew and vessels on activities to collect litter, or raise awareness. It’s low tech action but it seems to be effective.

Emma Priestland from Seas at Risk stated that there is very low ambition in the programs of measures that the Member States are setting. Is the European Commission planning on extending its work on plastic bags to prevent single-use plastics?

Marianne Wenning replied that with regards to the Circular Economy package, further information is not available for the moment. A new ambitious proposal is expected this year.

Ricardo Serrão Santos MEP closed the meeting by underlining the optimistic points of views offered by the speakers, yet stressing that it is time to act because our ecosystems and biodiversity are severely threatened.