LIFE Platform Meeting –
Plastics in a Circular Economy Athens / Greece 21 – 22 September 2017

Workshop 1:

Plastics Collection and Sorting – Moving Beyond the State of the Art

Question 1: Increased collection of which waste packaging fractions should be prioritised in order to meet the proposed circular economy recycling target of 55% by 2025? What barriers need to be overcome and how might this be achieved?

Increasing recycling levels of plastic packaging recycling from households provides that greatest opportunity. Plastic bottles are now widely collected across Europe, however, non bottle plastic packaging (pots, tubs, trays and films) are not collected and recycled in all Member States currently. This provides an opportunity for growth. Participants feel that the message to households should be kept simple and that 'all plastic packaging' should be requested. This would enable the sorting centres to recover as much as possible and facilitate economies of scale in downstream recycling activities.

Participants also felt non packaging plastics from households should be targeted where there is not already a system for their recovery, such as exists for WEEE. Some felt this plastic should be added to kerbside collection systems and other that it should be kept separate and collected, for example, from household waste recycling centres. Further research on the best collection system is required and the optimal solution likely to be country specific.

Barriers relate to adding additional streams to existing collection systems which were not originally designed for their inclusion. Here, sorting challenges and the risk of contamination of other material streams would need to be addressed. Also, different elements of the supply chain (collection, sorting, recycling) need to work more closely together to optimise recovery and facilitate high quality recycling. This is starting to happen with increased vertical diversification in the supply chain, however, more of a focus is still needed on this. Design for recycling continues to be an important aspect in increasing recycling levels and more work is needed here.

Question 2: How might we maximise the recycling of plastics currently collected and get most value from them? For example, from packaging, WEEE, ELV and agricultural plastics. What are the challenges and how might these be overcome?

Legislation currently uses 'push' mechanisms to meet policy objectives, for example setting targets for collection. Creating carefully designed 'pull' mechanisms that incentivise the use of recycled polymer in desirable ways (high quality recycling not downcycling) could help. These 'pull' mechanisms could also be used to encourage recycling of more challenging fractions found in the waste plastics collected, such as flame retardant coated plastics in WEEE.

The involvement of petrochemical companies in the blending, quality control and marketing of recycled polymer has the potential to facilitate a wider uptake of recycling plastics both generally and in higher value applications.

Question 3: What further developments in automated plastics sorting are required to increase diversion rates or improve the quality of feedstock for the plastics recycling sector? Is marking of products a viable solution?

Optical sorting technologies were felt to have improved significantly over recent years and there is a range of identification techniques currently used by manufacturers commercially. Research and development should (and is to a degree) being focused on how these different technologies can be combined to optimise the sorting process.

Question 4: How best can waste plastic minimisation and reuse be incentivised? On which plastic streams should there be a focus? What challenges need to be addressed looking beyond plastic recycling?

It was acknowledged that this is a difficult area to incentivise. However, the minimisation of carrier bags through the introduction of a small fee is a model where there may be scope to replicate it on other products. There may also be scope to use ICT and emerging technologies, such as drones, to implement a more 'just in time' approach to food shopping which may reduce the need for plastic packaging designed to keep a product fresh for an overly long period of time.

Moderator: Mike Jefferson, NEEMO

Workshop 2:

Marine Litter

Question 1: There are currently no targets for the reduction of marine litter in the Marine Strategy Framework Directive (MSFD). Should we be aiming for an overall target for reduction in European Seas? What should that target look like and should it apply to 'legacy' waste as well as 'new' waste?

- The group discussed the importance of basing any decision making on robust data.
- Information on the origin of marine litter is important when fixing solutions – modelling results from LIFE projects showed that
    - litter (including plastics) is not universally spread across the sea and that there are hotspots
    - litter entering the sea can end up locally but also is widespread requiring separate solutions for local, regional and transboundary areas
- decision makers in areas of hotspots are (understandably) reluctant to pay for the costs of clean up when the litter generated is not local
- 'polluter pays principle' should apply – but identifying the polluters and the origins of waste is not straightforward
- Setting targets would be beneficial and– there is an opportunity to feed into the target setting agenda on a regional seas level – a mechanism to do this needs to be established
- The Marine Strategy Framework Directive Working Groups are currently discussing how these targets could be set and how they could be applied
- LIFE projects could supply data to the MSFD Working Groups through the Communications strand of the project – this could be accomplished by ensuring all existing LIFE projects dealing with Marine Litter (even if this is only one action in a bigger project) forward information to their MSFD Working Group
- Some LIFE projects actively engage with the MSFD Working Groups and Regional Seas Fora already – an opportunity exists for projects that do not do already and also for new LIFE projects moving forward – LIFE evaluation should ensure that the links are present in the project design.

Question 2: Thinking about microplastics – an area of increasing concern: Primary microplastics arise from the plastic pellets produced by chemical companies for use in the plastics manufacturing industry and from particles and beads in personal care and household cleaning products. Is there a role for increasing public awareness about products that contain plastic micro-plastic particles? What other mechanisms can be employed to limit their distribution in European Seas?

- The project CleanSeaLife brought some handy visual aids including many items of plastic sorted from the beach on the previous day and some microplastic beads which illustrated the scale of the problem

- The discussion centred around the lack of public awareness concerning the type of products that contained plastic in some shape or form and personal care products as well
- Some members of the group were unaware of the extent of the problem and were surprised that microbeads were in toothpaste and shampoo (among other things)
- We discussed the fact that labelling normally contains polypropylene but that most people did not want to look at every label when shopping
- We learnt that some countries had already banned microbeads and that many manufacturers (e,g Unilever) had removed all plastic microbeads from their products
- This should be extended throughout Europe and may require a legislative change
- There is a need for better awareness of the impact of plastics on health, economy (the example of tourism and smoking waste on beaches was referred to) and wildlife/environment
- There is a need for better awareness of where plastics exist – we discussed some sort of labelling scheme for products – positive labelling – our products do not have plastic
- We discussed the value of public awareness campaigns and were given positive examples of LIFE projects which had actually measured the impact through monitoring campaigns
- LIFE projects can provide valuable evidence that public awareness campaigns do work and that an attitude change = impact change
- We explored the fact that natural products could be used instead of microplastic beads e.g. ground apricot or avocado seeds (turning waste to value)
- Finally we talked about whether there was a role here for emerging materials e.g. bioplastics PHA which may be fully degradable in the marine environment – the technology is not yet available but could be usefully explored (possible LIFE project?)

Question 3: Secondary microplastic from the break-down of larger plastic items through sunlight and abrasion are by quantity and impact the biggest concern for the marine environment. Consistently high concentrations of plastic items and particles in the 5 gyres suggest a significant ingestion potential through marine mammals and fish. Moreover, the Trojan horse effect of biomaterial floating on plastic items from continents to ecosystems to which they are alien may be threatening ecological balance to an extent not yet sufficiently researched and quantified. What would appear to be the first priority in order to mitigate plastic waste influx into the marine environment worldwide?

- We discussed the priorities for mitigating plastic waste influx into the marine environment.
- Top priority was to improve waste management reducing losses from landfill and collection points
- Reduced use was another hot topic which we discussed in relation to two items of plastic in the oceans identified as important by the group – plastic bottles and plastic bags
- Plastic bottles – according to the Green Alliance this constitutes 30% of plastic in the oceans. We discussed
    - the importance of return bottle schemes which are operational in some parts of Europe and that these should be more widespread and may require local legislation
    - the group liked the idea of stopping single use products and replacing them with multiple use products
    - in some countries pricing systems do not encourage the deposit schemes as the cost of water + bottle is already so cheap there would be little incentive in returning items
    - options for using alternative materials bio-based could also be explored (although we noted that this would not change behaviours)
- Plastic bags – no specific data for these items but were noted as regularly appearing on beaches and in the sea monitoring done by LIFE projects at least in Southern Europe

- Pricing policies were seen to be important
- Banning single use plastic bags from some countries has seen a significant reduction in number of plastic bags in locations where it is employed – could be employed on wider scale
- Any revenue connected with purchase of plastic bags (rather than bring your own bag) should be redirected into research or public awareness campaigns
- If plastic bags are supplied they should not be for single use only
- Again it was suggested to supply alternatives of which there are many good LIFE examples!

Question 4: In a recent survey, the top two entangling items in the World's Oceans were fishing line and fishing nets (Ocean Conservancy, 2014). These also contribute significantly to secondary microplastics in the sea. What steps do we need to take to reduce the impact of abandoned, discarded fishing gear (ALDFG) in European Seas?

- We discussed some specific issues relating to discarded, abandoned and lost fishing gear which is an issue in rocky reef areas
- It is expensive to remove and very time consuming – many issues around ghost fishing – nets and traps continue to catch fish and entangle wildlife – lines entangle wildlife and cause damage
- We thought that this was a very difficult issue to resolve
    - fishing gear is very valuable and unlikely that fishermen will abandon it on purpose due to cost of replacement,
    - understandable when gear is abandoned for safety reasons (e.g. to avoid boat capsizing), but
    - possible that old gear is abandoned to make insurance claims to replace damaged gear
    - LIFE projects are working directly on this issue
- There are some projects which are engaging with the public to reduce the impact of fishing lines
- Alternative materials might have a role to play but it was considered unlikely that there would be a move back to traditional materials precisely because plastic/ polypropylene is so durable
- We discussed whether incentivisation – bringing old/used gears or abandoned gears in for fees – this had been explored by some LIFE projects and was not thought to be a great idea

Conclusions

LIFE projects with a marine litter element should actively engage with the MSFD Working Groups and Regional Seas Fora to contribute to the data needed for setting targets for the MSFD descriptor. This should be included in the project design moving forward.

Possible legislation to ban the use of microbeads in all products throughout Europe.

Examine labelling schemes to allow shoppers to make a more informed choice.

Use of alternatives, both natural and bio-plastics, needs to be promoted through public awareness campaigns.

Encourage the use of deposit schemes and multiple use products.

Some sources of plastic in the oceans will require new policies – e.g. tyre dust, smoking waste and crisp packets.

One major issue is who is responsible and who pays for removal since waste is generated in one place and end up somewhere else. There was some discussion concerning the common denominators and whether they should pay (polluter pays principle) :

- the plastics producers
- people
- should we adopt strategic pricing so that the cost of clean up is embedded in the price and local authorities get local taxes to manage the problems? But this is still not seen as a fair distribution of costs
- generally seen as better to change behaviour if possible

Moderator: Dr. Lynne Berratt, NEEMO

Workshop 3: Bio Plastics

Question 1: What are the main hurdles for a large-scale uptake in consumer products of bio-based and/or biodegradable bio -based or non-bio-based plastics (in different applications)? Where is a focus needed?

a. The relevant legislation should be enforced and in addition, it should be adapted to the increased complexity of bioplastics and to provide guidance / standards for applications of bioplastics.
b. General waste management infrastructure should be built up, esp. for organic waste, in order to support bioplastics production and recycling.
c. Education regarding bioplastics is needed in order to inform the public and disperse myths about bioplastics.
d. Green public procurement and economic incentives are needed to "open" the market for bioplastics.

Question 2: What is the potential for the production of biowaste sourced plastics at an industrial scale? What are the barriers and how might these be overcome?

a. Bioplastics produced from biowaste need further research and funding for it, especially for the phase from pilot to commercial applications. (LIFE can play an important role here.)
b. Good waste management infrastructure, especially relating with recovery of organic waste, is a prerequisite.
c. Biorefineries were discussed as both a way to support biowaste sourced plastics and a competitor (as biowaste is used for production of biofuels).

Question 3: What needs to be considered when carrying out an LCA on bioplastics, and how do the requirements compare to those for LCAs on conventional plastics?

LCAs for conventional plastics are more lenient than those for bioplastics. The LCAs for conventional plastics and bioplastics should become comparable.

Moderator: Hasso von Pogell, European Bioplastics e.V.

Workshop 4:

Plastic Reprocessing – Closing the Loop and Creating Market Demand

Question 1: What are the most promising emerging plastic recycling technologies and techniques? Where is further research and development needed?

- One of the challenges to close the loop is to ensure standard quality among the recyclates.
- Eco-design plays a significant role in order to achieve good final quality.
- The society plays another role in increasing the demand for recyclable/recycled products. Under this case, it would be good to put specific indicators in products showing their environmental footprint.
- Innovation is significant. For example smart packaging solutions can reduce the burden through recycling.
- Chemical recycling should be enhanced, since it can lead to recycling of pure substances.
- Under any case, two parallel tasks should be done: primarily invest in R&D for new technologies and at the same time improve the design of the products.
- In addition, the environmental impact of recycling should be compared to the impact of extracting raw materials. There are cases that extracting and using raw materials is better in terms of environmental impact. Relevant tool is the LCA.
- Moreover, more research is needed to assess whether all products should be recycled into similar or other type of products.
- End of life criteria of the waste directive should be reshaped

Question 2: What are the greatest challenges currently facing the European waste plastics recycling sector? How might these be overcome?

- Many different types of plastics (i.e. type, colour, thickness etc), which in some cases require different recycling techniques.
- Innovation needs to be flexible so that by adding another technological element, innovation can still become useful (i.e. for the next generation of plastics/materials etc)
- Purity of the materials is a significant challenge. Ecodesign and proper dismantling is crucial. Special seminars to the dismantlers could help.
- Awareness in the consumer level.
- Economics of recycling. Are economics a barrier? The recyclable/recycled products do not achieve the correct price to become widely used by the consumers. A possible solution would be to reduce price elements (i.e. VAT) for these type of products
- The main challenge is to internalise the environmental cost of managing the waste products.

Question 3: How can Europe reduce reliance on non European markets for plastics recycling?

- As of 1/1/2018, China will not take plastics for recycling
- The main solution to increase the recyclable materials in the EU market is to bring customers in the big picture, so that they drive the demand.
- Produces should have control of the value chain (i.e. Panasonic in Japan is self-feeding with recycled electronics). EPR should be enhanced in EU.

Question 4: How can demand for recycled polymer be increased within Europe? How can demand stability be created?

- Financial instruments. Soon to happen??
- Oblige producers to take recycling materials with quotas. Another idea is to set minimum recycling quotas and provide financial incentives to the producers for products with recycled content.

Moderator: Prof. Dr. Helmut Maurer, European Commission, DG Environment, Sustainable Chemicals Unit