

Response to the Green Paper on Plastic Waste in the Environment

7 June 2013

The European plastics manufacturing industry welcomes the Commission's Green Paper on Plastic Waste in the Environment as an opportunity to improve the level of discussion regarding plastic products and plastic waste management which will form the foundation for an increase in the future recovery of this valuable resource.

Executive Summary:

- **Plastic waste is a valuable resource and should be treated as such**
- **Better implementation and enforcement of existing waste legislation is key**
- **A ban on/ phase-out of the landfilling of recyclable and highly combustible waste would stimulate the recycling and energy recovery of plastic waste**
- **Strict enforcement of EU legislation for exports of waste to Non-EU countries and "Schengen-area" for intra-EU movement of waste**
- **Biodegradable plastics should be promoted where biodegradability offers functionality and an added value**
- **Plastic waste in the marine environment is unacceptable**

Whereas many of the issues raised in the Green Paper on Plastic Waste in the Environment are not plastics-specific but indeed apply to products made of all materials (ecodesign, planned obsolescence, deposit and return systems etc.), we welcome the Green Paper's acknowledgement that better implementation of existing waste legislation would significantly reduce the impact of plastic waste on the environment. But while proper implementation is imperative, the plastics industry also welcomes the Green Paper as a catalyst for joint action to achieve its vision of "*Zero Plastics to Landfill by 2020*" as well as prevent plastics from ending up in the marine environment.

While discrepancies in Member States' implementation and enforcement of waste legislation are highlighted as a problem, the Green Paper fails to show what these differences are, why they exist and how they could be addressed. It is clear that any attempt to overcome existing deficits in waste management should start with a full understanding of the specific situation in each Member State. It is noteworthy to mention that in Member States where EU legislation is properly implemented and enforced plastic waste is not a problem, since it is successfully being used as a resource.

Using waste as a resource should be the cornerstone of the EU's resource efficiency strategy. With this in mind, we are promoting a ban on/ phase-out of recyclable and highly combustible waste going to landfill; this ban/phase-out should be set as a 2020 target in the revised Landfill Directive. Furthermore the concept of using waste as a resource should embrace both material recycling and energy recovery. Indeed, from a life cycle perspective, it is not sustainable, for example, to recycle all plastics. While material recycling enables the EU to become more self-sufficient in raw materials for its production facilities, energy recovery, in line with the waste hierarchy, should remain a complementary option since it increases the diversity of the EU's energy supply and contributes to energy security while helping to mitigate climate change through the replacement of virgin fossil fuel.

Plastic waste is a valuable resource, and when it comes to the export of waste to Non-EU countries we would call for the proper and strict enforcement of the Waste Shipment Regulation as well as the possible introduction of standards. Meanwhile, for the intra-EU movement of waste, we would call for a "Schengen area for waste", that is an area where recyclable and highly combustible waste could move freely between Member States.

When it comes to the sustainability of plastics, numerous statements in the Green Paper regarding the use of chemical additives are deeply flawed and may be misinterpreted; in particular by non-informed readers, who may be left with the impression that plastics are somehow closely linked to carcinogenic and mutagenic pollutants. While it may certainly not be the purpose of the Green Paper to hinder innovation and instil fear regarding the potential health impacts of new materials, omitting to inform the public that plastic packaging is actually subject to the most stringent legislation in the EU, may indeed end up doing just that. It also omits to mention the huge resource savings which plastic packaging enables, in particular in the area of food.

Innovative materials would include bio-based and biodegradable plastics and here it is essential to make the distinction between both these plastics clear in order to avoid confusion when addressing possible societal and environmental concerns. The choice of whether or not to use biodegradable plastics is directly related to the functionality and not to the raw material base of the plastic, and whereas biodegradable plastics may be promoted in applications where biodegradability offers an added value in terms of resource efficiency, emissions reduction and cost-savings, it is worth stressing that biodegradability, or any other form of enhanced degradation of plastics, does not solve the litter problem.

The plastics industry is concerned about the litter problem be it on land or in the marine environment, and is addressing this issue in partnership with other stakeholders. In a "Declaration for Solutions on Marine Litter", plastics organisations from around the globe outlined a set of industry actions to reduce marine littering and to date over 140 projects are planned, have been launched or have been completed.

In addition, we support research which will help to better understand the impact of plastic particles on the marine environment and which will help us develop possible solutions, e.g. we

work with the UN-related expert group GESAMP (Group of Experts on the Scientific Aspects of Marine Environmental Protection) as well as universities and continuously seek cooperation with potential partners to further improve understanding and opportunities to address this issue.

Detailed answers:

5.1. Application of the waste hierarchy to plastic waste management

1. Can plastic be appropriately dealt with in the existing legislative framework for waste management or does the existing legislation need to be adapted?

In the current economic climate, we support the European Commission's general approach to focus on ensuring that **existing environmental legislation is fully and properly implemented and enforced** - instead of proposing new legislation.

This is true in particular for waste legislation: the main piece of EU waste legislation, the Waste Framework Directive, sets a 50% recycling target for household and similar waste to be reached by 2020; however, very few Member States are on track to meet this goal. Even though the Commission has just recently started supporting activities for the least performing Member States, it is likely that many Member States will not achieve the goal without major improvements to their waste management infrastructure.

Nevertheless, we believe that there is a huge untapped potential to improve waste management and thereby increase resource efficiency, while at the same time fostering growth and competitiveness in Europe. The **review of the Landfill Directive in 2014 will provide the opportunity to effectively eliminate the landfilling of recyclable and high combustible waste in the EU by 2020**. While seven EU Member States plus Norway and Switzerland, for example, already landfill less than 10% of plastic waste, eleven EU Member States still landfill more than 60%. Landfilling remains the principal waste management option in many Member States, either because it is seen as being the cheapest option or, as is most often the case, because there is a lack of governance, decisiveness and local knowledge regarding waste management.

The most effective way to eliminate landfilling would be for the Commission to propose a ban on the landfilling of recyclable and highly combustible waste in the soon-to-be revised Landfill Directive. Such a ban will put positive pressure on national and local administrations and will unleash the full potential of plastic waste as a resource as well as acting as a powerful stimulus for recycling and efficient energy-from-waste. It will also provide the legal certainty required for future planning and investment in the necessary recycling and energy recovery infrastructure. We would therefore like to promote the idea that a landfill ban on recyclable and highly combustible waste is an essential element of the EU's strategy to recover from the economic crisis. Complementary to a ban, escalating landfill taxes could be imposed by the Member States to drive the phase out of the landfilling of plastic waste until the ban is in force.

While some may fear that a ban would automatically lead to an increase in energy recovery, experience in Member States which have already enacted similar bans, e.g. Germany, shows positive developments in both energy recovery and recycling actually take place.

With regards to the existing Waste Framework Directive, one change which should be considered would be the reinforcement of the provision for the inclusion of End-of-Waste Status for materials to facilitate increased materials recycling, as defined in Article 6. Such End-of-Waste criteria would enable recyclers who take “end-of-use” plastics as a feedstock and prepare them for recycling/reuse, do not require waste-management registration or permits and therefore have a reduced administrative burden. As an example, a plastics producer who buys used car bumpers, grinds them and uses the ground materials as a recycled ingredient in new plastic articles should not be subject to the scrutiny and administrative burden of a typical waste-management company. It is clear, however, that the transition from End-of-Waste to a product would require such materials to fulfil the requirements of relevant legislation, e.g. REACH, CLP, Food Contact Regulation, etc.

2. How can measures to promote greater recycling of plastic best be designed so as to ensure positive impacts for enhanced competitiveness and growth?

See combined answer to question 4.

3. Would full and effective implementation of the waste treatment requirements in the existing landfill legislation reduce sufficiently current landfilling of plastic waste?

Despite a continuing annual increase of 2,4% in the generation of post-consumer plastic waste over the last 15 years - taking into consideration a stagnation in recent years owing to the economic crisis and reduced component weight, which has increased market penetration - the amount of plastic waste which was landfilled between 2006 and 2011 decreased by 20% (from 12,5 to around 10 million tonnes). The main drivers for this trend have been national landfill bans, increased capacity for recycling and energy recovery, combined with increased use of secondary material (plastics regranulates) for plastic product manufacturing worldwide.

Even though this evolution demonstrates continuous improvements in waste management have taken place, 10 million tonnes of the valuable plastic waste resources are still buried in landfills each year. Today, 40% of post-consumer plastic waste in Europe is landfilled. **With business as usual the target of zero landfilling for plastic waste would only be achieved in approximately 25 years -in 2037!** By eliminating the landfilling of plastic waste by 2020 it is estimated that **80 million tonnes of plastic waste** would be prevented from going to landfill, an amount representing about 1 billion barrels of oil or €70 billion (if 1 barrel = \$100 and \$1 = €0.70). This is enough oil to meet Europe's needs for over 70 days!

Therefore, we believe that the implementation of the waste legislation alone would not be sufficient to significantly reduce the landfilling of waste in the short or medium term. As described, we are promoting a ban on the landfilling of recyclable and highly combustible waste in the Landfill Directive, which may be accompanied by a complementary landfill tax escalator to phase out landfilling of plastic waste by 2020.

4. **What measures would be appropriate and effective to promote plastic re-use and recovery over landfilling? Would a landfill ban for plastic be a proportionate solution or would an increase of landfill taxes and the introduction of diversion targets be sufficient?**

The most effective measure to promote recycling and energy recovery of plastic waste would be the elimination of landfilling. Therefore we suggest that the Commission immediately carry out an **impact assessment** (taking into consideration the learnings from the Member States) **to determine whether a ban** (such as the existing ban in the Landfill Directive for tyres, fluids, explosives) **or a ban combined with a phase-out** (such as the phase-out of biodegradable waste) **would be the most appropriate measure to improve competitiveness and growth** through the development of enhanced recovery and recycling infrastructure. The political decision to eradicate the landfilling of recyclable and combustible waste in the EU in the near future – our suggestion is 2020 – will already provide the legal certainty and trigger planning and investment in the necessary recycling and energy recovery infrastructure.

Based on experience in those Member States that have successfully eliminated the landfilling of plastic waste, a landfill tax alone is not considered a strong enough instrument to reach zero landfilling of plastic waste. Each Member State that had implemented higher landfill taxes over the years still required a ban to eradicate landfilling. Furthermore, based on recent studies, we believe that a landfill tax greater than 100 Euro per tonne is required to significantly reduce the amount of waste going to landfill.

This answer also covers the response to question 2.

5. **What further measures might be appropriate to move plastic waste recovery higher up the waste hierarchy thereby decreasing energy recovery in favour of mechanical recycling? Would a tax for energy recovery be a useful measure?**

Based on the experience in the Member States where a landfill ban already exists, such a **ban has led to a dramatic increase in the use of plastic waste as valuable resource**. PlasticsEurope fully supports the Commission's waste hierarchy, which prioritises recycling before energy recovery. However, as the Green Paper acknowledges correctly, "*under a life-cycle perspective not all plastic waste may be suitable for recycling*" and "*there are no technical reasons why plastic should go to landfill rather than being recycled or exploited for energy recovery*".

The importance of taking sustainability aspects into consideration for waste management purposes was reinforced during the 2008 revision of the Waste Framework Directive. For instance, from a lifecycle perspective, it is **not sustainable to recycle all plastics**. The reason for this is that even though for many plastic waste articles recycling may represent the sustainable solution, for some plastic waste streams such as WEEE, chemical packaging and shredder residues or fluff, the most sustainable solution is energy recovery.

Furthermore, there are other plastic applications for which movement up the waste hierarchy is not feasible or sustainable:

- Owing to their property profile, plastics are often selected for use in intimate combination with other materials, from which they may not be easily separated.
- Certain plastic articles are complex in nature and may incorporate differing polymer types, which are not intrinsically compatible in recycling operations; but in the case of state-of-the-art packaging, systems may be designed to greatly increase the longevity of the goods or products they protect. One such example is multi-layer polymer films used for the modified atmosphere protection of meat to extend shelf life. A UK retailer replaced their existing modified atmosphere beef packaging with skin packs which resulted in a reduction of in-store waste from 16% down to 4% as well as extending the service life once purchased. This saves money, embedded CO₂, and also water intensity as 15,000 litres are required to produce each kilo of beef.
- It must be stressed that highly contaminated plastics tend to require large quantities of water and power to remove contaminants, resulting in a net increase in greenhouse gases emissions and water consumption.

The plastics waste streams that cannot be recycled in a sustainable way provide a valuable energy resource for the efficient production of heat and power and help to offset the consumption of virgin fossil fuels whilst at the same time contributing to energy security and a resource efficient Europe.

The political aim should be to enable relevant stakeholders in the waste management industry to make an informed decision whether it is more sustainable to recycle plastic waste or to recover its embedded calorific value in efficient energy-from-waste facilities. We would like to stimulate a debate on **sustainability criteria to ensure the most appropriate recovery route for materials diverted from landfill** (recycling, energy recovery, etc.). The criteria should take into consideration elements such as: infrastructure, waste quality, market demand, after-treatment etc., and should cover all three pillars of sustainability (economic, environmental, and social aspects). They should, in practice, define the most relevant information required for a sustainable decision to be taken as to whether a specific plastic waste in a specific region in Europe should be recycled or used for energy recovery.

Regarding the question of additional taxes for energy recovery, it is worth bearing in mind that only a few Member States have introduced such a tax and that some of these countries have

since reduced the amount of the tax to 0 Euro. Member States with a tax on energy recovery experience the following issues:

- Increased costs for citizens for waste management (resulting from increased gate fees at the energy-from-waste facilities) and for electricity and heat (owing to higher production costs)
- Increased costs for recyclers which rely on energy recovery for those materials rejected in their sorting systems which cannot be reprocessed Spread of inappropriate recycling practices which do not satisfy sustainability criteria
- Increased shipment of plastic waste to overseas markets for energy recovery purposes, reducing the potential for the EU to be less dependent on external energy sources.
- Negative impact on the international competitiveness of European plastics processors and recyclers as an energy tax represents an additional cost.

To our knowledge there is **no competition between material recycling and energy recovery**. This is well demonstrated in countries with free capacities for energy recovery such as Germany, the Netherlands and Sweden, where high recycling rates are achieved. While it is important to incentivise recycling as the most preferred solution according to the waste hierarchy, it is equally important not to discourage or penalise energy recovery as an alternative to landfilling when recycling is not the most sustainable option. With a landfill ban or phase-out around 10 million tonnes of plastic waste will be available each year for recycling and energy recovery.

From our point of view it is crucial to create a **market environment that allows recycling and energy-from-waste companies to play their part** in the management of this waste according to the waste hierarchy. In such a market environment regulatory interventions, such as recycling targets or taxes on energy recovery, would no longer be necessary. To accelerate the process, incentives for recycling could be introduced, for example EU funding derived from landfill taxes, could be used to: raise the awareness of citizens regarding the value of plastic materials, avoid littering and provide financial investment opportunities for the development of modern recycling infrastructure.

On the other hand, we would **not be in favour of additional taxes on energy recovery** which would make it more difficult to eliminate the landfilling of plastic waste which should be the main target. It would in any case be counter-productive to put a tax on efficient energy recovery which applies the R1 factor of the Waste Framework Directive since this should be considered as being in line with the Commission's Resource Efficiency vision of using waste as a resource

6. **Should separate door step collection of all plastic waste combined with pay-as-you-throw schemes for residual waste be promoted in Europe, or even be made mandatory?**

It is important that collection systems maximise the recovery of recyclable materials and that collection systems are sufficiently simple for citizens to separate such materials from general waste. Therefore reducing complexity is the key to maximising recycling. Separate collection of dry recyclables is proving to be the most efficient way of recovering household articles for recycling owing to its simplicity. Combined collection schemes for glass, card, paper, plastics and metal that collect some or all of these materials in one bin are proving the most efficient means of maximising the collection of recyclable materials. Those materials that can be collected together within a combined system can be separated to a high level of quality in modern mechanical recycling facilities which are well capable of separating complex material streams. Technical solutions for the sorting of different plastic wastes has improved in recent years to an extent that it is today **technically possible to separate virtually all plastics**, thereby contributing to the production of high quality recycle.

5.2. Achievement of targets, plastic recycling and voluntary initiatives

7. **Are specific plastic waste recycling targets necessary in order to increase plastic waste recycling? What other type of measures could be introduced?**

We believe that the elimination of the landfilling of recyclable and highly combustible waste in the near future – PlasticsEurope’s suggestion would be 2020 – will inevitably increase the recycling of plastic waste, because such a decision would provide legal certainty and trigger planning and investments in the necessary recycling infrastructure.

Any specific plastic waste recycling target should take into account those eco-criteria that are required for sustainable recycling and not increase GHG emissions, water footprint, etc., as may occur if an arbitrary target were set. Furthermore **targets should be waste stream/sector specific rather than material specific**: e.g. household waste, packaging, ELV, WEEE, in order to ensure that the target does not discriminate against any material, thus enabling the most sustainable material for the application to be used (i.e. considering the net impacts and benefits across the lifecycle). Therefore, **we urge the Commission to consider and demonstrate during the review process the real need to maintain material-specific targets**, such as the recycling target for plastic packaging. If it is decided to keep this material specific target, our proposal would be to **adopt the level of recycling of plastic packaging waste for 2020 at the current level of the best performing larger Member States today**, which is currently Germany.

With regard to the 50% recycling target for municipal waste by 2020 in the Waste Framework Directive, it should be taken into account that many Member States will most likely not meet the

target even though the Commission has started a support programme for the 10 least performing countries. Given this, our proposal would be to **maintain the existing targets and focus activities on a better enforcement of waste management in those countries.**

Furthermore, there is a need for a harmonised EU system for the calculation and reporting of progress towards the achievement of the waste targets in order to have an accurate overview of the status in each Member State and to be able to make meaningful comparisons.

Market-orientated targets may be an appropriate means of stimulating the establishment of the necessary waste management infrastructure. For this purpose, the current legislation is sufficient (see response to Question 1); however, European-wide implementation and uniform execution needs to be secured.

8. Is it necessary to introduce measures to avoid substandard recycling or dumping of recyclable plastic waste exported to third countries?

There are numerous reasons for wastes being **exported to Non-EU countries**, and Asia in particular. These include:

- High prices paid for plastics waste for recycling
- Low transport costs (empty containers used to ship goods from Asia to Europe are available at lower costs to return materials to Asia)
- Low labour and manufacturing costs in recipient countries where lower standards may exist
- Material demands to produce new products

First of all, it is essential to secure better enforcement of existing waste shipment regulation and to fight illegal waste shipment and treatment. Secondly, standards could be introduced to avoid exports for substandard recycling or dumping. Such standards do already exist in the waste legislation, e.g. in Art. 6 (2) of the PPWD or Art. 12 of the Waste Shipments Regulation, and would allow waste shipment to Non-EU countries only if there is sound evidence that recycling or energy recovery activities in these countries take place under broadly equivalent conditions to those in Europe.

PlasticsEurope believes that industry initiatives, such as **EuCertPlast** (an EU scheme to certify recyclers) or the European **standard CEN 15343 for high quality solid recovered fuel**, that certify high quality waste management for both recycling and energy recovery could be a tool to boost quality management of wastes in Europe (and worldwide) by guaranteeing a level playing field. Such systems allow benchmarking when seeking evidence that the conditions of recycling/recovery outside the EU are adequate i.e. being conducted under broadly equivalent conditions as required under EU legislation.

In addition to this, the 'end of waste criteria' for plastics will be a valuable tool when it comes to improved monitoring of material shipments within and outside the EU.

The issue of exports of plastic waste to Non-EU regions needs to be separated from the issue of exports within the EU. Due to the growing demand for resources and increasing energy prices, there is a need to look at waste from a different perspective.

Until now waste was always seen as a problem which needs to be solved. Therefore, the rules have focused on keeping waste a local matter to ensure that it is handled where it was produced - applying the principle of origin. When **the focus is changed and plastic waste is correctly viewed as a valuable resource and no longer as a problem**, new opportunities and incentives to foster growth come to light: through increased resource efficiency and the availability of an alternate energy resource from those plastics that cannot be sustainably recycled. With the recommended landfill ban/phase-out of recyclable and highly combustible waste sent to landfill in place, far more plastic waste will be available for recycling and energy recovery. But even in 2020 there will almost certainly be a lack of infrastructure in many Member States, particularly in the new and smaller Member States.

From an economic point of view, it does not make sense to build the same waste management infrastructure, in particular expensive energy-from-waste facilities, in every single Member State when such an installation may be available in an adjacent Member State. Furthermore there may be a limited number of recycling plants which specialise in processing a specific waste stream, e.g. PVB (polyvinyl butyral) from car windscreens, or WEEE recovery of rare earths/metals. Another example would be a small Member State which borders a larger EU country which has surplus energy-from-waste capacity. In this case, the most sustainable solution would be the cross-border shipment of the valuable waste resource, avoiding the construction of an additional EfW plant. In such instances, mechanisms need to be put in place to facilitate such shipments to these plants.

At the moment, Member States are in the main developing their own independent initiatives for recycling and energy recovery, to meet the societal challenges and potential legislative targets that lie ahead. However, it would be much more resource efficient and cost effective to organise this collectively and in a harmonised way [in keeping with EU core values]. We would therefore like to stimulate the discussion regarding the **opportunities which the internal market** can provide for plastic waste which is no longer landfilled. Until now, local regulation makes it rather difficult for companies to transport specific types of waste to facilities where they can efficiently be either recycled or used for energy recovery. The idea of adapting regulation related to waste transport may appear controversial, but this view is based on the outmoded problem-focussed approach and not on the concept of waste as a resource. One idea to consider is the proposal for a **“Schengen-area” for waste** which would allow the transportation of waste within the area without any border restrictions while requiring that quality standards for the recycling and energy recovery of plastic waste are maintained.

9. **Would further voluntary action, in particular by producers and retailers, be a suitable and effective instrument for achieving better resource use in the life cycle of plastic products?**

Examples such as **Vinyl 2010/VinylPlus** in the PVC industry show how voluntary initiatives by industry can bring about a real step-change in end-of-life solutions for materials. The programme was developed bottom-up with an open process of stakeholder dialogue. Five key sustainable development challenges have been identified for PVC, together with a set of working principles. The first four challenges are technical in nature whilst the fifth challenge addresses the raising of awareness and understanding regarding the importance of sustainable development. Each of the challenges is based on The Natural Step System Conditions for a Sustainable Society. More detailed information can be found at: http://www.vinylplus.eu/en_GB/about-vinylplus/our-voluntary-commitment

The plastics industry has also developed its own mid-term vision for waste management: “**Zero Plastic to Landfill by 2020**”. In some regions significant quantities of plastic waste are already being recovered, but this is not the case in all Member States. Over the years, we have been raising awareness throughout society about the value not only of plastics, but of plastic waste as well. Plastic waste should not end up in landfills.

Therefore, while voluntary initiatives can indeed be very effective in many cases some changes to the existing legislative framework could be envisaged, e.g. a ban on the landfilling of recyclable and highly combustible waste will undoubtedly show positive results even sooner than a voluntary initiative aiming at the same outcome.

A number of other sectors have instigated voluntary programmes e.g. in the agricultural film area, APE EUROPE, a European association comprising 85% of agricultural plastic film manufacturers, seeks to foster the development of recovery schemes for used agricultural plastics in EU Member States. They target the development of national schemes to collect and recycle 70% of used agricultural films by 2022. In France during 2012, 41,500 tonnes of used plastic film were collected and recycled – equivalent to 61% of the available feedstock; and consistent with achieving the aim of a 75% collection rate by 2015.

In the drive for competitiveness and brand recognition companies are voluntarily seeking to minimise their resource use and eco-footprint; examples include the commitment of retailers and brands to sustainability, e.g. Marks and Spencer, Unilever. Designers look at products in terms of the packaging required to protect it through the distribution chain as well as optimising the design for efficient production (minimising post production waste) and end of life recycling when appropriate. Retailers will naturally consider the recyclability of their packaging; however, this may not be the primary consideration if a more complex packaging solution is required to extend the shelf life of the produce (see earlier example on meat packaging) which may reduce the opportunity for recycling but make more sense from an LCA perspective.

5.3. Targeting consumer behaviour

10. Is there scope to develop deposit and return or lease systems for specific categories of plastic products? If so, how could negative impacts on competition be avoided?

N.A.

11. What type of information would you consider necessary to empower consumers to make a direct contribution to resource efficiency when choosing a plastic product?

Consumers should be empowered with information which would allow them to make a direct contribution to Resource Efficiency when choosing a product made of any type of material, not just plastics.

It is important that we use commonly agreed methodologies when selecting a product which should not differ across the materials used for a given application. This will ensure that the optimal product will be developed and chosen with regard to resource efficiency criteria. In this respect, the Commission has just released their communication on measures to create a single market for green products in which they will launch a pilot project on the product environmental footprint. PlasticsEurope supports the development of such a harmonised multi-criteria methodology which takes into account the entire life cycle enabling the main environmental impacts of a product (which must be improved as a priority) to be identified, while providing a simplified overview of often complex real life systems.

One important aspect would be to provide consumers with clear guidelines regarding the appropriate end-of-life solutions for a given product. This should be supplemented by increased media communication to stimulate the behavioural change necessary to reduce littering.

5.4. Towards more sustainable plastics

12. Which changes to the chemical design of plastics could improve their recyclability?

This answer covers questions 12 and 13.

Innovative design and improved process engineering are enabling plastic recycling processes to be constantly improved, with new technologies being developed and patents registered. Film packaging, in particular, has always been a challenge with regards to recycling. In order to meet the high performance demands placed upon these flexible packaging materials; which are often designed to prevent the loss of resources used during the production of the packed product; they are inevitably becoming more sophisticated: e.g. multilayer films for the packaging of meat

under modified atmosphere conditions and on-pack printing to avoid the need for additional labels and sleeves, lightweighting, etc.

Although recycling technologies experienced difficulties with certain plastics in the past, advances in sorting and detection technologies are increasing both the breadth of plastics that can be recycled in a single step and the resulting quality. In this way an economically viable business is being created for recycled plastic film. However inefficient separation of recyclables and littering by citizens may result in poorer recycling rates with the subsequent loss of valuable resources. Recyclers need access to adequate information on the chemical composition of their input material and when correctly implemented, **REACH and CLP should address possible concerns related to the chemical composition of plastics.**

13. How could information on the chemical content of plastics be made available to all actors in the waste recycling chain?

See answer to question 12, which covers both Q12 and Q13.

14. How can challenges arising from the use of micro plastics in products or industrial processes and of nano-particles in plastics be best addressed?

Before inventions are brought to market, they are tested extensively according to current scientific knowledge as well as stringent EU and international standards developed to ensure the protection of human health and the environment from potential negative effects.

As a matter of principle, when a new challenge arises, it is crucial to amass enough robust scientific evidence needed to make a sound decision. As a matter of principle as well, **any litter in the marine environment is unacceptable.** When it comes to the complex challenge of micro plastics in the marine environment, PlasticsEurope supports further research aimed at increasing the level of understanding regarding their impact. The potential risks associated with persistent organic pollutants (POPs) absorbed by micro-plastics is still highly uncertain: the US National Oceanic and Atmospheric Administration concluded in their latest report of July 2008 that, *“toxicology studies are necessary to investigate the possibility of uptake of toxins from plastics or other inorganic debris particles in marine ecosystems. The likelihood of ingestion is minimal due to the low mass and concentration of debris particles relative to zooplankton organisms”*. The International Workshop on Micro-plastics in marine debris (Tacoma, USA September 2008) concluded that: *“at current levels in the open ocean, micro-plastics are unlikely to be an important global chemical reservoir for historically released POPs.”*

However, our industry agrees with the scientific community that we need to understand more about the effects of micro-plastics in the marine environment. Therefore, we are engaged in

research projects within this field, such as a comprehensive scientific review of this issue by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP).

With regards to nanoscale particles, these may be for example added to some types of plastics packaging to improve their material properties – e.g. thermal stability, barrier properties, UV-protection. The nanoparticles are incorporated into the plastic matrix, and research carried out by the Fraunhofer Institute has demonstrated that non-organic nano-materials used in plastics remain embedded in the plastic matrix and do not leach into food or water. Consequently, no noteworthy exposure to nanoparticles from plastics is expected.

5.5. Durability of plastics and plastic products

15. Should product design policy tackle planned obsolescence of plastic products and aim at enhancing re-use and modular design in order to minimize plastic waste?

The issues of product design and planned obsolescence are not plastics-specific. The challenge is striking the right balance between innovation and sustainability.

16. Could new rules on eco-design be of help in achieving increased reusability and durability of plastic products?

Guidance would be more useful than rules as this could evolve in the future taking into consideration changing circumstances and/or the availability of new technologies. It is especially important that the manufacturer of a given product or service understands how to develop these in the most sustainable way taking the full life cycle into account. Re-usability as such for a given product may not always be the best choice from a sustainability point of view. Important in all cases is that the user of the product understands the value of the resources they use and that they are well informed on how to sort the items (packaging, end-of-life electronics etc.), so that this valuable resource is not wasted.

We therefore believe it is important to embrace an eco-design approach which considers the full life cycle of the product, i.e. the design for manufacture, use, refurbishment/reuse and end of life recovery phases.

17. Should market based instruments be introduced in order to more accurately reflect environmental costs from plastic production to final disposal?

All materials should be treated equally. If market based instruments were to be introduced, these should consider the whole life cycle of the product, and not omit the use phase and the resource savings achieved during that step in the life cycle.

It will be important to define with stakeholders how the environmental cost of products (not only plastics) would be assessed before such a system could possibly be envisaged. The product environmental footprint methodology which will be piloted by the Commission could potentially be a tool to assess this. It is important to build knowledge on a commonly accepted and reliable multi-criteria methodology. Such a methodology should be implemented progressively and on a voluntary basis.

In specific areas and applications, one-way products may represent a useful solution, e.g. hygienic articles, medical applications. In some European Member States an effective internalisation of costs has been implemented for products such as cars, electrical goods or packaging, which are licensed via a product or system fee. In a similar way, a charge on carrier bags, will help reduce the likelihood of the bags being littered. In conclusion, it is recommended that a level-playing field is maintained across Europe through the uniform transposition of EU legislation in each EU Member State.

18. How can the waste burden posed by short-lived and single-use disposable plastic products best be addressed?

We would be in favour of the introduction of measures at national level to reduce the over-consumption and irresponsible disposal of short-lived and single use disposable products – however, such measures should **not be material-specific** but should apply to all materials equally.

5.6. Promotion of biodegradable plastics and bio-based plastics

19. What are the applications for which biodegradable plastics deserve to be promoted, what framework conditions should apply?

It is important to understand that not all bio-based plastics are biodegradable (e.g. bio-PE) and that biodegradable plastics are not necessarily bio-based but may sometimes be produced from fossil resources (e.g. biodegradable polyesters). It is essential to make this distinction in order to avoid confusion when addressing the different societal and environmental concerns of bio-based and biodegradable plastics.

Plastics that are biodegradable should be promoted in applications where biodegradability offers an added value in terms of resource efficiency, emissions reduction and cost-savings. Examples of such applications are the following:

- **Compostable waste bags:** when used as bio-waste bags, biodegradable plastics support clean separation and collection of organic waste (reduction of GHG emissions and waste recovery).
- **Compostable disposable tableware** in fast food restaurants or public events, where the disposable material can be selectively collected and recovered together with the food remains in composting facilities or biogas plants.
- **Biodegradable agricultural and horticultural applications:** e.g. mulch films. The film biodegrades in the soil after a certain period of time; thereby eliminating collection costs of the used films and reducing the problem related to soil pollution owing to the accumulation of plastic fragments.

The choice of whether or not to use biodegradable plastics is directly related to the functionality and not to the raw material base of the plastic. It is important to use them in applications where they can be recovered and processed i.e. through a commercial composting facility to facilitate their breakdown and prevent contamination of the plastics recycling stream and it is crucial to ensure that consumers understand that such plastics will not biodegrade in their home compost or in the natural environment.

20. Would it be appropriate to reinforce existing legal requirements by making a clear distinction between naturally compostable and technically biodegradable plastics, and should such a distinction be subject to mandatory information?

The European standard EN 13432 defines the criteria for compostability of packaging products in industrial composting plants. Compostability is a natural process that occurs by means of microorganisms. At the end of this process, only water, carbon dioxide and compost remain.

This standard should be referred to when claims of suitability for industrial composting are being made. Furthermore, the use of certification and labelling schemes based on EN 13432 should be made mandatory. If compostable plastics are suitable for home composting, then this should be clearly stated by means of certifications and labels (also based on the standard EN 13432). If the material is not suitable for home composting this should also be made clear.

It must be stressed that although biodegradable plastics are frequently referred to as a remedy, biodegradability or any other form of enhanced degradation of plastics does not resolve the litter issue. Indeed the ill-informed belief that products will degrade in the environment may even encourage littering. Developing sustainable solutions to address litter requires the establishment of sound waste management systems combined with education and raising environmental awareness measures is the only sustainable solution for litter. In line with this approach, compostable plastics which comply with the EN 13432 are designed to fulfil the specific requirements of organic recovery and promote resource efficiency. However, industry is

committed to characterising the behaviour of bioplastics in any environment, including the marine environment.

21. Would the use of oxo-degradable plastic require any kind of intervention with a view to safeguarding recycling processes, and if so, on which level?

Oxo-degradable (or rather: oxo-fragmentable) plastics are being promoted by some as fully degradable in the environment. However the latest studies show that the fragmentation process initiated by such plastic additives is often inadequate resulting in large polymer chains which cannot be further broken down through biological effects. This is particularly the case in the marine environment as the oxo-degradation processes require a dry environment.

Oxo-fragmentable plastics are not suitable for recycling streams either, as recyclers find that even small amounts of oxo-fragmentable plastics in their reprocessing systems may contaminate and subsequently jeopardise the quality of the recycled plastics.

Therefore we recommend that the **use of oxo-fragmentables in plastics should be prohibited in Europe.**

Bio-based plastics

22. How should bio-based plastics be considered in relation to plastic waste management and resource conservation? Should the use of bio based plastics be promoted?

Today, biomass exploitation in the sector of plastics is maturing. However, the contribution towards fossil resources dependency made by bio-based plastics technologies is dependent on the application. The choice of the most suitable raw materials (fossil or renewable) and energy source (conventional or renewable) should be based on multiple sustainability criteria, in each particular case, and should consider all three pillars of sustainability – economy, ecology and society.

Bio-based plastic waste can be managed **using the same technologies and principles associated with conventional plastics** because they are essentially the same material.

Other biopolymers may also be recovered via mechanical recycling, especially when sufficient volumes of homogenous waste material streams are available, either through separate collection or through sorting systems.

In terms of energy recovery, the energy content of bioplastics can be similar or equal to that of conventional plastics. The CO₂ absorbed during the growth phase of the bio feedstock

represents the bio-based carbon content within the bio-based plastics; thus making them suitable for energy recovery as well.

Like conventional plastics, bio-based equivalents of traditional plastics, e.g., bio-PE, bio-PET, bio-PA, bio-PVC and other bio-based polymers do not biodegrade. Biodegradability is an intrinsic material property related to the molecular structure of the material which is independent of the origin of the plastic.

5.7. EU initiatives dealing with marine litter including plastic waste

23. What actions other than those described in this Green Paper could be envisaged to reduce marine litter? Should some marine litter related actions be coordinated at EU level (e.g. by setting up a coordinated European Coastal Clean-up Day to raise awareness)?

We welcome the opportunity to work with EU stakeholders on initiatives such as the European Coastal Clean-up Day. This could be a very effective way of raising public awareness of the consequences of littering and inadequate waste management systems.

We believe that solutions to tackle marine litter must be developed on a global level; through the engagement of as many stakeholders as possible; and then adapted and implemented at regional/national level. Greater commitment to public education and outreach, partnerships with local governments, communities and industry, will all help reduce marine debris.

This is why PlasticsEurope was instrumental in the creation of the **Global Declaration for Solutions on Marine Litter**, which fosters cooperation of 58 world plastic organizations in 34 countries aimed at preventing marine litter. It is an international platform of best practices, experience and knowledge, not just for the plastics industry, but also for those stakeholders involved in plastics waste management and the marine litter issue.

To date over 140 projects are planned, have been launched or are completed, including our “Zero-pellet-loss” initiative, programmes such as “*Vacances Propres*”, which promotes responsible behaviour at holiday destinations, and “*Cool Seas Bottles Champions*” which raises awareness of primary school children throughout the UK concerning marine litter and the marine environment. A list of all projects is available on www.marinelittersolutions.com. Some of these are practical programmes looking to address existing marine litter and raise public awareness e.g. along the lines of coastal clean-up days. Others are more focused on developing a deeper understanding of the causes and effects of marine litter. For example, we have a partnership with GESAMP, an advisory body to the United Nations on the scientific aspects of marine environmental protection. The industry has committed to support GESAMP’s effort to evaluate the sources and effects of micro-plastics in the marine environment.

24. In its proposal for a new Environment Action Programme the Commission suggests that an EU wide quantitative reduction target for marine litter be established. How can the setting of such a target provide added value to measures that reduce plastic waste generally? How could such a target be developed?

In theory, quantitative targets provide the ability to measure the effectiveness of actions and to scale them for a defined outcome. To achieve this, a “quantitative reduction target” requires an appropriate monitoring system to analyse the current situation and to monitor progress. In the particular case of the global marine litter issue, scientists do not know precisely how much litter finds its way into the ocean or the actual impact. In order to gain a better understanding of the extent of Marine Litter and its effects, PlasticsEurope supports various projects. However, it is worth bearing in mind that the establishment of an adequate monitoring system is very complex, would need substantial investment and time to implement. The question of a quantitative reduction target was also discussed during the recent marine litter conference in Berlin where there was a wide consensus on the fact that we need to work on solutions to reduce the amount of litter entering our oceans now i.e. we **should not wait for quantitative targets to be set**. It is much more cost- and time-effective to capitalise on the existing momentum and instigate suitable actions without waiting for the development of the framework and suitable metrics necessary to support any future quantitative targets.

5.8. International action

25. Should the EU attach a higher priority to plastic waste in the framework of its "New Neighbourhood Policy", particularly in order to reduce plastic littering in the Mediterranean and in the Black Seas? What about Baltic Sea?

Marine litter is a global concern, affecting all the oceans of the world. Marine litter is mainly the result of poor waste management practices and infrastructure and a lack of awareness from the public at large regarding the consequences of their actions. Therefore, we would welcome EU initiatives of the EU addressing improved waste management in particular in non-EU countries around the Mediterranean and the Black Sea. One example could be the closure of the Saida landfill in Lebanon.

Even though plastic litter may be the most visible items (because plastics articles often float on the water surface), marine litter consists of a range of materials including metal, wood, rubber, glass, textiles and paper. Depending on the sort of litter (e.g. ropes, nets, pieces of broken glass) and the location (e.g. waterway with a wide variety of fish or beach), any item; regardless of the material it is made from; may pose a threat to the marine habitat and humans. Therefore, initiatives should not focus on material specific solutions but aim to improve overall waste management systems in these countries and raise awareness among consumers.

26. How could the EU promote more effectively international action to improve plastic waste management worldwide?

The EU is in a good position to show global leadership on waste management. Therefore authorities from the EU and Member States should share best practices, such as the elimination of the landfilling of recyclable and highly combustible waste, not only in Europe but also on a global level.

We are willing to support these activities with our expertise and networks to improve recycling and energy recovery and make better use of the valuable resources referred to as plastic waste.

Brussels, 7th June 2013