

# United Nations Environment Programme

**2<sup>nd</sup> Multi-stakeholder consultation workshop on a systemic approach to marine plastics**  
**31<sup>st</sup> January - 1<sup>st</sup> February 2019**

Workshop report



**Addressing  
Marine Plastics**  
A Systemic Approach



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## Introduction

UN Environment, the Ellen MacArthur Foundation, the Ocean Conservancy and GRID Arendal are collaborating under the Global Environment Facility (GEF)-funded project (2017-2019) - Addressing Marine Plastics - A Systemic Approach<sup>1</sup>. The project is aimed at capitalizing on growing a baseline of knowledge on marine plastics sources, pathways and environmental impacts.

Under the project, UN Environment addresses the global value chain of marine plastics, as the life cycle of plastics is cross-boundary and cross-cutting through policy, technology, management, economics, awareness raising and behaviour change. A holistic approach requires understanding the sources, pathways and fates of plastics – including microplastics – entering the marine environment. By tracing back those plastics value chains, UN Environment identifies opportunities to reduce and soundly manage marine plastics. The project contributes to the long-term objective of driving the plastics value chain towards a circular system where plastics are kept at their highest value, do not become waste, and do not pose a threat to the environment, in particular to oceans.

This workshop report covers the second expert consultation organised by UN Environment in the context of this project. The workshop built on background research conducted by UN Environment<sup>2</sup> and on the findings of the 1<sup>st</sup> workshop<sup>3</sup>, which highlighted hotspots, problematic products and polymers, and key areas of intervention along the global plastics value chain, for a systemic approach to marine plastics. The consultation brought together plastics and marine experts, decision makers and innovators from different horizons to provide their insights for a systemic and preventive approach to marine plastics, advising on actions that can be taken by different actors and at the different stages of the value chain (extraction, production, consumption, waste management) in a concerted effort. Discussion focused on actions to address marine plastics related to specific focus areas.

## Workshop approach and outline

Sessions 1 to 3 provided an introduction to the project and background information. Session 1 gave an overview of the GEF-funded project Addressing Marine Plastics – A Systemic Approach and outlined project findings thus far. Sessions 2 and 3 reported back on baseline work conducted on gaps, barriers

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<sup>1</sup> <http://gefmarineplastics.org/>

<sup>2</sup> Two reports have been published by UN Environment under this project:

- [Addressing marine plastics: A systemic approach - Stocktaking report](#): This report takes stock of the extent of knowledge on plastics in the marine environment. It provides a high-level summary of the available literature on the key sources and locations of marine plastics, and the problem products and polymers making up marine plastics and microplastics. It also looks at what is currently being done to address the problem and summarizes existing policy responses.
- [Mapping of global plastics value chain and plastics losses to the environment - With a particular focus on marine environment](#): This report provides a comprehensive global mapping of plastic losses to the environment throughout the plastic value chain using 2015 as the reference year. This mapping covers plastics production and processing, use of plastics or plastic containing products, and disposal of the products. It differentiates 23 types of plastics and 13 plastic applications, including division between macro- and microplastics.

<sup>3</sup> Workshop report: [Multi-stakeholder consultation workshop on a systemic approach to marine plastics \(15 and 16 February 2018\)](#)

and opportunities and on initial potential recommendations for Actions, intended to “set the scene” for the subsequent workshop sessions.

Sessions 4 to 7 looked at specific focus areas and identified the most needed actions to address marine plastics arising from that product/sector. In each session, actions were suggested and discussed across the value chain, and the group determined some priority actions amongst them. The recommended actions, including the one seen as priority, are reflected in Figure 1 to Figure 6, and Table 1 to Table 5 below. The final session presented the identified priorities, and discussed some high level take-home messages.

### **Session 1: Project overview**

Elisa Tonda, Head of the Consumption and Production Unit, United Nations Environment Programme Economy Division, welcomed participants and introduced the workshop.

A Tour de table allowed participants to become acquainted with who was in the room. A list of participants is provided in the Appendix.

Isabelle Vanderbeck (UN Environment) presented an overview of the GEF project: [Addressing Marine Plastics – A Systemic Approach](#)

Elisa Tonda (UN Environment) presented on [The plastics value chain, a systemic approach](#), covering the findings from the 1<sup>st</sup> multi-stakeholder consultation workshop, and the findings from the desktop studies – plastics value chain, stakeholders, main hotspots and gaps.

### **Session 2: Gaps, barriers, opportunities**

Philippa Notten (consultant to the GEF project) presented an overview of the [Gaps, Barriers and Opportunities](#) to addressing marine plastics. The presentation summarised the findings of the 1<sup>st</sup> multi-stakeholder consultation workshop and subsequent desktop research.

### **Session 3: Proposed initial set of recommendations for actions**

Philippa Notten presented the [Proposed initial set of recommendations for action](#) to address marine plastics, which come out of the 1<sup>st</sup> multi-stakeholder expert workshop and the findings of the desktop studies.

This was followed by a set of presentations covering systemic actions in different countries/regions:

- Hugo Schally, European Commission: [European Strategy for Plastics in a Circular Economy](#)
- Barbara Herrera Tamaya, Ministry of the Environment, Chile: [To a Circular Chile](#)
- Nolwenn Foray, Ellen MacArthur Foundation: [New Plastics Economy](#)
- Mona Aarhus, Norwegian Ministry of Climate and Environment: [Norwegian approach combatting marine plastic litter and microplastics](#)

### **Discussion session 2 and session 3**

The discussion emphasised that there is a need for a **broader understanding of circular economy** than just recycling. Solutions need to be looked for upstream, for example, policy/regulation to modify products and eliminate those that are difficult to put back into the use stream.

There is a strong need for product life cycle based tools to evaluate alternatives. The life cycle assessment studies (LCAs) need to include the impact of plastics when they reach the (marine)

environment (ecosystem impacts of litter), to enable a comprehensive and fair comparison with other alternatives. Such methodological development and consensus building around it may take 3-5 years, so there is also a need for quick and easy-to-use tools in the interim. The importance of having LCAs to guide policy was also raised as a priority, among other uses to inform the need for extended producer responsibility (EPR) schemes. It was cautioned that when evaluating trade-offs within an LCA, the circular economy perspective of keeping materials in the economy at high value and for longer should not be neglected, as this is an aspect not adequately highlighted in LCA.

An evidence-based approach based on monitoring data on marine or terrestrial litter is required to inform regionally specific actions, depending on individual country collection and recycling rates. The European Commission used monitoring data to identify what products/sectors they wanted to target (10 items), illustrating that **actions should be informed by data**.

There is a need for companies to **change their business models**. A barrier is a lack of standards, the increased availability and application of which would help create a level playing field and assist industry in designing out problematic and unnecessary plastics. New ways are needed to **finance new business models**, such as business models where the value only gets captured after several reuses. Investors and financing institutions need to be educated, and the opportunities and risks of new business models considered.

**Information transparency** is an important aspect. This includes what is actually in the products and what products are intended for (and that the intended use is consistent with what is included in the plastic products). A framework that supports product information flowing throughout the supply chain needs to be developed. The **role of policy makers/government in product related labelling** for consumers and buyers was noted as needing to be strengthened to ensure that the underlying mechanisms are coherent and consistent.

**The challenge small island states face** with respect to recycling was raised. Indonesia, for example, with 17,000 islands, effective recycling is prohibited by lack of scale, and high transport and logistics costs. Lack of coordination was also raised as an issue, with examples provided by Indonesia of local recycling projects saturating demand and of a change to packaging creating new problems (because no waste facilities existed for the new product).

The discussion further highlighted that **“compostable” and “biodegradable” do not equal “degradable in the marine environment”**. “Compostable” plastics require treatment in industrial composting facilities (i.e. in conditions not usually found in the environment) that are not available in many countries (especially developing countries, many of which have problems with basic waste management). Furthermore, industrial composters reportedly have problems with them (they also can potentially decrease the quality of recycled materials). Thus, current biodegradable and compostable plastics divert the attention of consumers and potentially create more waste management problems than they solve.

Common standards to measure biodegradability in the marine environment are a clear requirement for labels such as “compostable” plastics. Such standards do not exist, and currently no product can be said to be truly biodegradable (in natural environments). The audience questioned whether it is wise to devote efforts now to develop **standards for biodegradable plastics (or for compostable plastics)**: there is a risk that if developed early, no products could meet them. Development of these standards would require coordination between academia, government and industry. Ultimately, the

process would be costly and if no products can actually meet the standards yet it would be unwise to devote efforts to their development in the short run.

It was also noted that currently there is no plastic material that can be recycled infinitely without virgin material being added and that ultimately new technologies are needed. The distinction was made between **mechanical recycling** - transforming waste plastics into new products without changing the basic structure of the material, and **chemical recycling** – transforming waste plastics into new feedstock. Chemical recycling is currently the topic of much research and innovation. The issue was raised that because chemical recycling technologies are very costly, it can take 30-40 years to get a return on investment and thus prevent better solutions from being adopted. However, small-scale, low-cost chemical recycling units are emerging with the potential to fit into decentralized waste management systems without long pay-back periods. The context is important, with the example of Palau converting plastic collected on beaches into liquid fuel given. This would not be appropriate in all contexts but in Palau there are currently few options and the plastic would otherwise be burnt or remain as litter.

Sessions 4-6 focused on specific focus areas identified in terms of their volume of losses to and/or impact on the marine environment, based on the background research by UN Environment ([Addressing marine plastics: A systemic approach - Stocktaking report](#), and [Mapping of global plastics value chain and plastics losses to the environment - With a particular focus on marine environment](#)).

#### **Session 4: Recommendations for action – textiles, construction and cosmetics & personal care**

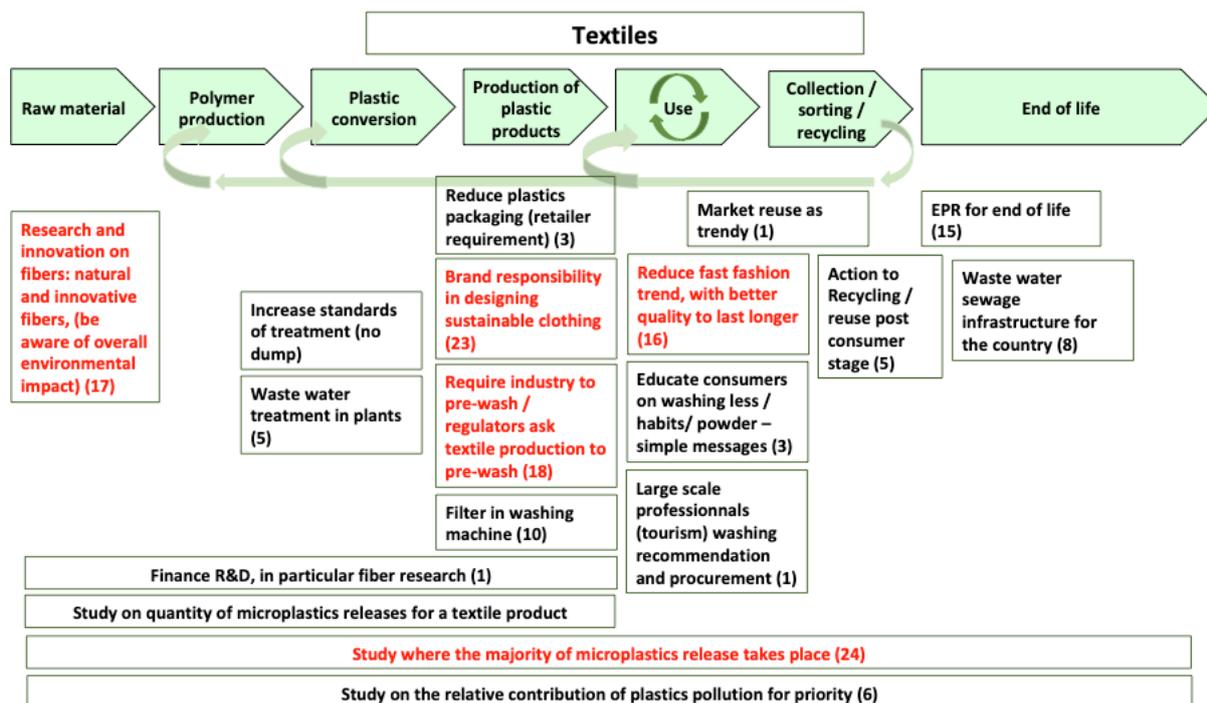
A short overview of the plastics and marine plastics pollution related issues in the three focus areas was given, followed by brief presentations covering systemic actions in these focus areas:

- Audrey Goulard, Decathlon: [Decathlon Sustainability](#) (textiles)
- Gavin Warner, Unilever: [Make Sustainable Living Commonplace](#) (cosmetics & personal care)

This was followed by discussions on each of the three focus areas, leading to recommendations for action:

#### **Textiles**

Textiles are estimated to account for approximately 9% of annual microplastic losses to the oceans. These losses occur in the use phase (laundering) and in the production of textiles (pre-treatment, dyeing and finishing). Artificial fibres found in coastal and river sediments and ingested by fish include those made from polyesters (PES) (predominantly PET), acrylic/polyacrylonitrile (PAN), polyamide (nylon) and semi-synthetic compounds (such as Rayon).



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the top five recommended actions shown in red.

Figure 1: Recommended actions to address marine plastics arising from textiles.

The recommended actions were as follow:

Strong support was given to actions required of brands to **design sustainable clothing**, along with the need to look at the nature of synthetic textiles themselves. This includes research and innovation on **developing fibres that do not shed microplastics** (raising the need to identify financiers of such research), along with a **return to natural fibres** (e.g. cotton, wool, silk etc.), acknowledging that alternatives must be evaluated for unintended consequences.

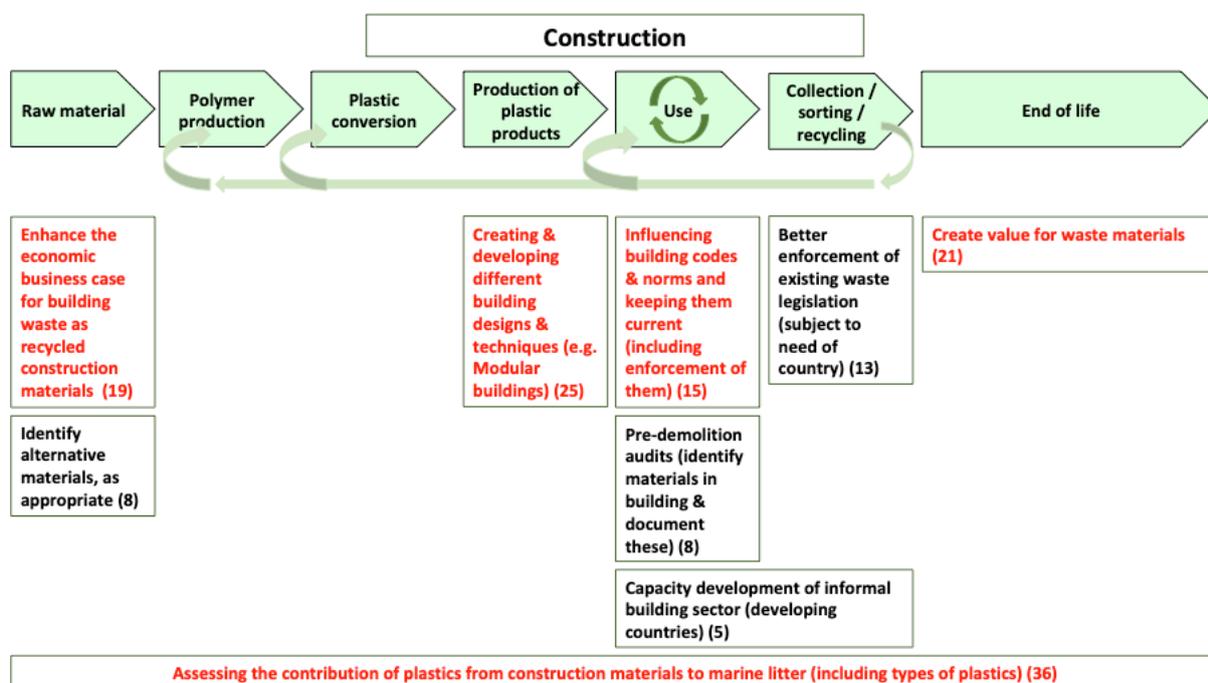
Equally strong support was given to the need for **a study to gain a clear understanding of where the majority of microplastic releases from textiles occur** so that measures can be sited to have the greatest effect. The development of standard tests to determine releases from different textile products are also needed, and are essential if better fabrics are to be developed and tested. Should studies confirm that the greatest fibre releases occur at the first wash, then there was strong support for actions for **brands/retailers and/or governments to require producers to pre-wash** items (along with governments and public/private partnerships to ensure textile producers have the necessary infrastructure to treat effluents from manufacturing facilities).

Actions to reduce the consumption of textiles were also identified, such as actions by consumers to **reduce the fast fashion trend**, promoting repair, reuse and clothing swaps, and promoting high quality fabrics that last longer.

## Construction

The building and construction sector is the second highest user of plastic (after packaging). Despite this high use of plastic, there is little data on the end-of-life and marine losses of construction plastics. Losses potentially occur in the use phase, e.g., microplastic losses from wind abrasion of paint and other plastic surfaces, and at end-of-life, e.g., informal disposal of building materials such as insulation,

cables, etc., as well as microplastic losses during building demolition and destruction due to extreme events. The construction sector is also notable in that it is the sector with the highest use of polymers with the highest risk profiles, such as polyvinylchloride (PVC), polyurethane (PUR) and polystyrene (EPS, PS), as well as polymers with hazardous additives, such as flame-retardants.



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the top five recommended actions shown in red.

Figure 2: Recommended actions to address marine plastics arising from building and construction.

The recommended actions were as follows:

The contribution of building and construction to marine plastics is not well characterised, despite indications from coastal clean-up data and certain countries (e.g., Norway) that it does play a role. The need to better understand and characterise the potential for construction plastics to become marine litter was thus well supported, and a top action identified was to commission research **studies to assess the contribution of construction plastics to marine litter**, including the types of plastics present.

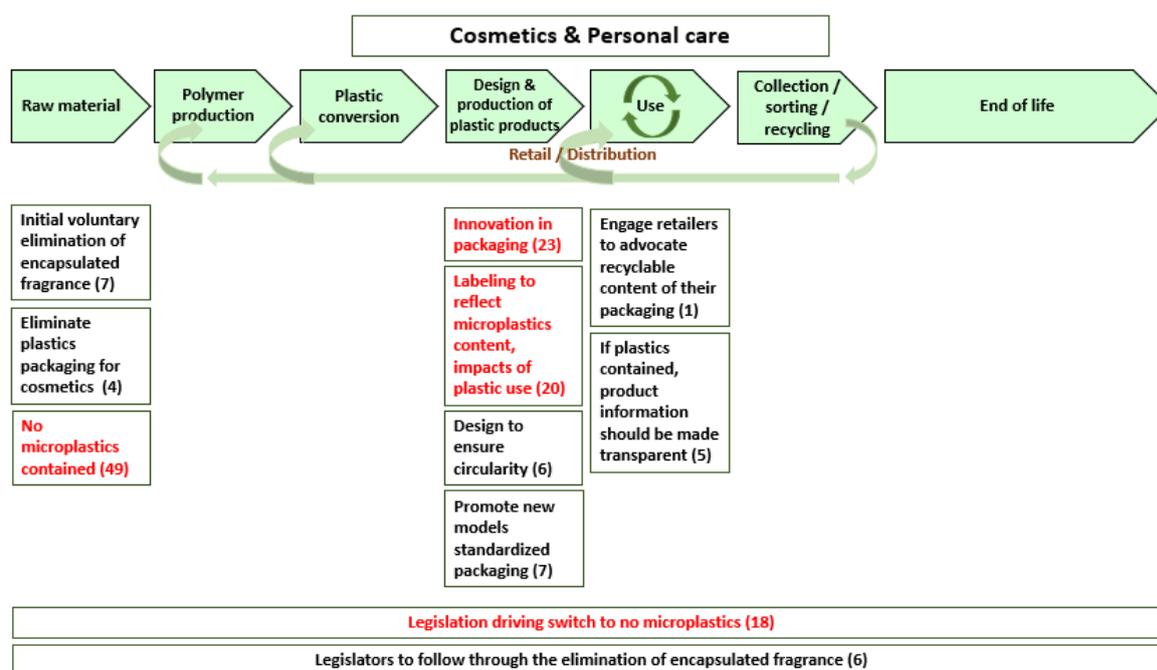
A number of actions were identified around reducing building waste from a prevention perspective and promoting its recycling (and thus reducing its potential to end up as marine litter). Actions identified included **developing different building designs and techniques (e.g. modular buildings) that minimise building waste** generation (especially on-site waste generation); **creating a value for**

**waste materials** (so that they will be reused/recycled); **enhancing the economic business case for using recycled construction materials**; and enforcing existing waste legislation.

Actions relating to the responsible use of plastics in construction were identified, including requiring relevant government institutions and enforcement agencies to influence **building codes and norms**, keeping them current and ensuing enforcement.

### Cosmetics and personal care products

An estimated 14 thousand tonnes of plastics in personal care products and cosmetics are emitted to oceans every year. Although their share of the total estimated annual microplastic load is small (0.03%), plastic losses from personal care products are in most cases direct emissions to water. Emissions originate from use phase losses (in contrast to most microplastic losses being wear and tear related). As microplastics are intentionally added into the products, it leads to the possibility for concrete actions. A number of different polymers are used in personal care products, including polyethylene (PE), polypropylene (PP), polyamide (nylon) and polymethyl methacrylate (PMMA).



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the most recommended actions shown in red.

Figure 3: Recommended actions to address marine plastics arising from cosmetics and personal care products.

Priority actions were as follows:

The most widely agreed action is that **brands should design/develop personal care products not to contain microplastics**, along with a role for legislators to **ban/phase out microplastics**.

Other well-supported actions around microbeads and other plastics in cosmetics are for legislators to require **greater transparency around plastic use in personal care products**, and to require better **labelling of products**, i.e., to ensure that it is easy for consumers to see that plastic is contained in the product, and potentially for labels also to include environmental and health impacts.

Actions around **innovation in the packaging of cosmetic and personal care products** also gained wide support.

### Session 5: Recommendations for action – Packaging and single-use items

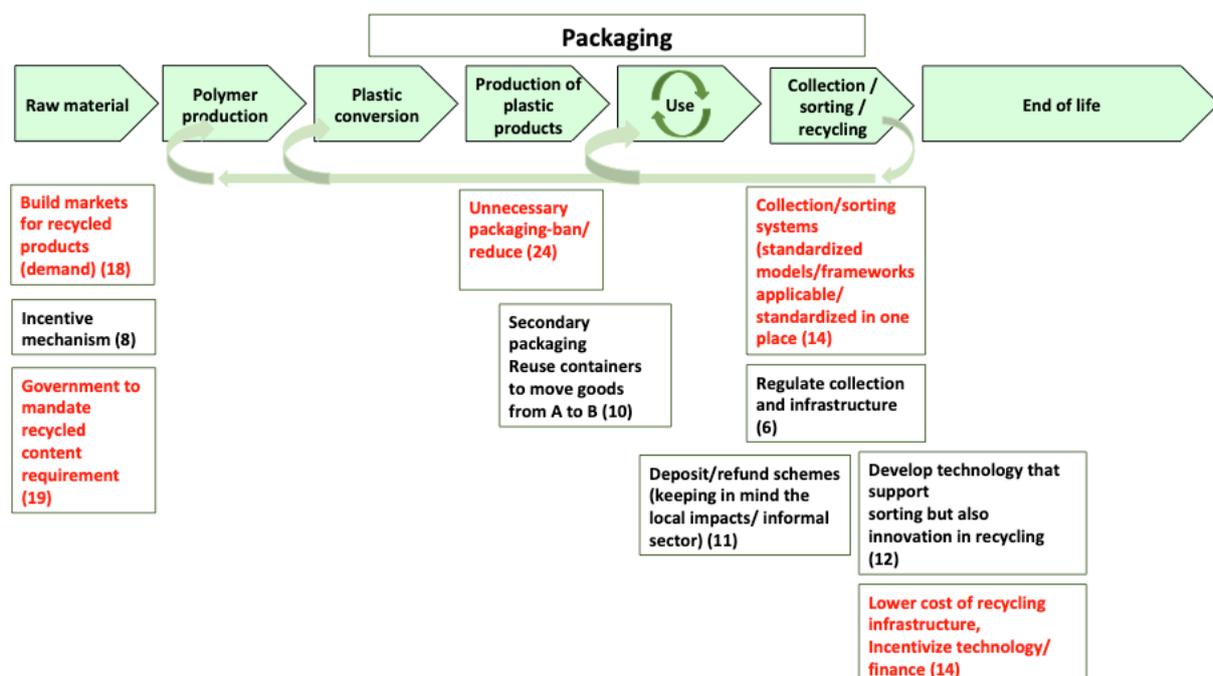
The importance of packaging and single-use plastic items as focus areas to address in combatting marine plastics was outlined. Four short presentations highlighted actions being taken on packaging and single-use plastic items in different countries and by industry:

- Bénédicte Jénot, Ministry for the Ecological and Solidary Transition, France: measures on [single use plastics in France](#)
- Tony Kingsbury, Director of Sustainability, EMEA (Europe, Middle East and Africa) at the Dow Chemical Company
- Crispian Lao, Philippines National Solid Waste Management Commission
- Nanette Laure, Waste enforcement and permit division, Ministry of environment energy and climate change, Seychelles: [Experience from Seychelles](#)

This was followed by discussions on three focus areas, leading to recommendations for action:

#### Packaging (not including PET bottles)

Packaging is the major application of plastics, accounting for approximately 30% of global plastic use. Being a short-lived product, packaging accounts for an even higher percentage of plastic waste. For example, packaging accounted for 39.9% of plastic demand in Europe in 2015, but for 59% of waste (in 2015). The main polymers used in packaging are polyethylene (HDPE, LDPE, LLDPE), polypropylene (PP), polyethylene terephthalate (PET) and polystyrene (PS). To a lesser degree, polyvinylchloride (PVC), polyurethane (PUR) and bioplastics also find applications in packaging.



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the top five recommended actions shown in red.

Figure 4: Recommended actions to address marine plastics arising from the packaging.

Priority actions were as follows:

Actions to **identify and act upon unnecessary and excessive packaging** received the highest priority. **Bans/restrictions** were put forward, with the proviso that the impacts of bans on low-income groups be taken into account.

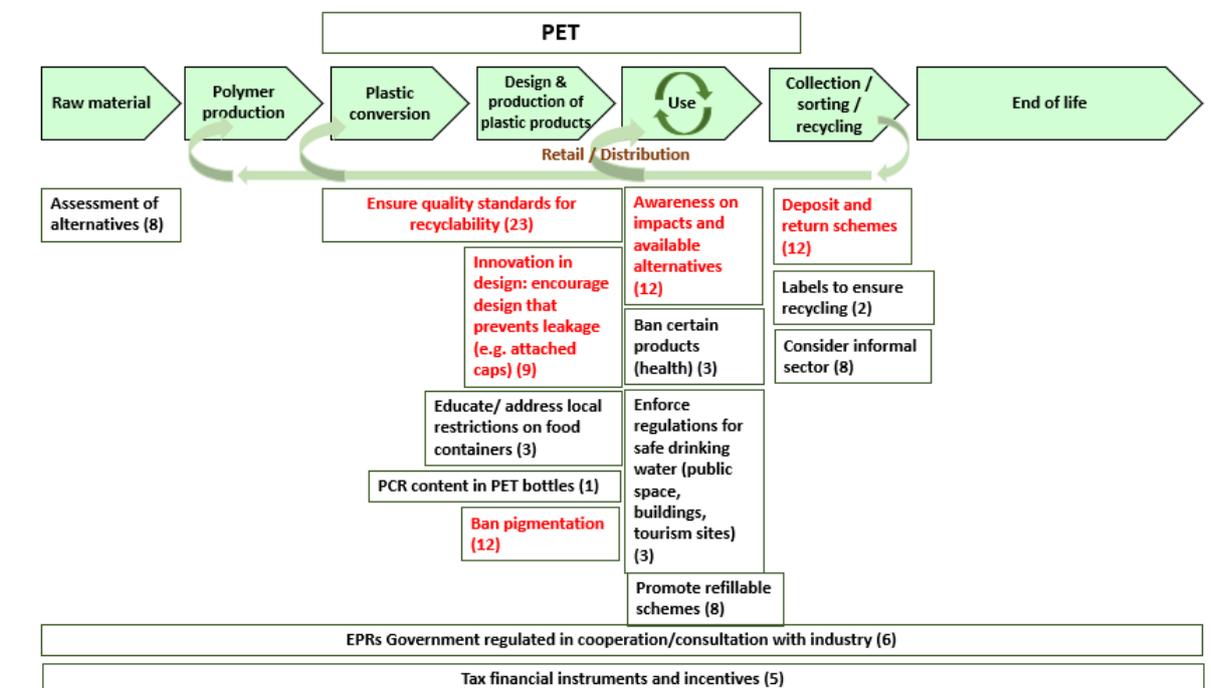
Increasing the collection of plastics packaging for recycling requires markets for the material collected, thus actions to **build markets for recycled products** were identified as a critical need. A specific action identified in this regard was for **governments to implement mandatory recycled content requirements**.

The fragmented approach to recycling was identified as a barrier to obtaining high recycling rates, with local areas even within a single country following different collection systems and accepting different materials. Thus sharing best practices and **setting up standardised collection systems** was identified as a high priority action. This could be done following studies that look at what works best in particular contexts.

The group also identified that whilst some technology development is still required in plastics recycling, such as for “contaminated” plastics (food containers), to a large degree the technology is already there, but actions are needed to **incentivise and finance the uptake of advanced recycling technology**. This needs to go hand-in-hand with regulatory action, since the most difficult plastics to recycle are of low value.

## PET bottles

As a particularly high volume packaging product, and one found consistently in the top ten marine litter items in coastal clean-up data, PET bottles were discussed as a focus area.



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the top five recommended actions shown in red.

Figure 5: Recommended actions to address marine plastics arising from the PET bottles.

Priority actions were as follows:

Actions were identified around increasing the recycling of PET bottles, which already enjoy the highest recycling rates of all plastic types in a number of countries. **Government actions to ensure quality of recycle through the development/implementation of standards** was identified as the highest priority action. Colour pigmentation in bottles was raised as a particular issue inhibiting high grade recycling of PET bottles, with the recommendation that governments **ban colour pigmentation** in bottles. **Deposit and return schemes** were recommended as an action to increase the volume and quality of PET bottles for recycling.

Actions to reduce consumption of PET bottles also gained high support, especially through **raising awareness of impacts and promoting available alternatives**, such as refill schemes.

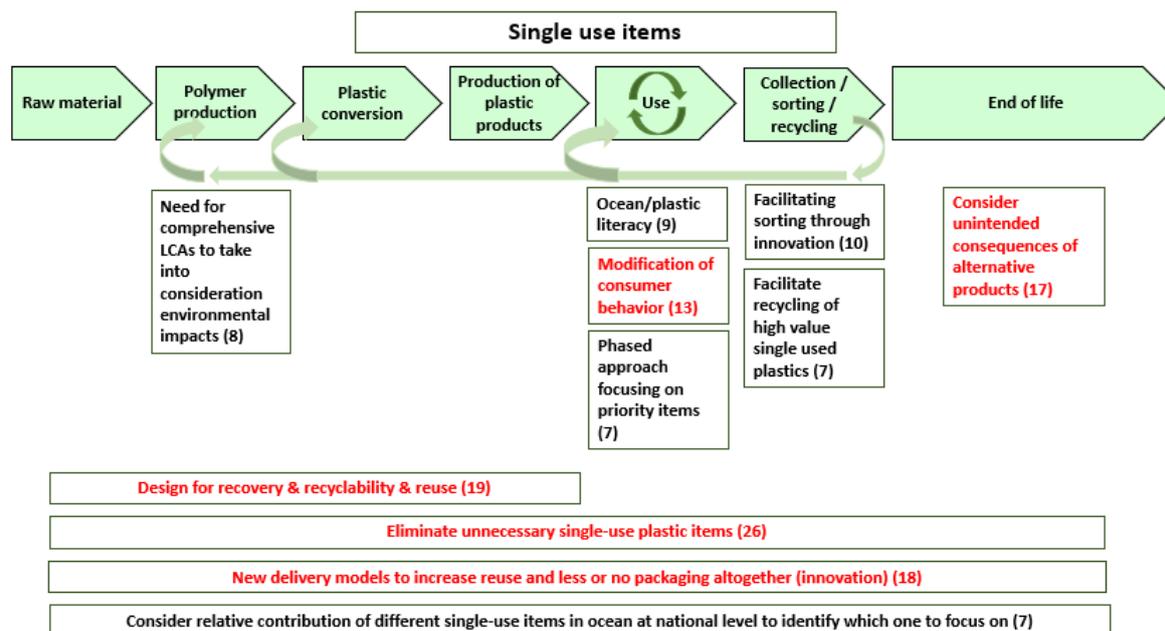
Actions by brands/industry are required around **innovations in bottle design** to promote recycling, such as bottle designs in which the cap, remains attached to the bottle.

### Single-use items

Single-use plastic items are consistently amongst the top items found in the marine environment. These short-lived items are consumed in high volumes, and because they make up a high proportion of consumer waste, they also have high prevalence in mismanaged plastic waste leaked to the environment. Many of these products are convenience items designed to be consumed on-the-go, contributing to their high prevalence in litter. The top items found in beach litter generally reflect consumer demand in different regions, but the following items are found in the highest numbers<sup>4</sup>: bottles, cups, food containers, packets and wrappers, straws, cutlery and stirrers, carrier bags, lids, cotton bud sticks, lollipop sticks, sticks for balloons, balloons, cigarette filters, wet wipes, sanitary towels and nappies (diapers).

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<sup>4</sup> EU top ten (accounting for 86% of beach litter), International Coastal Cleanup top ten (2018 and over 25 years) and “Dirty Dozen” (South Africa)



Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the top five recommended actions shown in red.

Figure 6: Recommended actions to address marine plastics arising from the single-use items.

Priority actions were as follows:

A priority action identified for single-use plastic items is for governments, in partnership with NGOs, industry and consumer groups, to **eliminate unnecessary single-use items**. Actions could either be in the form of bans or other disincentives, but in all cases, **unintended consequences must be considered**.

Actions to encourage **innovative designs of products** were identified as being required, for example to increase ease of recycling (e.g., lid and cap made from same material), but also more broadly, such as **new product delivery models** (e.g., plastic-free aisles in supermarket).

Also of high priority are actions to **modify consumer behaviour**, such as through providing incentives for reusable product options.

### Session 6: Recommendations for action – tourism, fishing & aquaculture, and shipping

The relevance of the tourism, fishing and aquaculture, and shipping to marine plastics was briefly introduced. This was followed by four short presentations highlighting actions being taken by the tourism industry and within fishing & aquaculture and shipping.

- Tourism: [Anais Heurtier, ABTA](#)
- Tourism: Carl Hunter, Saint Lucia Hotel & Tourism Association: [Replacing “single-use” plastics in Caribbean Hospitality](#)
- Aquaculture: Barbara Herrera Tamaya, Ministry of the Environment, Chile: [Impacts of Aquaculture Industry -Archipiélago of Chiloé](#)
- Fishing: [Bénédicte Jénot, Ministry for the Ecological and Solidary Transition, France](#)

This was followed by discussions on three focus areas, leading to recommendations for action:

## Tourism

Coastal/beach tourism is amongst the top three marine litter sources in the North, Mediterranean and Baltic seas. It is also a sector that is directly impacted by marine plastics. A diversity of plastic products has relevance to the tourism industry, including: toiletry and personal care products; food and beverage packaging; single-use items, such as cups, straw etc.; textiles; building and construction materials; electrical and electronic appliances and furnishings.

**Table 1: Recommended actions to address marine plastics arising from the tourism activities.**

<b>New Models</b>	Innovation and finance for alternative products (5)*	Eco-innovative business models e.g., sharing laundry for waste water treatment (11)	Use materials that can be recycled in island / destinations (10)	<b>Innovative packaging and reuse models for tourism industry (19)</b>
<b>Standards and voluntary certification</b>	Governments to set standards, building codes for construction and land use (1)	<b>Ensure certifications include criteria on plastics (14)</b>	Encourage “type 1” certification schemes and audits of hotels (10)	Sustainable procurement guidelines for single-use plastic items (11)
<b>Communication and Awareness</b>	Encourage the industry to reduce single use plastic items (11)	Communication to industry guidance (2)	Communication to destinations / consumers (5)	Consumer / campaigns (4)
<b>Research</b>	Research on beach waste categorization (e.g., land based/sea based) to inform action (2)			
<b>Waste management</b>	Taxes, modular fees hotels/restaurants waste (4)	Harbour and port facilities regulations to cruise ships (3)	<b>Finance and investment, Public and Private Partnerships for waste facilities (14)</b>	

*\*Note: the numbers in brackets indicate the number of votes the recommended action obtained, with most recommended actions shown in red.*

Priority actions were as follows:

That many tourist destinations struggle to manage plastics at end-of-life was a clear starting point in the discussions. This raised the need for actions to reduce/eliminate short-lived plastics consumed in high volumes in tourist activities. Actions that received most support were innovation in packaging and reuse models for this sector.

Actions to enable better waste management infrastructure and services were also identified as high priority, including finding ways of **financing waste infrastructure**, such as through **public/private partnerships**.

Another highly recommended action related to **standards and certifications for hotels**, resorts and other service providers. Resorts and hotels should be encouraged to seek certification. At the same time, **certifications should have criteria for plastics**.

### Fishing and aquaculture

Of the plastics collected in a recent study of the North Pacific Gyre, at least half (by weight) are from marine-based sources, i.e., from fishing and aquaculture.<sup>5</sup> These plastics are particularly concerning as they are durable plastics lost directly to marine environment and furthermore, are known to have high impacts on biodiversity. Plastic losses are due to illegal disposal (dumping) as well as due to accidental and incidental losses. The primary polymers used in fishing gear are polyethylene (PE), polypropylene (PP), polyamide (nylon), polyethylene terephthalate (PET) and polystyrene (PS).

**Table 2: Recommended actions to address marine plastics arising from the fishing & aquaculture**

<b>Production &amp; design</b>	<b>Design standard for nets: Minimum % recycled and design for recyclability (16)*</b>	R&D on fishing gear to reduce impacts on biodiversity (5)	Fishing aggregating devices/ alternative materials (1)	R&D for storm resistance in aquaculture gear
<b>Use</b>	<b>Repair-Reuse system for gear → tax breaks for repair business, subsidies (19)</b>	Good Practice to prevent gear loss Guidance (14)	Obligation to report & collect lost gear (9)	Reverse logistics for gear
	Educate fishermen community on impacts (Beach clean-ups) (4)	EPR schemes for fishing gear (7)	Add GPS trackers/tags to fishing gear (3)	Incentivize rental of fishing gear (7)
<b>End of life</b>	<b>Provide collection infrastructure in harbours &amp; aquaculture areas (17)</b>	<b>Incentivize return of lost gear in small scale/recreational fishing (16)</b>	Promote fishing for gear in coastal communities (7)	No special fee + ensure waste management in harbours

*\*Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the most recommended actions shown in red.*

Priority actions were as follows:

Identified actions related to preventing losses during use were to create value and **incentives both prevent gear losses and recover lost gear**. Among these actions, the one with the widest support was for governments in partnership with fishing communities to incentivise the **repair/reuse of fishing gear** (e.g., through tax breaks or subsidies). There is also the requirement to develop a **design standard for fishing nets so that these are recyclable and contain recycled content**.

A prioritized action around the end-of-life of fishing gear is for governments, in partnership with waste management agencies, to increase (or provide) **infrastructure, in particular port reception facilities, to collect discarded fishing gear and aquaculture equipment**.

<sup>5</sup> Lebreton, L. et al (2018) 'Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic', Scientific Reports, 8(1), pp. 4666. DOI: 10.1038/s41598-018-22939-w

## Shipping

Shipping as a source of marine plastic is not well accounted for in estimates of plastics loads to the oceans, as recent studies have tended to focus on land-based sources. This has led to shipping perhaps being underestimated as a source of marine plastics. Ship losses are significant as they are lost directly to the marine environment, in particular in the case of lost cargo. Losses arise from illegal disposal of ship waste (such as packaging and personal goods), as well as accidental loss of cargo (e.g., in storm events). The main polymers associated with marine plastics from shipping are thus those used in packaging and consumer goods. A further source of microplastics from shipping is of plastics contained in paint, as well as of plastic pellets used in “sand blasting with plastic” during ship maintenance.

**Table 3: Recommended actions to address marine plastics arising from shipping**

<b>Preparation</b>	System for logbook registration of e.g. plastics, assessments to reduce plastics on board that may become waste (13)*	<b>Ban sand-blasting with microplastics (also look at microplastics from paint, hull scraping) (24)</b>		
<b>Management on ship</b>	Recommendation for regulatory ship load system (including fee) (issue of containers lost at sea) (4)	<b>Replicating/ upscaling EU “green ship” standards / scheme including certification system for single use plastic items (17)</b>		
<b>Management at port</b>	Establish a tourism tax scheme when ships come to ports (2)	<b>Enhance port reception facilities to enable repair, recycle waste gear (19)</b>	<b>Public-private partnerships for sub-regional port reception facility (17)</b>	Implement new indirect fee system in ports (waste included) (15)
<b>End of Life</b>	Establish an end of life program to manage ship waste (focused on recreational fleets) (7)	Assessment of leakages including grey water for microfibers (4)		

\*Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the most recommended actions shown in red.

Priority actions were as follows:

A priority action is to **end the practice of using plastic micropellets in ship blasting**. Further actions to investigate in eliminating microplastic releases from ship maintenance are the materials used (e.g., plastics in paint) and the cleaning/scraping processes.

Actions are required to **enhance port reception facilities** and good management once plastics arrive at port (for repair and/or recycling). **Public-private partnerships for the development of sub-regional facilities** were also suggested.

**Scaling up of the EU “green ship” certification concept** is an action that received wide support. This green certification scheme aims to reduce the amount of waste generated by linking port fees paid to

the level of certification achieved. Criteria include waste separation and minimising single-use plastic items.

### **Session 7: Recommendations for action – household consumption and disposal of plastics**

The final recommendations for action session had a different focus. Rather than taking a product/sector focus, as in previous sessions, the focus was on actions that can be taken to influence consumers. Consumers have a critical role to play, both in their choice of products (and consequently the influence they have on retailers and producers), and also in how they dispose of the products they consume.

There is no single consumer lifestyle because the personal situations, socio-technical conditions and physical and natural conditions that surround an individual are different. People consume because they need to meet their basic and social needs (nutrition, health, convenience, traditions), and also to meet their personal desires (e.g., food preferences, luxury car, etc.) and because they are influenced by marketing (e.g., purchasing a product with additional functions, such as a mobile phone that fulfils functions above making phone calls). In certain instances, consumers are forced to consume due to lack of choices, for example, local mobility infrastructure that favours private car use.

In this session, participants discussed:

1. Actions that could be taken to influence consumer purchases, and
2. Actions that could be taken to influence consumer decisions around what they do with plastic products at end-of-life.

The priority actions identified for influencing consumer purchases are shown in Table 4. Actions that gained the greatest traction amongst participants were those around education and messaging, especially the need for education to start at school. The need for easy-to-grasp, reliable (regulated) information at point of sale was widely supported. Also gaining a high degree of support were actions around eco-innovative models, including providing alternatives to consumers and incentives to increase the uptake of reusable/returnable models.

Table 4: Recommended actions to influence consumer purchasing around plastics.

<b>Education &amp; consumer messaging</b>	Your purchase is a vote (6)	<b>Regulate/use guidelines for a uniformed way to display information &amp; inform purchasing (14)</b>	Messaging to cover negative impacts of plastics (including health impacts) but also positive impact of new solutions (7)	Awareness raising on sustainable lifestyles and the role of consumer associations to build this awareness (2)
	<b>Build plastics education into school practices and programmes (16)</b>	Messaging to build a re-use mentality (5)	Messaging that buying quality is better value (last longer) (6)	
<b>Display of information</b>	<b>Make point of sale information easy to grasp (19)</b>	Use marketing visual labels, should be self-explanatory and include health info (6)	Inform through apps (ensure plastics information is included in “rating apps”) (7)	Reliable labelling requiring independent certification and/or following a regulation (11)
<b>Channels for consumer messaging</b>	Incorporate into food shows on TV	Target social media and influencers	E-distribution channels, by placing sustainable packaging and products as first choice/front page (19)	Use traditional media channels: TV, news, radio, expo
<b>Eco-innovative models</b>	Provide alternatives to consumers (7)	<b>Provide incentives to new models such as returnable containers (18)</b>	Implement & communicate schemes with environmentally and socially positive solutions (5)	

\*Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the most recommended actions shown in red.

The priority actions identified for influencing consumer end-of-life decisions are shown in Table 5. Actions that gained the widest support were those around education and creating awareness to drive behaviour change. Actions by brands/industry for greater transparency around recycling were especially well supported, as were creating awareness for consumers of the need to create less waste. Also gaining a high degree of support from participants were actions required for harmonised/standardised guidelines and labels for recycling. Making it simple for consumers to sort and recycle their waste was also widely supported.

Table 5: Recommended actions to influence consumer decisions around plastics at end-of-life

<b>Standards and labels for recycling (government &amp; industry)</b>	Standards and guidelines for recycling labels/logos  (24)	Enforcement of product labelling standards		
<b>Behaviour change – consumers (Government, academia, NGO, industry)</b>	Education that is culturally and socially sensitive (but consistent)	Incorporate education/ awareness into school curricula  (21)	Include positive messaging – waste as a resource	Awareness to consume less (create less waste)  (22)
<b>Behaviour change (brands/ industry)</b>	Transparency: campaigns to show what happens with recycling (27)			
<b>Consumer information on recycling (local authorities, industry)</b>	App to link product/plastic type to local recycling options	Incorporate messaging/ information on recycling into other apps (e.g. health)  (4)	Explore other emerging technology platforms	
<b>Waste sorting and collection (local authorities)</b>	Make it simple for consumers (e.g. wet and dry bins)	Adapt waste sorting requirements to consumers and local infrastructure  (25)	Refuse unsorted waste (shock & awe!) (7)	

\*Note: the numbers in brackets indicate the number of votes the recommended action obtained, with the most recommended actions shown in red.

### Session 8: Conclusions on key recommendations for action

In this session the priority recommended actions for each focus area were summarised, and the following initial observations were shared:

- Crosscutting actions around building knowledge are required to allow for evidence-based actions (e.g., actions around monitoring and baselines, particular flows and impacts) and in the assessment of alternatives;
- Actions are identified across the value chain - both when looking at the full set of options identified and also when looking at the actions that received the greatest number of votes;
- Regulations such as bans are not widespread in the recommended actions, but are rather relevant to specific products/topic (e.g., banning pigmentation in PET bottles and banning microplastics in personal care products). Regulations were also raised more generally as needed for eliminating unnecessary single-use plastics items;
- A number of actions relate to design and innovation, including new materials, reuse models, new business models etc.
- Reducing consumption was identified as an action;

- Production models were also mentioned, in particular when referring to single use products, and the need to reduce such products.
- Actions are needed to build consumer awareness, with a number of possible channels identified, such as product labels, apps, social media, TV and education (schools), etc.
- Actions by governments are required to create level playing fields, including creating standards for recycled materials, recyclability, product labelling, etc.
- Actions to promote collaboration between public and private sectors are required, including through EPR schemes;
- Market creation and incentives for recycled or secondary materials are required; and
- Actions are required to build infrastructure and facilities, including in developing countries, tourism sites, harbours and aquaculture areas, etc.

### **Closure and next steps**

The workshop lead to recommendations on priority actions along the global value chain of plastics that could be taken to address problematic products and polymers. The workshop outcomes an input to finalise recommendations for actions for a systemic approach to marine plastics, to be published in the coming months. These recommendations for actions aim to guide UN Environment and other active actors in the plastics agenda.

## Appendix: List of participants

Name	Organization
Anais Heurtier	ABTA/Travelife
Audrey Goulard	Decathlon
Bárbara Herrera Tamaya	Ministerio de Medio Ambiente, Chile
Bénédicte Jénot	Ministère de la Transition Ecologique et Solidaire, France
Carl Hunter	Santa Lucia Hotel & Tourism Association
Crispian Lao	Philippines National Solid Waste Management Commission
Eric DesRoberts	Ocean Conservancy
Gavin Warner	Unilever
Heidi Savelli	UN Environment
Hugo Schally	European Commission
Isabelle Vanderbeck	UN Environment
James Brown	Department for Environment Food & Rural Affairs, UK
Jill Raval	UN Environment
Joan Fabres	GRID-Arendal
Keondra Bills Freemyn	Ocean Conservancy
Liana McManus	GRID-Arendal
Marc Richir	European Commission
Michiel De Smet	European Commission
Mona Aarhus	Ministry of Climate and Environment, Norway
Diane Menard	Secrétariat du Fonds Français pour l'Environnement Mondial
Nanette Laure	Ministry of Environment, Energy and Climate Change, Seychelles
Nolwenn Foray	Ellen MacArthur Foundation
Osman Keh Kamara	Consultant for Vietnam Administration of Seas and Islands
Philippa Notten	The Green House
Sapta Putra	Ministry of Marine Affairs and Fisheries, Indonesia
Tiina Kurvits	GRID-Arendal
Tim Grabiell	Environmental Investigation Agency
Tony Kingsbury	Dow Chemical
Youssef Chtourou	Danone Packaging
Yuki Kabe	Braskem
Elisa Tonda	UN Environment
Llorenç Milà i Canals	UN Environment
Sandra Averous	UN Environment
Feng Wang	UN Environment
Helena Rey	UN Environment
Ran Xie	UN Environment
Alex Koch	UN Environment