Proposed response template on written submissions prior to INC-3 (part b)

Potential Areas Identified by the Contact Groups

At its second session, the intergovernmental negotiating committee (INC) requested the secretariat to invite written submissions on:

- Any potential areas for intersessional work compiled by the co-facilitators of the two contact groups[1], to inform the work of INC-3.

The template below was prepared by the secretariat, in consultation with the Chair, and is meant as a guide to assist Members and Observers in preparing their written submissions.

All written submissions must be sent to unep-incplastic.secretariat@un.org. The submissions received will be made available on the INC webpage.

Please note that not all fields in the template need to be answered in the submission.

Deadline for submissions:

I. By **15 August 2023** for written submissions from **observer** organizations.
II. By **15 September 2023** for written submissions from **Members** of the Committee.

[1] Contact Group 1 focused on Section A: Objective(s). Section B: Substantive Obligations; Contact Group 2 focused on Sections C: Means of Implementation. D: Implementation measures. E: Additional matters as contained in part II of the Annex to document UNEP/PP/INC.2/4.

TEMPLATE FOR SUBMISSIONS

Name of country (for Members of the committee)	
Name of organisation (for observers to the committee)	**Undersigned organisations include:** Center for International Environmental Law (CIEL) (https://www.ciel.org) Earthwatch Australia (https://earthwatch.org.au) Environmental Investigation Agency (EIA) (https://eia-international.org) Development Indian Ocean Network (DION) Fauna & Flora (https://www.fauna-flora.org) Fidra (https://www.fidra.org.uk) Gallifrey Foundation (https://gallifrey.foundation) Global Alliance for Incinerator Alternatives (https://www.no-burn.org) No More Butts (https://nomorebutts.org) OceanCare (www.oceancare.org) Ocean. Now! (https://ocean-now.org) Pan African Vision for the Environment (PAVE), Lagos, Nigeria Recycle Hawaii (http://recyclehawaii.org) Sciaena (https://www.sciaena.org) Seas at Risk (https://seas-at-risk.org) Sustainable Environment Development Initiative (SEDI) (www.sedinig.org) Tearfund (https://www.tearfund.org/) The Pew Charitable Trusts (https://www.pewtrusts.org/en/) Zoological Society of London (ZSL) (www.zsl.org) The above organisations are members of a Microplastics Working Group, within the Civil Society and Rights Holder Coalition (with the exception of The Pew Charitable Trusts).

Contact person and contact information for the submission	Tanya Cox, Senior Technical Specialist Marine Plastics Fauna & Flora (tanya.cox@fauna-flora.org); Dr Scott Wilson, Chief Scientist Earthwatch Australia (swilson@earthwatch.org.au)
Date of submission	15/08/2023

Input on the potential areas of intersessional work to inform the work of INC-3 (following the lists compiled by the co-facilitators of the two contact groups)

This input regarding potential areas for intersessional work relates to the following points raised in Contact Group 1:

1. **Information on definitions of, e.g., plastics, microplastics, circularity**
2. **Potential sources of release of microplastics (applications and sectors).**

Contents

Introduction

Microplastics are found in polar ice caps, at the top of mountains, in soil, freshwater systems, and all ocean basins, from the surface to the deep sea. Ocean life is particularly vulnerable to exposure to, ingestion of and the damaging effects of microplastic pollution, given the ubiquitous nature of microplastics. Interdisciplinary research in this field has exponentially increased since the term was first coined in 2005 and emerging evidence now confirms the presence and accumulation of microplastics in humans. Research shows that microplastics have also been found in the food we eat, the air we breathe and the water we drink.

Microplastics enter oceanic systems directly, in micro size ranges, and indirectly, from the breakdown of larger plastic items, originating from various sources on land and at sea. The complex relationship between the ocean and the atmospheric system means that microplastics are mixed between air and ocean, dispersed widely due to the effects of wind, waves and currents, and assimilated throughout the water column. A significant contribution of microplastic pollution occurs as fugitive releases (unintentional and undesirable spills, leakage and loss) from various sectors.

Microplastics contain inherently toxic chemical additives known to leach into the environment and the species ingesting them. Microplastics are also known to adsorb chemicals from the aquatic environment, concentrating and accumulating them onto their surface – a phenomenon accentuated by the surface-to-volume ratio of the particles. By these means, those chemicals enter the food chain when the microplastics are ingested by animals or absorbed by algae. Microplastics also act as vectors for pathogens and alien invasive species, as they move through oceanic systems and currents, jeopardising biodiversity and healthy ecosystem function.

Cleaning up and removing microplastics from the ocean is neither possible nor cost-effective. Research has shown that over 170 trillion plastic particles are floating in the ocean all around the world[2]; and because of this ubiquity every marine species group has encountered microplastic pollution[3]. Given their small size (less than 5 mm) and bioavailability, microplastics are a significant threat to biodiversity. Numerous studies have revealed that they negatively impact organisms on different levels – such as growth[4], reproductivity[5], and immunity[6] – and that microplastics can be transferred through food webs[7], bioaccumulating and biomagnifying hazardous substances towards top predators, including humans.

Terrestrial microplastics also pose a significant and growing environmental concern. Scientists have found microplastics in various terrestrial ecosystems, including different types of soil, freshwater systems, and urban areas[8]. The harm of terrestrial microplastics lies in their ability to persist in the environment for extended periods, altering soil structure that leads to compromised agriculture productivity[9] and carbon sequestration[10], leaching toxic chemicals that can enter the food chain and disrupt ecosystem functions like changing microbial communities[11]. Also, microplastics are ingested by soil-dwelling organisms, leading to potential health risks as they enter into food webs, affecting wildlife and, ultimately, humans. Through our food, water, and inhalation, microplastics contaminate human bodies: studies have found microplastics in human blood, lungs, heart tissue[12] and placenta[13]. As the scale of terrestrial microplastics' impact becomes more apparent, urgent

action is needed to mitigate their presence and prevent further environmental degradation, and human and ecosystems health risks.

Tackling microplastic pollution requires upstream preventative measures that focus on the pollution source. The different sources of microplastic leakage into the environment and pathways to the ocean means that effective solutions will not be achieved with a 'one size fits all' approach to eliminate this type of pollution.

Microplastic pollution is a form of plastic pollution. No multilateral environmental agreement has defined plastic pollution; however, we encourage the use of the OECD definition: '*broadly all emissions and risks resulting from plastics productions, use, waste management and leakage*'[14]. Once in the environment, microplastic pollution poses a severe threat to biodiversity, ocean resilience and ecosystem health as a result of its bioavailability, toxicity and prevalence in all environments. For this reason, and to protect the ocean, reduce the impact on biodiversity and protect human health, microplastic pollution warrants particular attention and measures within the International Legally Binding Instrument (ILBI) to end plastic pollution, including in the marine environment.

[2] Eriksen, M., Cowger, W., Erdle, L. M., Coffin, S., Villarrubia-Gómez, P., Moore, C. J., ... & Wilcox, C. (2023). A growing plastic smog, now estimated to be over 170 trillion plastic particles afloat in the world's oceans—Urgent solutions required. Plos one, 18(3), e0281596.

[3] Tekman, M. B., Walther, B., Peter, C., Gutow, L., & Bergmann, M. (2022). Impacts of plastic pollution in the oceans on marine species, biodiversity and ecosystems. WWW Germany.

[4] Susanti, N. K. Y., Mardiastuti, A., & Wardiatno, Y. (2020, July). Microplastics and the impact of plastic on wildlife: a literature review. In IOP Conference Series: Earth and Environmental Science (Vol. 528, No. 1, p. 012013). IOP Publishing

[5] Cole, M., Lindeque, P., Fileman, E., Halsband, C., & Galloway, T. S. (2015). The impact of polystyrene microplastics on feeding, function and fecundity in the marine copepod Calanus helgolandicus. Environmental science & technology, 49(2), 1130-1137.

[6] Bhuyan, M. S. (2022). Effects of microplastics on fish and in human health. Frontiers in Environmental Science, 10, 250.

[7] Carbery, M., O'Connor, W., & Palanisami, T. (2018). Trophic transfer of microplastics and mixed contaminants in the marine food web and implications for human health. Environment international, 115, 400-409.

[8] Allen, S., et al. (2022). Micro(Nano)Plastics Sources, Fate, and Effects: What We Know after Ten Years of Research. Journal of Hazardous Materials Advances, Vol. 6. Available here.

[9] Center for International Environmental Law (2022). Sowing a Plastic Planet: How Microplastics in Agrochemicals Are Affecting Our Soils, Our Food, and Our Future. Available here.

[10] Wang, F., Wang, Q., Adams, C. A., Sun, Y., & Zhang, S. (2022). Effects of microplastics on soil properties: current knowledge and future perspectives. Journal of Hazardous Materials, 424, 127531.

[11] Center for International Environmental Law (2023). Breathing Plastic The Health Impacts of Invisible Plastics in the Air. Available here.

[12] Yang, Y., Xie, E., Du, Z., Peng, Z., Han, Z., Li, L., Zhao, R., Qin, Y., Xue, M., Li, F. and Hua, K., 2023. Detection of Various Microplastics in Patients Undergoing Cardiac Surgery. *Environmental Science & Technology*.

[13] Jung, Y. S., Sampath, V., Prunicki, M., Aguilera, J., Allen, H., LaBeaud, D., ... & Nadeau, K. (2022). Characterization and regulation of microplastic pollution for protecting planetary and human health. Environmental Pollution, 120442.

[14] The Organisation for Economic Co-operation and Development (OECD), Global Plastic Outlook. Available here.

Key aims of this submission

- Highlights the rationale for the importance of why members of the Committee need to include further work on microplastic pollution in the programme for intersessional work;
- Introduces definitions, known sources of microplastic pollution and pathways to the environment;
- Captures the links between microplastic pollution and other plastic pollution issues being addressed by the ILBI;
- Proposes practicable solutions and recommendations for intersessional work;
- Summarises key literature on the subject.

Given that there are already practical solutions to prevent and reduce the release of several types of microplastics into the environment, it would be a missed opportunity if the negotiations for the ILBI do not give significant – and much needed – attention to microplastics. To this end, it could be beneficial to incorporate checkpoints in the negotiation procedure to ensure the text is adequately addressing microplastics and not inadvertently leaving them to one side. It will also be important to ensure that the voices of those most adversely affected by the impact of microplastic pollution are heard in the negotiations.

Definition of microplastics

- It is important that microplastics are defined clearly as a subset of a broad notion of plastic pollution and kept within the scope of the ILBI (as required by Resolution 5/14), to ensure that specific and core obligations address this persistent and prevalent source of plastic pollution effectively.
- Microplastics are broadly defined as pieces of plastic measuring 5 mm or less in any dimension.
    - The upper size limit of 5 mm is widely accepted in scientific literature.
    - We strongly advocate that no lower limit should be set. Thus, the term should cover particulate plastic matter in the nano-range as well.
- The definition applies to all plastics regardless of feedstock: i.e., plastics derived from fossil fuels, biomass, recycled content or a combination of these.
- In order to support the development of source-specific preventative measures that tackle microplastic pollution, microplastics can be broadly categorised as either:
    - Primary microplastics – plastic particles manufactured to be of microplastic size range often for industrial and domestic applications; or

- Secondary microplastics – derived from the breakdown or fragmentation of larger (meso- and macro-) plastic items, including fugitive releases (spills, leakage and loss) from various sectors and products.

Known sources of primary and secondary microplastics

Primary Microplastics	Secondary Microplastics
Intentionally added microplastic ingredients in personal care products and cosmetics	Paints (including marine paints)
Intentionally added microplastic ingredients in domestic and commercial cleaning products	Vehicle tyres (especially cars as their tyres have much larger proportion of synthetic polymers than heavy duty vehicles[15])
Plastic pellets, flakes and powders	Synthetic fibres from textiles
Agricultural pesticide/fertiliser delivery systems	Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG), aquaculture and mariculture gear
Industrial abrasives	Cigarette butts
Drilling fluids for oil and gas exploration and mining	Expanded polystyrene from food packaging materials
Rubber infill for artificial turf	Expanded polystyrene from maritime infrastructure
Glitter (e.g., in cosmetics and fishing bait[16,17])	Geotextiles and agri-plastics
	Recycling
	Degradation of macroplastics in the entire plastic life cycle
	Synthetic sports field and play areas
	Incineration of macroplastics[18,19]

[15] Baensch-Baltruschat, B., Kocher, B., Stock, F., & Reifferscheid, G. (2020). Tyre and road wear particles (TRWP)-A review of generation, properties, emissions, human health risk, ecotoxicity, and fate in the environment. Science of the total Environment, 733, 137823.

[16] https://barlowstackle.com/worm-making-materials/glitter-worm-oils-1/

[17] https://www.berkley-fishing.com/powerbait-glitter-trout-bait-1285455?variant=1004942

[18] Shen, M., Hu, T., Huang, W., Song, B., Qin, M., Yi, H., ... & Zhang, Y. (2021). Can incineration completely eliminate plastic wastes? An investigation of microplastics and heavy metals in the bottom ash and fly ash from an incineration plant. Science of the Total Environment, 779, 146528.

[19] Yang, Z., Lü, F., Zhang, H., Wang, W., Shao, L., Ye, J., & He, P. (2021). Is incineration the terminator of plastics and microplastics? Journal of Hazardous Materials, 401, 123429.

	'Water-soluble' plastic (PVA) laundry pods[20]

Microplastic pathways to the environment

Different pathways are known and require different mitigation measures to reduce microplastic loading.

Known pathways include:

- Wastewater and effluent
- Biosolids and sludge
- Run-off and stormwater
- Disposal
- Accidental loss
- Fragmentation
- Wind/Airborne
- Precipitation (rain and snow)
- Salt spray
- Deep ocean deposition

Sectors:

- Plastic production
- Plastic manufacturing and packaging
- Personal care and cosmetics
- Domestic and industrial cleaning products
- Wastewater treatment
- Plastic waste treatment and disposal (recycling, incineration and landfilling)
- Agriculture
- Landscaping
- Clothing and textiles
- Fisheries, aquaculture and mariculture
- Maritime operations
- Transportation
- Tourism
- Tobacco
- Recreational play
- Construction
- Medical and healthcare

[20] Rolsky, C. and Kelkar, V., 2021. Degradation of polyvinyl alcohol in US wastewater treatment plants and subsequent nationwide emission estimate. *International Journal of Environmental Research and Public Health*, *18*(11), p.6027.

Links between potential core obligation 4 on reducing microplastics and other potential core obligations in the ILBI

Microplastic pollution affects nearly every aspect of the ILBI and should be considered as fitting squarely within the overarching objective to end plastic pollution[21]. It is critical to retain a core obligation to reduce microplastics in the ILBI text; however, additionally, nearly every potential core obligation should include consideration for reducing microplastics as part of the objective and implementation of corresponding measures to achieve such reduction. A non-exhaustive list of ways microplastics should be considered in other possible core obligations include:

1. Possible core obligation: phasing out and/or reducing the supply of, demand for and use of primary plastic polymers

The only way to adequately address plastic pollution, including microplastics, is by minimising the production, consumption and use of new plastic feedstocks. Promotion of such alternatives (e.g., bioplastics), risks perpetuating the same threats as conventional plastics (physical harm, chemical toxicity, environmental persistence) while also reinforcing linear material flows instead of facilitating transition to a more circular economy[22]. Supply-chain measures must start with mandatory measures and verifiable implementation of best practices to prevent chronic and acute spillage of virgin and recycled polymers, namely pellets[23], during production, transport, packaging, storage and conversion. Plastic pellets represent the second largest source of primary microplastic pollution globally, with up to an estimated 2.2 - 22.4 trillion plastic pellets directly entering the environment each year[24]. This is a preventable upstream issue related to the production, manufacturing and recycling of nearly all plastics and plastic products.

2. Possible core obligation: banning, phasing out and/or reducing the use of problematic and avoidable plastic products

Bans and prohibitions on various primary microplastics should be prioritised as necessary to reduce the various uses of intentionally added microplastics in consumer and professional products, from cosmetics and detergents to agriculture, horticulture and infill material for synthetic sports surfaces[25]. Further, single-use products are vulnerable to degradation and fragmentation into microplastics, thus eliminating avoidable plastic products and minimising the use of single-use plastics will help mitigate secondary microplastics.

3. Possible core obligation: banning, phasing out and/or reducing the production, consumption and use of chemicals and polymers of concern; and 12. Possible core obligation: protecting human health from the adverse effects of plastic pollution

Many plastic products contain additives, such as plasticizers, flame retardants, and stabilisers, which can be toxic. Over time, these additives can leach out of the plastic particles and contaminate the

surrounding environment including soil, freshwater and marine environments. Further, as mentioned above, microplastics have a large surface-to-volume ratio that adsorb and accumulate toxic chemicals from the environment present in persistent organic pollutants (POPs), such as polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs), to heavy metals and other harmful substances. When organisms ingest microplastics, the intentionally-added toxic additives, as well as those absorbed from the environment can be released into the organism, leading to chemical toxicity and internal exposure that bioaccumulates and biomagnifies in the food web potentially damaging the entire ecosystem and threatening human health. Banning chemicals and polymers of concern in all plastic products will help reduce toxicity of microplastics in the environment.

Recommendation:

Step 1: Development of a global browser-based transparent database for all acceptable chemical additives used in anthropogenic polymers[26], building on the EU's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) regulation. Note: Chemical additives can only be included in this database if there is verifiable data of no harm. The tool would serve as a global database of approved chemical additives for use in polymer production and would be considered by all National Action Plans. Maintenance of the tool could be mandatory on a monthly basis. Decisions of banning chemicals globally could be made swiftly if needed due to a large volume of transparent information.

Step 2: All polymers placed on the market must be supplied with a chain of custody/digital passport which transparently discloses all chemical additives included in the polymer. These chemicals must be present on the global database (from step 1). All polymer producing companies worldwide are legally mandated to supply this information. It will be illegal to manufacture and sell polymers without this transparent disclosure, following the rule: no data, no market.

5. Possible core obligation: strengthening waste management

Apart from ensuring and prioritising proactive upstream measures, end-of-life treatment like plastic recycling facilities use processes that increase the concentration of microplastics, and thus

[21] UNEP Resolution 5/14 and Potential Options for Elements Paper.
[22] Fauna & Flora. (2022) Alternative plastic: Is it the answer to ending marine plastic pollution? Available here.
[23] Fidra INC-3 Pre-session submissions (Part A and B), Available here.
[24] Oracle Environmental Experts, 2023, Mapping the Global Plastic Pellet Supply Chain, Available here.
[25] Environmental Investigation Agency (2023). Convention on Plastic Pollution Essential Elements: Microplastics. Available here.
[26] GAIA (2022). Defining plastic products, materials and polymers: a proposal. Available here.

mandatory implementation of loss prevention measures and increased infrastructure like filtration systems to prevent water pollution are necessary[27].

6. Possible core obligation: fostering design for circularity and 7. Possible core obligation: encouraging reduce, reuse and repair of plastic products and packaging

Design innovation plays a critical role in reducing microplastics because it focuses on creating products, materials, and circular systems that minimise or eliminate the generation and release of microplastics into the environment. General eco-criteria (e.g. durability, biodegradability, compostability, recyclability, reusability, circularity, chemical safety) and/or product- and sectoral-specific eco-criteria (e.g. recycled content, packaging, agriculture, fisheries and textiles) will help facilitate the reduction of microplastic pollution from the source by establishing minimum requirements that make products more resistant to shedding, chemical leaching and/or degradation in the environment.

These eco-design criteria, together with a ban on harmful additives and increased transparency and disclosure on chemical additive used in proposed core obligation 3 coupled with strengthened waste management in proposed core obligation 5, promote a non-toxic circular economy that will allow for easier reusing, repairing, repurposing and recycling of materials. These outcomes reduce the amount of plastic waste that breaks down in the environment and creates toxic microplastic pollution.

8. Possible core obligation: promoting the use of safe, sustainable alternatives and substitutes

Research and development promoting the use of safe, sustainable substitutes and options for reviewing and enabling the use of safe, sustainable alternatives and substitutes to conventional plastics (i.e., those derived from fossil fuels) needs to consider microplastics to avoid creating new unintended sources of them. There needs to be evidence of sustainability, following a science-based approach, hand in hand with the precautionary principle to any new alternative product and technology, to avoid the development of false solutions and introduction of unintended consequences.

9. Possible core obligation: eliminating the release and emission of plastics to water, soil and air

Bans, prohibitions and upstream prevention of primary microplastics that are intentionally added to products are key areas to target to limit the release and emission of microplastics to water, soil and air, as described in core obligation 2. For example, immediate bans on microplastics in cosmetics, cleaning products and agricultural pesticide/fertiliser delivery systems would have a significant impact on reducing microplastic pollution. Other sources of primary microplastic pollution, like plastic pellets, could be tackled with legally binding zero pellet loss targets across the global plastic

[27] Brown, E., et. al (2023). The potential for a plastic recycling facility to release microplastic pollution and possible filtration remediation effectiveness. Journal of Hazardous Materials Advances, Vol. 10. Available here.

supply chain. A regulatory approach with mandatory requirements to uphold multistakeholder-developed standards and certification schemes verified by third party audits on land and at sea, would significantly prevent chronic pellet losses across the supply chain[28].

In parallel, priority action should also go to tackling sources of secondary microplastics which account for the vast majority of microplastic pollution globally and require urgent action to avoid uncontrollable growth in the years to come. These emissions can be controlled at the source through a systemic approach combining a coherent international policy framework with dedicated sectoral approaches. Phasing out single-use plastics, in line with core obligations 6, 7 and 8, would address secondary microplastics from packaging while targeted measures would prevent emissions such as tyre wear, paint, fishing gear and textiles with innovative design of materials and machinery, compulsory filtration systems on air and water outlets to drastically reduce microplastic releases to water, soil and air.

10. Possible core obligation: addressing existing plastic pollution

Legacy plastic pollution is a significant source of microplastic pollution, due partly to the breakdown of plastic waste into smaller fragments. In order to restore the vital health and resilience of aquatic and terrestrial ecosystems, the prevention of all plastic pollution at source at each stage of the life cycle is critical. Clean up and end of life interventions will not prevent plastic pollution in the absence of upstream measures. Further, clean-up of existing microplastic pollution in the environment is near impossible and very costly. However, addressing legacy macroplastic pollution can help reduce the threat of further microplastic pollution and its associated toxicological threats. Clean-up operations of existing macroplastic pollution can also help raise community awareness and can help target and protect vulnerable ecosystems and species to ensure impact is minimised in the short term but it is vital that clean-up operations are conducted in a careful way to avoid further environmental damage to impacted ecosystems. Crucially, clean-up operations alone cannot and will not solve the problem of microplastic pollution until upstream measures are prioritised.

[28] Oracle Environmental Experts, 2023, Mapping the Global Plastic Pellet Supply Chain, Available here.

Possible solutions and recommendations for intersessional work

The current patchwork of fragmented domestic legislation and policies are inadequate to address complex, global and pervasive microplastic pollution. Instead, the ILBI is an opportunity to develop an array of coordinated global policy changes including dedicated programmes of work that can create comprehensive sectoral strategies with interventions across the value chain. As discussed above, microplastics must be considered as plastic pollution within each provision across the lifecycle of plastics. All solutions should be pragmatic and focused on the source: prevention of microplastic pollution is critical due to impracticalities, ineffectiveness and cost of clean-up.

- It is important to note that microplastic pollution can occur at several stages of the proposed life cycle:
    - Extraction – e.g., use of microplastics in drilling fluid/oil/gas
    - Production – e.g., fugitive release (spills, leakage and loss) of plastic pellets during production and transportation
    - Manufacturing – e.g., fugitive release (spills, leakage and loss) of pellets during handling and conversion, generation of microplastic (e.g., shavings, fillings and microplastic fibres)
    - Use – shedding, leakage or fugitive release of microplastics from products, (e.g., fibres from clothing, microbeads in facial cleansers and toothpastes)
    - End of life – e.g., leakage and loss of flakes from recycling facilities; emissions from incinerator ash; fragmentation of plastic waste; loss of pelletised recyclate in supply chain

- Where possible, solutions should be science-led, innovative and focused on the source.
- Solutions must be evidence-based to avoid the introduction of unintended consequences.
- Where evidence is limited but risk is high, the precautionary principle must be applied to reduce risk of microplastic pollution.

As mentioned above, an end to microplastic pollution cannot be obtained with a ‘one-size-fits-all’ solution: different sources require different intervention points. For example:

Type of measure	How it addresses microplastic pollution	Relevant sources of microplastic pollution
Prohibitions/ bans	• Focus on intentional use of microplastics as ingredients (e.g., in personal care products, paints) or components (e.g., rubber infill in artificial turf). • Drives innovation towards more sustainable alternatives that are explicitly and legitimately biodegradable. • Should be coupled with ambitious timelines/transition periods. • To make it even more effective, it should be linked to the prohibition of production of unnecessary packaging and products. • Prevention of secondary microplastics.	• Intentionally added microplastic ingredients in personal care products. • Intentionally added microplastic ingredients in domestic and commercial cleaning products. • Agricultural pesticide/fertiliser delivery systems. • Industrial abrasives. • Drilling fluids for oil gas exploration and mining. • Expanded polystyrene from food packaging materials. • Synthetic glitter (e.g., In cosmetics and fishing bait[29,30]) • Application of wastewater sludge to land.
Supply chain-wide legislation based on Best Available Techniques (BATs) and Best Environmental Practices (BEPs)	• Reduces risk of loss. • Increases transparency and • Improves accountability (i.e., third-party assessments).	• Plastic pellets, flakes and powders[31] • Synthetic fibres from textiles • Fishing gear (including Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG)), aquaculture and mariculture components. • Geotextiles and agri-plastics • Recycling
Product redesign and innovation	• Stimulates transition to a more circular economy. • Should include eliminating/minimising/ declaring/simplifying/de-	• Paints (including marine paints) • Vehicle tyres (especially cars because their tyres have much larger proportion of

[29] https://barlowstackle.com/worm-making-materials/glitter-worm-oils-1/
[30] https://www.berkley-fishing.com/powerbait-glitter-trout-bait-1285455?variant=1004942
[31] Oracle Environmental Experts, 2023, Mapping the Global Plastic Pellet Supply Chain, Available here.

	toxifying use of chemical additives. • Focus on Sustainable development (in line with Sustainable Development Goals). • Must avoid unintended consequences. For example, increased demand for 'bioplastics' that are structurally identical to conventional plastics. Alternative feedstocks and plastics can perpetuate the same threats as conventional plastics and reinforce linear material flows. They can pose the same negative consequences in the environment, and potentially exacerbate biodiversity loss because of land-use change and monocropping to meet the demands of a bio-based plastic feedstock. • Emission limits for tyres and textiles (as per proposed EU regulations and the World Forum for Harmonisation of Vehicle Regulations)[32]. Note: particular attention must be paid to the potential for higher shed rates from tyres on electric vehicles which are heavier and emission limits must be adjusted accordingly.	synthetic polymers than heavy duty vehicles[33]). • Expanded polystyrene used in maritime infrastructure • Synthetic sport fields • Textile industry (materials, chemicals, dyes and finishes) • Cigarette butts (materials and chemicals)

[32] PEW (2022). EU proposes first measures to limit plastic pollution from vehicle tyres.

[33] Baensch-Baltruschat, B., Kocher, B., Stock, F., & Reifferscheid, G. (2020). Tyre and road wear particles (TRWP)-A review of generation, properties, emissions, human health risk, ecotoxicity, and fate in the environment. Science of the total Environment, 733, 137823.

While different sources of microplastics require different measures and points of intervention, sectors that contain major sources of plastic pollution, like agriculture, fisheries and aquaculture and textiles, will require dedicated programmes of work to effectively target plastic pollution, including microplastics. Sectoral governance should include specific sources of microplastics that require a package of policies and measures that should be informed by multi-stakeholder action agendas to intervene across the value chain from upstream non-toxic and non-degradable design to downstream end-of-life management. A sectoral approach will allow multi-stakeholder engagement to target regulations for easier monitoring, compliance and enforcement. Thus, dedicated programmes for those sectors can also make guidance on BAT and BEP to reduce microplastics to be adopted by the Conference of the Parties and implemented into Parties domestic legislation.

Proposed next steps

- **Establish an intersessional working group composed of interested member states and relevant stakeholders, including from intergovernmental and non-governmental organisations to address:**
    - **Sectoral governance strategies for main sources of microplastic pollution**
    - **International Prohibitions/Bans to eliminate avoidable sources of microplastic pollution**
    - **Developing guidelines on Best Available Technology (BATs) and Best Environmental Practices (BEPs) to support global, supply chain-wide legislation that will prevent sources of microplastic pollution**
        - The process of developing guidelines on BATs and BEPs is a key component to reduce microplastic pollution at sectoral levels. It is critical that guidelines include time periods for review, reporting and disclosure. It is equally important that standards are developed with multi-stakeholder expert working groups, and must not be led by industry. Additionally, monitoring effectiveness of guidelines and standards must be conducted by independent, third-party bodies with guaranteed transparency.
        - Standards can support and guide BEPs. For example, the Publicly Available Specification (PAS) 510[34], published by the British Standards Institution (BSI), is an independently audited plastic pellet handling standard. It provides a standardised approach to prevent pellet loss, allowing companies to demonstrate and, crucially, verify commitment to good practice in pellet handling and management across the plastics supply chain. The PAS 510 improves confidence in industry commitments to prevent pellet loss, whereby several decades of voluntary industry initiatives have proved unsuccessful[35]. The PAS 510 was developed by an expert, multi-stakeholder steering committee coordinated by the BSI. It is

[34] The British Standards Institution (BSI), Publicly Available Standard (PAS) 510.

[35] Fauna & Flora. Stemming the tide: Putting an end to plastic pellet pollution (2022).

freely available and internationally applicable for all companies involved in plastics supply chains (including producers, transporters, converters, brands and retailers, and external stakeholders).

- **The establishment of international criteria for sustainable product redesign and innovation with the specific aim of reducing the risk of generation and loss of micro- and nanoplastics.**
  - Criteria must, inter alia, focus on waste hierarchy principles; detoxification (applying no data no market approach); principles of eco-design to support a transition to a more circular economy for plastic and must take into consideration end-of-life processing

- **Closing research gaps with a view to strengthening measures with additional evidence or dedicated streams of research, including but not limited to:**
  - Impact on biodiversity, ecosystems and human health where microplastics contain (in part or wholly) recycled content
  - Impact on biodiversity, ecosystems and human health where microplastics contain (in part or wholly) biomass-derived feedstock
  - Impact on biodiversity, ecosystems and human health of different chemical additives present in microplastics
  - Relative impact of different types (sources) of microplastics on biodiversity, ecosystems and human health including the relative and/or cumulative impacts of:
    - microplastics derived from different polymer types
    - different sizes and shapes of microplastics
    - different chemicals of concern found in microplastic particles
    - combinations of polymers and/or particle sizes and/or chemical additives
  - Impact of microplastics in the atmosphere and impacts on climate, including temperature, rainfall and climate change[36].

[36] Aeschlimann, M., Li, G., Kanji, Z.A. and Mitrano, D.M., 2022. Potential impacts of atmospheric microplastics and nanoplastics on cloud formation processes. *Nature Geoscience*, *15*(12), pp.967-975.