Scientists' Coalition perspectives on articles of the Chair's Text

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Impact Statement: In the leadup to the second part of the fifth session of the Intergovernmental Negotiating Committee to negotiate a legally binding global plastics treaty INC5.2), the Scientists' Coalition for an Effective Plastics Treaty (the Scientists' Coalition') herein provide independent evidence-based responses to selected articles of the 'Chair's text': the latest draft of the treaty text currently under negotiation. The aim of the Scientists' Coalition is to ensure treaty negotiations are guided by robust evidence-based science underpinned by conflict-of-interest mitigation policies and processes.

Dear Editor-in-Chief, *Prisms Plastics*

The future Global Plastics Treaty is an instrument positioned to end plastic pollution, and to protect health, rights, and the environment. The Scientists' Coalition for an Effective Plastics Treaty has been following treaty negotiations and supporting member states with independent and robust scientific evidence since the first negotiating session in 2022 (INC-1). When the most recent draft of the treaty text ('the Chair's text') was released on 1 December 2024, our members convened working groups around selected articles of the Chair's text to offer science-based responses. This letter summarizes those responses.

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Definitions (Article 2)

Clear definitions are an essential element of any Multilateral Environmental Agreement (MEA) as they ensure common understanding and shared language to reduce the potential for ambiguity and disagreement. Definitions (or a glossary of terms) were introduced into Plastic Treaty negotiations at INC-1 in 2022 and UNEA resolution 5/14 included definitions adopted or endorsed by intergovernmental processes (UNEP, 2022). Article 2 of the Chair's text requires definitions that are clear and science-based to ensure that all parties understand and agree on the scope and interpretation of the text.

We propose that Article 2 contain a short list of key definitions to facilitate negotiations and that prior to the first conference of parties (COP), a substantive list of definitions be prepared by an expert group/subsidiary body, including agreed terms (e.g., from other MEAs), as appropriate. An expert group can ensure the development and regular updating of terms and definitions reflect the best available science (Scientists' Coalition for an Effective Plastics Treaty 2025f).

Chemicals and products of concern (Article 3)

Strong scientific evidence links plastic chemicals to reproductive, neurodevelopmental, immune, and metabolic disorders in humans (Symeonides et al., 2024). However, existing MEAs, such as the Basel and Stockholm Conventions, lack the mandate and the scope to comprehensively and effectively regulate chemicals of concern (CoCs) in plastics across their full life cycle and supply chains (Wagner et al., 2024). The regulation of CoCs in the plastics treaty is, therefore, essential to protect human and environmental health from the most harmful plastic chemicals, with substantial benefits for public health, health care systems, and the environment.

A successful Article 3 would include the following core components: sufficient scope and criteria to address groups of CoCs in all plastics based on their hazards; an efficient mechanism to include new CoCs in the treaty facilitated by a voting option for the COP; a subsidiary body with the expertise to assess the addition of new products and CoCs and update criteria based on the latest science; binding obligations to control the production, use and trade of CoCs; and transparency requirements to improve public disclosure of the chemical composition of plastics (Brander et al., 2024).

Regulating CoCs in all plastics is estimated to lead to significant benefits for both health and the global economy. For example, if the widely used plastic chemical bisphenol A (BPA) was eliminated from all plastics, more than 60 thousand cases of childhood obesity could be prevented annually in the US and EU, with nearly USD 4 billion in health cost savings (Trasande et al., 2024). Even greater benefits would be realised if bisphenols were regulated as a class. For products of concern, we note

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that the initial list recommended in the Chair's text would only result in a modest reduction in plastic pollution of 17% (Trasande et al., 2024). However, listing additional plastic products widely found in the environment (e.g., plastic bottles and lids) would assist significantly in mitigating plastic pollution while substantially reducing environmental burdens and associated societal costs. We note that essential use criteria are currently missing from the assessment of products of concern and that these should be included (Figuière, Borchert, Cousins, & Ågerstrand, 2023). Additionally, Article 3 should be fully integrated with Articles 5, 6, 7, and 11 to ensure cross-compatibility and to facilitate successful implementation of the future treaty (Scientists' Coalition for an Effective Plastics Treaty, 2025a).

Plastic Product Design (Article 5)

The design phase is critical in ensuring safer, more sustainable, and more circular plastics and plastic alternatives enter the market. Importantly, CoCs and intentionally added nano and micro-sized plastics (MNPs) should be avoided in the design and manufacture of plastic products (Syberg et al., 2022; Wagner et al., 2024). Plastic product design (Article 5) underpins decisions regarding the use of chemicals, the essentiality of products (Article 3), and overall plastic production (Article 6). Therefore, these articles should be considered in conjunction for effective implementation and should include the following evidence-based elements: global legally binding control measures, transparency, safety, essential use, and sustainability criteria, and design for circular systems. Figure 1 illustrates how evidence-based criteria are key to identifying open and adaptive lists of products groups of concern in the treaty annex.

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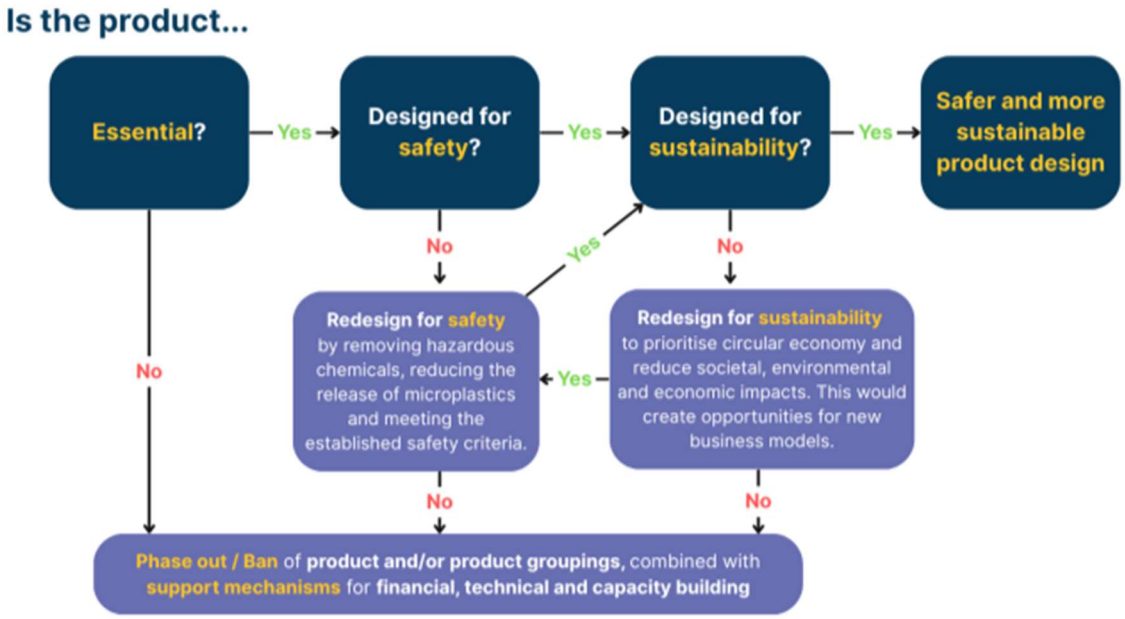

Figure 1. Illustration of the interconnections between core elements of the decision-making process for achieving safer and more sustainable product design (Article 5) (Scientists' Coalition for an Effective Plastics Treaty, 2025b).

Production/Supply (Article 6)

In 1994, the Oslo Symposium developed a working definition on sustainable consumption which has become the basis of sustainable consumption and production (SCP) discourse: "'…the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations". The United Nations Commission on Sustainable Development (UNCSD) officially adopted this working definition in 1995.

Evidence demonstrates that even if plastics production is reduced by 1-3% per year, global plastic pollution will continue to grow unless ambitious reduction targets such as a cap on virgin plastics, are established and enforced (Baztan et al., 2024; Bergmann et al., 2022). The correlation between monetary value of plastic products when they reach end of useful life and their risk of ending up as plastic pollution has further been demonstrated (Syberg et al.,2020). The current dynamics of accelerating global production of single-use and short-lived products, will lead to increased plastic pollution. As demonstrated by Cowger et al. (2024), a 1% increase in plastic production leads to a 1% increase in plastic pollution. Ambitious and legally binding global plastic production reduction targets will, therefore, not only reduce the consumption of fossil and biomass feedstocks for plastic production; they are also

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essential for minimizing production of single-use and short-lived plastic products, increasing longevity of products, preventing plastic pollution, and, ultimately, facilitating the transition towards a more just and sustainable production and consumption of plastics. Article 6 is, therefore, key to the success of the future treaty (Scientists' Coalition for an Effective Plastics Treaty, 2025c).

Releases and leakages (Article 7)

Microplastics (including those intentionally added) and CoCs can be released or leaked into the environment, food, and living organisms all along the full life cycle of plastics. Leakages and releases include emissions to air from plastics such as greenhouse gases (GHGs), plastic chemicals, and plastic particulates (e.g. volatile organic compounds and MNPs). No other MEAs sufficiently address the releases, leakages, and emissions of plastic pollution (Table 1).

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Table 1. Do existing multilateral environmental agreements (MEAs) already address plastic releases and leakages into ecosystems? (Scientists' Coalition for an Effective Plastics Treaty, 2025d).

MEA	What it addresses	Limitations
Basel Convention, incl. Its Plastics Amendment	Regulation of plastic waste trade	Does not address prod use of plastics
Rotterdam Convention	Regulation of international trade of hazardous chemicals	No restriction on chem
Stockholm Convention	Regulation of chemicals listed as Persistent Organic Pollutant (POP)	Little overlap with plas chemicals
Montreal Protocol	Ozone-depleting chemicals	
Minamata Convention	Mercury-containing chemicals	
Globally Harmonised System (GHS)	Information exchange on physical hazards and toxicity of chemicals	Not legally binding, no implemented by all UN States
MARPOL Convention	Sea-based sources of marine litter	Does not address land (the major source of m pollution[16])
UNCLOS Convention	Defines and regulates maritime areas	No specific regulation waste; no monitoring o pollution

To successfully prevent releases and leakages, as shown in Figure 2, Article 7 should be considered alongside other articles while ensuring upstream measures are prioritised and supported by harmonised definitions, criteria, and standards including for safety, sustainability, essential use, and transparency.

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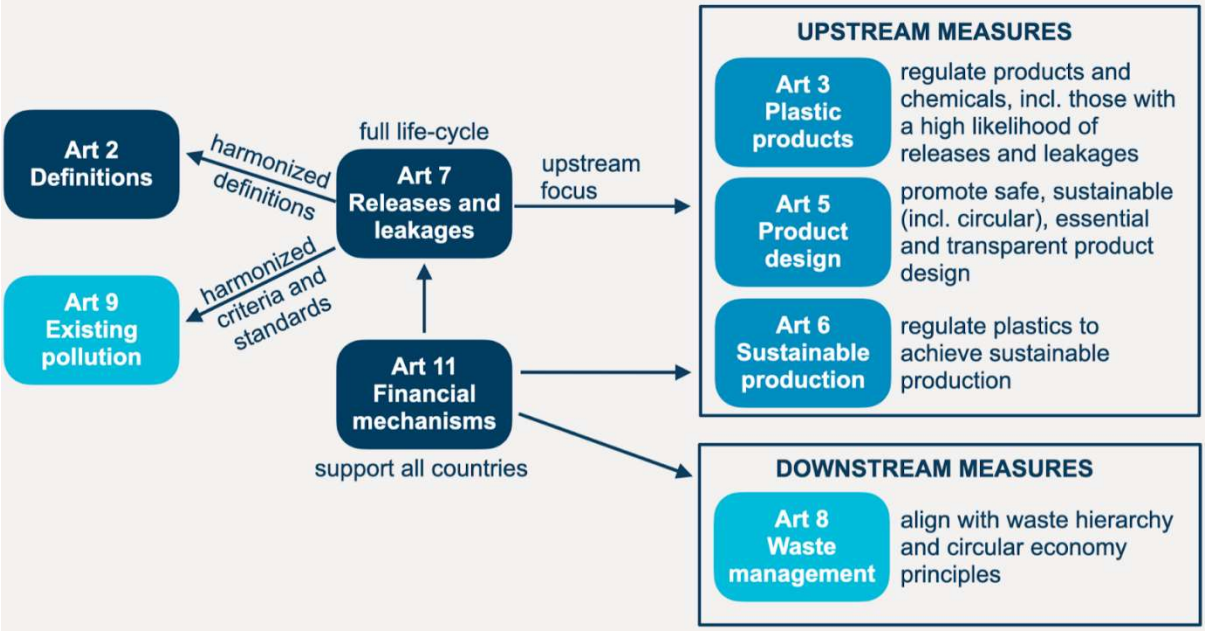

Figure 2. Key links between Article 7 and other articles in the Chair's text, including the importance of Article 7 to the treaty (Scientists' Coalition for an Effective Plastics Treaty, 2025d).

Finance (Article 11)

An effective and just financial mechanism will be crucial, not only to achieve an agreed text, but also to ensure that all member states can meet their legal obligations under the treaty. Financing will be needed to support the implementation of measures across the full plastics life cycle to achieve systemic change at a global scale. It is important that financing strategies and obligations are underpinned by core environmental principles and fundamental human rights (OHCHR, 2024) to safeguard against burden shifting and ensure plastic polluters are held accountable. Outcomes from other MEAs indicate a need to mobilize new resources, and to redirect and realign existing financial incentives (Barrowclough & Birkbeck, 2022; UNEP FI, 2023).

Our review of the Chair's text also identified potential risks in Article 11 to the effectiveness of the treaty. These include overemphasising the efficacy of waste management and missing connections between finance and other measures in the treaty text. These omissions are key because they fail to incentivise the most effective responses i.e. prioritising supply side measures that affectively address plastic leakage, releases, and emissions. Instead, the draft text problematically prioritises downstream financial investments in techno-economic lock-ins which lack sufficient safety and sustainability criteria, standards, monitoring, and reporting requirements. Finally, the prospect of plastic credits risks repeating past false solutions. Evidence from carbon markets shows that credits often fail to deliver concrete environmental or social benefits (Moon et al., 2025). There is an opportunity for the treaty to overcome these challenges with a financial mechanism

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that addresses overproduction and incentivises safer, more sustainable, accessible and cost-effective upstream solutions (Scientists' Coalition for an Effective Plastics' Treaty, 2025a).

Human Health (Article 19)

Health is a fundamental human right (UNGA 1948, 2022) which can only be upheld by a global plastics treaty that addresses adverse human health effects that occur at all stages of the full life cycle of plastics. A standalone article on health is supported by many member states and health experts. A strong treaty will centre the protection of health in the preamble and the objective, within a full life cycle approach to addressing plastic pollution and will integrate health across relevant articles. Health concerns underpin the need for legally binding global targets to reduce plastic production (Article 3, 6), to reduce the number of chemicals used in plastics, and to eliminate hazardous substances, ideally through group-based approaches (Articles 3, 5). This can be supported by establishing harmonised safety criteria for plastics and their alternatives, including through safe product design (Article 5), and by ensuring mandatory transparency and traceability throughout the life cycle of plastics (Articles 3, 4, 5, 6, 8, 9, 17, 18). Sectoral exemptions, including for the health sector, do not protect human health and will hinder progress in addressing plastic pollution. Providing mechanisms to support and integrate emerging science is critical to ensuring the treaty is future- proofed to protect human health (Articles 3 and Annex, 5, 6,19, 20, 24). This can be supported by a subsidiary science body that mitigates conflicts of interest and includes health scientists and practitioners (Scientists' Coalition for an Effective Plastics Treaty, 2025e).

Science-Policy Interface

Science-policy interfaces (SPIs) enable exchange and integration of the best available science into policymaking (Allen et al., 2025). They are crucial for fully informed treaty negotiations and the operationalization and implementation of the treaty provisions (Rucevska et al., 2023). A dedicated SPI as a subsidiary body of the future treaty will be important, as will regular opportunities for independent expert input in the form of regular invitations to submit information to the COP, and the formation of expert or working groups and/or science advisory panels. An SPI with robust participatory, transparency, and inclusivity policies could future-proof, streamline, and strengthen the treaty. An effective SPI will guide the development of globally harmonized criteria, standards, assessment, monitoring, and reporting (Spring et al., 2025). Horizon scanning will identify emerging issues and information gaps and estimate and prevent impacts and avoidable costs including costs of inaction and regrettable technologies, systems, alternatives, and substitutes. An effective SPI will also have the capacity to interpret the complex science of plastics

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for non-scientists and establish open access platforms to ensure equitable availability of the best available science. Well-designed SPIs ensure policy remains scientifically up-to-date and valid in the face of environmental, economic, technological and social dynamics. Importantly, SPIs with conflict-of-interest mitigation policies and processes will be essential to protect future decision making from vested interests and enhance public trust (Scientists' Coalition for an Effective Plastics Treaty, 2024).

Conclusion

The harms caused by plastics occur throughout their full life cycle. They are complex and far reaching, affecting all ecosystems and societies. Therefore, it is essential that the global plastics treaty is grounded in the best available knowledge and understanding of the interconnectedness of the drivers of these harms and their solutions. Such knowledge and understanding necessitates, inter alia, inter- and transdisciplinary science free from conflicts of interest, as well as the lived experiences and expertise of frontline and fence line communities, Indigenous peoples, and waste workers. An integrated and holistic understanding of the diverse impacts and challenges plastics present across regions and communities will be essential in identifying key interventions for safe and sustainable future-orientated solutions.

Author Contribution Statement

As corresponding author, T.F. has the authority to act on behalf of all co-authors. T.F. conceptualised the Letter and produced the first draft of the Letter. All authors are co-leads of a Scientists' Coalition for an Effective Plastics Treaty working group relevant to their section of the Letter which corresponds to an article of the Chair's text. All authors substantially contributed to the work by summarising the outcomes of their working group in response to an article of the Chair's text in the Letter. All authors contributed to the final drafting, cohesion, and integration of the Letter in its entirety and approved its final version for publication. Therefore, all authors are accountable for all aspects of the work.

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Conflict of Interest Statement

Trisia Farrelly is a Senior Editor of *Cambridge Prisms: Plastics*. Martin Wagner is an unremunerated member of the Scientific Advisory Board of the Food Packaging Forum foundation.

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