Plastics treaty text must center ecosystems

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Plastics pollution is now ubiquitous (1, 2) and affects the environment at all stages of the plastics life cycle. Plastics manufacturing involves thousands of chemicals that can pollute ecosystems. Once in

the environment, plastic litter can entangle and choke wildlife, and plastic objects can act as a reservoir for invasive species and concentrate other pollutants (1, 3, 4). Plastics can then break down into potentially toxic micro- and nanoplastics. Negotiations for the plastics treaty (the legally binding instrument on plastic pollution, including in the marine environment) (5, 6) must ensure that its text centers the effects of plastics on ecosystems, as services that eco-systems provide are essential for biodiversity and human health and well-being.

Plastic does not occur in isolation. Terms in the treaty's current draft such as "hotspot," "accumulation zone," "cleanup," and "sectors" focus on the distribution and concentration of pollutants rather than the natural systems these pollutants affect. Ignoring impacted ecosystems implies that mitigating plastics pollution can take place without ecological restoration.

The current terms should be replaced by language that centers ecosystems, such as "habitats polluted by plastic products" or "ecosystems affected by plastic-associated pollution." This phrasing makes the treaty's key goals clear and tangible: Ecosystems and biodiversity must be conserved and protected from pollutants at all stages of the plastics life cycle. This language also acknowledges that each affected ecosystems will require an individualized approach to restoration, depending on where the pollution is generated, the drivers of the pollution, and the impacts to local habitats and biodiversity. Prioritizing increased ecosystem stability, protection, and restoration will be more effective long term than limited, and possibly dangerous (7), stopgaps.

To reduce plastics' impact on the environment, the underlying drivers of ecosystem degradation through the plastics life cycle must be addressed (8). Such drivers include large-scale production and consumption pat-terns, facilitated by fossil fuel subsidies (9), a lack of reuse and safe recycling options, and destructive disposal practices. Through an effective, legally binding agreement, the plastics treaty can help to implement the commitments of the Kunming-Montreal Global Biodiversity Framework (particularly targets 6, 7, 14, 16) and the Sustainable Development Goals (particularly goals 12, 14, 15). The plastics treaty should include obligations to decrease global plastics production, eliminate hazardous substances, and develop safe and sustainable plastic consumption (10). It should also include a time-line and roadmap for making the required changes. Resources should be allocated to each aspect of this transformation and adhere to the principle of zero waste hierarchy (11), which prioritizes pollution prevention over waste management measures.

REFERENCES

1. A. R. Aves et al., Cryosphere16, 2127 (2022).

2. M. L. Taylor et al., Sci. Rep. 6, 33997 (2016).

3. S. Rist, N. B. Hartmann, in Freshwater Microplastics: Emerging Environmental Contaminants?, M. Wagner, S. Lambert, Eds. (Springer, Cham, 2018), pp. 25–49.

4. C. M. Rochman et al., Sci. Rep. 5, 14340 (2015).

5. United Nations Environment Programme, "UNEA Resolution 5/14 entitled 'End plastic pollution: Towards an international legally binding instrument'" (2022).

6. United Nations Environment Programme, "Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment" (2023); https://wedocs.unep.org/handle/20.500.11822/43239.

7. M. Spencer et al., PeerJ11, e15021 (2023).

8. IPBES, “Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES),” E. S. Brondizio, J. Settele, S. Díaz, H. T. Ngo, Eds. (IPBES Secretariat, Bonn, Germany, 2019).

9. J. P. Tilsted et al., One Earth6, 607 (2023).

10. N. Simon et al., Science373, 47 (2021).

11. Zero Waste International Alliance, “Zero waste hierarchy of highest and best use 8.0” (2023); https://zwia.org/zwh/.