

The Global Plastics Treaty - What science shows are essential elements for its success

Plastics pollution causes widespread **harm** ([Carney Almroth et al. 2024](#)) including adverse impacts on **human health** ([Deeney et al. 2024](#)), the **environment, climate** ([Bauer et al. 2022](#)), and **biodiversity** ([da Silva et al. 2023](#); [Daghighi et al. 2023](#)); and it has negative effects on **human rights** ([UNGA 2022](#); [O'Meara 2022](#)) **and the economy** ([Cordier et al. 2024](#); [Trasande et al. 2024](#)). These impacts occur across all stages of the plastics life cycle from raw material extraction to remediation ([Bergmann et al. 2023](#); [Brander et al. 2024](#)).

Approximately 460 million tons of plastics are produced annually, and it is expected that under a business-as-usual scenario, production will triple by 2060 ([Baztan 2024](#)). This threatens all three pillars of sustainability: environmental, social, and economic ([de Sousa 2021](#); [Rognerud et al. 2022](#); [Stoett et al. 2024](#)). The scientific evidence is clear that these issues cannot be addressed by waste management alone and will require primary plastics production reduction ([Baztan et al. 2024](#); [Cowger et al. 2024](#); [Zheng & Suh 2019](#); [OECD 2024](#)).

*Peer-reviewed scientific evidence shows that **an effective treaty** must have a well-defined scope and effective means of implementation including the following **globally and nationally mandated** key elements:*

- A scope that addresses the **full life cycle of plastics to protect human health and the environment and to end plastics pollution by 2040** ([Bergmann et al. 2022](#)).
- **Reduction targets for primary plastics production** and reduction incentives that are ambitious and legally binding, for all plastics including plastic chemicals and plastic alternatives ([Baztan et al. 2024](#)).
- **Restrictions and bans on chemicals of concern** in plastics, utilising hazard and group-based approaches. Such global and efficient regulation is essential because only a small fraction of plastic chemicals are regulated under current multilateral environmental agreements ([UNEP 2023](#); [Wagner et al. 2024](#)).
- Provisions for the **reduction of the production and shedding of micro- and nanoplastics** across the full life cycle of plastics, given they account for around one-quarter of all plastic pollution, are harmful, and cannot be removed from the environment ([Thompson et al. 2024](#)).
- **Phaseouts of non-essential plastic chemicals, materials, and products** and the application of the essential-use approach to allow time-bound exemptions for hazardous plastics that are critical for the health, safety, and functioning of society, and where no safer and more sustainable alternatives and substitutes are currently available ([Deeney et al. 2024](#)).
- **Harmonized safety, environmental, and sociocultural sustainability criteria** to be applied to plastics, chemicals, materials, products, technologies, alternatives and substitutes, with extensive upfront testing ([Scientists Coalition 2024](#)).
- Adherence to the **principles of the waste hierarchy**, prioritizing reduction, reuse and refill systems, and **improved waste management strategies, with safe and environmentally sound collection, treatment and disposal** ([SDG 11.6.1](#); [Syberg et al., 2024](#)).
- Requirements for **transparency, reporting and monitoring** of plastics chemicals, materials, products and their supportive technologies, systems and services. Harmonized criteria that include measurable indicators will be needed for compliance and enforcement throughout the supply chain ([Brander et al. 2024](#)).
- A dedicated **financial mechanism, as well as technical cooperation, capacity building, and cooperative and trade-related provisions**, that support parties in meeting their obligations to the treaty ([Maes et al. 2023](#)) and ensure a just transition for affected populations, communities, and workers across the full plastics life cycle ([O'Hare et al. 2023](#); [Dauvergne 2023](#)).
- A dedicated **independent science policy interface** composed of a diverse range of plastics pollution experts and rights holders, with clear mechanisms to manage and mitigate conflicts of interest ([Thompson et al. 2024](#)).