

Enabling scalable substitutes to plastic:

PLASTIC POLLUTION IS A TRANSBOUNDARY CRISIS. EVEN IF WE MAXIMISE RECYCLING AND REUSE, PLASTIC PRODUCTION IS PROJECTED TO TRIPLE BY 2060, LOCKING IN IRREVERSIBLE ENVIRONMENTAL AND HEALTH IMPACTS (SYSTEMIQ, 2024). THE UN TREATY MUST GO BEYOND MANAGING PLASTIC — IT MUST ENABLE CREDIBLE, SAFE, AND SCALABLE SUBSTITUTES TO AVOID PLASTIC IN THE FIRST PLACE.

A Treaty opportunity for lasting impact

OUR PROPOSAL: NATURE-BASED NON-PLASTIC SUBSTITUTES

Natural polymers — derived from seaweed, plants, food and agricultural waste by-products — are **not chemically modified** and integrate fully into natural cycles. Through thoughtful selection of production methods and processing techniques, these materials offer a viable, low-impact solution for applications where reuse or recycling is not feasible. They are distinct from fossil plastics and bioplastics, which still behave like conventional plastics in the environment.

The Article 5 of the Chair's Draft of the UN Plastic Treaty (December 2024) currently provides draft provision on non-plastic substitutes:

- “Each Party shall take measures to foster innovation and incentivize and promote the **development and use at scale of safe, environmentally sound, and sustainable non-plastic substitutes**, including products, technologies and services, taking into account their potential for environmental, economic, social and human health impacts, across their lifecycle.” (UNEP, 2024)

WHY THIS MATTERS FOR THE TREATY

1) Environmental integrity: Low impact products and natural end-of-life pathways

Natural polymers offer significant environmental advantages over conventional plastics, as demonstrated by comprehensive life cycle assessments (Sinkko et al., 2024).

- Unlike synthetic alternatives, they leave no toxic residues or microplastics upon end of life, addressing critical concerns about chemical migration from conventional packaging (Food Packaging Forum, 2024; Lacourt et al., 2024).
- These materials can be composted or digested alongside food waste, allowing them to return naturally to the biosphere, supporting circular economy principles that break the link between material demand and resource use (Eunomia, 2025).
- Their production methods avoid the carbon-intensive polymerisation processes required for traditional plastics and eliminate the need for toxic additives, which pose ongoing safety concerns in recycled plastic systems (Food Packaging Forum, 2024; Seref and Kaya, 2025).

This results in low-impact final consumer products that support environmental sustainability goals and address the urgent need for decarbonisation of packaging systems (Eunomia, 2025).

2) Available at scale: Market-ready solutions from established commercial players

Commercial solutions using natural polymers are already operational and market-ready, representing a practical pathway toward the 80% reduction in ocean plastic pollution identified as achievable through comprehensive system change (The Pew Charitable Trusts and SYSTEMIQ, 2020).

- Companies such as Notpla (UK), Xampla (UK), Traceless (Germany), and ZeroCircle (India) currently supply natural polymer products for packaging, coatings, and single-use applications.
- These solutions prove particularly valuable in contexts where infrastructure for reuse or industrial composting remains limited, or where food contamination complicates traditional recycling processes.
- Natural polymers enable higher value recovery from organic material cycles by reducing cross-contamination between organics and plastics, seamlessly integrating into existing organic waste flows.

3) Supportive policy landscape: Regulatory frameworks favouring natural alternatives

The regulatory environment increasingly favours natural polymer alternatives, as documented by recent trade policy analysis (UNCTAD, 2024).

- The EU Single-Use Plastics Directive specifically excludes non-chemically modified natural polymers from plastic restrictions, providing crucial regulatory clarity and creating market incentives for adoption (Sinkko et al., 2024).
- Several countries are actively exploring comprehensive policy measures including bans, taxes, and Extended Producer Responsibility (EPR) schemes targeting conventional plastics, with WTO members reporting various measures aimed at non-plastic substitutes including natural fibres such as bamboo, cotton, jute, and wool (WTO, 2023; UNCTAD, 2024).

These policy developments accelerate the adoption of non-plastic substitutes, particularly when these alternatives are clearly defined and properly incentivised through supportive regulations.

WHAT TREATY NEGOTIATORS CAN DO

1) Clarify definitions

- Establish a **clear, binding definition of natural, not chemically modified polymers** as a distinct, non-plastic category in the Treaty, building on existing regulatory precedents that exclude these materials from plastic restrictions (UNCTAD, 2024).
- Commit to further work under the Treaty framework (e.g., through technical annexes or expert working groups) to **establish science-based industry standards** for what constitutes a safe, environmentally sound, and sustainable non-plastic substitutes, addressing the analytical challenges identified in emerging packaging alternatives research (Lacourt et al., 2024).

2) Recognise regenerative end-of-life pathways

- Acknowledge that natural polymers can be organically recycled (e.g., composted or digested) and contribute to natural systems regeneration, unlike synthetic polymers that persist or require high-impact chemical recycling (Sinkko et al., 2024).
- Ensure policy frameworks enable safe, non-toxic materials, compared to more resource-intensive plastic recycling methods, as called by the UN Trade and Development (UNCTAD, 2024).

3) Enable scale-up

- Support investment and R&D for **non-plastic substitutes** through treaty-linked funding mechanisms, recognising the financial sector's growing commitment to addressing plastic pollution (UNEP Finance Initiative, 2024).
- Exclude natural, not chemically modified polymers from control measures to be applied to fossil-fuel based plastics, following established regulatory precedents (UNCTAD, 2024).
- Promote public procurement of natural polymer alternatives and capacity-building across the value chain.

CONCLUSION

The Treaty is a historic opportunity not just to regulate plastic — but to **catalyse the transition away from it**. Nature-based substitutes are a critical part of that shift, as evidenced by comprehensive system analysis showing that material substitution alongside reduction and improved recycling can achieve substantial reductions in plastic pollution (SYSTEMIQ, 2024; The Pew Charitable Trusts and SYSTEMIQ, 2020).

Treaty text should explicitly recognise and support their development and deployment.

WHO ARE THE NATURAL POLYMERS GROUP (NPG)

The Natural Polymers Group is a coalition of leading innovators committed to scaling nature-based, non-chemically modified substitutes to conventional plastics. Our members include pioneering companies such as Notpla, Loliware, Traceless, Xampla, ZeroCircle, MarinaTex, and PlantSea — all working to deliver sustainable materials that are safe, regenerative, and market-ready.

We welcome the opportunity to support treaty negotiators with evidence, case studies, or technical insights on how these solutions can contribute to a successful, ambitious global plastics treaty.

→ www.naturalpolymersgroup.com

NATURAL POLYMERS GROUP

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