

# Alternatives and substitutes: Definitions & other principles found in Public International Law

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## What does Public International Law tell us about a definition on substitutes and alternatives to plastics?

- **No internationally agreed definition** of what constitutes an alternative or a substitute **in the context of plastics** ⇒ important to make it right from the start.
- More coming also from the INC: Many delegations during the INC 1 mentioned that the scope of the Plastics Treaty should include alternatives and substitutes to plastics
- **Public International Law has already addressed alternatives and substitutes to other forms of pollutants or substances of concern.**
  - ◆ **Public International Law does not make a clear differentiation between substitutes and alternatives.** But **such differentiation would be useful in the context of plastics** to differentiate between (i) non polymer /natural material substitutes and (ii) polymer based alternatives (better plastics)

# Alternatives

- An alternative **reduces** or **efficiently eliminates** [pollution]

## Art. 1 (4) Convention for the Protection of the Ozone Layer

"Alternative substances" means substances which **reduce, eliminate** or **avoid** adverse effects on the ozone layer"

- **International agreements emphasize that human health risks and environmental implications of alternatives need to be promoted when identifying alternatives (could also be applied to substitutes), as well as their economic and social costs**

### Convention on Persistent Organic Pollutants (The POP Stockholm Convention)

- Art. 9 Information exchange "Each Party shall facilitate or undertake the exchange of information relevant to: (...) (b) Alternatives to persistent organic pollutants, including **information relating to their risks as well as to their economic and social costs.**"
- Annex II Part D for DDT "2. Each Party that produces and/or uses DDT shall restrict such production and/ or use for disease vector control in accordance with the World Health Organization recommendations and guidelines on the use of DDT and when locally safe, effective and affordable alternatives are not available to the Party in question. (...) 5. (b) [...] **Factors to be promoted when considering alternatives or combinations of alternatives shall include the human health risks and environmental implications of such alternatives. Viable alternatives to DDT shall pose less risk to human health and the environment, be suitable for disease control based on conditions in the Parties in question and be supported with monitoring data.**
- Annex F b) information on socio-economic considerations "Alternatives (products and processes): (i) Technical feasibility; (ii) Costs, including environmental and health costs; (iii) Efficacy; (iv) Risk; (v) Availability; and (vi) Accessibility;"

### Protocol to the Convention on long-range Transboundary air pollution on Persistent Organic Pollutants (POPs)

- Art.5 Exchange of information and technology "[...] (b) **The exchange of and access to information on the development and use of alternatives to persistent organic pollutants as well as on the evaluation of the risks that such alternatives pose to human health and the environment, and information on the economic and social costs of such alternatives;**"
- Art.6 Public awareness The Parties shall, consistent with their laws, regulations and practices, promote the provision of information to the general public, including individuals who are direct users of persistent organic pollutants. This information may include, inter alia: (...) (d) **Information on alternatives to persistent organic pollutants, as well as an evaluation of the risks that such alternatives pose to human health and the environment, and information on the economic and social impacts of such alternatives.**

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# Substitutes

- Regarding substitute materials, other international legal instruments also mention that when looking at substitute materials or activities a **particular consideration needs to be given to the potential environmental benefits or penalties of substitute materials or activities** (i.e. negative externalities).

## Convention on the Protection and Use of Transboundary Watercourses and International Lakes (The UN/ECE Water Convention)

- ANNEX II GUIDELINES FOR DEVELOPING BEST ENVIRONMENTAL PRACTICES” 2. In determining what combination of measures constitute best environmental practices, in general or in individual cases, particular consideration should be given to: (a) The environmental hazard of: (i) The product; (ii) The product's production; (iii) The product's use; (iv) **The product's ultimate disposal;** (b) **Substitution by less polluting processes or substances;** (c) Scale of use; (d) **Potential environmental benefit or penalty of substitute materials or activities;** (e) Advances and changes in scientific knowledge and understanding; (f) Time limits for implementation;(g) Social and economic implications. 3. It therefore follows that best environmental practices for a particular source will change with time in the light of technological advances, economic and social factors, as well as in the light of changes in scientific knowledge and understanding.”

Similar wording under Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)

- From a public international law perspective, there are also some principles of international environmental law that need to be taken into consideration when identifying or liberalising trade in alternatives and substitutes to plastics:
- ◆ **Principles of the Rio Declaration** (mentioned Resolution that establishes the negotiation of the Plastics Treaty (UNEP/EA.5/Res.14), for e.g.:
    - **The precautionary principle (Principle 15)**: dictates the adoption of a cautious approach in matters relating to the environment when there is scientific uncertainty about the possible negative impacts of [substitutes or alternatives to plastics]
      - “Knowledge about pollution and toxic substances will never be complete, necessitating recourse to the precautionary principle, which holds that where there are threats of harm to human health or the environment, lack of full scientific certainty must not be used as a reason for postponing preventive action” (SR on Human Rights and the Environment, David Boyd (A/HRC/49/53)).
    - **The polluter-pays principle (Principle 16)**: the polluter should bear the costs of preventing and implementing control measures for pollution

# Public International Law Principles

→ From a public international law perspective, there are also some principles of international environmental law that need to be taken into consideration when identifying or liberalising trade in alternatives and substitutes to plastics:

## ◆ Principles established by other international legally binding treaties

- **The principle of self-sufficiency** (e.g. Basel Convention, also under EU Waste Framework Directive (2008/98/EC) and EU Landfill of waste Directive (1999/31/EC)): requires that most waste should be treated or disposed of within the region in which it is produced.
- **Principle of prevention** (also linked to precautionary principle):
  - “States should enact measures to achieve zero pollution and zero waste. States should eliminate the production, use and release of toxic substances, except for essential uses. States must prevent exposure, by regulating industries, emissions, chemicals and waste, and promote innovation of safe substitutes” (SR on Human Rights and the Environment, David Boyd (A/HRC/49/53).
  - **Mentioned in multiple treaties but also under Stockholm Declaration Principle 6:** “The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of ill countries against pollution should be supported”.

## ◆ Principles of customary international law:

- **The no harm principle** (also linked to Principle 2 of the Rio Declaration): Under this principle, States should aim to create a solution by which no transboundary harm can occur.

→ While the environmental and human health assessments vis-à-vis potential substitutes and alternatives to plastic are still ongoing, a particular caution seem to be appropriate in the context of **bioplastics, compostable and biodegradable plastics** as possible alternative to plastics:

**1. Assessment of potential impacts of solutions**

93. Apparent solutions to the plastics crisis bring problems of their own. Thus, there is a need to assess their potential impacts on human rights to prevent unintended consequences and the shifting from one form of toxic exposure to another.

94. Bioplastics have been presented as an alternative to the plastics impacts of fossil fuel extraction and waste.<sup>132</sup> Instead of utilizing fossil fuel feedstock, they are made primarily of plants. Where food crops such as corn and sugarcane are used, bioplastics enter into competition with food staples for the population. Just like plastics, bioplastics may also contain toxic additives. Accordingly, while bioplastics may biodegrade where composting practices are available, they aggravate the toxification of the planet.

95. Plastic-to-fuel technologies have been presented as another alternative to plastic waste.<sup>133</sup> Instead of dumping or landfilling, those technologies transform plastics into fuel through incineration. Nonetheless, the incineration of plastic waste results in the creation of persistent organic pollutants, such as dioxins and furans, brominated dioxins and polychlorinated biphenyls. Plastic-to-fuel technologies therefore release new hazardous substances into the air. Moreover, incineration generates toxic ash, weighing about 30 per cent of the burned waste, which contains harmful persistent organic pollutants.<sup>134</sup>



The definition of the term “bioplastics” varies greatly around the world, but is most commonly used to describe bio-based, biodegradable, and/or compostable plastics. The use of the term “bioplastic” brings confusion about the difference between bio-based, biodegradable, and compostable materials

Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, Report on the stages of the plastics cycle and their impacts on human rights (A/76/207). It also emphasizes the need to assess the human rights implications of substitutes and alternatives to plastics

(See also [OCEANA report](#) and [Plastics Solutions Review](#))

# Additional resources on alternatives to plastics

POSITION BRIEFING



Alternative plastic:  
Is it the answer to ending  
marine plastic pollution?



Underwater scene showing plastic waste (bags, bottles) floating in the ocean.

Alternative plastic: Is it the answer to ending marine plastic pollution?

## Plastic Solutions Review

Plastic Solutions Review provides clear information and analysis of solutions regarding bio-based plastics, biodegradable and compostable plastics, chemical recycling, incineration, oxo-degradable plastics, plastic credit, plastic-to-fuel, and bioplastics, each page reviewed by an expert panel of scientists



### BIOPLASTIC REMAINS PLASTIC:

Bio-based, biodegradable and compostable plastics



False solutions to the plastic crisis in the ocean

November 2022

New plastic products made of bio-based, biodegradable, or compostable plastics<sup>1,2</sup> (hereafter "bioplastics and compostable plastics") see their use increasingly being presented as a "sustainable" alternative to conventional plastics and as the solution to the plastic crisis – including marine plastic pollution. The use of bioplastics and compostable plastics has grown substantially in recent years. This increase partly reflects the growing popularity of "corporate social responsibility" (CSR) and, more recently, environmental, social, and governance (ESG) as business promotion tools, with companies frequently making claims about their products being "green", "environmentally friendly", "biodegradable", or "100% compostable". In the case of bioplastics and compostable plastics, such claims are misleading and offer a false solution to the marine plastic crisis. Here, Oceana details the reasons why these materials pose a threat to the marine environment, and why it is therefore unlikely that their use can reverse the tide of plastic pollution at sea, pursuant to the objectives of the European Union Single-Use Plastics Directive (EU) 2019/904.<sup>3</sup>

The exponential growth in global plastic production<sup>4</sup> has led to increased amounts of plastic waste in the environment, polluting and harming marine ecosystems to an alarming extent. Annual plastic flows to the ocean are expected to grow from 11 million metric tons in 2016 to 29 million metric tons in 2040 if no action is taken.<sup>5</sup> Over 80% of the annual input of plastics comes from land-based sources, with drink bottles, bags, and other plastic packaging representing the main types of items.<sup>6,7,8</sup>

**BOX 1: Types of bioplastics and compostable plastics**

- Bio-based plastics are fully or partly made from biological raw materials as opposed to the fossil raw material (oil) used in conventional plastics. They can be either biodegradable or non-biodegradable.
- Biodegradable plastics are designed to biodegrade in a specific medium (land, soil, compost) under certain conditions and in varying periods of time.
- Industrially compostable plastics are designed to biodegrade in the conditions of an industrial composting plant or an industrial anaerobic digestion plant with a subsequent composting step.
- Home compostable plastics are designed to biodegrade in the conditions of a well-managed home composter at lower temperatures than in industrial composting plants. Most of them also biodegrade in industrial composting plants.
- Non-biodegradable plastics last for long periods of time. They can disintegrate into smaller pieces, forming microplastics, and accumulate in the environment.

Adapted from European Environment Agency, 2020<sup>9</sup>.

<sup>1</sup> The term "bioplastics" comprises bio-based plastics or biodegradable plastics (Wolmer et al. 2018; European Bioplastics 2018).

<sup>2</sup> Article 1, Directive (EU) 2019/904 of the European Parliament and of the Council of 3 June 2019 on the reduction of the impact of certain plastic products on the environment. The objective of this Directive is to prevent and reduce the impact of plastic pollution on the environment, in particular the specific threat to human health, as well as to promote the transition to a circular economy with innovative and sustainable business models, products and practices. This also contributes to the efficient functioning of the internal market.

<sup>3</sup> Global production of plastics has tripled in the past two decades and is expected to double again by 2050. Global production of plastics has tripled in the past two decades and is expected to double again by 2050. Global production of plastics has tripled in the past two decades and is expected to double again by 2050. Global production of plastics has tripled in the past two decades and is expected to double again by 2050.




29 M metric tons  
11 M metric tons  
2016 2040  
Increase of annual plastic flows to the ocean



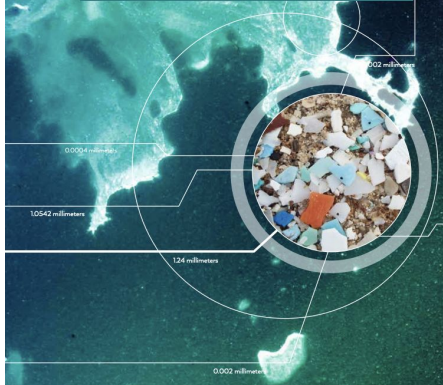
Over 80%  
of the annual input of plastic comes from land-based sources

Bioplastics remains plastic: Bio-based, biodegradable and compostable plastics. False solutions to the plastic crisis in the ocean



## BIODEGRADABLE PLASTICS & MARINE LITTER

MISCONCEPTIONS, CONCERNS AND IMPACTS ON MARINE ENVIRONMENTS



Map showing the size of marine litter particles in millimeters: 502, 10542, 134, 9100.

UNEP Biodegradable Plastics & Marine Litter



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**For any questions**

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