

Global Plastic Pollution and the Transition Towards a Circular Economy: Lessons from the EU's Legal Framework on Plastics

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Abstract. Since the 1950s, billions of tons of primary plastic waste have been generated around the globe to date. Instead of the current linear make-use-dispose plastic economy, a circular plastics economy is said to be able to reduce plastic pollution in the environment. Recently, the United Nations Environment Assembly adopted a resolution to forge a globally binding treaty addressing plastic pollution by addressing the full life cycle of plastics and by taking such a circular approach. A circular approach for plastics has already been adopted by the EU. Therefore, this contribution sets out some lessons that the UN Treaty can learn from the implementation of the EU's circular approach for plastics. These relate to the restriction on placing on the market of certain plastic products, the introduction of ecodesign requirements and the establishment of EPR schemes. The EU legal framework on plastics shows that it is important to take into account the inherent interlinkage between not only plastic life cycle stages, but also between the different provisions and obligations, in order to maximize the contribution to and unlock synergies in tackling plastic pollution.

Keywords: Global plastic pollution, Circular Economy, EU Plastics Strategy, UN Plastic Treaty

1. Introduction

Since the 1950s, an estimated 7 billion tons of primary plastic waste have been generated around the globe to date.¹ The majority of this plastic waste has been disposed of in landfills, dumps or the environment and based on current trends and developments, the amount of plastic waste that is mismanaged and ends up in the environment has been projected to keep increasing.² The current linear 'make-use-dispose' plastic economy leads to significant negative impacts. It contributes to resource depletion and greenhouse gas emissions and mismanaged plastic (waste) leaks into the environment, causing harm to ecosystems, biodiversity as well as human health and society.³

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1 Drowning in plastics – Marine litter and plastic waste vital graphics, United Nations Environment Programme 2021, p. 15.

2 W.W.Y. Lau et al., Evaluating scenarios toward zero plastic pollution, *Science* Vol. 369 No. 6510 2020, pp. 1455-1461.

3 G. Nagtzaam et al., The plastic pollution problem, definitions, scope and alternatives, in: G. Nagtzaam et al., *Global Plastic Pollution and its Regulation*, Edgar Elgar 2023; Drowning in plastics – Marine litter and plastic waste vital graphics, *United Nations Environment Programme* 2021, p. 15-17; D. Jung, An International Legal Framework for Marine Plastics Pollution, in: F.M. Platjouw & A. Pozdnakova (eds.), *The Environmental Rule of Law for Oceans*, Cambridge University Press 2023, p. 46-47; J.R. Jambeck & I. Walker-Franklin, The impacts of plastics' life cycle, *One Earth* 6, 2023; Dietary and inhalation exposure to nano- and microplastic particles and potential implications for human health, Geneva: World Health Organisation 2022; E.R. van der Marel, Trading Plastic Waste in a Global Economy: Soundly Regulated by the Basel Convention, *Journal of Environmental Law* 34 (2022); N. Simon et al., A binding global agreement to address the life cycle of plastics, *Science* Vol. 373 No. 6550 2021; <https://www.ciel.org/project-update/plastic-climate-the-hidden-costs-of-a-plastic-planet/>, accessed on: 20-10-2023.

For some time, regulation has been used to address plastic pollution on both the national and regional level. Examples include bans on single-use plastics such as in Bangladesh and Senegal, the requirement for microfiber filters in new washing machines in France, and the implementation in the European Union (EU) of legislation to reduce plastic waste and curb plastic pollution.⁴ Most recently, the United Nations Environment Assembly (UNEA) unanimously adopted a resolution to forge a global and binding legal treaty to address plastic pollution.⁵ The UNEA resolution states the importance of the treaty to address the full life cycle of plastic.⁶ To this end, the resolution states that the Treaty should include provisions that promote the sustainable production and consumption of plastics through inter alia circular economy (CE) approaches.⁷

Taking into account the whole life cycle of plastics, or in other words: adopting a life cycle thinking approach with regard to plastics, is considered to be closely linked to a CE for plastics.⁸ In the UN report ‘Turning off the Tap’ a circular and zero-pollution plastics economy is described as an economy ‘that eliminates unnecessary production and consumptions, avoids negative impacts on ecosystems and human health, keeps products and materials in the economy and safely collects and disposes waste that cannot be economically processed’.⁹ According to the same report, this systems change to a circular plastics economy could reduce plastic pollution in the environment by 80 per cent, compared to the business-as-usual linear plastics economy.¹⁰ Also in literature the transition towards a circular plastics economy is argued as to contribute to reducing the industry’s negative impact on the environment.¹¹

A circular approach for plastics has already been adopted by the EU with its EU Plastics Strategy, which focuses on all life cycle stages of the plastics value chain.¹² According to the EU, a global uptake of this circular economy approach to plastics ‘has the potential of considerably reducing the overall impacts of plastics on the environment’ and would entail that the whole life cycle of plastics, instead of only the waste stage, is covered.¹³ One of the steps the EU has taken to achieve a CE for plastics, is to establish the right regulatory framework. Examples include measures on single-use plastics, design requirements for plastic packaging and regulating the separate collection and waste management of plastics and certain plastic products.

The approach pursued in the UN Plastics Treaty seems to be similar to the EU’s approach, as it also aims to address the full life cycle of plastics and includes suggestions for several legal instruments and requirements that are already in place in the EU. As the UN Treaty is still under negotiation, this article will examine what lessons can be learned from the implementation of the EU’s circular approach for plastics in its legal framework.

4 See: Leading the way to a global circular economy: state of play and outlook, SWD(2020) 100, p. 22; https://www.europarl.europa.eu/doceo/document/E-9-2020-001371_EN.html; L. Godfrey, Waste Plastic, the Challenge Facing Developing Countries – Ban it, Change it, Collect it?, Recycling 2019 (4)1,3.

5 Resolution adopted by the United Nations Environment Assembly on 2 March 2022 ‘End plastic pollution: towards an international legally binding instrument’, UNEP/EA.5/Res.14.

6 A lifecycle approach for plastics has been argued for in literature, see inter alia: D. Jung, An International Legal Framework for Marine Plastics Pollution, in: F.M. Platjouw & A. Pozdnakova (eds.), *The Environmental Rule of Law for Oceans*, Cambridge University Press 2023; J.R. Jambeck & I. Walker-Franklin, The impacts of plastics’ life cycle, *One Earth* 6, 2023.

7 Resolution adopted by the United Nations Environment Assembly on 2 March 2022 ‘End plastic pollution: towards an international legally binding instrument’, UNEP/EA.5/Res.14.

8 D. Jung, An International Legal Framework for Marine Plastics Pollution, in: F.M. Platjouw & A. Pozdnakova (eds.), *The Environmental Rule of Law for Oceans*, Cambridge University Press 2023. See more in general: J. Cramer & T.J. de Romph, How to improve the EU legal framework in view of the circular economy, *Journal of Energy & Natural Resources Law*, 2020.

9 United Nations Environment Programme, Turning off the tap. How the world can end plastic pollution and create a circular economy, 2023, p. 7.

10 United Nations Environment Programme, Turning off the tap. How the world can end plastic pollution and create a circular economy, 2023, p. 7. See also: Leading the way to a global circular economy: state of play and outlook, SWD(2020) 100, p. 22. In literature, the transition towards a circular plastics economy is also considered essential to tackle the problem of plastic pollution, see inter alia: G. Nagtzaam et al., The plastic pollution problem, definitions, scope and alternatives, in: G. Nagtzaam et al., *Global Plastic Pollution and its Regulation*, Edgar Elgar 2023.

11 See for example: G. Nagtzaam et al., The plastic pollution problem, definitions, scope and alternatives, in: G. Nagtzaam et al., *Global Plastic Pollution and its Regulation*, Edgar Elgar 2023; N. Simon et al, A binding global agreement to address the life cycle of plastics, *Science* Vol. 373 No. 6550 2021; N. Aurisano, R. Weber & P. Fantke, Enabling a circular economy for chemicals in plastics, *Current Opinion in Green and Sustainable Chemistry*, Vol 31 (2021); P. Pathak, S. Sharma & S. Ramakrishna, Circular transformation in plastic management lessens the carbon footprint of the plastic industry, *Materials Today Sustainability* 22 (2023).

12 A European Strategy for Plastics in a Circular Economy, COM (2018) 28 final, p. 10.

13 Leading the way to a global circular economy: state of play and outlook, SWD (2020) 100, p. 22-23.

2. Plastics Pollution as a Global Problem: Current Developments in International Law

Discussions on developing an international treaty (with legally binding rules) on plastic pollution have long been held, in both policy documents and in literature.¹⁴ Key arguments for addressing the problem at the international level include that if no action is taken, the projected global production of plastic will triple by 2060 compared to 2019. This means a global increase in plastic waste in the environment, resulting in damage to human health and ecosystems.¹⁵ Moreover, plastic pollution does not respect national borders, and therefore satisfactory solutions will not be found by individual countries alone. The urgent need for a global approach has also been convincingly demonstrated by Borrelle *et al.* and Lau *et al.*¹⁶ They show that even with strong and coordinated measures to reduce plastic pollution the amount of plastic in the environment will still increase in the coming years. Therefore, strong action – on a global level – is needed.

Nevertheless, for a long time an international approach to combat plastic pollution has been poorly coordinated and scattered across different policy areas.¹⁷ Global policies to address the plastic problem were mostly of a voluntary nature.¹⁸ Moreover, most existing international agreements and regulations are aimed at preventing and stopping marine pollution from plastics caused by sea-based sources, such as the International Convention for the Prevention of Pollution from Ships (MARPOL),¹⁹ whereas land-based sources are also a major source of plastic pollution. Furthermore, these global agreements and regulations do not address the entire life cycle of plastics nor focus on circularity of the plastics chain. The focus is mostly on the waste phase and only a little on the design or production phase.²⁰

Since 2022 the development to achieve an internationally binding treaty has gained momentum. The resolution adopted by the UN Environment Assembly in March 2022 has mandated an Intergovernmental Negotiating Committee (INC) to develop an international legally binding instrument on plastic pollution, with an explicit focus on a life cycle approach that includes plastic production, design as well as disposal.²¹ The deadline is ambitious: the goal is to conclude negotiations at the end of 2024.²²

To date, the INC has held three sessions. For the purpose of the third session, a Zero Draft text was prepared, incorporating the views expressed at the first and second sessions.²³ This text was published on September 4, 2023 and contains a number of proposed measures ranging from restrictions on the production of primary plastic polymers to measures focused on product design, extended producer responsibility, waste management and trade. The text sets out several scenarios for the design of the various provisions. Many options expect states to set their own goals and obligations at the national level in national plans, and nowhere does the text include specific goals or targets; these have yet to be formulated, if they will be included in the final text at all.

14 Bharat H. Desai et al., “Challenge of the Plastics Pollution: A New Common Concern of Humankind in the Making?”, *Environmental Policy and Law*, vol. 49, no. 5, 2018, pp.252-255.

15 E.g. OECD (2022), *Global Plastics Outlook: Policy Scenarios to 2060*, OECD Publishing, Paris, <https://doi.org/10.1787/aa1edf33-en>. Eriksen M, Cowger W, Erdle LM, Coffin S, Villarrubia-Gómez P, et al. (2023) A growing plastic smog, now estimated to be over 170 trillion plastic particles afloat in the world’s oceans—Urgent solutions required. *PLOS ONE* 18(3):e0281596. <https://doi.org/10.1371/journal.pone.0281596>.

16 S.B. Borelle et al., Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution, *Science* 369, 1515-1518 (2020), W.W.Y. Lau et al. Evaluating scenarios toward zero plastic pollution, *Science* 369, 1455-1461 (2020).

17 K. Raubenheimer, A. McIlgorm, N. Oral, Towards an improved international framework to govern the life cycle of plastics, *Review of European & Comparative International Environmental Law*, vol. 27, issue 3, p. 210-221.

18 R. Karasik, T. Vegh, Z. Diana, J. Bering, J. Caldas, A. Pickle, D. Rittschof and J. Virdin (2020), 20 Years of Government Response to the Global Plastic Pollution Problem: The Plastics Policy Inventory, NI X 20-05, NC: Duke University, p. 7 and 32-33.

19 Nils Simon et al., A binding global agreement to address the life cycle of plastics, *Science* 373, 43-47 (2021).

20 See e.g. G. Nagtzaam, A Fraying Patchwork Quilt: International Law and Plastic Pollution, 34 *Vill. Envtl. L.J.* 133 (2023), p. 145 and 180 and Jung, D., An International Legal Framework for Marine Plastics Pollution: Time for a Change to Regulate the Lifecycle of Plastics, In: F. Platjouw & A. Pozdnakova (Eds.), *The Environmental Rule of Law for Oceans: Designing Legal Solutions* (pp. 46-57), Cambridge: Cambridge University Press.

21 UNEA Resolution 5/14 entitled “End plastic pollution: Towards an international legally binding instrument”.

22 UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023, via: <https://wedocs.unep.org/bitstream/handle/20.500.11822/43239/ZERODRAFT.pdf>, note 1.

23 UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

In November 2023, the Zero Draft text has been debated by the participating States at the third session of the INC (INC-3) in Nairobi, Kenya. The discussions show that there are still many different points of view and that the establishment of the treaty will certainly not be easy. For example, there were discussions about the scope of the treaty, such as how to interpret a ‘full life cycle approach’, and the institutional arrangements.²⁴ In the end, three groups worked on adapting the text. At the time of writing, a consolidated version of the adapted draft text has not yet been published. However, the text proposals from the various working groups do show a complex outcome, in which many different variants were formulated for different measures.²⁵

In the following sections, we will focus in particular on three legal instruments mentioned in the Zero Draft text: restrictions on placing on the market of certain plastic products, product design requirements, and Extended Producer Responsibility (EPR). These are all important instruments in the context of the transition to a circular economy and have all been included in the EU legal framework on plastics as well. The Zero Draft text and the text proposals made by the contact groups during INC-3 contain several proposed provisions with respect to these instruments. We will not discuss all variants of the text proposals, but highlight several aspects in relation to already existing EU legislation.

3. The EU Legal Framework on Plastic Pollution

The EU has identified plastics as one of the key product groups for the CE transition.²⁶ Following up on the first CE Action Plan, the EU announced the EU Plastics Strategy, which contains the EU’s vision for a circular plastics economy.²⁷ It is the first EU policy framework that adopts a material-specific life cycle approach, integrating all life cycle stages of the plastic value chain.²⁸ Following its CE Action Plans and Plastics Strategy, the EU has taken several steps to establish the right regulatory framework for the development of the CE for plastics.²⁹ For example, the Single-Use Plastics Directive (SUP Directive) was introduced in 2019, containing rules for the ten most commonly found single-use plastic items on European beaches.³⁰ Looking specifically at plastic packaging, the EU already introduced the Plastic Bags Directive in 2015, which requires Member States to take measures on the consumption of light-weight plastic carrier bags,³¹ amended the Packaging and Packaging Waste to better align it with CE objectives and presented a proposal for a new Packaging and Packaging Waste Regulation to *inter alia* promote a circular economy for (plastic) packaging³². Very recently, the European Commission adopted a restriction on intentionally added microplastics.³³

Altogether, in recent years, the EU has been building a legal framework that addresses the circularity of plastics. Specific provisions and instruments range from restrictions on placing on the market certain types of plastic or certain (single use) plastic applications, design requirements, including recycled content requirements, and the use of EPR schemes for certain plastic products. In addition, separate collection and recycling requirements are

24 M.B. Gracia, A Global Plastics Treaty to “change humanity’s relationship with the planet”, November, 24 2023, via [https://www.maastrichtuniversity.nl/blog/2023/11/global-plastics-treaty-“change-humanity’s-relationship-planet](https://www.maastrichtuniversity.nl/blog/2023/11/global-plastics-treaty-“change-humanity’s-relationship-planet”), Earth Negotiations Bulletin, Summary of the Third Session of the Intergovernmental Negotiating Committee to Develop an International Legally Binding Instrument on Plastic Pollution 11–19 November 2023, via: <https://enb.iisd.org/sites/default/files/2023-11/enb3620e.pdf>.

25 See for the documents prepared by the Contact Groups: <https://www.unep.org/inc-plastic-pollution/session-3/documents/in-session#ContactGroups>.

26 A new Circular Economy Action Plan: For a cleaner and more competitive Europe, COM (2020) 98 final, p. 8-10.

27 A European Strategy for Plastics in a Circular Economy, COM (2018) 28 final.

28 On the implementation of the Circular Economy Action Plan, COM (2019) 190 final, p. 6-7.

29 Closing the loop – An EU action plan for the Circular Economy, COM (2015) 614 final, p. 2.

30 Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, OJ 2019 L 155/1.

31 Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags, OJ 2015 L 115/11.

32 Proposal for a Regulation of the European Parliament and of the Council on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC

33 Commission Regulation (EU) 2023/2055 of 25 September 2023 amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards synthetic polymer microparticles.

in place for several plastic products as well as a ban on the export of plastic waste to non-OECD countries, except for clean plastic waste sent for recycling.³⁴

3.1. Restrictions on placing on the market of certain plastic products

One of the ways to tackle plastic pollution is to focus on the prevention of plastic waste.³⁵ This can be realized by restricting the placing on the market of certain plastic products, plastic products with specific features, specific plastic materials and of intermediate components, such as microplastics.³⁶ Within the current legal framework in the EU, bans and restrictions are in place for both plastic applications and plastic types.³⁷ In the SUP Directive, restrictions on placing on the market were introduced for the ten single-use plastic items most commonly found on European beaches and for which suitable and more sustainable alternatives are readily available:³⁸ cotton bud sticks, cutlery, plates, straws, beverage stirrers, balloon sticks, as well as food and beverage containers and beverage cups made of expanded polystyrene.³⁹ The latter as well as the fact that the SUP Directive contains a general restriction on the use of oxo-degradable plastics shows that restrictions can also concern products made of certain plastic types.⁴⁰

In September 2023, the EU adopted a prohibition on the placing on the market of intentionally added microplastics, prohibiting the sale of microplastics as such and products to which microplastics have been intentionally added and that release those microplastics when used.⁴¹ Furthermore, in the 2022 proposal for the Packaging and Packaging Waste Regulation, additional restrictions on placing on the market of inter alia plastic packaging are proposed. These include restrictions on the use of certain packaging formats, such as single-use plastic grouped packaging and packaging for certain purposes, such as single-use packaging in the HORECA sector.⁴²

The Zero Draft text of the “international legally binding instrument on plastic pollution” (UNEP/PP/INC.3/4, 4 September 2023) includes a provision that seems to a large extent to be similar to the restrictions in the EU legal framework. The provisions in question focus on so-called problematic and avoidable plastic products, which

34 See particularly the SUP Directive, but also the Packaging and Packaging Waste Directive as well as the subsequent proposal for the Packaging and Packaging Waste Regulation. See also: Commission Delegated Regulation (EU) 2020/2174 of 19 October 2020 amending Annexes IC, III, IIIA, IV, V, VII and VIII to Regulation (EC) No 1013/2006 of the European Parliament and of the Council on shipments of waste, OJ 2020 L 433/11.

35 N. Simon et al., A binding global agreement to address the life cycle of plastics, *Science* Vol. 373 Issue 6550 2021.

36 See more extensive: E. Cornago, P. Börkey & A. Brown, Preventing single-use plastic waste: Implications of different policy approaches, OED Environment Working Papers No. 182, 2021. The scope of this section will be limited to plastic products and will not include restrictions on the use of chemicals, groups of chemicals or certain polymers, although this has been included in the Zero Draft text under Part II.2. Similarly, the Zero Draft text also contains an option on restricting the production, use in manufacturing, sale, distribution, import or export of plastics and products containing intentionally added microplastics. While the European Commission is working on restricting the use of intentionally added microplastics as well, there is not yet any legal text available. Therefore, the restriction on placing on the market of intentionally added microplastics also falls outside the scope of this section.

37 See about similar regulatory measures on the restriction of single-use plastic products that are in place on both the national and local levels: J. van Leeuwen, T.R. Walker & J. Vince, Plastic Pollution: The challenges of uncertainty and multiplicity in global marine governance in: P.G. Harris (ed), *Routledge Handbook of marine Governance and Global Environmental Change*, Routledge 2022; T. Kiessling et al., What potential does the EU Single-Use Plastics Directive have for reducing plastic pollution at coastlines and riversides? An evaluation based on citizen science data, *Waste Management* Vol 164 2023.

38 Recital 15 Directive (EU) 2019/904.

39 Article 5 Directive (EU) 2019/904.

40 Article 5 Directive (EU) 2019/904. See also: Recital 15 Directive (EU) 2019/904.

41 Commission Regulation (EU) 2023/2055 of 25 September 2023 amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards synthetic polymer microparticles.

42 Article 22 & Annex V Proposal for a Regulation of the European Parliament and of the Council on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC.

include short-lived and single-use plastic products,⁴³ many of which also represent the majority of plastic leakage in the environment.⁴⁴ With regard to these products, two options are provided. Whilst one option only entails that Parties should take the necessary measures to regulate and reduce and, as appropriate, not allow problematic and avoidable plastic products, the other option entails a prohibition on the production, sale, distribution, import or export of certain plastic products after certain specified dates.⁴⁵ In addition, it requires Parties to reduce the production, sale, distribution and transport of these products. The criteria for the determination of plastic products, the list of plastic products subject to phase-out measures and the timeframes for their phase-out will be specified in an annex. According to this option, the prohibition to phase-out these plastic products does not apply when a party has a registered exemption from the phase-out dates for a product. Although the procedure for registering such an exemption may still need to be defined, the provision do state that no party may have an exemption in effect at any time after X years after the phase-out date, which means that despite any exemptions, all problematic and avoidable plastic products will be phased-out after a certain date.⁴⁶

In the meantime, however, the text proposals made by the contact groups during INC-3 show that members of these contact groups expressed various views on the provision on problematic and avoidable plastic products, as for every option mentioned above, multiple proposals for alternatives were captured. Whilst one proposal entails an option to have no provision on problematic and avoidable plastic products, the other proposals contained variations of the requirement for members to take necessary measures to regulate, reduce and not allow for these plastic products, with some only entailing an encouragement to do so or highlighting the consideration of national circumstances.⁴⁷ Also with regard to the exemptions several alternatives were captured. Although some members expressed reservations about including exemptions in the Treaty, the most noteworthy alternative options in the compiled text included the options to delete the provisions containing expiry dates for all potential exemptions, which would mean that exemptions to a potential ban would be allowed indefinitely.⁴⁸

In light of the proposed options for restricting problematic and avoidable plastic products, some critical reflection on the already existing legislation on these products at the EU level might be insightful. Looking specifically at the implementation of the SUP Directive's provision and its effect on plastic pollution, it appears that the SUP Directive's market restrictions have overall been well implemented, with only some Member States that transposed the restriction too late or incorrectly,⁴⁹ and some Member States even imposing additional restrictions on the placing on the market of extra single-use plastic products.⁵⁰ Nevertheless, it can be questioned to what extent the SUP Directive's product bans are actually contributing to a reduction of (plastic) litter and pollution. From a 2022 campaign led by an NGO, it appeared that greenwashing practices are taking place and

43 UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023, Part II.3. It is recognized that a definition for 'problematic and avoidable plastic products' may be necessary. Nevertheless, in the report 'Turning off the tap', unnecessary and avoidable plastics and plastic products are described as "plastics with low or no utility that can be eliminated while providing the same utility, those designed for a short use period when reuse or new delivery models could provide the same utility, and those that can be substituted for alternative materials with a more sustainable footprint (as validated by Life Cycle Assessment studies). Moreover, criteria are provided to help identify such plastic uses. See: United Nations Environment Programme, Turning off the tap. How the world can end plastic pollution and create a circular economy, 2023, p. 19.

44 Potential options for elements towards an international legally binding instrument, based on a comprehensive approach that addresses the full life cycle of plastics as called for by United Nations Environment Assembly resolution 5/14, UNEP/PP/INC.2/4, paragraph II.B.2.

45 Part II.3 of the UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023. See for restrictions on export and import of these avoidable plastic products also Part II.10 (a)(1)(c) and Part II.10 (a)(5)(c) of the Zero Draft text.

46 Part II.4 of the UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023..

47 Contact Group I under 3,

48 Contact Group I under 4.

49 Single Use Plastics Directive Implementation Assessment Report, Zero Waste Europe, September 2022. It should be noted, however, that the official review by the European Commission will not take place until 2027, see: Article 15 Directive (EU) 2019/904.

50 Nevertheless, from literature it appears that the extent to which the directive as a whole is being successfully implemented differs among MSs, see: L. Aristei, A Plastic Word. Ups and Downs in the Natinoa Application of Directive 2019/904/EU, *Italian Journal of Public Law* 14 (2022).

that there seems to be a general lack of enforcement on the restriction obligation.⁵¹ Moreover, literature studies estimated that the reduction of overall plastic litter quantities that can be achieved by the bans in SUP Directive is only marginal. Moreover, with regard to the SUP Directive's restrictions, it was highlighted that for its effect, it is important that the other measures in the SUP Directive also take effect, such as product design requirements and EPR schemes, and that an increased focus on the transition to reusable alternatives would be necessary as well.⁵² This shows the importance of taking into account the interaction and potential synergies between different legal measures, which follows from the inherent interlinkage and interaction within the life cycle of plastics as well as within the legislation governing them.⁵³

Along the same lines, with regard to imposing bans it should also be noted that attention should be paid to the fact that prohibiting certain plastic products could not only lead to less plastic products and reusable alternatives, but also to substitution to other materials.⁵⁴ This could lead to pollution albeit not *plastic* pollution, as well as to higher environmental impacts due to greater life cycle environmental footprints of alternative materials, such as paper.⁵⁵ In other words, the effectiveness and impact of the product ban depends on potential substitution effects.⁵⁶ This is in line with the initial assessment carried out by the European Commission for the SUP Directive's proposal, which estimated a marginal reduction of demand for the single-use plastic items covered by the product ban.⁵⁷ In this regard, the fact that the Zero Draft text contains a provision that obliges Parties to take measures to incentivize and promote the development and use at scale of non-plastic substitutes should be assessed critically, even though attention is paid to the fact that these substitutes are to be safe, environmentally sound and sustainable.⁵⁸ It should be clarified when these parameters are met and how this should be demonstrated, for example by means of LCA-based evidence.⁵⁹

Also, it could be questioned if this approach offers enough incentive to consumers and companies to change their consumption and littering behavior or business models respectively, for example to reusable products.⁶⁰ The text proposals made during INC-3 do contain some options which seem to take such critiques into account, as one alternative requires to take into account the non-plastic substitutes' potential for waste reduction and

51 Single Use Plastics Directive Implementation Assessment Report, Zero Waste Europe, September 2022.

52 Kiessling et al. estimated that the reduction of overall litter and plastic litter is only between 4–7% at European coastlines and 2–6% at sampling sites in Germany, whereas Herberz et al. estimated a reduction of marine pollution by 5.5% in the EU. See: T. Kiessling et al., What potential does the EU Single-Use Plastics Directive have for reducing plastic pollution at coastlines and riversides? An evaluation based on citizen science data, *Waste Management* Vol 164 2023; T. Herberz, C.Y. Barlow & M. Finkbeiner, Sustainability Assessment of a Single-Use Plastics Ban, *Sustainability* 2020 12(9).

53 I.M. de Waal, The transition towards a more circular plastic packaging chain – A case study of the Netherlands, *EEELR* 32(5) 2023.

54 See also: Impact assessment – Reducing Marine Litter: action on single use plastics and fishing gear, SWD(2018) 254 final part 3/3, p. 72.

55 P.Hurmelinna-Kaukkanen, E. Paukku & S. Taskila, Innovation management responses to regulation – SUP-Directive and replacing plastic, *International Journal of Innovation Management* vol. 25 no. 10 2021, p. 7; L. Godfrey, Waste Plastic, the Challenge Facing Developing Countries – Ban it, Change it, Collect it?, *Recycling* 2019 (4)1,3; E. Cornago, P. Börkey & A. Brown, Preventing single-use plastic waste: Implications of different policy approaches, *OED Environment Working Papers* No. 182, 2021, p. 32-34; Moving towards sustainable plastics use in the EU by 2030, *Think 2030*, p. 13; E. Joltreau, Extended Producer Responsibility, Packaging Waste Reduction and Eco-design, *Environmental and Resource Economics* 83 (2022); T.G. Abate & K. Eloffsson, Environmental Taxation of plastic Bags and Substitutes: Balancing Marine Pollution and Climate Change, *SSRN* 2023, p. 2-3. See specifically with regard to plastic packaging also: I.M. de Waal, The transition towards a more circular plastic packaging chain – A case study of the Netherlands, *EEELR* 32(5) 2023.

56 E. Cornago, P. Börkey & A. Brown, Preventing single-use plastic waste: Implications of different policy approaches, *OED Environment Working Papers* No. 182, 2021, p. 32; T. Herberz, C.Y. Barlow & M. Finkbeiner, Sustainability Assessment of a Single-Use Plastics Ban, *Sustainability* 2020 12(9).

57 European Commission, Directorate-General for Environment, Assessment of measures to reduce marine litter from single use plastics – Final report and annex, Publications Office, 2018, <https://data.europa.eu/doi/10.2779/500175>.

58 Part II.6 of the UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

59 See for example: United Nations Environment Programme, Turning off the tap. How the world can end plastic pollution and create a circular economy, 2023, p. 19 & 34. However, see critical about the use of LCAs and their shortcomings with regard to taking into account plastic pollution: T. Herberz, C.Y. Barlow & M. Finkbeiner, Sustainability Assessment of a Single-Use Plastics Ban, *Sustainability* 2020 12(9).

60 T. Kiessling et al., What potential does the EU Single-Use Plastics Directive have for reducing plastic pollution at coastlines and riversides? An evaluation based on citizen science data, *Waste Management* Vol 164 2023.

reuse, and another to consider possible unintended consequences and tradeoffs. Additional proposals refer to adopting criteria for non-plastic substitutes that incorporate a comprehensive life cycle assessment or establishing a process for the assessment of substitutes considering their potential impact on inter alia waste hierarchy and ‘reduce, reuse, and recycle’ approaches.⁶¹ Based on the abovementioned points of criticism, the adoption of such alternatives would be desirable to ensure the effectiveness and impact of a potential prohibition of certain problematic and avoidable plastic products.

Lastly, with regard to the global character of the Zero Draft treaty, it should be noted that when phasing-out certain single-use (plastic) items context and inclusivity are important.⁶² For example, restricting the use of certain single-use plastic products for food or beverage consumption might require that clean, safe and potable water supplies are available, either for filling reusable drinking bottles or for cleaning reusable alternatives for packaging.⁶³ It seems that some alternative options in the text proposals made during INC-3 to some extent reflect the importance of considering such circumstances. For instance, several alternatives for the prohibition on problematic plastic products already take into consideration national circumstances, an alternative exemption provision allows small island developing states and other states that are dependent on inter alia plastic products to register extensions to exemptions under different circumstances than other Parties,⁶⁴ and one alternative for the provision on non-plastic substitutes explicitly mentions taking into account the developing countries’ access to the transfer of necessary technologies and financial resources⁶⁵. Although these are desirable additions, further research into this would nevertheless be required for such restrictions at the global level, at least for some plastic products.

All in all, despite the not overly positive experiences with regard to the SUP Directive’s restriction of single-use plastic products, a clear and unambiguous restriction on problematic and avoidable plastic products are still preferable over many of the watered down alternatives in the compiled text. Especially when combined with clear provisions on exemptions and other provisions that aim to contribute to a decrease of problematic and avoidable plastics, its impact might be improved. Several alternatives in the text proposals made during INC-3 would be welcome modifications to the Zero Draft text as they take into account several of the points of criticism based on the EU’s experience, including on the potential adverse effects of non-plastic substitutes.

3.2. *Design of products*

In the EU, the design phase is seen as one of the most important phases for implementing measures for the transition to sustainable and circular products. According to the European Commission, 80 percent of a product’s environmental impact is determined during the design phase.⁶⁶ This is reflected in the package of legislative measures the EU has developed since the Green Deal and CE Action Plans. There is specific EU legislation in place that regulates plastic product design, such as in the aforementioned Packaging and Packaging Waste Directive and the SUP-Directive. Both directives contain provisions focusing on the design stage of plastic (packaging) products, including provisions ensuring the reusability and recovery of plastic packaging or recycled content requirements respectively.⁶⁷ The 2022 proposal for the Packaging and Packaging Waste Regulation contains further design criteria for plastic packaging, such as on design for recyclability and mandatory recycled content requirements.⁶⁸

61 Contact Group I under 6.2 OP2 Bis 1 and OP2 Ter.

62 See about this also: P. Dauvergne, The necessity of justice for a fair, legitimate, and effective treaty on plastic pollution, *Marine Policy* 155 (2023).

63 L. Godfrey, Waste Plastic, the Challenge Facing Developing Countries – Ban it, Change it, Collect it?, *Recycling* 2019 (4)1.

64 Contact Group I, under 4.4 OP4 Bis 1.

65 Contact Group I, under 6.1 OP1 Alt 3. See also: OP1 Alt 5.

66 A New Circular Economy Action Plan COM (2020) 98, par. 2.1.

67 European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, Art. 9 and Annex II; Article 6 Directive (EU) 2019/904.

68 Article 6 & 7 Proposal for the Packaging and Packaging Waste Regulation.

Another important legislative measure, which aims to accelerate the transition to a circular economy more generally, is the 2022 proposal for a Regulation on Ecodesign for Sustainable Products.⁶⁹ This is a follow-up to the already existing Ecodesign Directive.⁷⁰ An important change is that the scope of the regulation has been significantly broadened compared to the current directive. Almost all products are covered, whereas the current directive only covers energy-related products. In addition, the proposed Regulation permits a broader set of ecodesign requirements, such as minimum requirements for recycled content in products and requirements that improve the reparability of products such as prohibiting certain technical solutions that limit reparability. It also includes requirements to improve product information to facilitate circular use. Whereas the proposed Regulation merely provides a framework for ecodesign requirements, the actual product requirements will have to be set by the European Commission per product or product group in delegated acts. Such requirements may also address plastic products or plastic packaging. The EC will draw up a working plan for this purpose in which priority product categories will be identified. An initial assessment lists textiles, furniture, mattresses, tires and paint, among others, as suitable product groups.⁷¹

The Zero Draft text and the text proposals at the INC-3 show several options similar to the provisions in both the specific EU directives (PPWD and SUP Directive) and proposed Ecodesign Regulation. For example, the texts contain provisions on product design and performance requiring each Party to take measures to ensure that the design of plastic products, including packaging, is improved. It uses fairly general concepts to implement this requirement, such as the requirement that the measures should, among other things, increase the ‘durability, reusability, reparability and refurbishability’ of plastics.⁷² One of the alternative options includes that Parties shall require that plastics and plastic products that are domestically produced and those available on their market comply with minimum design and performance criteria, which are to be included in an Annex. In addition to general criteria, these can include sector- or product-specific criteria and elements.⁷³ Furthermore, the Zero Draft text also contains provisions requiring plastic products to contain minimum levels of recycled content.⁷⁴

Based on the proposed options, there are some lessons to be learned from EU legislation. In general, it can be considered desirable to set product requirements, especially also as design requirements seem to be necessary for achieving re-use or recycling objectives. The same is the case for being able to meet recycled content requirements. Looking at the suggested approach to establish sector- or product-specific criteria in addition to general minimum design and performance criteria, a similarity can be detected with the legal mechanism chosen by the EU to establish ecodesign requirements by product or product groups. From experience with the current Ecodesign Directive, this mechanism is complex and time-consuming. The standard regulatory process for setting ecodesign requirements would take about three and a half years, according to the European Commission. However, a report by the European Court of Auditors shows that in practice the process takes much longer. For example, setting ecodesign requirements for heaters took seven years and six years for refrigerators.⁷⁵ The lengthy process poses the risk that ecodesign requirements will be outdated before they even come into force.⁷⁶

69 Proposal for a Regulation of the European Parliament and of the Council establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC, COM (2022) 142.

70 Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast).

71 European Commission, ‘See Questions and Answers: Sustainable Products Initiative’ at ec.europa.eu/commission/presscorner/detail/en/qanda_22_2014.

72 Art. 5, UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

73 Art. 5 & Annex C Part I UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

74 Art. 5 C UNEP Zero draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

75 European Court of Auditors, EU Action on Ecodesign and Energy Labelling: Important Contribution to Greater Energy Efficiency Reduced by Significant Delay and Non-compliance, p. 18-19 at www.eca.europa.eu/lists/ecadocuments/sr20_01/sr_ecodesign_and_energy_labels_en.pdf.

76 *Ibid.*, p. 20 and 39.

Circular product innovation will then have little or no incentive.⁷⁷ An alternative is to establish more general eco-design requirements that apply to all (plastic) products and are not product-specific. The disadvantage of this is that such general requirements are difficult to implement and enforce in practice. Consequently, their effectiveness may be limited. For example, a case study on the Packaging and Packaging Waste Directive found that the vague and unclear wording of the minimum design requirements for packaging made implementation and enforcement difficult in practice.⁷⁸ Altogether, although we are of the opinion that establishing minimum design and performance requirements would be beneficial, care must be taken to find a balance between setting sufficiently detailed criteria for sectors and products and avoiding excessively lengthy processes in establishing those.

3.3. *Extended producer responsibility*

A third tool we would like to discuss is Extended Producer Responsibility (EPR). EPR is based on the idea that producers are responsible for the environmental impact of their products throughout their life cycle. It builds on the ‘polluter pays principle’ by making the producer financially – and in some EPR-systems also organizationally – responsible for the post-consumer phase of their products, including their take-back, recycling and disposal.⁷⁹ EPR can be seen as one of the key instruments in a global regulatory framework for the transition to circular plastics. Benefits commonly attributed to EPR include improving the recycling process which increases recycling rates, improving separate waste collection and encouraging innovation in product design which reduces the environmental impact of products.⁸⁰ Worldwide, the number and variety of EPR systems have increased significantly in recent years. Already in 2016, the OECD indicated it had identified some 400 different EPR systems.⁸¹

At the European level the instrument of EPR was adopted in the late 1990s as part of the waste management legislation. The Waste Framework Directive encouraged Member States to introduce EPR schemes in which the producer is financially or both financially and organizationally responsible for managing the waste stage of a product’s life cycle.⁸² The goal was explicitly not only to make the producer responsible for the waste phase, but also to steer the design of products towards more circular design.⁸³ As opposed to ecodesign requirements, the EU has left discretion to the MSs to establish EPR schemes. Nevertheless, the EU itself introduced several mandatory EPR schemes, such as for electrical and electronic waste, for batteries and for end-of-life vehicles. For plastics, it is relevant that both the SUP Directive and the PPWD require the establishment of EPR systems by 2024,⁸⁴ in different forms. For example, the SUP Directive makes producers of certain plastic products financially responsible for the costs of awareness raising measures and cleaning up litter resulting from those products.⁸⁵

With regard to EPR more generally, in 2018, the Waste Framework Directive introduced, among other things, general minimum requirements for national EPR schemes, whether or not adopted pursuant to EU obligations, to meet. Article 8 (a) of this directive specifies requirements for defining the role of all actors, for

77 C. Backes and M. Boeve, *Regulating the Producer instead of the Procurer – The EU Sustainable Products Initiative and Extended Producer Responsibility as Ways to Foster the Transition to a Circular Economy*, in In W. Jansen, & R. Caranta (Eds.), *Mandatory Sustainability Requirements in EU Public Procurement Law: Reflections on a Paradigm Shift*, Hart Publishing, 2023, p. 100-101.

78 I.M. de Waal, *The transition towards a more circular plastic packaging chain – A case study of the Netherlands*, *EEELR* 32(5) 2023.

79 E.g. Lindhqvist, T., *Extended Producer Responsibility in Cleaner Production – Policy Principle to Promote Environmental Improvements of Product Systems*, 2000.

80 W. Leal Filho et al., *An Overview of the Problems Posed by Plastic Products and the Role of Extended Producer Responsibility in Europe*, 214 *J. Cleaner Production* 551 (2019), Brown, A., F. Laubinger and P. Börkey (2023), “New Aspects of EPR: Extending producer responsibility to additional product groups and challenges throughout the product lifecycle”, No. 225, *OECD Publishing*, Paris, p. 12 and I.M. de Waal, *The transition towards a more circular plastic packaging chain – A case study of the Netherlands*, *EEELR* 32(5) 2023.

81 <https://www.oecd.org/environment/waste/Extended-producer-responsibility-Policy-Highlights-2016-web.pdf>.

82 Art. 8 and art. 3 (21) Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

83 See Recital 27 Waste Framework Directive, and e.g. W. Vermeulen et al., *WHITE PAPER on Pathways for Extended Producer Responsibility on the road to a Circular Economy*, *Utrecht University Circular Economy and Society Hub*: Utrecht 2021.

84 Article 7 Directive 94/62/EC & 8 Directive (EU) 2019/904.

85 Article 8.3 Directive (EU) 2019/904.

providing information about prevention and reuse, for control systems, auditing and transparency and for linking the financial responsibility to recyclability. The reason for introducing minimum requirements for EPR schemes in the Waste Framework Directive is that there have been wide variations among Member States in the effectiveness and performance of EPR schemes. Another cited reason is that the minimum requirements should improve the governance and transparency of EPR schemes and reduce the potential for conflicts of interest to arise between producer responsibility organizations and the waste processors with whom those organizations enter into contracts.⁸⁶ However, the introduction of EPR schemes for additional product groups is currently still largely left to the discretion of the Member States and thus voluntarily.

EPR has also been given a prominent role in the Zero Draft text and text proposals during INC-3. However, the proposals show very different options regarding EPR. For example, one option indicates that parties ‘shall establish and operate’ EPR systems, while another option provides that parties are only ‘encouraged to establish and operate’ EPR systems, or even only ‘are encouraged to consider’. The latter indicates a (very) voluntary approach. Another difference is that one option refers to ‘modalities to be established in Annex D’, which would include ‘elements for the establishment and operation of EPR systems based on common principles, including for sectoral approaches as relevant’.⁸⁷ This sounds somewhat similar to the minimum requirements for the EPR schemes at the EU level. In other options, the establishment of these modalities are left to the ‘governing body’ or this reference does not occur and thus no minimum requirements seem to be set. Furthermore, it is noteworthy that the goal of EPR for now seems to be primarily focused on increasing recycling rates rather than high quality recycling or achieving targets that focus on higher steps of the waste hierarchy or influence design, as according to the Zero Draft text EPR shall be established ‘to incentivize increased recyclability, promote higher recycling rates, and enhance the accountability of producers and importers for safe and environmentally sound management of plastics and plastic products throughout their life cycle and across international supply chains.’⁸⁸

To make use of EPR’s full potential, the following potential lessons could be learned from experiences with EU EPR schemes. In the first place, it appears that making EPR schemes mandatory can be positive, because of their beneficial effects, but also because EPR schemes are otherwise not introduced. Therefore, it would be desirable to not make the establishment of EPR schemes entirely voluntary, but to choose one of the more mandatory options. In the second place, the current options can be criticized for focusing on recycling instead of higher Rs. Nevertheless, from the EU EPR schemes it appears that the actual influence of EPR on the design stage of products is limited. One of the ways to stimulate this and what the EU is betting on, is fee modulation based on certain design requirements, such as recycled content. Although this may be a possible aspect to include in the Treaty, it should be noted that the success and implementation of fee modulation is doubted due to the limited financial incentive it provides. An alternative to this end could be to introduce a so called ‘circular value chain organization’, to establish a cooperation between different stakeholders along the value chain and stimulate circular product design.⁸⁹ Lastly, some general points of focus with regard to EPR would be that attention needs to be paid to the formulation of objectives and targets, especially with concern to the responsibilities and the costs producers should bear. For example, the current provisions in the Waste Framework Directive limit the responsibility of producers to realizing the respective (recycling) targets of an EPR scheme. As a consequence, a producer will only be responsible for arranging the collecting and recycling facilities that realize these targets and will therefore not bear full responsibility for their products in the post-consumer phase. This means that producers have no incentive to achieve more than these targets.⁹⁰ Also, when establishing, for example, recycling targets, attention should be paid to the fact that recycling targets based on recycling weight, could have a contradictory

86 Recital 21 and 22 Directive 2008/98/EC.

87 Footnote 38 UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

88 Article 7 Option 1 UNEP Zero Draft text on the international legally binding instrument on plastic pollution, including in the marine environment, 4 September 2023.

89 W. Vermeulen et al., WHITE PAPER on Pathways for Extended Producer Responsibility on the road to a Circular Economy, *Utrecht University Circular Economy and Society Hub*: Utrecht 2021.

90 C. Backes and M. Boeve, Regulating the Producer instead of the Procurer – The EU Sustainable Products Initiative and Extended Producer Responsibility as Ways to Foster the Transition to a Circular Economy, in In W. Jansen, & R. Caranta (Eds.), *Mandatory Sustainability Requirements in EU Public Procurement Law: Reflections on a Paradigm Shift*, Hart Publishing, 2023.

effect on the quality of the recycled material and therewith on the supply of high-quality recycled material. From previous research on these aspects in the EU it appears that the calculation method plays an important role in this, but also that material specific targets could be desirable in this regard. Overall, however, the introduction of a regulation regarding EPR at the global level can be welcomed, both because of the intended positive benefits for the transition to a circular plastic value chain, as well as on the prevention of market disruptions.

4. Concluding remarks

In order to effectively address the challenge of the plastic problem, an approach at all regulatory levels is needed. Until now, approaches to combat plastic pollution at the global level have taken place with little coordination and efficiency. Although regulations have been in place at the national and regional level for some time – increasingly taking the full lifecycle of plastic products into account – a global approach has lagged behind. The current process underway for the development of a legally binding global treaty, under the UN auspices, takes a full plastic lifecycle approach. It is, therefore, a very important step in curbing plastic pollution around the globe. In this process, lessons could be learned from experiences with the EU circular approach to plastics in its legal framework to address the challenge of plastic pollution. Not only are there lessons to be learned with regard to specific instruments, such as restrictions on placing products on the market, ecodesign requirements or EPR, but also the coherence between provisions will need to be taken into account. The EU legal framework shows that it is important to introduce provisions and obligations at multiple levels and life cycle stages that are aligned, in order to leverage maximum contribution and create synergies.