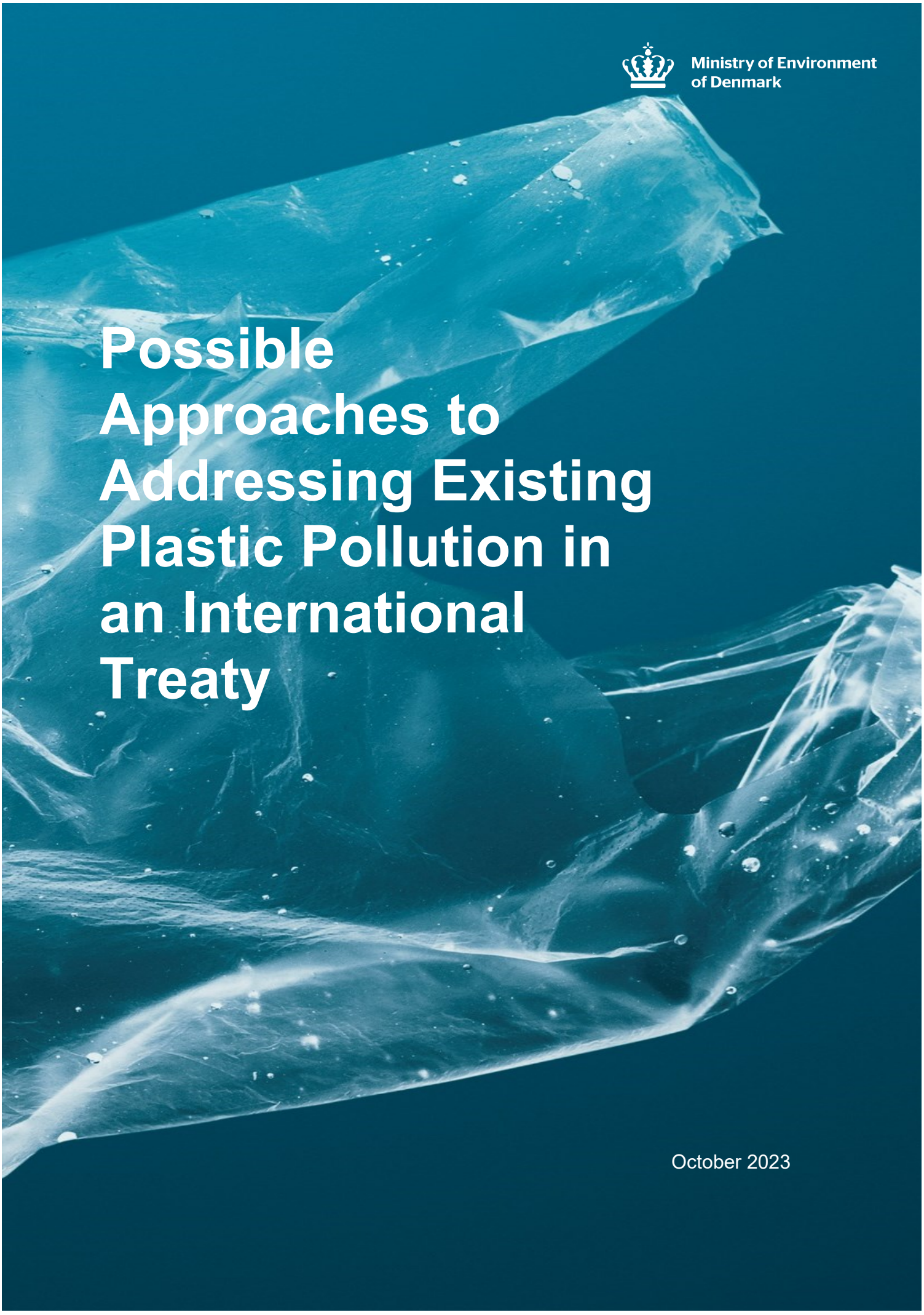

Ministry of Environment of Denmark

Possible Approaches to Addressing Existing Plastic Pollution in an International Treaty

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Summary

The question of how to address existing plastic pollution is critical. Prior to the third session of the Intergovernmental Negotiating Committee to develop a legally binding international agreement on plastic pollution (INC-3), the INC Secretariat published the Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment. The Zero draft primarily addresses existing plastics pollution by proposing options relating to parties cooperating to identify areas most impacted by and vulnerable to existing pollution, to clean up and remediate such pollution, and promote citizen engagement. The Zero draft focusses primarily on how such activities should be conducted and does not include obligations to clean up or remediate existing pollution towards a specific level or target.

The ***aim*** of this report is to elaborate on possible approaches to address existing plastic pollution in an international treaty. To aid decision-makers in the future development of positions around the future treaty, we have conducted a pro and con analysis of potential options to explore the potential benefits and issues of various options from a scientific, technical and legal perspective.

By conducting a literature review, four policy options have been identified:

1. Binding obligation to remediate and clean-up existing plastic pollution (Monitoring obligations, prioritisation, mapping and remediation obligations for certain types of existing pollution);
2. Remediate plastic pollution through national plans without binding obligations. National plans include national action plans (NAPs) and national implementation plans (NIPs);
3. Voluntary commitments to remediate and clean-up existing plastic pollution on a case-to-case basis and
4. Retrospective liability for existing plastic pollution (Sanction past pollution activities and make the polluter pay for clean-up activities).

In order to further understand views and positions of different stakeholders, a total of 85 stakeholders were invited to participate in an online survey to explain their views on addressing existing pollution including how the financing of such. In total only 13 stakeholders responded to the survey. Most of the respondents associate themselves with a government followed by NGOs and Academia. It is noteworthy that no representatives from business organisations and only one company participated in the survey.

The majority of the respondents preferred the development of binding obligation to remediate and clean up existing plastic pollution and mention that having binding obligations will ensure the application of the principles of shared but differentiated responsibility and that the polluter should pay. According to them, having a binding approach will increase the likelihood of identification and financing environmental clean-up and follow-up, thereby creating a more robust and lasting system and framework. Monitoring, prioritisation and clean up obligations ensures a systematic and scientific approach, instead of relying on ad-hoc voluntary contributions or national priorities. Past experience with relying solely on voluntary commitments is referred to as evidence for such an approach not being a solution. When it comes to funding, most stakeholders preferred introducing a dedicated Multilateral Fund financed by donors (states as well as other actors) and implementing an international plastic pollution fee.

From our evaluation of the pros and cons of having binding obligation, voluntary commitments, etc. to remediate and clean-up existing plastic pollution with regard to necessity, urgency, effectiveness and suitable, we learned that each of the four different options has pros and cons. To

some extent these depend on the type of plastic pollution that is supposedly subject to remediation activities and clean-ups. Six different types of plastic pollution were identified: 1) Official and controlled landfills; 2) Uncontrolled dumpsites; 3) Terrestrial plastic pollution; 4) Rivers and nearshore marine plastic pollution; 5) Open ocean plastic pollution and 6) Non-populated “pristine” areas (e.g., the Arctic/Antarctic, mountains).

Based on our analysis, we recommend that binding obligations and guidance are adopted towards remediation and clean-ups of official and controlled landfills and uncontrolled dumpsites. These binding obligations should ensure/encourage: i) clear regulatory policies, frameworks and targets to encourage and ensure environmentally sound clean-ups and remediation, ii) development of Best Available Techniques/Best Environmental Practices (BAT/BEP) for the conduct of clean-ups, iii) the safe management of wastes collected and final fate, iv) resource and process efficiency, v) environmental protection and impact assessments, vi) health and safety during remediation, vii) organisation of clean-ups, viii) transparency and reporting on the conduct, outcomes and fate of materials collected, ix) innovation, research and development of technologies and methodologies.

For terrestrial plastic pollution and rivers and nearshore marine plastic pollution, we recommend remediation of plastic pollution through national plans as these types of plastic pollution are fairly close to the source of plastic pollution and national plans can be used to ensure commitment locally and nationally. It is vital that parties develop and implement strategies in their national plans to address terrestrial plastic pollution and rivers and nearshore marine plastic pollution and the national plans should include clear goals, stakeholder involvement, allocation of resources, public awareness raising, enforcement and monitoring. Otherwise there is a risk that the full potential of using national plans is not achieved.

For open ocean plastic pollution, we recommend that voluntary commitments are adopted and that it is ensured that all elements needed to make them successful are implemented in order to overcome lack of continuity, inconsistent funding and insufficient expertise to address a problem of such a scale. For pollution in non-populated “pristine” areas (e.g., the Arctic/Antarctic, mountains), we recommend voluntary agreements due to similar challenges as those posed for remediating open ocean pollution. However, since some pristine areas have rich and highly sensitive ecosystems it is recommended that regional action plans for such areas (e.g., by the Arctic Council for the Arctic) are also developed.

We furthermore recommend that the governing body develop specific guidance relating to guide Member States and non-State actors to ensure clean-ups are taken in an environmentally sound, socially responsible and economically efficient manner, whilst giving signatories flexibility in terms of implementation measures. This guidance could be incorporated in the designation and identification of BAT/BEP or a new concept serving a similar purpose to BAT/BEP. BAT/BEP guidelines could then be developed, as proposed in the Zero draft, by the governing body of the future instrument, to set the standards for safe and environmentally sound remediation and clean-up of existing plastics pollution.

1. Introduction

Plastic pollution is a recognized threat to environmental health, capable of causing lasting impacts on ecosystems and societies, as pointed out by the United Nations (UN) Secretary-General (Guterres 2023). Despite sustained societal, political, and scientific focus, plastic pollution continues to accelerate, and today more plastic enters the environment than ever before from a range of different sources (Charles & Kimman 2023) (see figure 1).

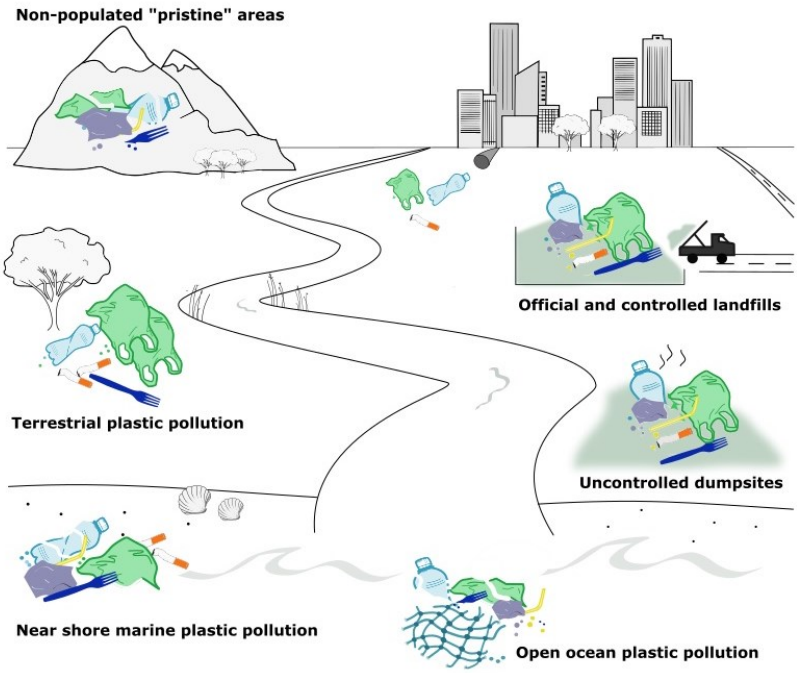


Figure 1. Different types and sources of plastic pollution

Due to this concerning trend, the UN Environment Assembly adopted Resolution 5/14 in March 2022, mandating the Executive Director of the UN Environment Programme (UNEP) to convene an Intergovernmental Negotiating Committee (INC) to develop a legally binding instrument by the end of 2024 to "end plastic pollution, including in the marine environment" (UNEP 2022a). If sufficiently ambitious and properly implemented, this treaty on plastic pollution (hereafter 'the treaty') could help facilitate the much-needed transition to a more sustainable and circular plastic economy. UNEA Resolution 5/14 highlights that the INC should consider "(c) To promote national and international cooperative measures to reduce plastic pollution in the marine environment, including existing plastic pollution;" (Para 3 (c)). Together with the UN Decade of Ocean Science for Sustainable Development, the work on the treaty may provide a unique opportunity for decision-makers and other stakeholders to impact plastic pollution policy in decades to come.

At present, only 9% of plastics ever produced are estimated to have been recycled, with the remaining being landfilled, incinerated or released to the environment (mismanaged) (Geyer, Jambeck and Law, 2017), not counting micro(nano)plastic shed during use. The OECD estimates that more than 79 million tonnes of plastic wastes were mismanaged in 2019; a number that is estimated to grow to 150 million tonnes by 2060 in a business-as-usual scenario (OECD, 2022). It is thus clear that whilst the main aim of the future treaty may be to reduce continued releases and pollution of plastics to the environment, there is a critical amount of existing plastic

pollution contributing to air, soil and aquatic pollution, as well as chemical pollution, that will need to be addressed as well.

The question of how to address existing plastic pollution is critical, especially to countries that have been burdened with plastics wastes from other countries over the past decades, or that are subject to waves of plastics washing up on and polluting their shores (Barrowclough, Birkbeck and Christen, 2020). This is particularly a key issue for small island developing states (SIDS) that lack both space, financing, technologies and otherwise capacities to manage the plastics washing up on their shores from international waters as well as excess use of plastic in business sectors such as tourism. Equally important is the matter of how remediation efforts should be conducted in order to ensure minimum ecological impact and sufficient effectivity, and who should finance these efforts at the national and global level, including in areas beyond national jurisdiction.

Prior to the third session of the INC (INC-3) in November 2023, the INC Secretariat published the Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment (hereafter the "Zero draft"; UNEP/PP/INC.3/4). The Zero draft proposed various options for control measures, including measures to address existing plastics pollution (Part II.11) as well as several related measures concerning means of implementation (Part IV), financing (Part III) and reporting and monitoring (Part IV.4). The Zero draft addresses existing plastics pollution primarily by proposing options relating to parties cooperating to identify areas most impacted by and vulnerable to existing pollution, to clean up and remediate such pollution, and to promote citizen engagement. It further proposes to implement such measures through national plans, conduct awareness raising and through the governing body adopt indicators for hotspot identification, and best available techniques (BAT) and best environmental practices (BEP). The Zero draft does not include obligations to clean up or remediate existing pollution towards a specific level or target, focusing primarily on how such activities should be conducted.

The aim of this report is to elaborate on possible approaches and options to address existing plastic pollution in an international treaty (see figure 2). To aid decision-makers in the future development of positions around the future treaty, we have conducted a pro and con analysis of potential options to explore the potential benefits and issues of various options from a scientific, technical and legal perspective. In chapter 2 of this report, the methodology of the project is presented. In chapter 3, the identified proposed approaches and options are presented and discussed with a specific focus on possible legally binding approaches and voluntary approaches and their pros and cons. In chapter 4, relevant experiences from other international environmental agreements are described. The results of a stakeholder survey and interviews are presented and discussed in chapter 5. Finally, the pros and cons of different potential options to address existing plastic pollution in an international treaty are discussed from a scientific, technical and legal perspective in chapter 6.

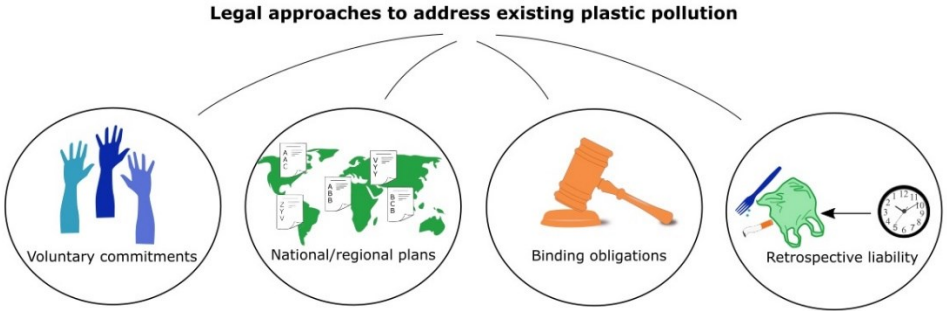


Figure 2. Different legal approaches to address existing plastic pollution

2. Methodological approach

In order to meet the aim of the project, we first performed a ***literature review*** to develop an overview of existing knowledge and currently proposed approaches. This included systematic scrutiny of official documents, in-session documents, written statements and pre-session submissions, alongside English versions of websites of States, groups of States, Alliances and stakeholders involved in the first and second meetings of the INC (INC-1 and INC-2). Keywords used in the literature search include: “Plastic* treaty” in combination with “existing plastic pollution”; “remediation”; “clean-up”; “restoration”; “legacy plastic” and “legacy pollution”. The literature review was supplemented by searches on Web of Science and Google Scholar. A specific focus of the literature review was on identification of proposals and options and their pros and cons from a scientific, technical, legal and practical perspective, taking into account the various political, geographical, economic and social realities of the countries involved in the negotiations towards the treaty. The literature review also included an analysis of relevant experiences from other international and regional environmental agreements.

Second, we completed a ***stakeholder analysis*** to identify additional proposals and options for how an international treaty can address existing plastic pollution. Stakeholders are defined here as an individual or group influenced by, and with an ability to significantly impact (either directly or indirectly), the international treaty (Engi and Glicken, 1995). Stakeholder analysis consists of four overall elements: 1) Stakeholder identification, 2) Mapping of interests and values, 3) Power-influence analysis and finally, 4) Stakeholder management strategy (Bendtsen et al. 2020). In this project, we focused on the first two elements of stakeholder analysis. Stakeholders were identified using Google News, EURACTIV, Chemical Watch and Environmental Health News. Recognizing that the treaty is a global process, we endeavoured to include a global representation of stakeholders, drawing on the submissions to the first and second meetings of the INC to capture global diversity. To the extent possible, contact information to the stakeholders identified was collected and all identified stakeholders were invited to participate in an online survey. Key questions in the survey include: “Which stakeholder group and/or association do you associate yourself most with”; “Which of the following options do you prefer” and “May we contact you for a short 10-minute follow-up interview”. Furthermore, the stakeholder analysis included participant observation and informal consultations with stakeholder coalitions at the INC-2 negotiations, and subsequent interviews with relevant stakeholders from the relevant coalitions.

Finally, we completed a ***pro and con analysis*** of the policy approaches and options identified in the literature review and stakeholder analysis. Our focus was on providing useful recommendations for policy makers on how to overcome gaps and barriers that currently hamper introduction and successful approaches to addressing existing plastic pollution in an international treaty.

3. Identified propose approaches and options and their pros and cons

3.1 Stakeholder analysis

In order to identify potential measures and options when it comes to remediation of existing plastic pollution, we completed the first two elements of a stakeholder analysis as elaborated in Chapter 2. The first element includes stakeholder identification, which were identified using a range of online news sources.

The topics of the different news articles are diverse and include: Transparency about chemicals in plastic products, sustainability criteria, end use of plastics, binding chemical disclosure requirements, microplastics, the Precautionary Principle, Polluter Pays Principle, product design and use, plastic waste management, voluntary measures, pre-approval of plastic additives, national plans and the potential of having a global cap on production. Only very few news items mention remediation.

In the Nordic Report elaborating on the concept of international sustainability criteria under a legally binding treaty, Rognerud et al. (2021) proposes for governments to formulate policies and measures to prevent and remediate plastic pollution through national implementation of the treaty provisions in the form of National Plastic Action Plans (NPAPs). The authors further propose to identify knowledge gaps and develop research agenda related to hazards, impacts and remediation of plastic products, aligning to international conventions and pacts and connecting with international research efforts, with a particular focus on impacts on local communities, microplastics, environmental and food safety of recycled plastic and new materials, and potential toxic effects of plastics.

In their draft resolution on plastic pollution for UNEA-5.2 from September 2021, the Governments of Peru and Rwanda called for the INC to develop an international legally binding treaty based on a comprehensive approach to prevent and reduce plastic pollution in the environment, including microplastics, by promoting a circular economy and addressing the full lifecycle of plastics. This should include provisions to promote national plans to prevent, reduce and remediate plastic pollution tailored to local and national circumstances and the characteristics of specific sectors, and to support regional and international cooperation and coordination (see Chemical Watch (2022) and UNEA (2022)). This effort should also consider the need for a financial mechanism to support the implementation of priorities, including the option of a dedicated multilateral fund (Chemical Watch 2021a).

The final statement from the Ministerial Conference on Marine Litter and Plastic Pollution from September 2021 also mentioned remediation as it states that the treaty could be based on a precautionary approach, the Rio Declaration and other relevant environmental principles and “remediating the existing plastic pollution using an evidence and risk-based approach…” (Ministerial Statement 2021).

A few other stakeholders and researchers have also discussed remediation in their scientific publications including calling for funds for remediation activities and clean-ups. In May 2022, the NGO, International Pesticides Elimination Network (IPEN) has called for an international treaty on plastic pollution to, for instance, introduce extended producer responsibility schemes to ensure that industry bears the costs of plastics throughout their life cycle include as well as funding for implementation and monitoring (Chemical Watch 2021b). IPEN has furthermore called for the enforcement of the polluter pays principle to ensure existing pollution is remediated (Karlsson et al. 2021).

Similarly to IPEN, the NGO Environmental Investigation Agency has focused on approaches to finance the implementation of the treaty. According to EIA, financial support to developing countries and economies in transition can be divided into two: (i) enabling activities, and (ii) incremental costs. Enabling activities can be capacity-building and training, institutional strengthening, policy development, monitoring and reporting and finally, pilot and demonstration projects. Incremental costs are extra expenses related to compliance with the new commitments e.g., investments that might need to be made in separate collection and recycling infrastructure of plastic bottles (EIA 2022). Funding of enabling activities and extra expenses related to compliance with the new commitments can be both bilateral or multilateral. The UN Environment Programme, found “little coordination in bilateral funding in overall funding strategies or in project funding at the national level, leading to redundancies and inefficiencies” in its provisional review of financial resources and mechanisms (UNEP 2020, EIA 2022). When multilateral funding is available, many countries encounter challenges in accessing it. Finally, difficulties exist in coordinating national budgets and plans, where countries are increasingly dedicating their own funds to combat plastic pollution, where countries are receiving significant international funds.

3.2 Submissions to INC-2

Several states and stakeholders submitted written submissions in response to the Executive Secretary of the INC Secretariat invitation on 9 December 2022 to inform the secretariat in the preparation of a document with potential options for elements towards an international legally binding instrument. Table A in Appendix A provides an overview of all Member States and stakeholders that mention remediation, clean-up or existing plastic pollution in their statements and highlights their reflections of relevance to remediation and the scope of this project. The following sub-sections provide an analysis of the submissions.

3.2.1 High level of initial ambition across the full-life cycle of plastics or not?

It is clear from the written submissions that there is some diversity with regard to whether existing plastic pollution is a problem that should be addressed solely through specific articles or that should be addressed through measures across the full life-cycle of plastics, including specific remediation measures. Whereas some countries do not mention remediation, restoration, clean-up or existing pollution at all in their submissions, other countries put that plastic pollution cannot be resolved without considering remediation as the final step of the full life-cycle of plastics. For instance, Palau states that plastic pollution cannot be managed without taking a comprehensive approach, from sourcing of plastics to end-of-life management and remediation of pollution. Similarly, Tonga argues that the issue needs to be considered comprehensively from the point at which plastic is conceived as a material to the end of life. Some states include remediation of existing plastic pollution in their suggested objectives. E.g., the Cook Islands state that the objective of the treaty should be concise, including a goal to “…promote remediation where safe to do so for the environment and human health.” whereas the Federated States of Micronesia call for “remediating existing plastic pollution where possible, particularly in the marine environment.” Only, the Cook Islands call for national targets to include a minimum target for the collection and recycling of plastic waste.

Different states highlight different aspects related to the life-cycle and remediation, restoration, clean-up and existing pollution. Rwanda urges that the core obligations and measures to remediate plastic pollution in the marine environment include existing plastic pollution, as well as plastic pollution in other environments. AOSIS calls for a high level of initial ambition for all stakeholders across the full-life cycle of plastics, including remediation, whereas Australia called for regulating the movement and end of life management of plastic waste in order to reduce leakage from mismanaged waste. The EU focuses on ensuring that the instrument harmonises requirements and introduce obligations for monitoring and reporting in relation to the management of plastics along its life cycle. The Cook Islands call for each party to develop and maintain publicly available inventories of plastic-related chemicals, polymers, and products, as well as emissions throughout the full life cycle of plastics.

3.2.2 Urgency of remediation activities

Several states explicitly acknowledge that the remediation, restoration, clean-up of existing plastic pollution is urgent and that this will need to be considered as part of the new instrument (e.g., see submission from the EU, Ghana and Rwanda). Often reference is made to there being ongoing and increasing plastic pollution in the environment, that existing market failures fail to internalise the costs of cleaning up plastics pollution into the price of manufacturing plastics products, and that the costs of eliminating existing pollution will likewise be significant and will continue to grow in the future (see for instance, the submission made by Ghana).

Some argue that the urgency of plastic pollution calls for legally binding international instrument that applies a whole range of measures ranging from prohibitions, taxes on disposable plastic items, investments for the collection of plastic waste in different ecosystems at the national level, policies on the reduction of plastic containers to cleaning operations on beaches and other water bodies, measures of the polluter pays (see for instance Equatorial Guinea). Others such as the EU seem to favour adopting targeted voluntary removal measures in national action plans. Specific measures mentioned by the EU include clean-up activities and awareness-raising initiatives and the EU purports that these remediation activities could be implemented in specific contexts such as accumulation sites on coasts, rivers, estuaries, urban mining, and unregulated landfills, as feasible and justified from a socioeconomic perspective. As part of the implementation of national plans that are specifically designed to take the particular circumstances of each country into account, including for the elimination of plastics currently in the environment, Peru calls for the creation of favourable conditions for the development of international scientific cooperation in the fields of evaluation of the scale, human health and environmental threats of plastic pollution as well as development of new technologies for cleaning the environment from plastic pollution.

3.2.3 Prioritization and environmentally sound remediation

The issue of prioritisation comes up repetitively in the submissions (see for instance, Ecuador, Monaco, the EU and the Federated States of Micronesia). For instance, Ecuador and Monaco call for parties to act, including through cooperation to identify, prioritise, and address areas of legacy waste. A few states provide insights into what they believe should be given high priority. For instance, the Federated States of Micronesia call for “Policies and measures must also be put into place to address the legacy plastic pollution that already exists in the environment, prioritising those locations and pollutants that cause the most harmful impacts on human health and ecosystems, with particular attention to existing plastic pollution in the marine environment (including in marine areas beyond national jurisdiction) and focusing especially on small islands/atolls.” Ecuador wishes to ensure remediation of plastic pollution that poses risks to local communities, biodiversity, fisheries, health, tourism, navigation, and maritime safety. The EU finds that plastic pollution hotspots should be given priority along with measures that can have a local or regional positive impact on human health and the environment, and minimising negative effects to ecosystems. The Alliance of Small Island States (AOSIS) argued parties should give priority to global actions such as remediation of plastic pollution in the environment,

including the marine environment and areas beyond national jurisdiction as these have the greatest potential to achieve the ultimate objective. Interestingly, Gabon and Guinea call for the establishment of an international plastic pollution remediation system for the oceans and international areas. The EU argues that criteria could be developed to ensure that clean-up activities respect biodiversity. In general, prioritisation is often mentioned along with a call to ensure that remediation is done in an environmentally sound manner (see Canada, Ecuador, Monaco).

3.2.4 Monitoring and Reporting

Monitoring and reporting is another integrated aspect of many of the submissions. Several states highlight the importance of transparency and reporting requirements on the national measures that parties implement to prevent, reduce, and remove plastic pollution (e.g., Canada, Switzerland). The EU argues that obligation for monitoring and reporting be put in place in relation to plastic pollution in the environment, but also the management of plastics along its life cycle and calls for a common reporting format with both mandatory and optional components. These components should include main SMART indicators (Specific, Measurable, Attainable, Relevant, and Time-bound) against which progress must be tracked and reported. Both the EU and Ecuador call for the COP to establish a global monitoring framework that establishes baselines and monitors the evolution of the presence of plastic in the environment, including harmonised definitions, methodologies, and formats for reporting at the regional and global level.

According to the EU, this should also include measures promoting the identification of hotspots of transboundary plastic pollution, where efforts would benefit from cross-border collaboration. Regarding the remediation of hotspots, Gabon and Guinea call for the development of a “definition of tolerability thresholds for chemical additives in the plastics industry, petrochemicals and plastics.

The data collected through the various monitoring activities should according to Gabon be compiled by the competent national authority for the preparation of national reports on the reduction and elimination of plastic pollution. This report should then again be used to track the execution of mitigation strategies for plastic-polluted sites, awareness programs and operations at the local level. The Cook Islands call for the development and maintenance of publicly available inventories of plastic-related chemicals, polymers, and products, as well as emissions throughout the full life cycle of plastics that is designed to track among other volumes and types of legacy plastics removed from the environment.

3.2.5 International cooperation and guidance

Calls for collaborative actions, cooperation and guidance to address existing plastic pollution and marine litter, including in international waters, are repetitively made throughout the submissions (e.g., Australia, Canada). The same goes for calls for a coordinated global, national and local efforts to address damage caused by ongoing plastic pollution, including clean-up and remediation activities (e.g., New Zealand, Norway, Monaco, Rwanda and Uruguay).

On cooperation, Norway, Rwanda and Uruguay calls for parties to develop strategies to identify, prioritise and address areas of legacy waste in an environmentally sound manner, and encourage partnerships with stakeholders in support of these strategies, including international organisations, whereas Switzerland argue that the COP could adopt guidance on the remediation of aquatic environments and terrestrial sites contaminated with plastic waste.

Canada also calls for the development of guidance to prevent and reduce plastics entering the environment from key sources and pathways and to prioritise and conduct environmentally sound removal of plastic pollution. The latter includes plastic pollution on land, from waterways, nearshore areas and removal of abandoned, lost or otherwise discarded fishing gear on open water within national jurisdictions. Along the same argument, Ecuador and Monaco call for the COP to adopt criteria and guidelines on BAT/BEP for environmentally sound remediation of

existing waste. To support this work, Uruguay envisioned the establishment of an intersessional working group to address strategies for eliminating, minimization, control, monitoring and remediation of the exiting plastics pollution.

3.2.6 The establishment of a legacy fund

Several states call for consideration of establishment of a trust or legacy fund that would specifically target remediation of plastic pollution (e.g., see AOSIS, Ecuador, Ghana, Rwanda and Tonga).

Ghana concretely proposes a Global Plastic Pollution Fee (GPPF) that is to serve as an economic incentive for companies to adopt more sustainable production and disposal practices, while also generating revenue that can be used to finance environmentally safe and sound waste management and clean-up initiatives. Rwanda calls for the fund to be funded by the private sector, whereas most countries simply call for appropriate funding for the implementation of the treaty and are otherwise open to various sources of funding.

Several specify that the dedicated funds should support eligible countries to carry out their obligations, commitments and/or contributions under the treaty, as well as fund scientific studies on sources of marine litter (see Federated States of Micronesia and Palau), whilst others argue that the funds should be dedicated to support the implementation of a ten-year plan to remediate past plastic pollution in international areas or in countries receiving plastic waste from the high seas (see Gabon).

The Cook Islands call for a financial mechanism to be established under the treaty inspired by similar articles under the Montreal Protocol and the Minamata Convention specifically regarding funding mechanisms, transfer of technologies and capacity building and technology assistance.

Regarding the nature of the fund, Ecuador calls for it to be a “robust integrated mechanism” that ensures the provision and mobilisation of new, additional, and predictable flows of financial resources. Resources that can be used to support relevant research, development, and innovation projects, promote technology transfer and know-how, and provide capacity building and technical assistance.

3.3 INC Secretariat’s identification of potential options for elements towards an international legally binding instrument

In April 2023 the secretariat of the INC on Plastic Pollution published a note with potential options for elements towards an international legally binding instrument including core obligations, control measures and voluntary approaches; implementation measures; and means of implementation. The note is based on the discussions at INC-1 as well as 67 submissions made by States and groups of States. The INC Secretariat also received 176 submissions from stakeholders and stakeholder groups, and produced two stakeholder webinars where 46 stakeholder organisations presented their submissions (IISD 2023).

The note identifies 12 possible core obligations that can assist in structuring the deliberations of the INC. Some of the obligations are mutually exclusive whereas others could complement one another. Possible core obligation 10 addresses existing plastic pollution. Options for addressing existing plastic pollution listed include: i) Taking measures to remediate plastic pollution in the environment in areas beyond national jurisdiction and ii) Cooperating in the development strategies to identify, prioritise and address areas of existing waste.

Sector/context-specific measures listed include:

i. Elimination of ghost gear pollution in the environment;
ii. Conduction of remediation activities in specific contexts such as accumulation sites on coasts, rivers and estuaries, urban mining and uncontrolled landfills, as feasible and justified from a socioeconomic perspective; and
iii. Develop criteria and guidelines on best available techniques and best environmental practices, including to ensure that clean-up activities respect biodiversity through e.g., identification of indicators for hot spots where quantities and types of litter endanger marine or other species or habitats and encouraging the adoption of targeted removal measures in national action plans on a voluntary basis (e.g., clean-up activities and awareness-raising initiatives).

In regard to ii) on remediation activities, the note by the Secretariat states that priority could be given to plastic pollution hotspots and measures that could have a positive local or regional impact on human health or the environment and to minimising negative effects to ecosystems (UNEP 2023). Remediation is also mentioned under the heading of Financial assistance as a means of implementation. One of the options listed as a way "...to provide for new, additional, stable, accessible, adequate, timely and predictable flows of financial resources to support the implementation of the instrument…" include to "...(d) Establish an additional fund dedicated to tackling existing pollution in the environment and the remediation of legacy plastic waste to reduce and eliminate the release of plastics (and microplastics) to air, water and land, including in the marine environment, targeted specifically at supporting vulnerable countries and small island developing States that bear a heavy burden of legacy plastics on their shorelines" (UNEP 2023).

4. Lessons learnt from previous international environmental agreements

Several existing international environmental agreements address the clean-up or remediation of pollution, or restoration of the environment due to pollution or degradation. In the Nordic Council report on international sustainability criteria under the legally binding agreement, Rognerud et al. (2021) mentions that the Montreal Protocol, the Basel Convention and the Stockholm Convention could be a source of inspiration. Similarly, in their report for UNEP on "Global governance of plastics and associated chemicals", BRS (2023) mention the Convention on Biological Diversity (CBD) and the Stockholm Convention as examples of multilateral environmental agreements (MEAs) that include remediation of degraded ecosystems and of sites contaminated with chemicals, respectively. Meanwhile, they highlight the Basel Convention for being the agreement for which the dematerialization (post-use) phase of the plastics value chain is most comprehensively addressed. Existing plastic pollution represents an issue of international environmental law and, therefore, it is important to realise that its regulation should – and will - be governed by the well-established set of principles in this field.

4.1 The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the Basel Convention) entered into force in 1992. The Convention was created to prevent the negative impacts of the trade of hazardous wastes. Following the Plastic Waste Amendments introduced in 2019, the Basel Convention increasingly also addresses the trade in plastic wastes - requiring the prior informed consent of trade of unsorted plastics wastes destined for recycling. The Basel Convention Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (so-far ratified by 12 countries) Art. 6. Preventive Measures requires the Parties to ensure any person in operational control of hazardous wastes at the time of an incident to take all reasonable measures to mitigate damage. In this context, reasonable measures mean "to prevent, minimise, or mitigate loss or damage, or to effect environmental clean-up", according to Art. 3. of the Protocol. The Protocol thus also entails that future spills and releases of plastics during transboundary trade may be subject to liability and compensation claims. Whilst the Protocol is not retroactive and cannot be utilised to finance the clean-up of existing pollution, it may contribute to prevent future pollution in the leadup to the ratification of the future treaty on plastic pollution.

What may be of more relevance to the treatment of existing plastic pollution under a future instrument, is the need to ensure that clean-ups and clean-up activities are conducted in an environmentally and socially responsible manner. One concept that is particularly relevant in this regard, is "environmentally sound management" (ESM), typically used in relation to the management of hazardous wastes. Signatories to the Basel Convention are required to obtain prior informed consent to the shipment of hazardous wastes, through which the receiving country confirms that the wastes will be treated in an environmentally sound manner. The Basel Convention defines ESM as "taking all practicable steps to ensure that hazardous wastes and other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes" (Basel Convention, Art. 2 (Definitions)).

The current Framework for ESM of wastes, adopted at COP11 of the Basel Convention, takes a full lifecycle approach, favouring the waste hierarchy, and identifies the following elements as needed to be considered for the ESM of wastes: i) regulatory matters, ii) facility-related matters, iii) waste-related matters, iv) resource and process efficiency, v) environmental protection, vi) occupational safety and health, vii) organisational matters, viii) transparency, and ix) innovation, research and development (UNEP 2013).

Under the Plastic Waste Amendments, the Basel Convention includes reference to the ESM of plastics wastes, yet it is still not fully defined what ESM of plastics wastes entails in practice, especially when relating to the recycling of wastes (van der Marel 2022). A key limitation of the ESM framework is the lack of clear and specific indicators and limits for measures to be considered ESM. Rather, frameworks and guidelines for ESM are process-oriented, non-binding and typically rely on qualitative language and recommendations as to procedures. Indeed, ESM is a "broad policy concept that is implemented in various ways by different countries, organisations and stakeholders" (UNEP 2021). This does allow for ESM to be adopted to national circumstances and capabilities, but also risks diluting ESM as a concept (van der Marel 2022).

During the Basel Convention COP16 in May 2023, the COP adopted new Technical guidelines on the environmentally sound management of plastic wastes (Decision BC-16/4) including considerations on new technologies, and notably, recognizing that it is still unclear if chemical recycling of wastes can be considered ESM. These new Technical guidelines on the environmentally sound management of plastic wastes (UNEP/CHW.16/6/Add.3/Rev.1), whilst referring to the waste hierarchy, do not prioritise the best outcomes of the recycling of plastics wastes and as such is limited to providing normative guidance to Member States on the fate of plastics wastes.

In summary, when it comes to the Basel Convention there are several aspects that are important to have in mind:

1. The Basel Convention contains language obligating signatories to take measures to prevent future spills and releases of plastics pollution during trade activities, including transportation and storage;
2. The framework for ESM of plastics wastes remains vague on some points and lacks prioritisation or a hierarchy of best outcomes;
3. If an ESM approach is to be taken to address clean-ups of existing plastics pollution, more specific guidance may be appropriate in the form of BAT/BEP guidance on specific recommended and advisable techniques and practices;

4.2 The Convention on Biological Diversity

According to BRS (2023) the Convention on Biological Diversity (CBD) "…provides an avenue for remediation of plastic litter through its obligation to rehabilitate and restore degraded ecosystems and promote the recovery of threatened species" as Article 8(f) includes remediation as an obligation to "rehabilitate and restore degraded ecosystems, and promote the recovery of threatened species".

The CBD was adopted in 1992 and entered into force in 1993. The CBD has objectives to ensure: 1) Conservation of biological diversity; 2) Sustainable use of the components of biological diversity and 3) Fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

4.2.1 Funding of conservation and remediation activities

Especially the aspects relating to funding of activities under the CBD are worth noting in this context, since the challenges posed under CBD might be reproduced in the treaty instrument. The CBD has a strong focus on the transfer of new, additional and sufficient financial resources from developed countries to developing countries to support conservation in developing

countries (CBD Article 8 and 9). However, the issue of mobilising funds has been a recurring topic since the adoption of the CBD. Most recently, the 15th Meeting of the Parties of the Convention of Biological Diversity negotiators did not manage to create a new dedicated fund to fulfil the agreement as requested by many developing countries (Zhu et al. 2022). According to Zhu et al. (2022) it is generally acknowledged that the CBD has been dogged by a pattern of "…setting ambitious goals without establishing the financial architecture necessary for meeting them". So far, the funding provided is "scattered and aspirational" (Zhu et al. 2022, Cumming 2022). This discrepancy is known as "the funding gap". During CBD COP15, a clear divide materialised itself between wealthy countries such as the EU that insisted on setting ambitious targets, and developing countries that refused to agree to specifics unless funding was first put on the table (Zhu et al. 2022). Another interesting aspect of funding is related to ensuring that support of harmful activities is put to a halt. According to the OECD, governments spend approximately USD 500 billion per year in support of activities that potentially harm biodiversity, which is five to six times more than total spending for biodiversity (OECD 2020).

How to address the funding gap has been subjected to multiple discussion and analysis e.g., by UNEP and the OECD. In 2011, CBD Secretariat developed a Strategy for Resource Mobilization that aimed at ensuring reporting of: 1. International flows of financial resources, including for biodiversity conservation; 2. Financial resources available for biodiversity in each country; 3. Steps countries are taking to implement the strategy for resource mobilisation; and 4. Specific initiatives including those relating to innovative financing mechanisms. Overarching issues of relevance to the strategy were how to ensure that all relevant information and data is considered, efficiently collected and of a high quality and avoid double counting (UNEP 2011).

In 2020, the OECD presented five key recommendations on how to improve the assessment, tracking and reporting of biodiversity finance flows:

- Improve the consistency and transparency of the data reported to the CBD by e.g., reporting quantitative data on expenditure by individual category and providing supplementary information on methods used to estimate finance flows;
- Develop and agree on an internationally harmonised approach for assessing and tracking public biodiversity finance, building on existing frameworks and classification systems;
- Establish a common framework to assess and track private finance for biodiversity;
- Increase national-level efforts to identify, assess and track public expenditure harmful to biodiversity, including biodiversity-harmful subsidies;
- Develop guidance and adopt measures to evaluate the effectiveness of biodiversity finance flows, and related policy instruments (OECD 2020).

At the COP15, different funding options were discussed e.g., having a dedicated global fund for implementing the existing finance mechanism for the CBD known as the Global Environment Facility (GEF), having a 1% levy on all biodiversity-based products sold in developed countries or a hybrid combination of a multilateral finance mechanism and bilateral funding (Zhu et al. 2020). Besides the CBD, the GEF also services other global treaties, such as the UN Framework Convention on Climate Change (UNFCCC) and its Paris Agreement. Allocation of finances within the GEF has also been pointed out as problematic as it is determined through voting rights and the USA has a primary say despite not being a party to all treaties services by the GEF, such as the CBD. Additionally, parties such as Brazil and China with the ability to prepare large grant proposals have historically been able to obtain most of the GEF funding (Zhu et al. 2020).

4.2.2 Liability and redress under the CBD

In Article 14(2) on Impact Assessment and Minimising Adverse Impacts, the COP pledged to examine "… on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity". The CBD gives little guidance to key questions that arise when it comes to liability and redress which includes: is a liability and

redress regime under the Convention appropriate at all? What is damage to biological diversity? How do you calculate adequate monetary compensation if the damage is irreversible and reinstatement impossible? What would restoration look like? Should there be a focus on state responsibility or state liability or both? (UNEP 2007). Since the adoption of the CBD, the work on liability and redress under the CBD has continuously progressed via the completion of different workshops and meetings (see the UNEP 2001, 2005, 2008).

In summary, when it comes to the CBD there are several aspects that are important to have in mind:

1. It is important to agree on mobilising funds while simultaneously setting ambitious goals for plastic remediation;
2. Measures should be taken to bridge the so-called "funding gap";
3. A balance has to be ensured between the costs associated with the harm of plastic pollution and the funding made available for remediation activities. Harm should be defined in broad environmental, health and socio-economic terms;
4. Mechanisms and guidance can with great benefits be put in place to ensure that information and data on international financial resources made available for plastic remediation is efficiently collected and of a high quality and avoid double counting;
5. One has to consider whether to have: 1) a dedicated global fund for implementing the existing finance mechanism i.e., Global Environment Facility (GEF), 2) having a given levy on all plastics or 3) implementing a hybrid combination of a multilateral finance mechanism and bilateral funding. A combination of different funding mechanisms could also be considered;
6. If the GEF is chosen, problems with allocation of finances within the GEF has to be addressed.

4.3 Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in 2001 and came into effect in 2004. The Stockholm Convention aims to eliminate and reduce the release of POPs to the environment during the production and use phases in the life-cycle of chemicals listed in Annexes A, B and C to the Convention. It is a typical example of a so-called 'list technique' utilised in environmental conventions (Dupuy & Vinuales 2018, p. 213), where parties' obligations are linked to a list or lists of objects found in the annex(es) of the convention. This technique allows for flexibility as new items can be added on the list(s) during the convention's lifetime. List conventions are in that sense dynamic regulatory instruments. Another example of a convention using this technique is the CITES convention. The list technique was chosen for the Stockholm Convention, because it basically restated at the international level already existing national regulations regarding the 'dirty dozen' (pesticides and industrial chemicals). It was therefore somehow easy to gain international support.

Under the structure of the Stockholm Convention, each list in Annexes A, B and C is linked to a respective set of obligations (Arts. 3-6) (Dupuy & Vinuales 2018, p. 264). The lists can be updated following a stringent amendment (registration) procedure (Art. 8). The amendments of the lists should follow the precautionary approach (Rio Declaration, principle 15). The Stockholm Convention is, thus, designed to respond to new scientific development, to be flexible and precautionary. Yet, the amendments of the Annexes (adding new substances) is much more burdensome and slower than expected, as the additions can impinge on industrial interests and hit a strong lobby (Bodansky et al. 2008, p. 406).

Although the Stockholm Convention mainly deals with the production and use of POPs, it also partially covers other phases of the chemicals' life-cycle, namely international trade and waste management. The latter is especially relevant to this report. Article 6 of the Stockholm Convention titled '[m]easures to reduce or eliminate releases from stockpiles and wastes' requires the

parties to, among others, identify stockpiles of chemicals listed in Annexes A and B and to manage the stockpiles in a safe, efficient and environmentally sound manner. Moreover, parties shall '[e]ndeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C; if remediation of those sites is undertaken it shall be performed in an environmentally sound manner' (Art 1e)). The provision regarding remediation of contaminated sites is, thus, of a voluntary character. It is not, therefore, surprising that environmentally sound management of POPs waste has been identified as one of the priority areas for action to address implementation challenges of the Stockholm Convention in its second effectiveness evaluation round (UNEP 2022b, para. 5(d)). The COP of the Stockholm Convention urges the states to increase their efforts to compile and share the information on POPs stockpiles; it also calls for adoption and enforcement of national legislation regarding the same, for the Secretariat to continue their work on developing guidelines on Article 6 implementation, and on the parties to use any available tools; finally, researchers and regional centres are also called upon to contribute to the knowledge development and sharing regarding waste management (UNEP 2022b, Recommendations (Article 6)).

In summary, when it comes to the Stockholm Convention there are several aspects that are important to have in mind:

1. Remediation efforts are only managed as voluntary actions in the Stockholm Convention and the Stockholm Convention has not been particularly successful so far when it comes to remediation;
2. Remediation of contaminated sites and management of POPs stockpiles remains a major problem, which is only presumably destined to grow, as new chemicals are added to the Convention's annexes;
3. Only a minor fraction of chemicals of potential concern in plastics falls under the Stockholm Convention (BRS 2022: 6);
4. The future international treaty on plastic pollution could draw inspiration from the list technique of the Stockholm Convention, expanding the technique to include families and supporting development of appropriate tools to address plastic pollution remediation.

TABLE 1. Summary of the main features of the selected conventions relevant to the design of the treaty

Full name	Does it apply to existing plastic pollution?	Does it regulate remediation of existing pollution (plastic or other)/environmental damage?	Does it regulate any remediation of pollution/environmental damage? (E.g. which type(s) of regulatory and policy option it uses in this respect?)	How is the convention relevant to the future treaty on plastic pollution?
Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	No	No	Yes, the Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal regulates possible future release of plastics to the environment during trade activities. Binding obligation to mitigate damage – but conditioned by reasonableness and compliance with domestic law.	- Addresses the trade in plastic wastes. - Liability Protocol (Art. 6) – obligation of any person in operational control or possession of waste to mitigate damage, incl. conduction environmental clean-up, in case of incident involving hazardous waste – eventual clean-up should be conducted in an environmentally and socially responsible manner – prevents building up existing plastic pollution before the treaty is adopted. - Uses the (vaguely defined) concept of 'Environmentally sound management', also in relation to plastics, that could be specified and used in the treaty.
Convention on Biological Diversity	No	Yes, art. 8(f) CBD imposes on the parties an obligation to 'Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species …'	Yes, binding obligation – but vague guidance on tools ('…the development and implementation of plans or other management strategies'). Binding obligation to 'Cooperate in providing financial and other support for in-situ conservation … , particularly to developing countries.' – but extensive 'funding-gap' exists.	- Art. 8(f) CBD could be theoretically used as a legal basis for the obligation to remediate plastic litter where it leads to a degradation of ecosystems and threatens species. - The experience with funding rehabilitation and restoration under CBD can inform the design of the treaty. - A minor fraction of chemicals of potential concern in plastics are covered by the Stockholm Convention. - The structure of the Stockholm Convention – the list technique – could serve as inspiration for the treaty.

Convention on Persistent Organic Pollutants	Partially, as only a minor fraction of chemicals of potential concern in plastics falls under the Stockholm Convention	Yes, art. 6(1)e requires parties to 'Endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C', i.e. incl. the covered plastics, and 'if remediation of those sites is undertaken it shall be performed in an environmentally sound manner.' Voluntary commitments to remediate and clean-up of existing pollution.	No, in other parts (e.g. regarding POP stockpiles and waste), the Stockholm Convention focuses on prevention.	- A minor fraction of chemicals of potential concern in plastics are covered by the Stockholm Convention - The structure of the Stockholm Convention – the list technique – could serve as inspiration for the treaty

For all these MEAs, and generally any legal approach establishing authority regarding environmental remediation, it is important to note they in many cases rely on hazard and risk assessment criteria developed over the history of environmental regulation to establish an acceptable baseline of the pollutant in the environment. With this baseline, the delegated authority has the legal basis to establish, with respect to specific pollutants, environmental quality goals. And with the environmental quality goals, the delegated authority can then develop adequate remediation measures and define the scope of remediation deemed adequate in achieving recognized environmental quality goals. At this time, conventional tools to both sample and analyse environmental plastic pollution and develop hazard and risk assessment strategies are currently in development. Agreement regarding an acceptable environmental baseline for plastic, a synthetic and non-naturally occurring material, has yet to be defined or achieved. Until these tools are readily available, there remain gaps in the foundation supporting development of legal authority regarding plastic pollution remediation. Until such thresholds have been developed, the only scientific sound threshold must therefore be zero.

4.4 Most relevant general principles of (customary) international environmental law

The modern understanding of international environmental principles is codified in the Rio Declaration (UN, 1992). While the Rio Declaration is not legally binding on states, many of the principles contained therein have found their ways into binding legal instruments, and international and national case law. They fulfil multiple functions: the principles may serve as a legal basis for international conventions (e.g. the UNFCCC regime has been arguably built around the CBDR principle, UNFCCC, art. 3(1)), as interpretive guideline, and/or conciliation tools (e.g. the principle of sustainable development in the *Gabčíkovo-Nagymaros* case[1]). Principles of international environmental law can be divided in two groups: principles of prevention and principles concerning balancing of contradictory interests (Dupuy & Viñuales, 2018, 60 et seq.). Both of these groups are relevant to review in respect to the regulation and management of existing plastic pollution. In the first category, the 'no-harm' principle provides legal argumentation for including retrospective rules in the treaty on plastic pollution, while the preventive principle, precautionary principle, and the principle of cooperation, consultation and notification justify establishing clean-up obligations to avoid further harm. Principles from the second category, particularly the polluter-pays-principle and the principle of sustainable development, should then guide the design of the rules distributing responsibilities for the clean-up activities among the states. Finally, it is important to note the concepts of common areas and common heritage of mankind that are relevant (yet with only weak normative power) to the regulation and management of existing plastic pollution.

[1] *Gabčíkovo-Nagymaros Project*, Hungary v. Slovakia, Judgment, ICJ Reports 1997

TABLE 2. Typology of principles of international environmental law (based on Dupuy & Viñuales, 2018, 60 et seq.)

Principles of prevention		**Principle on balancing contradicting interests**	
Name of the principle(s)	**How it can be used in the Treaty**	**Name of the principle(s)**	**How it can be used in the Treaty**
No-harm principle	Inclusion of retrospective rules (see below section 6.2.1)	Polluter-pays principle	Inclusion of retrospective rules Distributing responsibilities for the clean-up activities among states
Preventive principle Precautionary principle	Establishing clean-up obligations	Principle of sustainable development Common but differentiated responsibilities principle	Distributing responsibilities for the clean-up activities among states and the design of these activities
Principle of cooperation Procedural principles (consultation, notifi …)	Establishing procedures re clean-up obligations	Inter-generational equity	Inclusion of binding obligations re remediation

5. Stakeholder survey

In order to further understand views and positions of different stakeholders, a total of 85 stakeholders were contacted and invited to participate in an online survey. Key questions in the survey include: “Which stakeholder group and/or association do you associate yourself most with”; “Which of the following options do you prefer” and “May we contact you for a short 10-minute follow-up interview via Zoom”.

In total 11 responded to the survey. 7 of the 11 respondents agreed to be interviewed. Most of the respondents associate themselves with a government followed by NGOs and Academia. It is noteworthy that no representatives from business organisations and only one company participated in the survey (see figure 3).

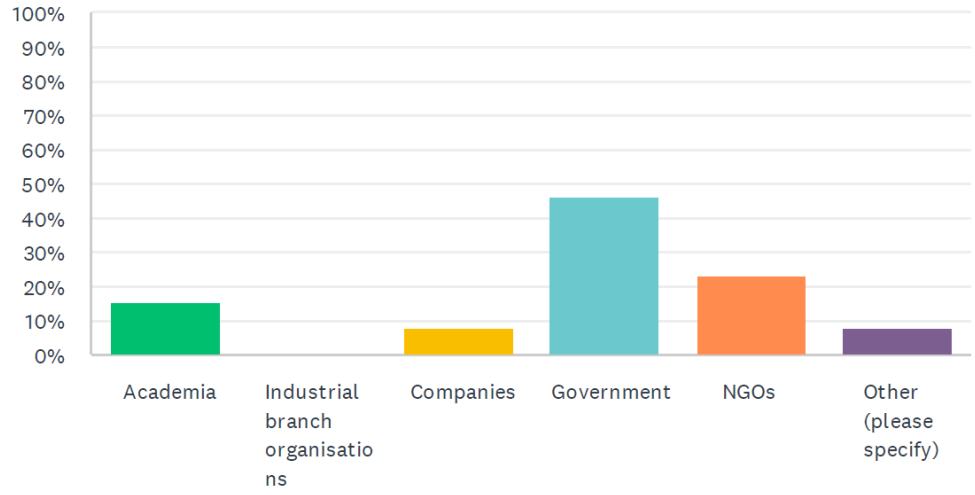


FIGURE 3. Respondents answer to which stakeholder group and/or association, they associate themselves most with? (n = 13)

5.1 Possible and preferred policy options

In the survey, the respondents were asked to evaluate the following options:

1. Binding obligation to remediate and clean-up existing plastic pollution (Monitoring obligations, prioritisation, mapping and remediation obligations for certain types of existing pollution)
2. Remediate plastic pollution through National Plastic Action Plans without binding obligations
3. Voluntary commitments to remediate and clean-up existing plastic pollution on a case-to-case basis
4. Retrospective liability for existing plastic pollution (Sanction past pollution activities and make the polluter pay for clean-up activities) and
5. Other

It seems clear that almost all possible approaches and options are currently available in theory and relevant for states to consider at this point in time (see figure 4), but it is clear that far most of the respondents prefer development of binding obligation to remediate and clean-up existing

plastic pollution (Monitoring obligations, prioritisation, mapping and remediation obligations for certain types of existing pollution) (see figure 5).

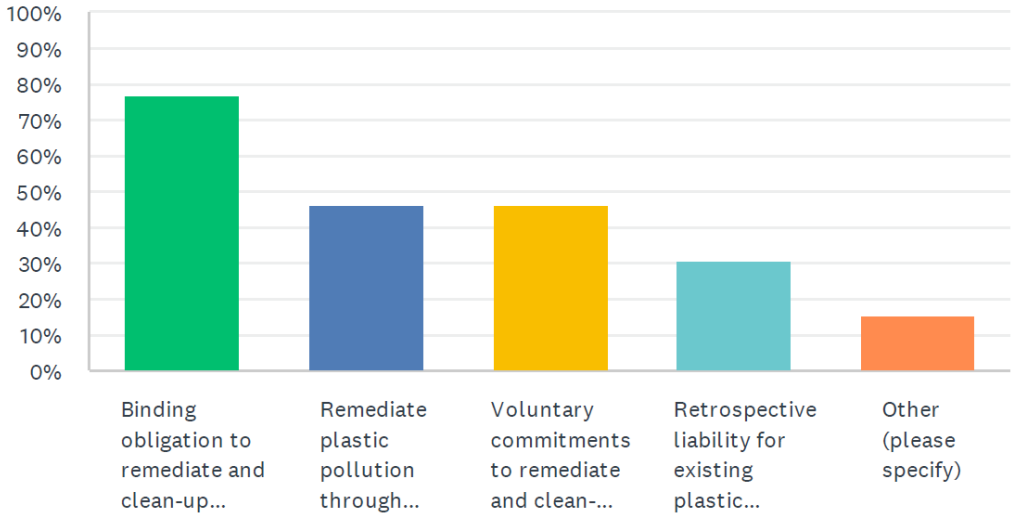


FIGURE 4. Respondents answers to which possible approaches and options they think are available and relevant for States to consider at this point in time? (n = 13)

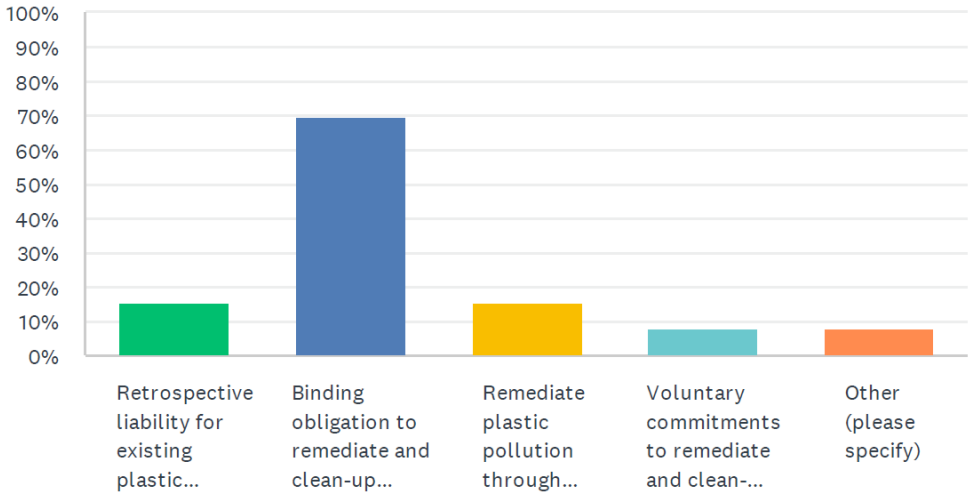


FIGURE 5. Respondents answer the questions of which of the options they prefer? (n = 13)

When it comes to the advantages of their preferred option, the stakeholders that prefer having binding obligations mention that having binding obligations will ensure the application of the principle of shared but differentiated responsibility and the polluter pays principle. According to them, having a binding approach will increase the likelihood of identification and financing environmental clean-up and follow-up, thereby creating a more robust and lasting system and framework. Monitoring, prioritisation and clean-up obligations ensures a systematic and scientific approach, instead of relying on ad-hoc voluntary contributions or national priorities. Past experience with relying solely on voluntary commitments is referred to as evidence for such an approach not being a solution. With regard to the polluter pays principle, one stakeholder notes that the nature of plastic pollution e.g., universal origin and pollution at the sea, means that it will be difficult to trace the perpetrators. Having a mandatory global cap with determined national

contributions on plastic production was preferred by one stakeholder specified as one of the "other" options. It was argued that such a gap will slow the current exponential increase in plastic production and slow the build out of the plastic production infrastructure and thereby have the knock-on effect of reducing generation of plastic waste.

When it comes to funding of activities related to remediating existing plastic pollution, stakeholders were given the opportunity to choose between the following:

1. A dedicated Multilateral Fund financed by donors (states as well as other actors);
2. Establish a Loss and Damage Fund for helping people recover from the plastic pollution impacts similar to the one established at the United Nations Climate Conference (COP27);
3. Implement a Global Plastic Pollution Fee;
4. Global Environment Facility (GEF) should serve as the financial mechanism and
5. Rely on Public-Private Partnership funding

Most stakeholders preferred implementing a dedicated Multilateral Fund financed by donors (states as well as other actors) and implementing a global plastic pollution fee (figure 6). Remediation of plastic pollution is noted to be expensive. According to one stakeholder, this means that including it as a binding obligation likely means funding must be provided to developing states to help them implement their obligations under the treaty.

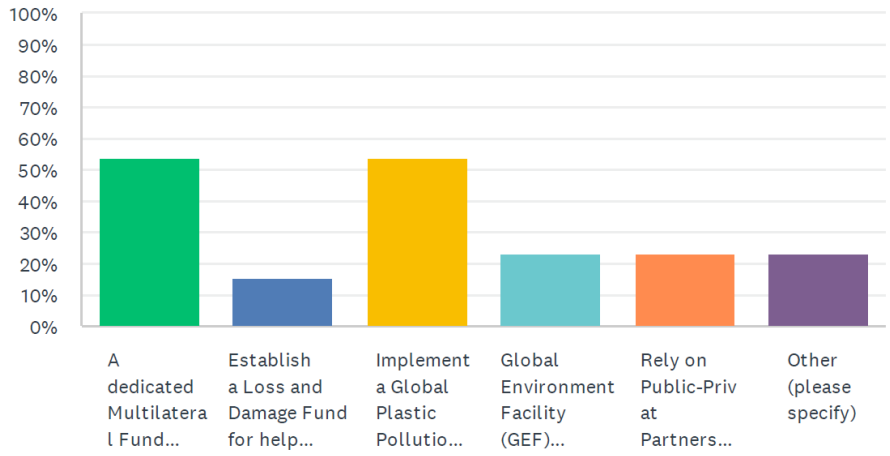


FIGURE 6. Respondents answer which of the funding options they prefer when it comes to funding of activities to address existing plastic pollution (n = 13)

6. Pros and cons of different policy options

It is evident from our analysis that there are many options for measures to address existing pollution, ranging from binding obligations to have cleaned up all plastics pollution by a specific date, to commitments to clean up more generally or collaborate to clean up. The most appropriate options in a given situation will depend on the type of existing plastic pollution being addressed, the pros and cons of the legal options available and the financing provided.

As mentioned in the introduction, any of the measures discussed and recommended in this report are dependent on remediation being more explicitly defined. Since there currently is no scientific sound threshold for plastic hazard, neither environmental nor for human health, the only safe option is to aim for full remediation, including associated chemicals and micro(nano)plastics. While this might not be either technical, economically or politically feasible, it is still the only scenario where a scientific assessment can deem a site to be remediated, based on the current scientific state of the art. This implies that a policy decision on when a site is sufficiently remediated might be needed.

6.1 Six categories of existing plastics pollution

Existing plastics pollution can be found in all environments. Overall, six categories of existing plastics pollution can be identified that may require different approaches, measures and financing mechanisms (table 3).

TABLE 3. Types of existing plastic pollution (used for assessing efficiency of different remediation activities)

Type	Description	Implications for remediation
Official and controlled landfills such as municipal solid waste sites (OECD 2023) 	Disposal of plastic waste by deposit at landfills is a common practice across many regions of the world. Landfills are typically areas on land allocated for storing trash including plastic waste. Precautions to prevent leakage to the environment from the site, can vary significantly between locations and states. According to OECD almost half of all plastic waste was deposited at landfills in 2019, making it the fastest growing reservoir of plastic waste.	From a mitigation perspective, plastic at landfills poses some challenges, even though access to the plastic is somewhat easier than litter found in hard to access environmental compartments such as deep sea (see below). The main challenges associated with mitigation of plastic waste at dumpsites relates to the magnitude of waste and the hazardous nature of plastic waste at landfills (ISWA 2023, OECD 2022b, c, Silva et al. 2021, Rasool et al. 2020). Especially open landfills pose a risk to both human health and the environment, with leakages of microplastics, plastic associated chemicals and adhered pathogenic bacteria being well-documented problems (Laner et al. 2012, Silva et al. 2021, Xu et al. 2020, Shi et al. 2021).

Uncontrolled dumpsites (OECD 2023) 	According to the OECD, 22% of the world's plastic waste was dumped either at uncontrolled dumpsites or directly in the environment in 2019, accounting for more than 75 million tons of plastic waste (GEN 2023).	Uncontrolled dumpsites generate similar environmental and human health hazards as landfills, but with a higher risk of plastics (including leachates and micro(nano)plastics) and other wastes being spread to surrounding areas, especially considering how informal dumps are commonly located adjacent to or in waterways. Still, the waste is to a greater extent confined within a geographical area compared to scattered/littered plastics pollution, making a targeted remediation effort easier by comparison (Rasool et al. 2020, Limoli et al. 2019, Bernatek-Jakiel et al. 2019, Ferronato and Torretta 2019).
Terrestrial plastic pollution (Willmer 2023) 	Pollution of soil is of growing concern, and some estimates of microplastic prevalence indicate that concentrations in soils might be higher than those found in the ocean.	Scattered terrestrial plastic pollution is harder to remediate than fractions found in landfills and uncontrolled dumpsites, due to the wider geographical distribution and sometimes more inaccessible location (e.g. mountains or areas with poor transport infrastructure).
Rivers and nearshore marine plastic pollution (OECD 2022) 	Up to 80% of ocean plastic pollution stems from land-based sources, implicating that the majority of marine plastic pollution is initially near shore pollution. Rivers are believed to be a major source of near shore plastic pollution with the remaining originating from more diffuse sources such as beaches.	Since plastic litter tends to undergo some degradation over time, a greater part of the near shore pollution, compare to open ocean pollution, consists of larger pieces of the plastic products, which are easier to remediate than their smaller counterparts, such as micro- and nanoplastics (Windsor et al. 2019, Emmerik and Schwarz 2020, Harris et al. 2021, van Emmerik et al. 2022).
Open ocean plastic pollution (Thevenon et al. 2015) 	Due to the fact that the most commonly used polymers (e.g., PP and PE) are buoyant in seawater, plastic tends to be transported with ocean currents. Plastic pollution is widespread in the marine environment with several larger hotspots such as the gyre zones.	Once plastic has been transported to the open ocean it is very hard to collect, and efforts to remediate ocean plastics are both expensive and with very limited effect. Despite the buoyant nature of most plastics the vast majority of plastic lost to the ocean has disappeared from the surface and is most likely found in other compartments such as seafloor. This pollution is even harder and more expensive to collect than the plastic on the sea surface (Windsor et al. 2019, Borrelle et al. 2020, Tekman et al. 2022, Thushari and Senevirathna 2020).

Non-populated “pristine” areas (e.g., the Arctic/Antarctic, mountains) (Arctic Council Secretariat 2023) 	Plastic pollution has reached even the most remote locations on the planet, such as the Arctic. Processes such as atmospheric deposition and ocean currents have transported plastic to these areas, and now pollute these previously pristine areas. Increasing tourism can also be a significant source of pollution, as documented at e.g., some of the peaks of the highest mountains in the world.	Pollution in these areas is typically difficult to remediate, due to the remote access and challenges with collecting and transporting plastic debris. Amounts of plastic pollution in e.g., the Arctic far surpasses what can be expected from local sources, and significant pollution thus stems from other areas. Ecosystems in these areas are typically already impacted by anthropogenic stressors such as climate change (Bergman et al. 2022, Cunningham et al. 2020, Collard and Ask 2021, Lima et al. 2021).

6.2 The necessity, urgency, effectiveness and suitability for remediating exiting pollution

The necessity, urgency, effectiveness and suitability of remediation and clean-up activities varies across the six types of existing plastic pollution and are important to have in mind.

6.2.1 Official and controlled landfills

The necessity, urgency, effectiveness and suitability are all evaluated to be high for official and controlled landfills.

Necessity is assessed to be high due to its far-reaching environmental, health, and social implications of growing solid waste sites, especially in the global south (The World Bank 2023). It is well documented that plastic from landfills leach hazardous chemicals and shed micro(nano)plastics to the environment (Gutberlet 2023), making current controlled landfills a source of uncontrolled environmental pollution (Bharath et al. 2021). Waste pickers which constitute the backbone of the informal recycling sector are particularly exposed to these hazards (Gutberlet et al. 2018).

Urgency is also evaluated to be high as volumes of plastic waste entering landfills otherwise is expected to increase further, and magnify the environmental and human health implications explained above. It is further well documented that exposure to environmental conditions such as UV-light degrade the plastics, resulting in release of chemicals and micro(nano)plastics (Gutberlet et al. 2018, Wojnowska-Baryła et al. 2022), and reducing the recyclability of the plastics (Iñiguez et al. 2018). This implies that the longer it takes to develop and implement remediation strategies, the higher the eventual financial and environmental and public health costs will be.

Effectiveness can be high, since plastic items typically tend to be more or less intact once they are disposed of at controlled landfills. Since the plastic waste is further confined within a controlled geographical area, this provides suitable conditions for remediation (Dubey et al. 2016). Specific efforts will depend on political will, clear goals and shared vision for participants, funding and resources, capacity of parties to implement the agreed-upon measures, degree of enforcement and monitoring.

Finally, suitability is evaluated to be high given the nature of official and controlled landfills (officially design, collected waste, operational controls, environmental compliance, monitoring, accessibility control, etc.) and the key elements of effective binding agreements (e.g., shared vision, clear targets, enforcement, monitoring).

6.2.2 Uncontrolled dumpsites

The necessity, urgency and effectiveness are all evaluated to be high for uncontrolled landfills. Necessity is high as uncontrolled dumpsites are widespread and are growing rapidly, particularly in low and middle-income regions of many states (OECD 2022a). Uncontrolled dumpsites can cause severe damage on local ecosystems and have adverse health implications for local communities similar to those described for controlled dumpsites, but the problems are typically magnified due to the unconfined nature of the waste. Urgency is also evaluated to be high due to the uncontrolled environmental and human health risk associated with uncontrolled dumpsites. Finally, effectiveness is evaluated to be high as plastic products tend to be more or less intact, similar to those found on controlled dumpsites, and thus still have monetary value for recycling. The physical condition further makes collection doable, similar to plastic waste at controlled dumpsites. In contrast to necessity, urgency and effectiveness, suitability is evaluated to be very high given that binding obligations can bring organisation, oversight, planning, monitoring and adherence to environmental and health standards where there is none.

6.2.3 Terrestrial plastic pollution

Necessity is well established to be high, as importance and impacts of plastic pollution on terrestrial ecosystems have been documented (Hurley et al. 2020, Hooge et al. 2023). Terrestrial plastic pollution in areas associated with agricultural activities might further pose food security issues, further highlighting the necessity of addressing type of plastic pollution (Zhang et al. 2020).

Urgency is also evaluated to be high, not at least in regard to plastic pollution in areas associated with agricultural activities due to the associated concerns for food safety, but also with respect to environmental impact (Rillig and Lehmann 2020).

Some terrestrial plastic pollution can be remediated with high efficiency e.g., agricultural plastics used for mulching and before it is shredded into the soil, whereas remediation is much harder once it is shredded (Li et al. 2022). Other significant sources such as sludge used for fertiliser, is equally hard to remediate once it has been added to the soil.

Suitability can be high for certain types of plastic pollution, where direct links can be made to the polluter such as for plastics used for agricultural purposes. For more scattered pollution suitability depends on accessibility to the terrestrial area and how easy it is to collect the plastic.

6.2.4 Rivers and nearshore marine plastic pollution

Rivers and nearshore pollution are the last points where plastic pollution can effectively be collected, before it enters the open ocean (Weiss et al. 2021), which make these zones of high importance for collecting plastic. It has however recently become evident that rivers are not just conveyor belts for plastic pollution towards the ocean, but also serve as reservoirs in themselves (Weiss et al. 2021), impacting river ecosystems and polluting the water that sustain communities living alongside the rivers. Coastal areas are typically rich in biodiversity and provide vital ecosystem services to people around the globe (Lau et al. 2019).

While upstream measures are more cost effective and prevent ecological harm, remediation of rivers and near coastal zones provide the last chance to prevent marine plastic pollution. This makes interception at these sites of medium to highly urgent.

Collection of plastic pollution in rivers can be relatively effective for larger pieces of macroplastic (Schmaltz et al. 2020), while micro(nano)plastic will typically pass such technologies. Near coastal collection of plastic is highly dependent on the geographical location and is typically less time and cost efficient than collection further upstream.

As a final option for preventing plastic from entering the open ocean, this type of remediation can be suitable. Especially in areas that are known to transport the largest quantities of plastic to the marine environment. Efforts to prevent plastic entering the ocean from such areas should therefore gain high priority, since upstream measures are preferable. If such efforts are not sufficiently implemented, they might be last effective options for conducting remediation.

6.2.5 Non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.)

The need for remediation on non-populated “pristine” areas can be high**,** since ecosystems in pristine areas can be sensitive to pollution, and rich in diversity (Arctic Council, 2023). On the other hand, it can be very time consuming and difficult to conduct any sufficient remediation, similar to open ocean pollution.

Urgency is considered to be medium and above what is recommended for open ocean but below addressing pollution closer to the sources. Due to the challenges with conducting sufficient remediation in these areas, actions which prevent pollution reaching these remote areas are preferable. Effectiveness is considered to be low as getting access to non-populated pristine areas is difficult and expensive and remediating and transporting waste to waste treatment facilities is typically both expensive, time consuming and energy intensive. It follows that suitability is also considered low as mentioned above the remote nature and sensitive ecosystems typically make remediation difficult. Any targeted efforts should be devoted to larger items such as, for instance, lost fishing gear and hot spots of accumulated plastics pollution.

6.3 Legal aspects of different measures and options

6.3.1 Binding obligations

Independent of the type of plastic pollution, the **necessity** of binding obligations supported by sound implementation methods is generally considered to be very high. This is due to far-reaching environmental, health, and social implications of plastic pollution. For instance, pollution from uncontrolled dumpsites are widespread and are growing rapidly, particularly in low and middle-income regions of many states. Informal dumpsites can cause severe damage on local ecosystems and have adverse health implications for local communities. Plastic from informal dumpsites is known to enter and pollute rivers and oceans across borders. Similarly, for open ocean plastic pollution and non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.), the necessity for binding obligations is considered very high. Open ocean plastic pollution is inherently transboundary and an international problem that can only be addressed via coordinated global action. The same is true regarding sources of pollution in non-populated pristine areas that can often be traced to production and consumption far away. Many of these areas are beyond national jurisdictions and their protection is a shared responsibility. International legally binding agreements can effectively emphasise this collective duty, ensuring all parties play a role in their preservation.

In contrast to necessity, the urgency varies between the different types of plastic pollution. For official and controlled landfills, the urgency for having binding obligations depends on the scale and immediacy of the plastic pollution in a given region or context, whereas the urgency for coordinated international action on uncontrolled dumpsites is high due to the nature of plastic pollution and as plastics from one country's informal dumpsites can enter the oceans and affect neighbouring states. The urgency to have international binding obligations for addressing open ocean plastic pollution and non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.) is considered to be very high for a number of reasons. First of all, the open oceans are beyond the ability of individual states to remediate, and a coordinated international effort will be needed. Second, plastic pollution is pervasive and causes irreversible damage in pristine areas with intrinsic value, shared resources and fragile ecosystems. Third, international waters are governed by different legal and territorial statuses, such as for instance United Nations Convention on the

Law of the Sea (UNCLOS) and the Antarctic Treaty System, which makes it hard to navigate without binding agreements between states.

The effectiveness of binding obligations when it comes to official and controlled landfills depends highly on political will, clear goals and shared vision for participants, funding and resources, capacity of parties to implement the agreed-upon measures, degree of enforcement and monitoring. Effectiveness of binding measures when it comes to uncontrolled dumpsites is considered to be high and will similarly depend on clear goals and targets, funding and resources, capacity building and enforcement and monitoring on an international scale, but also the design of the binding measures and commitments made. As informal dumpsites are often located within national jurisdiction, states might resist aspects of the treaty they see as infringing on their sovereignty or national priorities. Effectiveness for open ocean plastic pollution and non-populated "pristine" areas (the Arctic/Antarctic, mountains etc.) is evaluated to be potentially high under conditions of the development of a clear framework for accountability and consequences for non-compliance and enforcement mechanisms. However, the pitfalls of e.g., MEAs such as the CBD have to be avoided.

The suitability of binding obligations is evaluated to be either high or very high for all types of plastic pollution, except for open ocean plastic pollution and non-populated "pristine" areas. The nature of official and controlled landfills (e.g., officially designed, waste is collected, operational controls, environmental compliance, monitoring and accessibility control) makes binding obligations a good match given the key elements of effective binding agreements (e.g., shared vision, clear targets, enforcement, monitoring). Binding obligations can also bring organisation, oversight, planning, monitoring and adherence to environmental and health standards to uncontrolled dumpsites where such traits are currently not present. For open ocean plastic pollution and non-populated "pristine" areas (the Arctic/Antarctic, mountains etc.), the suitability is evaluated to be limited as enforcement is very challenging and parties might be reluctant to give up sovereignty over pristine areas within their national territory. For terrestrial plastic pollution and nearshore marine plastic pollution the necessity, urgency, effectiveness and suitability of binding obligations is evaluated to be similar to informal dumpsites.

6.3.2 Remediation of existing plastic pollution through National Plans

As with binding obligations, the need to remediate plastic pollution through national plans (NAPs and NIPs) also varies depending on the type of plastic pollution. As a general rule, the necessity of national plans depends on how close to the source of plastic pollution they are implemented. For official and controlled landfills as well as uncontrolled landfills, the necessity to remediate plastic pollution through national plans is high in order to ensure commitment locally and nationally. Addressing landfill-related plastic pollution, terrestrial plastic pollution and nearshore marine plastic pollution in national plans (leachate contamination, formation of microplastics, etc.) can facilitate cost-effective measures to increase recycling, composting and waste reduction, waste collection and awareness raising and public engagement locally and nationally. National plans can also be used to ensure that parties develop and implement strategies in their national plans to address informal dumpsites. The national plans should include clear goals, stakeholder involvement, allocation of resources, public awareness raising, enforcement and monitoring. Welfare of waste pickers is of special concern.

NAPs are considered less relevant when it comes to open ocean pollution and in areas like the Arctic/Antarctic mainly due to the transboundary nature of open ocean pollution and in areas like the Arctic/Antarctic and that the pollution in these areas are far from the source of pollution. Furthermore, many of these waters and territories are international and fall outside national jurisdictions for which NAPs are designed.

For all types of plastic pollution, the urgency is evaluated to be high as volumes of plastic waste entering landfills, the terrestrial and marine environment and pristine areas are otherwise

expected to increase even more. National plans can include long-term considerations that are important as plastic pollution is an immediate, persistent and constitute a transboundary long-term problem. The longer it takes to develop and implement national plans, the higher the eventual financial and environmental and public health costs.

The effectiveness of national plans is evaluated to be very similar to the effectiveness of binding obligations for all types of plastic pollution with the important difference that failing to meet the objectives of the national plans does not normally have legal ramifications whereas binding obligations could have depending on the final provisions of the treaty.

For official and controlled landfills, suitability of remediate plastic pollution through national plans is evaluated to be high given the nature of official and controlled landfills (officially design, collected waste, operational controls, environmental compliance, monitoring, accessibility control, etc.) and the key elements of effective national plans (clear objectives locally and nationally, local knowledge about sources, types and amount of plastic pollution, involvement of local and national stakeholders and alignment between national actions with international commitments). Suitability of remediate plastic pollution through national plans when it comes to uncontrolled landfills is similarly evaluated to be high for many of the same reasons as for official and controlled landfills, but primarily that national plans can help bring organisation, control, monitoring and enforcement, etc. to uncontrolled landfills. The suitability of remediating plastic pollution through national plans for terrestrial plastic pollution and nearshore marine plastic pollution is also evaluated to be high as these types of pollution fall within national jurisdiction, whereas it is evaluated to be less suitable for open ocean plastic pollution and non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.) beyond national jurisdiction.

6.3.3 Voluntary commitments to remediate and clean-up

The necessity of voluntary commitments to remediate and clean-up is considered to be high when it comes to official and controlled landfills and well as uncontrolled landfills especially in the short-term as voluntary commitments are normally considered to be an immediate and flexible regulatory option that allow stakeholders to familiarise themselves with a problem before other regulations are developed and enforced. Voluntary commitments by key stakeholders, states, the public, etc. are furthermore useful to initiate rapid action which is also very relevant for terrestrial plastic pollution and nearshore marine plastic pollution, open ocean plastic pollution and pollution in non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.).

As the volume of plastic pollution continues to grow, any actions to address this problem can be considered urgent, including voluntary commitments to remediate and clean-up. It is essential to initiate stakeholder collaboration and resource allocation as early as possible, which has historically been a key element of successful voluntary programmes.

For official and controlled landfills, the effectiveness of voluntary commitments to remediate and clean-up can vary greatly depending on incentives and final level of participation, peer pressure, technical support, monitoring and reporting, third party verification and alignment of national goals. For uncontrolled landfills, the effectiveness of voluntary commitments to remediate and clean-up can be increased significantly when combining these commitments with formal regulatory measures, public awareness campaigns, and international cooperation. Similarly, when it comes to the effectiveness of voluntary commitments to remediate and clean-up for terrestrial plastic pollution and nearshore marine plastic pollution. A concern could be that voluntary commitments by parties as well as non-state actors to remediate open ocean plastic pollution and pollution in non-populated “pristine” areas (the Arctic/Antarctic, mountains etc.) lack continuity, consistent funding and sufficient expertise to address a problem of such a scale.

The suitability of voluntary commitments to remediate and clean-up is evaluated to be limited for controlled and uncontrolled landfills as well as terrestrial plastic pollution and nearshore

marine plastic pollution, given the continued worsening of plastic pollution. The flexibility that voluntary programmes offer requires quick implementation, broad stakeholder collaboration in the design phase, high level of participation, compliance and consistency in monitoring, reporting, public awareness campaigns, international cooperation and long-term commitment that cannot be guaranteed due to the voluntary nature of such programmes. For open ocean plastic pollution and pollution in non-populated "pristine" areas (the Arctic/Antarctic, mountains etc.), voluntary commitments might be the only real option given that many of these areas are beyond national jurisdiction, but the scale of plastic pollution makes relying on voluntary measures less than ideal.

6.3.4 Retrospective liability for existing plastic pollution

The need for retrospective liability for existing plastic pollution in controlled and uncontrolled landfills could be considered highly necessary from an environmental justice point of view and could ensure accountability, enable immediate compensation and generation of resources for remediation efforts. Yet, assuming that controlled landfills have fulfilled past regulation and legislative measures, it might seem unfair to implement retrospective application of law now that we know that plastic pollution is more problematic than previously thought.

For terrestrial plastic pollution and nearshore marine plastic pollution, it might sometimes be possible to trace individual plastic items back to specific manufacturers, but in general such systematic source tracing is almost impossible and complex. This means that assigning liability retrospectively is very hard. This systematic tracing is further complicated by the slow degradation of plastics into micro- and nanoplastics when exposed to the elements. The urgency of implementing retrospective liability is considered to be high as the volume of plastic pollution continues to grow and has been for many decades now. This could call for remediation and compensation through retrospective measures, however these have to be evaluated against the legal and economic consequences of such measures.

Effectiveness of retrospective liability for existing plastic pollution for most types of plastic pollution will depend on the ability to prove past actions, the identification of polluters, the extent of past pollution that should be remediated and compensation that should be paid to victims. The perceived violation of legal predictability and fairness that comes with retrospective legislation hampers effectiveness.

Suitability of retrospective liability for existing plastic pollution for all types of plastic pollution is evaluated to be limited given that retrospective measures have a number of challenges e.g., lack of legal predictability, identification, and proving the environmental consequences of past actions. Lengthy legal battles initiated by affected entities can be foreseen that have substantial legal costs and can cause delay in remediation effect and compensation.

6.4 Challenges related to remediation of plastic pollution in areas beyond national jurisdiction

From the above, it is clear that regulating areas beyond national jurisdiction poses foreseeable challenges as no state has the competence to individually decide over the area or sole responsibility to protect those areas. Two thirds of all oceans fall in the category of marine areas beyond national jurisdiction. Accumulating plastic pollution in the marine environment does not naturally stay within state jurisdictions, thus posing a distinct problem for regulators to deal with. Plastic pollution is mentioned in the preamble to the new agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (the BBNJ agreement) adopted in June 2023 under UNCLOS. Existing plastic pollution will fall under the definition of 'cumulative impacts' in the agreement and will therefore need to be taken into consideration within the environmental impact assessment conducted according to this agreement. Under article 38 of the agreement, the Scientific and Technical Body is tasked to assess '[…] cumulative impacts in areas beyond national jurisdiction and how those impacts should be taken

into account in the environmental impact assessment process.' The issue of existing plastic pollution beyond national jurisdiction is acknowledged by multiple international environmental organisations, notably by the Global Environment Facility (GEF). However, rather than on clean-up measures, the focus is directed to prevention of the aggravation of plastic pollution. The reason behind being possibly a question of feasibility; marine plastic pollution is an externality to primarily land-based activities that can be regulated and controlled easier than dealing with scattered plastic pollution beyond national jurisdiction.

However, as existing plastic pollution beyond national jurisdiction is a reality that will not solve itself and as it poses threats to both natural environmental and human health, and thus presents an environmental, social and economic problem, it is essential to include it in the treaty on plastic pollution. This may also streamline regulation and activities that are already agreed and/or implemented. As regulating both clean-up activities and areas beyond national jurisdiction is complex, it might be necessary to conclude a separate agreement under the future treaty on plastic pollution. However, the intention and possibility to do so should be incorporated in the treaty on plastic pollution. This will ensure acknowledgement by and the commitment of the international community to address this issue.

6.5 Challenges associated with retroactive responsibilities

From the above, it is clear that dealing with existing plastic in an international treaty poses the questions of a possible retroactive application of the treaty and/or including retrospective rules in it. It is considered a general principle of law that legal rules cannot be applied on events that occurred before the specific rules were adopted (non-retroactive application of law) (Kryvoi & Matos, 2021). Therefore, states cannot now for example agree that improper disposal of plastic waste that happened in the past constituted a tortious action. Allowing retroactive application of the international treaty to assign liability for existing plastic pollution would interfere with the principles of legal certainty and legitimate expectations, both building blocks of most legal systems. Yet, parties to the global legally binding instrument could override the non-retroactive application principle if they specifically agree to it (Vienna Convention, article 28); however, this seems improbable. Possibly a more viable solution, not interfering with other general principles of law, would be an inclusion of retrospective rules. A retrospective rule operates for the future, but is based on past experience and/or responds to lasting effects of a past event. It can be seen as a weak version of retroactivity (Legal Response International, 2012). We know cases, mainly from national legislation, where retrospective rules are in effect, e.g., the US Superfund law (Comprehensive Environmental Response, Compensation and Liability Act). Superfund imposes liability upon owners and operators of any facility releasing defined hazardous substances, where the liability is strict, joint, several, perpetual and retroactive. Provided that it is possible to identify potentially responsible parties and support response costs based upon characterization of pollutant contamination and demonstration of unacceptable risk thus compelling remediation, liability under the Superfund law can be triggered even for acts that happened before the law was adopted (1980). Therefore, if it could be, for example, established that accumulated plastic pollution at a specific location keeps causing damage, as long as the "damage" can be characterised in a manner demonstrating unacceptable risk caused by pollutants and contaminants, such as within the scope of Superfund, this could potentially be captured by retrospective rules.

An analogous legal construct also underlies the establishment of the Loss and Damage (LaD) fund under the UNFCCC regime (UN, 2023). Already felt consequences of climate change, due to accumulated greenhouse gases (GHGs) in the atmosphere, materialising as loss and damage represent a breach of international human rights law (Sharma-Khushal et al., 2022). That is because the right to a clean, healthy and sustainable environment has been recognized by the UN General Assembly Human Rights Council (2021) as a human right. Therefore, states are held accountable to deal with the impacts of accumulated GHGs, for example, through the establishment of the LaD fund. The same argument can be used parallelly to the issue of existing

plastic pollution. Still, retrospective rules face the legal obstacle of establishing a causal relationship between the activities of the liable party and the harm done. This legal obstacle is again well known from the climate change area, where it has been frequently tested (e.g. Luciano Lliuya *v.* RWE AG), but rarely overcome (e.g. State of the Netherlands *v.* Urgenda Foundation) in front of national and international courts. Attributing the responsibility for the harms being caused by existing plastic pollution is a highly political and economic issue, likely to be caught in the common-but-differentiated responsibilities discussion.

Additionally, in legal proceedings, it might be easier to establish a causal relation between the pollution and harm if we focus on harm to human health rather than harm to the environment as such. However, where these two protected interests are intertwined, a concrete harm to human health alerts decision-makers and regulators more than a harm to the environment and, thus, leads them to adopt rules, decisions and measures more readily. The application of the precautionary principle exemplifies this distinction (Sadeleer, 2006). Due to the above, the treaty needs to find alternatives to a retroactive and/or retrospective application, likely softer but effective and efficient tools to deal with existing plastic pollution.

6.6 Binding versus voluntary measures

Several stakeholders have called for binding measures related to various aspects of the treaty, among others, remediation. When it comes to remediation activities, it is a problem that international agreements tend to define the lowest common denominator and that they are slow to produce the desired effects. The process of their implementation can also be lengthy as no country can be forced to participate, only urged to (French 1994). Some states might find it beneficial to “free ride”, and lack of monitoring and enforcement can furthermore work against the original intentions of a given agreement. As the experience from the reviewed MEAs shows us, even when a binding obligation to remediate an environmental damage exists (as in the CBD), this obligation remains vague and ineffective if not accompanied by an elaboration of a toolbox for participating states connected to specific funding arrangements. Moreover, given the character of international law as a system whose enforcement is dependent on political will and public engagement with the given issue in individual states, an effective implementation of any international commitments will depend on adoption and implementation of national policies and tools (for example in the form of a national plan). International binding commitments thus cannot alone secure effective remediation of existing plastic pollution.

Other stakeholders have called for voluntary measures to be implemented also for remediation activities. Voluntary measures can be very successful in achieving a given environmental target *if* designed properly. Key elements of successful voluntary measures have been identified to be: Clear incentives to participate for various stakeholders (reduced costs, high publicity, access to guidance and technical assistance, future liability reduction), signed commitments and periodical reporting, ensuring quality of information, transparency in design, reporting and evaluation (clear baseline to measure development against, stakeholder involvement, public access to information to enhance legitimacy), the presence of a regulatory threat that is triggered if voluntary measures are not effective and participatory disincentives e.g. list of non-participants (Hansen and Tickner 2007). In cases where the above-identified aspects are missing, a commitment of voluntary action stays ineffective although being included in an internationally binding MEA (as in the Stockholm Convention).

The review of the relevant MEAs provided above shows that it is not a decisive factor for an effective pollution remediation whether the relevant international commitment is drafted as a binding obligation or a voluntary measure. What seems more decisive is that (i) the commitment is supported by a well-functioning funding scheme, (ii) the parties to the MEA are familiar with available tools to conduct the remediation, (iii) the international commitment is supported by other governance levels, particularly the national one, but also others, such as attitudes of the

general public (here awareness-raising and educational activities become relevant). Yet, signing under an international binding requirement arguably increases the clarity of objectives and thus the commitment of the parties. This has been together with a fair allocation of resources and a balanced implementation system defined as a factor overall increasing the effectiveness of global regulatory regimes (Getz 2006).

7. Conclusion and recommendations

In this report we set out to elaborate on possible approaches and options to address existing plastic pollution in an international treaty and conducted a pro and con analysis of possible options to explore the potential benefits and issues of these options from a scientific, technical and legal perspective.

Via our stakeholder analysis, we found that states and stakeholders vary with regard to the level of emphasis put on remediation, restoration and clean-up of existing plastic pollution. We further found that this is influenced by a range of considerations such as their initial position on the scope of the treaty (whether it should address the full lifecycle of plastics pollution or only downstream aspects); the perceived urgency of remediation and level of prioritisation; their positions on what should be monitored and reported on; and approaches to funding mechanisms.

We identified four possible policy options for addressing existing plastic pollution under the treaty:

1. Binding obligation to remediate and clean-up existing plastic pollution (Monitoring obligations, prioritisation, mapping and remediation obligations for certain types of existing pollution);
2. Remediate plastic pollution through national plans without binding obligations. National plans include national action plans (NAPs) and national implementation plans (NIPs);
3. Voluntary commitments to remediate and clean-up existing plastic pollution on a case-to-case basis and
4. Retrospective liability for existing plastic pollution (Sanction past pollution activities and make the polluter pay for clean-up activities).

In order to further understand views and positions of different stakeholders, a total of 85 stakeholders were invited to participate in an online survey to explain their views on addressing existing pollution including how the financing of such. In total only 13 stakeholders responded to the survey. Most of the respondents associate themselves with a government followed by NGOs and Academia. It is noteworthy that no representatives from business organisations and only one company participated in the survey.

The majority of the respondents preferred the development of binding obligation to remediate and clean-up existing plastic pollution and mention that having binding obligations will ensure the application of the principles of shared but differentiated responsibility and that the polluter should pay. According to them, having a binding approach will increase the likelihood of identification and financing environmental clean-up and follow-up, thereby creating a more robust and lasting system and framework. Monitoring, prioritisation and clean-up obligations ensures a systematic and scientific approach, instead of relying on ad-hoc voluntary contributions or national priorities. Past experience with relying solely on voluntary commitments is referred to as evidence for such an approach not being a solution. When it comes to funding, most stakeholders preferred introducing a dedicated Multilateral Fund financed by donors (states as well as other actors) and implementing a global plastic pollution fee.

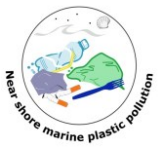
From past experiences with Multilateral Environmental Agreements such as the Basel Convention, the Convention on Biological Diversity and the Stockholm Convention, we conclude that

there are several aspects that are important to consider. Remediation of contaminated sites and management of POPs stockpiles remains a major problem under the Stockholm Convention. Remediation efforts are only managed as voluntary actions in the Stockholm Convention and the Convention has not been particularly successful so far when it comes to remediation. Many stakeholders refer to the framework for ESM when it comes to existing plastic pollution. Under the Basel Convention, the concept of ESM of plastic wastes remains vague on some points and lacks prioritisation or a hierarchy of best outcomes. If an ESM approach is to be taken to address clean-ups of existing plastics pollution, more specific guidance may be appropriate in the form of BAT/BEP guidance on specific recommended and advisable techniques and practices. From the Conversion on Biological Diversity, we learned that it is important to agree on mobilising funds while simultaneously setting ambitious goals for plastic remediation and ensuring a balance between the costs associated with the harm of plastic pollution and the funding made available for remediation activities. Mechanisms and guidance can with great benefits be put in place to ensure that information and data on international financial resources made available for plastic remediation is efficiently collected and of a high quality and avoid double counting. It has to be decided upon whether to institute: 1) a dedicated global fund for implementing the existing finance mechanism i.e., Global Environment Facility (GEF), 2) having a given levy on all plastics or 3) implementing a hybrid combination of a multilateral finance mechanism and bilateral funding. A combination of different funding mechanisms could also be chosen. If GEF is chosen, problems with allocation of finances within the GEF has to be addressed.

From our evaluation of the pros and cons of binding obligations, voluntary commitments, etc. to remediate and clean-up existing plastic pollution with regard to necessity, urgency, effectiveness and suitable, we conclude that each option has pros and cons that furthermore depend to a large extent on the type of plastic pollution that is supposedly subject to remediation activities and clean-ups (see table 4). Six different types of plastic pollution were identified: 1) Official and controlled landfills; 2) Uncontrolled dumpsites; 3) Terrestrial plastic pollution; 4) Rivers and nearshore marine plastic pollution; 5) Open ocean plastic pollution and 6) Non-populated “pristine” areas (e.g., the Arctic/Antarctic, mountains).

TABLE 4. Types of existing plastic pollution vs suggested prioritisation, policy options and recommendations. 1 is highest priority

	Suggested priority	Suggested measure	Recommendations
	1		Binding obligations should ensure/encourage i) clear regulatory policies, frameworks and targets to encourage and ensure environmentally sound cleanups and remediation, ii) development of Best Available Techniques/Best Environmental Practices for the conduct of clean-ups, iii) the safe management of wastes collected and final fate, iv) resource and process efficiency, v) environmental protection and impact assessments, vi) health and safety during remediation, vii) organisation of cleanups, viii) transparency and reporting on the conduct, outcomes and fate of materials collected, ix) innovation, research and development of technologies and methodologies.
	2		

	3		It is vital that states develop and implement strategies in their national plans to address terrestrial plastic pollution and rivers and nearshore marine plastic pollution and the national plans should include clear goals, stakeholder involvement, allocation of resources, public awareness raising, enforcement and monitoring. Otherwise there is a risk that the full potential of using national plans is not achieved.
	3		
	5		For voluntary commitments to have a higher likelihood for being successful, it is vital that the programmes has clear incentives to participate for various stakeholders (reduced costs, high publicity, access to guidance and technical assistance, future liability reduction), signed commitments and periodical reporting, ensurance of quality of information, transparency in design, reporting and evaluation (clear baseline to measure development against, stakeholder involvement, public access to information to enhance legitimacy), the presence of a regulatory threat that is triggered if voluntary measures are not effective and participatory disincentives e.g. list of non-participants.
	4		Since some pristine areas have rich and highly sensitive ecosystems it is recommended to combine voluntary commitments with regional action plans for such areas.

In general, the effectiveness of binding obligations depends highly on political will, clear goals and shared vision for participants, funding and resources, capacity of parties to implement the agreed-upon measures, degree of monitoring and the development of a clear framework for accountability and consequences for non-compliance and enforcement mechanisms. Remediation of plastic pollution through national plans can also be used to ensure that parties develop and implement strategies in their national plans to address e.g., informal dumpsites. The national plans should include clear goals, stakeholder involvement, allocation of resources, public awareness raising, enforcement and monitoring. Welfare of waste pickers is of special concern. Voluntary commitments can be very successful in achieving a given environmental target if designed properly. Key elements of successful voluntary measures have been identified to be: Clear incentives to participate for various stakeholders (reduced costs, high publicity, access to guidance and technical assistance, future liability reduction), signed commitments and periodical reporting, ensuring quality of information, transparency in design, reporting and evaluation (clear baseline to measure development against, stakeholder involvement, public access to information to enhance legitimacy), the presence of a regulatory threat that is triggered if voluntary measures are not effective and participatory disincentives e.g. list of non-participants. The overall suitability of retrospective liability for existing plastic pollution for all types of plastic pollution is evaluated to be limited given that retrospective measures have a number of challenges e.g., lack of legal predictability, identification, and proving the environmental consequences of past actions. Lengthy legal battles initiated by affected entities can be foreseen that have substantial legal costs and can cause delay in remediation effect and compensation.

In general, it is evident that remediating existing plastic pollution as early as possible is the most favourable option compared to cleaning up environmental pollution at the open ocean or in remote pristine areas. This is almost independent of whether we are considering binding obligations to remediate and clean-up existing plastic pollution, remediation of plastic pollution through national plans without binding obligations, or voluntary commitments to remediate and clean-up existing plastic pollution on a case-to-case basis. Remediating plastic pollution at controlled and informal dumpsites rather than after it is spread further to the environment is more effective, as it is easier to collect, and further prevents the negative environmental impact that occurs once the waste is lost to the environment. With the high quantities of waste accumulated at dumpsites it is recommended that efforts are firstly focused here. This implies improving working conditions for those engaged in the remediation, including the informal recycling sector.

Based on our analysis, we recommend that binding obligations and guidance are adopted towards remediation and clean-ups of official and controlled landfills and uncontrolled dumpsites. These binding obligations should ensure/encourage: i) clear regulatory policies, frameworks and targets to encourage and ensure environmentally sound clean-ups and remediation, ii) development of Best Available Techniques/Best Environmental Practices for the conduct of clean-ups, iii) the safe management of wastes collected and final fate, iv) resource and process efficiency, v) environmental protection and impact assessments, vi) health and safety during remediation, vii) organisation of clean-ups, viii) transparency and reporting on the conduct, outcomes and fate of materials collected, ix) innovation, research and development of technologies and methodologies.

For terrestrial plastic pollution and rivers and nearshore marine plastic pollution, we recommend remediation of plastic pollution through national plans as these types of plastic pollution are fairly close to the source of plastic pollution and national plans can be used to ensure commitment locally and nationally. It is vital that parties develop and implement strategies in their national plans to address terrestrial plastic pollution and rivers and nearshore marine plastic pollution and the national plans should include clear goals, stakeholder involvement, allocation of resources, public awareness raising, enforcement and monitoring. Otherwise there is a risk that the full potential of using national plans is not achieved. In order to ensure a sufficient level of ambition in national plans, it is recommended that binding targets for national plans are developed in a global context.

For open ocean plastic pollution, we recommend that voluntary commitments are adopted and that it is ensured that all elements needed to make them successful are implemented in order to overcome lack of continuity, inconsistent funding and insufficient expertise to address a problem of such a scale. The reason for this recommendation is that this type of plastic pollution is so difficult to remediate that it requires far more resources' than those required for the abovementioned types and that remediation activities can further have a significant negative impact on wildlife. For pollution in non-populated "pristine" areas (e.g., the Arctic/Antarctic, mountains), we recommend voluntary agreements due to similar challenges as those posed for remediating open ocean pollution. However, since some pristine areas have rich and highly sensitive ecosystems it is recommended that regional action plans for such areas (e.g., by the Arctic Council for the Arctic) are developed. It is important to note that regional actions plans have not been addressed in this report and further work is needed to provide more specific recommendations on these.

We furthermore recommend that the governing body develops specific guidance to ensure clean-ups are conducted in an environmentally sound, socially responsible and economically efficient manner, whilst giving signatories flexibility in terms of implementation measures. This guidance could be incorporated in the designation and identification of Best Available Techniques/Best Environmental Practices (BAT/BEP) or a new concept serving a similar purpose to BAT/BEP. BAT/BEP guidelines could then be developed, as proposed in the Zero draft, by the

governing body of the future instrument, to set the standards for safe and environmentally sound remediation and clean-up of existing plastics pollution.

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Appendix

TABLE A. States that mention remediation, restoration, clean-up or existing plastic pollution in their written submissions to the INC Secretariat prior to INC-2, intended to inform the document outlining potential options for elements of a future legally binding instrument. All the submissions can be found here in their full length: https://www.unep.org/inc-plastic-pollution/session-2/submissions#Members

Country/-ies	Element(s) of statements related to remediation, restoration, clean-up or existing pollution
Alliance of Small Island States (AOSIS)	"Recognizing that we have limited days to negotiate this Instrument, it must be structured to include: 1. A high level of initial ambition for all stakeholders across the full-life cycle of plastics, including remediation;..." "In developing and defining the obligations under the ILBI, parties should give priority to the global actions that have the greatest potential to achieve the ultimate objective. These could include, for example: …I. The remediation of plastic pollution in the environment, including the marine environment and areas beyond national jurisdiction." "AOSIS is also considering the possibility of a trust fund that would specifically target remediation of plastic pollution in the marine environment."
Australia	"**Reducing plastic leakage, ensuring environmentally sound waste management and addressing legacy waste** The instrument should reduce leakage of plastics (and associated chemicals) to the environment across each stage of the life cycle. Potential measures include: • Ensuring that those plastics that are essential but cannot be reused or recycled are managed in an environmentally sound manner, in line with the waste hierarchy. • Regulating the movement, and end of life management of plastic waste to reduce leakage from mismanaged waste. • Improved measurement, monitoring and reporting of plastic leakage so that we can assess global progress towards the instrument's objective and better target our activities. • Collaborative actions to manage existing pollution, including guidance and cooperation to address legacy marine litter, including in international waters."

Canada	"Provisions are required to reduce the release of plastic into the environment and address legacy plastic pollution, in complementarity with existing instruments. These provisions should identify and tackle land and aquatic-based sources of plastic pollution, including microplastics, through prevention, reduction and, where appropriate, removal efforts. **General Obligation:** Each Party should be required to implement and report on national measures that prevent, reduce, and remove in an environmentally sound manner where appropriate plastic pollution from land and aquatic-based sources, including microplastics and abandoned, lost or otherwise discarded fishing gear. **Guidance:** The Conference of the Parties, or a mechanism within it, should develop guidance to: (a) prevent and reduce plastics entering the environment from key sources and pathways; and, (b) prioritize and conduct environmentally sound removal of plastic pollution on land and from waterways and nearshore areas, as well as open water removal of abandoned, lost or otherwise discarded fishing gear within national jurisdictions."
Cook Islands	"The objective is the first step in setting the potential scope of the agreement. It should be concise, but allow for the following outcomes/goals:… 3. Minimise emissions and releases to the environment across the full life cycle, including those related to climate change, and promote remediation where safe to do so for the environment and human health. 1) "Each Party shall develop and maintain publicly available inventories of plastic-related chemicals, polymers, and products, as well as emissions throughout the full life cycle of plastics. Inventories must be designed to track: …iv) Remediation – volumes and types of legacy plastics removed from the environment." 2) "Monitoring and evaluation… e) National targets to include … a minimum target for the collection and recycling of plastic waste." 2. Means of Implementation "A financial mechanism should be established under the agreement. Consideration can be given to similar articles under the Montreal Protocol and the Minamata Convention – specifically in the areas of a Multilateral Fund, Global Environment Facility Trust Fund, Plastic Pollution Trust fund, transfer of technologies, establishment of an Executive Committee, capacity building and technology assistance."

Ecuador	"Clean-up of legacy plastic waste as a source of ongoing pollution • Obligation. Parties should take action, including through cooperation to identify, prioritize, and address areas of legacy waste and ensure that remediation of plastic pollution, that poses risks to local communities; biodiversity; fisheries; health; tourism; navigation, and maritime safety, is done in an environmentally safe and sound manner, in line with guidance developed by the Conference of the Parties. (See EIA Submission) • Guidance. The Conference of Parties should be required to adopt criteria and guidelines on the best available techniques and best environmental practices for environmentally sound remediation of legacy waste. The Conference of the Parties should adopt a process to review and update the guidance. • Monitoring. The Conference of the Parties should establish a global monitoring framework that establishes baselines and monitors the evolution of the presence of plastic in the environment, including harmonized definitions, methodologies, and formats for reporting." "2. Means of implementation Appropriate funding for treaty implementation is required for the Convention to meet its objective to end plastic pollution. Ecuador is open to consideration of complementary innovative approaches and sources of funding to support the implementation of the Convention, including the Global Plastic Pollution Fee, proposed by Ghana in its submission. Ecuador aligns its submission with the submission by GRULAC, which states as follows: An ambitious agreement to end plastic pollution, including in the marine environment, will demand that developing countries be provided with commensurate means for its implementation, informed by the best available science, traditional knowledge, knowledge of Indigenous Peoples and local knowledge systems, as well as socioeconomic information and assessment related to plastic pollution. …The INC should thus conceive of a robust integrated mechanism that ensures the provision and mobilization of new, additional, and predictable flows of financial resources to support relevant research, development, and innovation (R&D&I) projects, promote technology transfer and know-how, and provide capacity building and technical assistance. "
Equatorial Guinea	"…the legally binding international instrument on plastic pollution even in the marine environment should apply measures that range from prohibitions and taxes on numerous disposable plastic items, investments for the collection of plastic waste in different ecosystems at the national level, policies on the reduction of plastic containers to cleaning operations on beaches and other water bodies, measures of the polluter pays;..."

European Union	"Address existing plastic pollution The EU and its Member States recognize that the issue of existing plastic pollution is urgent and that it will need to be considered as part of the new instrument. The EU and its Member States believe existing plastic pollution could be addressed via remediation activities in specific contexts such as accumulation sites on coasts, rivers, estuaries, urban mining, and unregulated landfills, as feasible and justified from a socioeconomic perspective. Priority should be given to plastic pollution hotspots and measures that can have a local or regional positive impact on human health and the environment, and minimizing negative effects to ecosystems. In that regard, criteria could be developed to ensure that clean-up activities respect biodiversity. Examples of measures set out in the options paper include, indicators to identify hot spots where quantities and types of litter endanger marine or other species or habitats. On the basis of such identification, targeted removal measures could be adopted in national action plans, on a voluntary basis, e.g., clean-up activities and awareness-raising initiatives." "Monitoring and reporting The instrument should harmonize requirements and introduce obligation for monitoring and reporting in relation to two aspects: (1) management of plastics along its life cycle and (2) plastic pollution in the environment. There should be a common reporting format with both mandatory and optional components including main SMART indicators (Specific, Measurable, Attainable, Relevant, and Time-bound) against which progress must be tracked and reported. … *(2) Harmonize framework for monitoring and reporting of plastic pollution in the Environment* To ensure the effectiveness of such provisions and to avoid a scattered and overburdened landscape, the EU and its Member States stress the need for a common framework of indicators and methods including the internationally agreed definitions to support harmonization of monitoring and reporting, not only at the national, but also at the regional and global level. This could be done efficiently by building upon existing monitoring and reporting protocols, for example those included in different Regional Sea Conventions and other relevant regional and international instruments such as the Minamata Convention, as well as the SDG monitoring framework or the GPLM Platform developed by UNEP. It should also include measures promoting the identification of hotspots that involve plastic pollution originating from different countries, where efforts would benefit from cross-border collaboration. "

Federated States of Micronesia	"1. Proposed Objective: To end plastic pollution in all global environments, including by limiting production and consumption of plastics to sustainable levels and products; promoting a circular economy for plastics, and; remediating existing plastic pollution where possible, particularly in the marine environment." "Remediation: Policies and measures must also be put into place to address the legacy plastic pollution that already exists in the environment, prioritizing those locations and pollutants that cause the most harmful impacts on human health and ecosystems, with particular attention to existing plastic pollution in the marine environment (including in marine areas beyond national jurisdiction) and focusing especially on small islands/atolls." "2. Means of Implementation: Dedicated Financial Mechanism (Multilateral Fund) …The treaty should establish a dedicated financial mechanism or Multilateral Fund for the provision of necessary financial resources and means of implementation to eligible countries in order to carry out their obligations, commitments and/or contributions under the agreement. "
Gabon	"Core Obligations, Controls and Voluntary Approaches… Establishment of an international plastic pollution remediation system for the oceans and international areas; - Mobilization of the necessary funds for the implementation of a ten-year plan to remediate past plastic pollution in international areas or in countries receiving plastic waste from the high seas; …" "3. Control Measures and Voluntary Approaches …Definition of the tolerance thresholds for chemical additives in the plastics industry, petrochemicals and plastics, in particular: ✓ the design and use of the plastic product; ✓ the production and consumption of virgin and secondary polymers; ✓ the supply of raw materials; ✓ remediation of priority hot spots; ✓ management and treatment of plastic waste." "The data should be compiled by the Competent National Authority for the preparation of national reports on the reduction and elimination of plastic pollution. Such reports should track the execution of mitigation strategies for plastic-polluted sites, awareness programs and operations at the local level."

Ghana	"Yet, our unsustainable patterns of production and consumption of plastics have created an environmental and health catastrophe for the planet. Today, legacy plastic pollution weighs heavily on our oceans and land, our biodiversity, and human health. At the first Intergovernmental Negotiating Committee (INC) meeting, Ghana proposed the establishment of a "Legacy Fund" to finance the clean-up of legacy plastic pollution.[2]" "These costs also do not account for cleaning up legacy plastic pollution, which is a current and egregious source of ongoing pollution that must also be ended under the legally binding instrument. With every year that the pollution gap is not closed, the volume of legacy plastic pollution in the environment grows. The costs of eliminating legacy pollution will likewise be significant." "The GPPF will serve as an economic incentive for companies to adopt more sustainable production and disposal practices, while also generating revenue that can be used to finance environmentally safe and sound waste management and clean-up initiatives."
Guinea	"2. Core Obligations, Controls and Voluntary Approaches What fundamental obligations, control measures and voluntary approaches would make it possible to adopt a global approach to the fight against pollution by materials plastics, including in the marine environment, throughout their life cycle, in accordance with the future objectives of the instrument? Obligations: ... - implementation of an international plastic pollution remediation system for oceans and international areas" "…definition of tolerability thresholds for chemical additives in the plastics industry, petrochemicals and plastics, in particular: ✓ the design and use of the plastic product; ✓ the production and consumption of virgin and secondary polymers; ✓ supply of raw materials; ✓ remediation of priority hot spots; ✓ the management and treatment of plastic waste."[2]

[2] Translated from French.

Monaco	"Legacy waste is not only a local plastic pollution issue, but also a source of continuous spread of microplastics and chemicals of concern, and remediation may benefit from concerted international coordination and guidance from the treaty." "Remediation of legacy plastic waste • Cooperation. Parties should cooperate to develop strategies to identify, prioritise and address areas of legacy waste in an environmentally sound manner. • Guidance. The Conference of Parties should be required to adopt criteria and guidelines on best available techniques and best environmental practices for environmentally sound remediation of legacy waste."
New Zealand	"Control measures (including voluntary measures… Non-exhaustive list of downstream control measures supported by New Zealand (dispose, treat, remediate, prevent leakage) - Coordinated global, national and local efforts to address damage caused by ongoing plastic pollution, including clean-up and remediation activities" "New Zealand recognises the importance to tangata whenua (indigenous peoples) of reducing plastic waste and eliminating pollution, and the importance traditional knowledge plays in the sustainable management and protection of the environment. Mātauranga Māori (Māori knowledge) demonstrates a deep relationship Māori have with the whenua (land) and moana (water). Implementation of the instrument must ensure indigenous peoples' rights and knowledge, including traditional knowledge, are respected, documented, and preserved with their free, prior and informed consent, including through their full and effective participation in decision-making."
Norway	"Lastly, legacy waste is not only a local plastic pollution challenge, but also a source of continuous spread of microplastics and chemicals of concern, and remediation may benefit from concerted coordination and guidance from the treaty. The options paper should reflect options to reduce and eliminate the release of plastics to air, water and land for INC to further discuss these options at INC-2." "Remediation for legacy plastic waste • Cooperation. Parties should cooperate to develop strategies to identify, prioritise and address areas of legacy waste in an environmentally sound manner, and encourage partnerships with stakeholders in support of these strategies."

Palau	"Objectives • End plastic pollution. • … • Address legacy waste: manage plastics that have not been reused or recycled, including existing pollution plus marine plastic pollution" "In addition, Palauans have grave concerns about the environmental, social, cultural, economic, human health and, food security impacts, of plastics pollution. This further exacerbates the climate change impacts we are already experiencing. We cannot manage this challenge without looking at this issue comprehensively, from sourcing of plastics to the end-of-life cycle management, and remediation of releases." "Implementing measures… c) Financial and technical support for scientific studies to identify the source of marine litter that washes up on the shores of Palau. Study will include options of best management practices to address marine litter resulting in reduced pressure on Palau's national landfill. Capacity building to support the development of community action plans to address marine plastic litter. Activities must include regular survey and beach clean-ups to identify and sort plastics to enable data collection."
Peru	"Proposal of possible mandatory approach measures: … • Preparation of national action plans according to the particular circumstances of each country, including for the elimination of plastics currently in the environment."
Russia	"What measures will be required to support the implementation of the instrument?... 4. Creating favorable conditions for the development of international scientific cooperation in the fields of: - evaluation of the scale of plastic pollution, - evaluation of threats for human health and the environment as a result of plastic pollution, - development of new technologies for cleaning the environment from plastic pollution."

Rwanda	"Rwanda further suggests dividing the lifecycle into the following stages, along the lines of the stages as identified by the UN Environment Programme and various governments and stakeholders: 1. Raw Materials (Sourcing): Core obligations and control measures on oil and gas extraction, gathering and processing as well as petrochemical production; 2. Virgin Polymer Production, Consumption and Use (Upstream): Core obligations and control measures on virgin polymer production, consumption and use, covering the moment when plastic first comes into existence as a material (polymerization) and enters the environment as a pollutant (pellet loss) through conversion into plastic products; 3. Product Design and Use (Midstream): Core obligations and control measures on plastic products placed on the market, covering their design and use, including reuse; 4. Plastic Waste Management (Downstream): Core obligations and control measures on the environmentally sound management of plastic waste, in line with the waste hierarchy; and 5. Plastic Pollution in the Environment (Remediation): Core obligations and control measures to address plastic in the environment and its remediation" "Plastic in the Environment (Remediation) This provision addresses Resolution 5/14, paragraph 3(c), and should include obligations and measures to remediate plastic pollution in the marine environment, including existing plastic pollution, as well as plastic pollution in other environments. Options for Elements ● Cooperation. Parties should be required to develop strategies to identify, prioritise and address plastic pollution in the environment in an environmentally sound manner, and establish partnerships with stakeholders to support efforts to implement those strategies. ● Protocols. The Conference of Parties should adopt protocols on best available techniques and best environmental practices for environmentally sound remediation of plastic pollution in the environment." "2. Means of Implementation… • Trust Fund for Plastic Pollution. Parties should establish a Trust Fund for Plastic Pollution, operating under the authority of the Parties, in order to provide additional financial assistance to support remediation of existing plastic pollution as well as other agreed-upon costs, funded by the private sector."
Sri Lanka	"Decontamination of plastics contaminated sites (e.g. Waste dump sites, marine environments etc) in an environmental friendly manner.."

Switzerland	"Remediation of legacy plastic waste • Cooperation. Parties should be encouraged to cooperate with other relevant actors, such as international organizations, and identify, prioritize and address areas of legacy waste and develop global, regional and national plans to implement, in an environmentally sound manner, the remediation of aquatic environments and terrestrial sites contaminated with plastic waste. Further guidance could be adopted by the COP. • Transparency and reporting requirements could also be included."
Tonga	"The lack of technical and financial capacity, infrastructure coupled with poor waste management practices and systems in the region lead to huge quantities of plastics/plastics products waste ending up our shores. Therefore, we need to consider the issue comprehensively from the point at which plastic is conceived as a material to the moment it finds its way to end of life." "Means of implementation Tonga require financial assistance, Technical assistance and Capacity buildings to tackle the plastic pollution issue, and is actively seeking the support of our member nations to deliver this most important of Treaties to ensure the legacy we leave our children is one of prosperity and environmental harmony, not pollution and destruction."
Uruguay	"Legacy waste is not only a local plastic pollution issue, but also a source of continuous spread of microplastics and chemicals of concern, and remediation may benefit from concerted coordination and guidance from the treaty. The options paper should reflect options to reduce and eliminate the release of plastics to air, water, and land for INC to further discuss these options at INC-2." "Establishment of intersessional working group: an intersessional working group on marine pollution and legacy plastics should be established in INC-2 to address strategies for eliminating the existing pollution, addressing its prevention, minimization, control, monitoring and remediation of the legacy plastics." "Cooperation: Parties should cooperate to develop strategies to identify, prioritize and address areas of legacy waste in an environmentally sound manner, and encourage partnerships with stakeholders in supporting efforts to implement these strategies."

Possible Approaches to Addressing Existing Plastic Pollution in an International Treaty

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