



Nordic Council
of Ministers

Possible elements of a new global agreement to prevent plastic pollution



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Abbreviations

10-YFP on SCP	10-Year Framework of Programmes on Sustainable Consumption and Production
ACC	American Chemistry Council
AHEG	Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics
AHTEG	Ad Hoc Technical Expert Group
AIA	Advance informed agreement
APR	Association of Plastics Recyclers
BAT	Best available techniques
BEP	Best environmental practices
BPA	Bisphenol A
BPF	British Plastics Federation
BRS	Basel, Rotterdam and Stockholm Conventions
CBD	Convention on Biological Diversity
CIEL	Center for International Environmental Law
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
COP	Conference of Parties
DDT	Dichlorodiphenyltrichloroethane
EEDI	Energy Efficiency Design Index
EIA	Environmental Investigation Agency
EPR	Extended producer responsibility
ESM	Environmentally sound management
FAO	The Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GESAMP	United Nations-sponsored Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GPML	Global Partnership on Marine Litter
HDPE	High-density polyethylene
IHR	International Health Regulations
IMO	International Maritime Organization
INC	Intergovernmental negotiating committee
IPBES	Intergovernmental science-policy Platform on Biodiversity Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change

IUCN	International Union for Conservation of Nature
LBS	Land-based sources
LMO	Living modified organism
LRTAP	Convention on Long-Range Transboundary Air Pollution
MARPOL	International Convention for the Prevention of Pollution by Ships
MBIs	Market-based instruments
MEA	Multilateral environmental agreement
MoU	Memorandums of Understanding
NAP	National action plan
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NGO	Non-governmental organization
NPMP	National Plastics Management Plan
OECD	Organization for Economic Co-operation and Development
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PCB	Polychlorinated biphenyl
PCR	Post-consumer resin
PET	Polyethylene terephthalate
PIC	Prior informed consent
POP	Persistent organic pollutant
PRE	Plastics Recyclers Europe
PRO	Producer responsibility organization
RoP	Rules of Procedure
SAICM	Strategic Approach to International Chemicals Management
SCP	Sustainable consumption and production
SDG	Sustainable Development Goal
TBT	Technical Barriers to Trade
UNCLOS	United Nations Convention on the Law of the Sea
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wide Fund for Nature



Photo: Ritzau/Scanpix.dk

Executive Summary

Plastics and their chemical components are integrated in all areas of our daily lives. While plastics will continue to bring various societal benefits, a systematic and holistic global approach is needed to mitigate marine plastic pollution. In 2017, an assessment of the effectiveness of relevant international governance strategies and approaches was presented to the third session of the United Nations Environment Assembly (UNEA) that highlighted key gaps in international plastics governance. The report points out that the absence of an institution with a mandate to coordinate existing efforts, lack of legally binding instruments in key regions to manage marine plastic pollution originating from land, and limited industry due diligence and lack of global design standards to mitigate plastic pollution hamper effective international management of plastics. These shortcomings necessitate a global response that extends beyond waste management to address the entire life cycle of plastic pollution. A business-as-usual approach that does not address current governance gaps is harmful to ecosystems and the services they provide, as well as harmful to social well-being and economic productivity in multiple sectors.

This report contributes to global discussions by: (1) defining potential objectives and strategic goals of a potential new global agreement; (2) providing a first outline of a structure for a potential new global agreement; and (3) identifying and detailing national implementation measures to achieve the global goal of zero discharge of plastics into the marine environment.

A global policy setting regarding the prevention of marine pollution by plastics has been established over recent years and this report contributes to relevant discussions within this setting in which the international community has agreed to certain principles, approaches and decisions. Since 2014, UNEA has in its four consecutive meetings adopted five resolutions specific to the issue of marine plastic litter and microplastics and the mitigation efforts underway, while emphasizing the urgent need for greater progress. In 2017, the third session of the Assembly agreed to the long-term elimination of all discharge of litter and microplastics to the ocean and established an intersessional Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics to consider, inter alia, a stronger governance response at the

global level¹. Its intersessional meetings have discussed the sources, response options, enabling mechanisms and barriers to long-term elimination, amongst other issues, and will provide input to the fifth session of UNEA to be held in February 2021.

The vision of UNEA agreed in 2017, for the long-term elimination of all discharge of litter and microplastics to the oceans, builds on and complements Target 14.1 of the 2030 Agenda on Sustainable Development, which calls for preventing and significantly reducing marine pollution of all kinds, particularly from land-based activities, by 2025. The UNEA vision is termed the 'global objective' for the proposed new agreement on marine plastic litter discussed in this report.

In response to numerous calls from the international community for the development of a new global agreement on marine plastic litter, the Nordic Council of Ministers for the Environment and Climate (MR-MK) adopted a Declaration in 2019 that called for the development of such an agreement. The Declaration requested the preparation of a report to inform decision-making, by sketching out the possible elements and approaches of a new global agreement that addresses the whole life cycle of plastics (NCM, 2019). This report is delivered in response to that request.

The report aims to inform the UNEA process and other forthcoming meetings on managing and preventing pollution by plastics. Meetings of parties to relevant instruments and various partnerships aiming to address the issue of plastic pollution also could consider the measures outlined in this report as possibly useful options within their respective mandates.

Why a new global agreement?

Plastics are found in disturbing quantities in our oceans, air, soil and freshwater resources. Plastic pollution presents a significant risk to marine ecosystems and biodiversity globally (UNEP, 2014), as well as to the marine economies of many nations (McIlgorm et al., 2020). The current international legal and policy framework is inadequate to address the issue of marine plastic pollution (UNEP, 2017). Policy and market failures in waste management have also played a key role.

In 2017, governments agreed to the goal of long-term elimination of all discharge of litter and microplastics to the ocean. The marine litter issue, however, cannot be solved in the ocean itself. Elimination of discharge to sea requires a much-needed systemic change that enables better management of plastics on land too. This can only be achieved when global governance spans the entire plastics life cycle, addressing product design and the entire supply chain. The plastic pollution problem is bigger than ineffective and unsound waste management.

This report outlines suggested elements of a new global agreement to combat plastic pollution. Importantly, the elements aim to engage governments, industry and consumers by providing better tools for governments to regulate national markets, global guidance for industry and incentives for consumers. In implementing those elements, parties to the proposed agreement would approach fulfilment a number of Sustainable Development Goals, particularly Goal 14 on life below water, Goal 11 regarding sustainable cities and communities and Goal 12 on responsible

1. UNEA Res. 3/7, para 10

consumption and production. Parties would thereby also reduce the global risks of non-renewable resource depletion, reduced food security, and the health risks of soil, water and chemical pollution.

Approaches to a new agreement: holistic or filling gaps?

Existing global instruments, such as the Basel Convention, the Stockholm Convention, the UN Law of the Sea Convention, the Convention on Biological Diversity, Annex V of the International Convention for the Prevention of Pollution by Ships (MARPOL) and the London Convention and the Protocol thereto, will be complemented by the proposed new global agreement. Geographical gaps in the current regional frameworks concerning land-based sources of marine pollution (UNEP, 2017) can be addressed through a specific global agreement on plastics.

However, a new global agreement for plastics must go beyond simply closing the gaps in the current global and regional law and policy framework. A comprehensive and long-term governance strategy is needed to address prevention as a primary approach and to ensure sustainable management of plastics throughout the value chain.² First, the existing framework's weakness on upstream and midstream activities must be addressed (see figure C) by providing robust national financial mechanisms that improve downstream activities in all countries.

A global agreement can help countries address plastic pollution in upstream activities, facilitating governments to enact necessary legislation and implement effective measures. Countries can be provided with the tools to regulate the products placed on their markets that will create a level playing field for industry and governments, avoid disputes under the World Trade Organisation and assist in regulating the growing online sales platform. Most importantly, by addressing the issue at the design phase, all sources and pathways of marine plastic pollution can be addressed. Through this life cycle value chain approach, downstream management services would grow, as risks of exposure to international trade fluctuations in secondary plastics would be reduced, and the economic stability of and investment in downstream plastic waste management services would be enhanced. This, in turn, will benefit those countries that suffer the impacts of transboundary movement of marine plastic litter.

Thus, a life cycle management approach that goes beyond merely closing existing governance gaps can more effectively measure the extent of plastic pollution, including microplastics, and measure progress made at the global level in prevention and mitigation. Commonly agreed targets and measures can help governments implement national actions.

The design of a new global agreement

The design of a new global agreement will depend on the agreed objectives and scope. This will, in turn, influence the design of the obligations parties must commit to and how parties are expected to implement these obligations. Global discussions have progressed from a need to reduce marine litter (downstream), to promoting sustainable waste management in an attempt to achieve such reductions

2. The value chain refers to all business activities undertaken to create a product, including from extraction, production and distribution to activities that again create value from the product at end-of-life.

(midstream), to targeting sources (upstream activities) in order to support sustainable waste management and thereby prevent marine litter. These approaches are reflected in Table A.

Table A: The three objectives assessed for the design of a new global agreement.

Objective	Design possibilities and limitations
Reduction of marine litter	Build on the Regional Seas Conventions and Action Plans framework. <ul style="list-style-type: none"> – May have limited options for addressing source materials and design of plastic products, including the elimination of residual waste across the full life cycle. – Tracking progress at the global level may prove challenging.
Sustainable waste management	Promote 3R waste hierarchy (reduce, reuse, recycle), including a reduction in the generation of wastes. <ul style="list-style-type: none"> – Would facilitate a reduction in but not eliminate marine litter. – Options to influence the design of products across the global value chain may be limited.
Sustainable consumption and production	Address the full life cycle of plastics <ul style="list-style-type: none"> – Would facilitate sustainable waste management and reduction of marine litter and microplastics. – Reduces residual waste across the value chain.

The objectives listed in Table A were considered together with the request in the Declaration adopted by the Nordic Council of Ministers for the Environment and Climate Change, requesting that the entire life cycle of plastics be addressed by the agreement. This led to the study focusing on an agreement that has the objective of sustainable consumption and production across the life cycle of plastics in order to achieve all three of these objectives in the long-term. The third objective has therefore guided the elements outlined in this report.

Options for the design of a new global framework to govern plastic pollution is presented through three approaches. These can be described simplistically, although variations are possible, as:

1. a highly regulatory (top-down) approach;
2. a voluntary (bottom-up) mechanism; or
3. a hybrid formulation that combines the two approaches.

The proposed new global agreement is presented in this report as a framework agreement that provides the legal basis for future development of more detailed implementing instruments over time. A highly regulatory approach provides limited flexibility in the selection of national implementation measures. In contrast, a voluntary approach would not allow for the development of obligations that countries would commit to. In this context, the hybrid approach is therefore favoured in this report

The following table lays out how the hybrid approach engages societal actors in plastics management throughout the life cycle of plastic products. It enables

management tools to be utilised by government, industry and consumers at all points along the plastics value chain.

Table B: Summary of engagement of government, industry and consumers through a new global agreement.

Governments	Industry	Consumers
<ul style="list-style-type: none"> - Tools to regulate domestic markets - Tools to ensure transparency across the value chain of products and materials - Tools to develop partnerships with industry – Developing countries: <ul style="list-style-type: none"> • Assistance for development of National Plastics Management Plans • Assistance for development of regulatory & market-based instruments to reduce the financial & physical burden of waste management 	<ul style="list-style-type: none"> - Guidance on sustainability objectives & criteria - Confidence in a fair & transparent competitive opportunity - Potential cost savings based on performance outcomes 	<ul style="list-style-type: none"> - Incentives to reduce, reuse, recycle - Penalties for waste and litter - Increased opportunity for sustainable income generation

The building blocks of a new global agreement

Multilateral environmental agreements (MEAs) typically exhibit common structural features, as illustrated in Figure A. These are usually blocks of provisions that serve particular functions in the working of an MEA: general, management, supporting, institutional, assessment and final provisions.

- **General** provisions elaborate on the agreement’s objective, principles and strategic goals, scope and definitions or use of terms.
- **Management** provisions provide the key mechanisms and operational commitments to be implemented by the parties and other partners in order to achieve their objectives and goals.
- **Supporting** provisions enable implementation of the key mechanisms and specific commitments, such as through advisory functions, international liaison, capacity building, and technical and financial assistance, and education and awareness raising.
- **Institutional** provisions set up the governing body, scientific and technical bodies, and secretariat.
- **Assessment** provisions track progress towards the objective of the agreement at the international and national levels through reporting (disclosure of standardized information), monitoring and research, and review (third-party verification).
- **Final** provisions describe the conditions for ratification and accession, entry into force, dispute settlement, amendment and withdrawal from the agreement.

These typical MEA structural features have been adopted here for the proposed new agreement on marine plastic litter and are illustrated in Figure A.

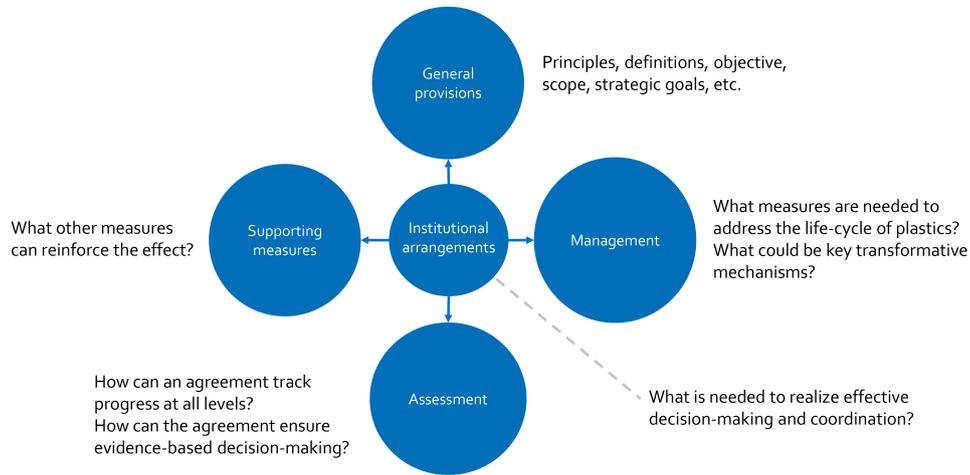


Figure A: The building blocks of an international agreement forming the focus of this report.

The strategic goals of a new global agreement

The strategic goals of the new agreement can guide high-level targets to ensure convergence of national efforts to eliminate leakage of plastics into the marine environment. The following are suggested as four strategic goals:

1. Elimination of problematic and avoidable plastic products.
2. Sustainable management of all products.
3. Sustainable waste management.
4. Chemical hazard reduction.

These strategic goals have been chosen because their fulfilment would meet the overall objective of the proposed agreement, i.e. long-term elimination of all discharge of litter and microplastics to the ocean. Of necessity, they relate to the full lifecycle of plastic products. They would be articulated in the general provisions of the proposed agreement.

To be effective in reducing marine plastic pollution over the long-term, the strategic goals of a new global agreement must aim to address all sectors and the full value chain of plastics, upstream, midstream and downstream. Beginning with raw material extraction, through all phases of the life cycle, to design, international trade, microplastics and chemical additives, all with the intention of minimising residual waste across all life cycle phases.

International sustainability criteria

The achievement of strategic goals can be facilitated through operational implementation mechanisms. The fundamental and central operational implementation mechanism proposed in this report is the formulation and adoption of international sustainability criteria addressing the full life cycle of products. These criteria would apply to economic activities along the value chain of plastics, to incentivise reusability, repairability and recyclability of products. In other words, economic activities are considered as 'upstream', 'midstream' and 'downstream' in the context of the controlled flows of the plastics value chain (as illustrated in Figure B). The following figure sets them out and identifies where the economic activities relate to the proposed strategic goals and juxtaposes them with risks of plastic pollution leaking into the environment.

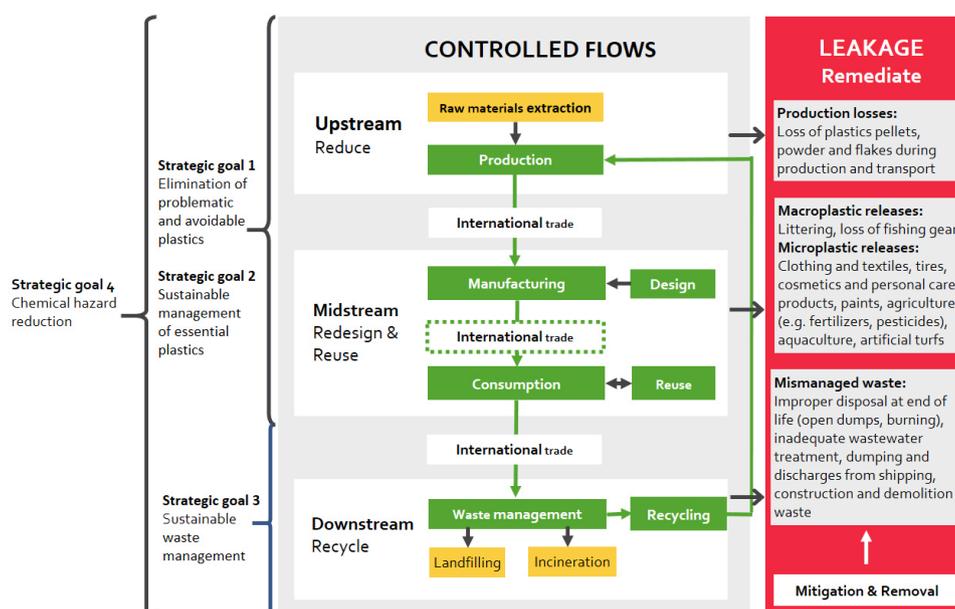


Figure B: The value chain of plastics, indicating circular materials flows in green.

The activities within the value chain would be designed to prevent leakage, thereby minimising the need for mitigation and removal (i.e. remediation).

The proposed new agreement's international sustainability criteria would be like the brain and nerve system guiding how its other implementation measures apply. They would be formulated by the parties to the agreement, through open-ended technical working groups, and would be supported by the development of related technical standards, testing protocols and certification schemes. The obligation to formulate and adopt international sustainability criteria would be situated in the management provisions in the body of the proposed new agreement. The structure and processes for the meetings of parties and for the open-ended technical working groups would be prescribed in the part of the agreement on institutional provisions.

Two other core operational implementation mechanisms

Fundamental to achieving the objectives of any multilateral environmental agreement is its implementation at the national level. The strategic goals could be achieved through two additional core operational implementation mechanisms, following the formulation and adoption of international sustainability criteria. These mechanisms would be written into the management provisions in the body of the proposed new agreement.

To implement the international sustainability criteria, parties to the agreement might commit to:

- **Develop National Plastics Management Plans (NPMPs)** that aim to address the main drivers of plastic pollution by helping countries to design a holistic and comprehensive strategy to manage plastics throughout the life cycle. The plans promote a bottom-up approach that provides flexibility at the national level for setting targets, identifying measures and mobilizing resources, while ensuring progression over time. NPMPs are submitted to the agreement and periodically updated.
- **Develop and agree International Sustainability Criteria** under the new agreement, to be fulfilled through National Plastics Sustainability Standards.
- **Develop and fulfil National Plastics Sustainability Standards** that can be operationalized through the regulation of domestic markets in accordance with the sustainability criteria and deployment of market-based instruments to promote behaviour change by industry and consumers and provide funding mechanisms for waste management services. These may be elaborated in NPMPs.

Supporting measures

The strategic goals and core operational implementation mechanisms are supported by measures addressing funding, sustainable remediation, education and awareness, as well as research. A new global agreement can provide the platform for global coordination to facilitate such measures.

Implementation of the proposed agreement could be supported by funding and capacity building measures. These would be limited to technical assistance comprising incremental costs in developing NPMPs, national sustainability standards and national assessment and reporting.

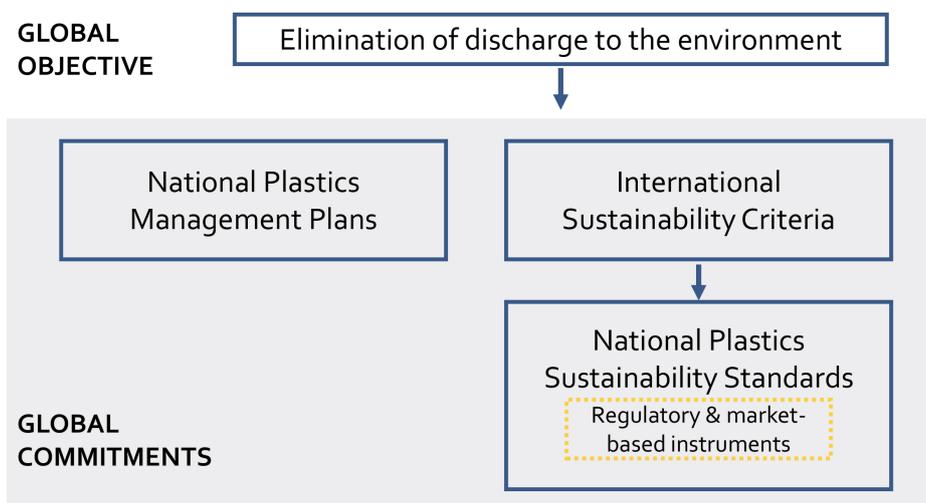


Figure C: Linkages between implementation mechanisms, highlighting core global commitments.

Assessment to measure progress

The proposed international agreement would set out National Information Sharing, Monitoring and Reporting processes to collate technical information and performance information in prescribed formats to measure national progress in sustainable plastics management. These would be prescribed in the part of the agreement on assessment of progress.

A mechanism for measuring progress is proposed with obligations for reporting to understand performance and monitoring to assess bio-physical and socio-economic impacts of actions. A periodic global review will help to aggregate national data to determine global progress, including identifying best practices and possible implementation gaps, helping to progressively scale up action. Furthermore, national reviews can provide feed-back on progress for individual countries to inform the future development of these NPMPs.

Institutional elements

The development of necessary tools and guidelines and evaluation of progress will require establishment of a governing body that meets at periodic intervals and is supported by a secretariat. Furthermore, a subsidiary scientific body could help to address needs for scientific and technical expertise, and economic and market knowledge, in particular for preparation of necessary guidelines/standards to facilitate implementation and methodologies for measuring progress.

Timeframes

Setting common global timeframes promotes progress towards goals. In the process of preparation and negotiation of the proposed new agreement, countries would commit to cooperate in the development of international sustainability criteria to be included in the text of the agreement, which can then be further developed by subsidiary bodies into performance outcomes, guidelines and best environmental practices that address the life cycle of plastics.

Once this planning phase is complete, countries then have an obligation to develop National Plastics Management Plans (NPMPs) and National Plastics Sustainability Standards. These standards can be given effect within national regulatory and market-based frameworks and outlined in NPMPs. Assistance can be provided to those countries in need during this phase. National plans and standards are part of the implementation of the new agreement, after it comes into force.

Monitoring and reporting frameworks are then used on rolling cycles to enable tracking of global progress. National reporting according to the agreed global standards could lead into national reviews, aggregated to a global review which ultimately allows for the identification of best practices and possible implementation gaps where facilitation can be provided.

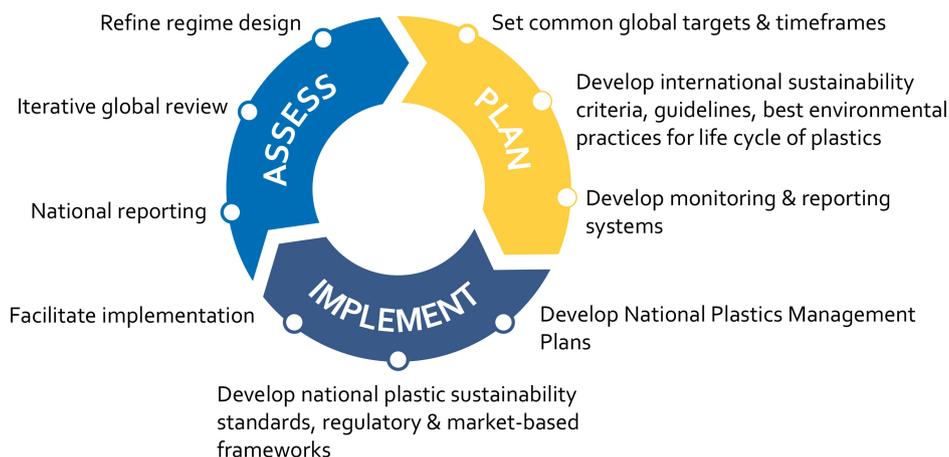


Figure D: Overview of the primary phases of a new global agreement.

Moving to the next step

The report outlines a new conceptual approach to a global agreement. This approach is based on the development of international sustainability criteria for plastics and additives that are formulated in general terms and adopted during the process of negotiation of the agreement. They would be gradually elaborated in specific terms by technical working groups later and fulfilled through the

development of national plastics sustainability management plans and national plastics standards.

The concepts presented in this study will require further discussion to take a potential new global agreement to the next level. A number of fora are tackling the issue of plastic pollution may consider the concepts presented here within the contexts of their mandates.



4.8–12.7 million tons of plastic enter the ocean each year.

Photo: Unsplash.com

1. Introduction

Plastics have generated several benefits for society and the environment. Plastic pollution, however, has become a persistent and widespread challenge. To date, 6.3 billion metric tons of plastic waste has been generated, from which only 9% has been recycled, 12% incinerated and 79% accumulated in landfills or disposed in the natural environment (Geyer et al., 2017). Consequently, plastics are found in disturbing quantities in the ocean, air, soil and freshwater resources, even in the most remote and pristine areas of the world.

An estimated 4.8–12.7 million metric tons of plastic waste enters the oceans each year from land-based sources alone (Jambeck et al., 2015). The problem of plastic pollution in the ocean is undoubtedly a marine problem that requires a land-based solution. It is inherently linked to unsustainable consumption and production patterns and the inability of waste management infrastructure to keep pace with our rate of waste generation. Estimates show that if the current consumption patterns and waste management practices continue, then by 2050 there will be an estimated 12 billion metric tons of plastic waste in landfills or the natural environment (Geyer et al., 2017).

Microplastics is an emerging issue of global concern (Galgani et al., 2017) that has presented challenges in understanding the sources, pathways and impacts thereof, but also in identifying effective responses. Mitigation and removal options are costly and such activities are not easily implemented in many countries. No international agreement addresses the issue of primary or secondary microplastics. Through a life cycle approach that aims to eliminate residual waste and promote product sustainability criteria, the intentional addition of primary microplastics and abrasion of products leading to the leakage of secondary microplastics can be prevented globally.

Plastics and their chemical additives are integrated in all areas of our daily lives. Thus, a systematic and holistic global approach is needed to deal with plastic pollution. In 2017, an assessment of the effectiveness of relevant international governance strategies and approaches was presented to the third session of the United Nations Environment Assembly (UNEA) that highlights key gaps in

international governance. These gaps include the lack of an institution whose mandate focuses on the coordination of existing efforts, and gaps in the development of legally binding instruments in key regions to manage marine pollution originating from land. In addition, limited industry due diligence and lack of global design standards to mitigate plastic pollution (including microplastics), as highlighted in the report, support the need for a global response that addresses more than waste management. In light of current trajectories, a business-as-usual approach under current governance models will be grossly inadequate and, indeed, harmful to ecosystems and the services they provide, as well as social well-being and economic losses to multiple sectors.

The report aims to respond to the unprecedented concern of plastic pollution across academic and policy spheres as well as civil society. The report builds on the premise that incremental and voluntary approaches are necessary but insufficient. A systemic change spanning the life cycle of plastics is critical but can only be achieved when the global governance of plastics matches the urgency, magnitude and complexity of the challenge.

This report exists within an existing policy landscape and contributes to global discussions in which the international community has agreed to certain principles, approaches and decisions regarding the prevention of pollution by plastics. Since 2014, UNEA has in its four consecutive meetings adopted resolutions that recognize the issue of marine plastic litter and microplastics and the efforts underway, while emphasizing the urgent need for greater progress.

In 2017, the third session of the UN Environment Assembly agreed to the long-term elimination of all discharge of litter and microplastics into the ocean and established an intersessional Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics to consider, inter alia, a stronger governance response at the global level³. These intersessional meetings have discussed the sources, response options, barriers to implementation and enabling mechanisms, amongst others, and will provide input to the fifth session of UNEA.

The agreed vision of UNEA for the long-term elimination of all discharge of litter and microplastics to the ocean builds on and complements Target 14.1 of the 2030 Agenda on Sustainable Development that calls for preventing and significantly reducing marine pollution of all kinds, particularly from land-based activities, by 2025.

1.1 Objective

In April 2019, the Nordic Council of Ministers adopted a Declaration that calls for the development of a global agreement to more effectively and comprehensively deal with marine plastic litter and microplastics (NCM, 2019). The objective of this report is to lay out possible elements and approaches of a proposed new global agreement in delivery of paragraph 9 of the declaration.

The report outlines a framework agreement that provides the legal basis for future development of enabling instruments over time. This new global agreement can set out various obligations that parties commit to implementing. Ultimately, the report

3. UNEA Res. 3/7, para 10

aims to show how an international agreement can be designed to effectively stimulate needed action at all levels to combat plastic pollution, benefit the climate and close the loop of material flows by harnessing the collective effort of nations. Above all, the suggested elements of a new global agreement to combat plastic pollution aims to benefit governments, industry and civil society. Table 1 highlights some of the potential benefits.

Table 1: Benefits of a new global agreement for government, industry and civil society.

Governments	Industry	Civil Society
<ul style="list-style-type: none"> - Tools to regulate domestic markets - Tools to develop partnerships with industry -Developing countries: <ul style="list-style-type: none"> • Assistance for development of National Plastics Management Plans • Assistance for development of regulatory & market-based instruments to reduce the financial & physical burden of waste management 	<ul style="list-style-type: none"> - Guidance on sustainability objectives & criteria - Confidence in a fair & transparent competitive opportunity - Potential cost savings based on performance outcomes 	<ul style="list-style-type: none"> - Sustainable environment for current & future generations - Preservation of ecosystem services - Reduced risk from chemical hazard - Reduced risk from mismanaged waste-related disease - Increased opportunity for sustainable income generation

The report aims inform the UNEA process and other forthcoming meetings on managing and preventing pollution by plastics. Meetings of parties to various relevant instruments and partnerships aiming to address the issue of plastic pollution could also consider the measures outlined in this report as possible response options within the mandate of these instruments.

1.2 Process and engagement

The standard elements employed in the design of existing multilateral agreements are tailored to the specific context of plastic pollution in this report. Here, principles, approaches and text agreed on within resolutions adopted for marine plastic litter and microplastics and Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics (AHEG) meeting documents form a basis for elements, where applicable. A summary of text agreed under the UNEA forum relevant to plastic pollution is collated in Annex 4.

The proposals that will be presented aim to incorporate a wide range of stakeholder contributions in order to make the proposals as real-world as possible, but still providing a bold life cycle approach that aims for a far-reaching framework to deal with a broad range of issues and applications, as well as emerging issues related to marine plastic litter and microplastics. The methodology consists of literature review, followed by the organization of two technical expert workshops to inform

drafting. In addition, the first draft of the report was submitted for review for select experts in global plastics governance.

1.3 Use of terms

The following explanation of terms used in this report is provided for the purposes of interpretation of discussions presented in the report. Where appropriate, commonly used definitions are provided from the literature.

Abrasion – the release of secondary microplastics during the intended use of a product

Avoidable or unnecessary plastic products – can currently be reduced or substituted with non-plastic fit-for-purpose alternatives and/or can be eliminated entirely without compromising the consumer's access to the product, inability to meet health or safety regulations, or causing undesirable environmental outcomes⁴ (see also 'problematic plastic products').

Consumer – any purchaser of plastic items (complete products, parts thereof or feedstocks), including manufacturers, industry sectors and end-users.

Consumption – the action of using up a resource, product or component thereof, both directly or indirectly.

Environmentally sustainable – environmental resources are protected and maintained for current and future generations including by minimising negative human impact.

Environmentally sound management (ESM) – as per the Basel Convention, "taking all practicable steps to ensure that hazardous wastes or 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."

Extended Producer Responsibility (EPR) – a policy approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products.⁵

Downcycle – refer to 'repurpose.'

Leakage – littering, mismanaged plastic waste, and releases of microplastics during production, product use and after disposal.

Market-based instruments (MBIs) – binding and voluntary policy instruments that use markets, price, and other economic variables to provide incentives for polluters to reduce or eliminate negative environmental externalities.

Examples include environmentally related taxes, charges and subsidies, deposit-refund systems, environmental labelling laws, licenses, and Extended Producer Responsibility schemes.⁶

Post-Consumer Resin (PCR) – plastic waste that has been recycled ready for use in

4. Adapted from Australian Packaging Covenant Organisation (APCO), 2019. Single-Use, Problematic and Unnecessary Plastic Packaging. Available at: www.packagingcovenant.org.au/documents/item/3183.

5. <https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm>

6. Wikipedia, modified.

new products.

Problematic plastic products – products that are currently 1) Difficult to collect/ recover for reuse, recycling or composting purposes; or, 2) A material that hinders, disrupts or obstructs opportunities to recover other materials or resources; or 3) A significant contribution to the plastic litter problem; or 4) Made using, manufactured with, contains or has contained hazardous chemicals or materials that pose a significant risk to human health or the environment. (This type of plastic product may not be considered problematic should emerging technologies result in effective collection/recovery for reuse, recycling or composting purposes, provided it can be removed from the environment⁷ (see also 'avoidable or unnecessary plastic products'.

Recycle – the reprocessing of the waste materials to enable use as per the original purpose of the original material.

Repurpose – use at the end of original purpose for a different purpose, e.g. energy creation, incorporation into non-related products).

Reuse – a product or packaging that has been conceived and designed to accomplish, within its lifecycle, a certain number of trips, rotations, or uses for the same purpose for which it was conceived, without any physical or material change beyond cleaning and labelling and excluding the use of waste. A program must exist for collecting the used product or packaging and reusing it, or facilities or products exist that allow the purchaser to reuse the product or package.⁸

Primary Packaging – Packaging that contains the finished or final products, sometimes called retail or consumer packaging.⁹

Secondary packaging – Packaging additional to the primary packaging and that is used for protection and collation of individual units during storage, transport and distribution.¹⁰

Sustainable waste management – waste management systems that are environmentally sound, effective, autonomous and financed long-term from domestic sources, including market-based instruments.

Tertiary packaging – Outer packaging, including pallets, slip sheets, stretch wrap, strapping any labels, used for the shipment and distribution of goods and is rarely seen by consumers.¹¹

Value chain – all business activities undertaken to create a product, including from extraction, production and distribution to activities that again create value from the product at end-of-life.

Viable end-markets – sustainable and profitable reprocessing of an end-of-life product, particularly collected plastic waste.

7. Adapted from Australian Packaging Covenant Organisation (APCO), 2019. Single-Use, Problematic and Unnecessary Plastic Packaging. Available at: www.packagingcovenant.org.au/documents/item/3183.
8. Adapted from ISO 14021:2016, Environmental labels and declarations—Self-declared environmental claims (Type II environmental labelling).
9. <http://www.wrap.org.uk/sites/files/wrap/Definitions.pdf>
10. <http://www.wrap.org.uk/sites/files/wrap/Definitions.pdf>
11. <http://www.wrap.org.uk/sites/files/wrap/Definitions.pdf>



The world currently produces 400 million tons of plastics each year.

Photo: Unsplash.com

2. Why a global agreement on plastic pollution

Marine plastic pollution is recognised globally as a risk to marine ecosystems and biodiversity (UNEP, 2014). The issues caused by the pollutant, such as ingestion and entanglement by species spanning the marine food web, habitat destruction, impaired reproduction of commercial fish stocks (risking food security) and the potential transfer of contaminants to humans (GESAMP, 2015), have raised the profile of marine pollution in general within the public sector as well as with government authorities. Marine plastic pollution is also increasingly recognised as a risk to the marine economies of many nations (McIlgorm et al., 2020). It undermines the livelihoods of subsistence and small-scale fishing communities, tourism operators and aquaculture facilities, amongst others.

The issue of marine plastic pollution highlights the policy and market failures of waste management more generally (UNEP, 2017). For plastics, these failures are driven by a global value chain grounded on unsound product design that, in turn, leads to low value for waste (Ocean Conservancy, 2015). The result is poor collection rates at the end of a product's life due to insufficient end-markets for plastic waste, which increases the opportunity for such waste to enter the marine environment.

Marine plastic pollution is essentially a symptom of a broad and complex problem. The downstream impacts on marine ecosystems and biodiversity are significant. Should we continue efforts to address the issue through the lens of the marine environment, we risk overlooking the root causes on land. These causes are 1) wide-ranging, 2) are fundamentally linked to our economic models, 3) are deep-rooted in our lifestyles, and 4) are transboundary. From the necessary services plastics provide to society to our consumption of avoidable short-lived products, the resulting pollution from the various life cycle processes of plastics contribute to the global risks of non-renewable resource depletion, reduced food security and intensified climate change. In addition, air, soil, water and chemical pollution resulting from production, manufacture, use and final treatment processes can have far-reaching consequences on human and environmental health.

The World Bank estimates that globally 37% of solid waste generated is dumped or disposed of in landfill, 33% ends up in open dumps, 19% is recycled or composted and 11% is incinerated (World Bank, 2018). By diverting waste from landfill for recycling, additional jobs are created, greenhouse gas emissions are reduced and energy efficiency is achieved (The Recycling Partnership, 2020)¹². Thus, the use of recycled plastic content in place of virgin content reduces the need for non-renewable resources. These are global concerns requiring urgent coordinated action.

Residual waste is the fraction that remains after all recyclable materials have been recovered. This includes residuals from industry (plastics, construction and demolition, agriculture, shipping, etc.), commercial enterprises, public sector and households, as well as chemical residues resulting from the production of plastics through to recycling processes. Residual wastes are commonly sent to landfill or incinerated. Where waste management services are inadequate, only about 20% of the municipal plastic waste stream has enough value to incentivize waste pickers to collect it, thus 80% can be regarded as residual waste and is likely to be dumped, buried or open-burned (Ocean Conservancy, 2015). Low residual value of plastic waste is a key driver of leakage and should be centrally acknowledged in the design of the agreement, including goal setting and activities.

A new global agreement provides the opportunity to develop international sustainability objectives and criteria that define the desired performance outcomes for plastic products and associated processes across the life cycle and the global value chain. The Technical Barriers to Trade (TBT) Agreement of the World Trade Organization (WTO) strongly encourages basing national regulations on relevant international standards, thus reducing the risk of disputes under the WTO when regulating products placed on the domestic market and supporting the need for developing plastic sustainability criteria at the global level.

2.1 Positioning the elements within the current global policy framework

A new global agreement to combat plastic pollution must complement the existing policy framework without duplicating efforts already underway. The 2017 UNEP report titled *Combating marine plastic litter and microplastics: An assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches* (UNEP, 2017) identified over a dozen gaps and challenges in the existing frameworks on marine plastic litter and microplastics. These can be summarised in three clusters:

1. **Coordination:** Lack of an institution whose mandate focuses on coordination of existing efforts and managing the issue upstream.
2. **Management:** Lack of globally binding standards to mitigate plastic pollution particularly from land-based sources, including design of products
3. **Assessment:** Lack of global standards for national monitoring and reporting, as well as, lack of data on sources and extent of plastics environment and on health and ecosystem risks

12. As per the report, in the U.S. alone 37.4 million tons of waste is available to be recycled, of which 20 million tons are thrown in the trash due to lack of access and participation. If these 20 million tons were recycled, it would generate 370,000 full-time equivalent jobs, reduce U.S. greenhouse gas emissions by 96 million metric tons of carbon dioxide equivalent, conserve an annual energy equivalent of 154 million barrels of oil and achieve the equivalent of taking more than 20 million cars off U.S. highways.

Consequently, the gaps in the current governance frameworks provide a fragmented and inefficient approach to address marine plastic litter and microplastics. Binding international instruments have primarily focused on sea-based sources of marine plastic litter through Annex V of the International Convention for the Prevention of Pollution by Ships (MARPOL) and the London Convention and Protocol thereto. This is despite indications that the majority of marine plastic pollution originates from land-based activities. In addition, the management of chemicals in plastic products and associated processes must be strengthened, complementing the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention) and the Strategic Approach to International Chemicals Management (SAICM).

The UNEP report of 2017 presented three response options at the global level. A new globally harmonised approach was suggested as one of two options that would enable progress at the global level. This report further explores the third option outlined in the 2017 UNEP report for a new global architecture with a multilayered governance approach. To this end, this report moves beyond the prevention of marine plastic litter and microplastics to focus on plastics across their life cycle, thus encompassing all sources of plastic pollution and chemical additives in all affected environmental compartments, recognising that these are all potential pathways to the marine environment.

2.1.1 Complementing existing international legal and policy frameworks

In recent years, heightened understanding and awareness of plastic pollution has prompted many international organizations to take action to prevent the uncontrolled spread of plastics in the environment.

The Basel Convention

In May 2019, the Conference of Parties (COP) to the Basel Convention adopted amendments that require exporting countries to obtain prior informed consent from the importing country before exporting hazardous plastic waste and plastic waste that requires special consideration.¹³

Ensuring complementarity with the Basel Convention, in particular Article 4 (para 2), is important¹⁴ including the use of principles and definitions. Where the principle of proximity as defined in the Basel Convention¹⁵ is not feasible due to a lack of scale or available technology, the trade of plastic by-products (scrap) and wastes must be managed in accordance with multilateral environmental agreements (MEAs) and other international and regional instruments (guidelines, best practices, code of practice, etc.) and in accordance with this agreement. The design of a new global agreement will need to consider the developments under the Basel Convention, including the voluntary Partnership on Plastic Waste.

13. BC-14/12: Amendments to Annexes II, VIII and IX to the Basel Convention.

14. Basel Convention, Article 4, para 2: Each Party shall take the appropriate measures to: (a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects.

15. Basel Convention, Article 4, para 2: b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal; (d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes.

The UN Convention on the Law of the Sea

As an overarching framework convention, the UN Convention on the Law of the Sea (UNCLOS) provides a general obligation for all countries to protect and preserve the marine environment (Article 192). This has been recognised as customary international law and all countries, whether party to the Convention or not, must comply to the best of their ability (Birnie et al., 2009). The new global agreement as proposed in this report will complement this obligation, as well as the following:

- Article 207 - Pollution from land-based sources,
- Article 208 - Pollution from seabed activities subject to national jurisdiction,
- Article 210 - Pollution by dumping,
- Article 211 - Pollution from vessels, and
- Article 212 - Pollution from or through the atmosphere.

The Stockholm Convention on Persistent Organic Pollutants

By taking a whole life cycle approach, including associated chemicals and waste, a new global agreement also complements the Stockholm Convention through long-term prevention of toxins re-entering the market via recycling and reuse processes (Article 6d(iii)). A new global agreement must therefore aim to close these gaps where possible, while complementing relevant measures undertaken within the mandate of the Stockholm Convention.

The Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) has for a number of years considered plastic pollution as a risk to species and habitats and the ecosystems of which they form a part. The *Zero draft of the post-2020 global biodiversity framework* has outlined possible targets for reducing pollution by plastic waste by at least 50% by 2030 (CBD, 2020). The measures proposed in this report will complement efforts by Parties to the CBD in meeting any targets agreed for reducing pollution by plastic waste.

MARPOL

Sea-based and vessel sources of marine plastic pollution are regulated globally under MARPOL Annex V and the London Convention and the Protocol thereto. Should MARPOL Annex V be complied with in full, all operational wastes generated while at sea will be delivered to port reception facilities for disposal. In addition, the London Convention and Protocol ban any disposal of plastic wastes at sea or marine internal waters. These instruments, including the International Maritime Organization's (IMO) Action Plan to Address Marine Plastic Litter from Ships, will be complemented if residual wastes are minimised and plastic wastes have potential end-markets.

By stimulating the reuse and reparability of products, as well as end-markets for the recycling of plastic wastes, the release of greenhouse gases can be reduced, assisting in meeting Paris Agreement targets and achieving Sustainable Development Goal (SDG) 13 on climate action. A number of additional SDG targets

can also be complemented as highlighted in Annex 6, in particular those targeting responsible consumption and production (SDG 12), sustainable cities and communities (SDG 11), clean water and sanitation (SDG 6) and good health well-being (SDG3), amongst others.

2.1.2 Complementing regional legal and policy frameworks

The Regional Seas Conventions and Action Plans have focused on marine litter for many years. A new global agreement can complement those Regional Seas that have developed marine litter action plans as well as binding conventions and protocols for prevention of marine pollution from land-based sources. The experience gained in monitoring, reporting, awareness-raising and developing action plans and guidelines, amongst others, must be built on. In this way, the Regional Seas Conventions and Action Plans can assist in informing best practices and facilitate monitoring.

The Regional Seas Conventions and Action Plans and other regional platforms, such as regional nodes for the Global Partnership on Marine Litter (GPML) and the Basel Convention Regional and Coordinating Centres¹⁶, can also be used to assist countries in developing National Plastics Management Plans and delivering on obligations under the new agreement, including capacity building, reporting and research requirements, and prevent duplication of effort in this regard.

2.2 How a new agreement can add value to existing frameworks

A new global agreement for plastics must go beyond simply closing the gaps in the current international policy framework. A more comprehensive and long-term governance strategy is needed to address prevention as a primary approach but also ensure sustainable management of plastics throughout the value chain. Existing mechanisms are particularly weak on upstream and midstream activities that will need to be targeted, coupled with robust national financial mechanisms to improve downstream activities in all countries. By providing political and economic stability to downstream activities, the risk of exposure from international trade fluctuations in secondary plastics can be reduced and investment in these services enhanced.

A global agreement will be particularly important in helping countries to address plastic pollution in upstream activities, facilitating governments to enact necessary legislation and implement effective measures. This, in turn, will benefit those countries that suffer the impacts of transboundary movement of marine plastic litter. Expanding the policy landscape beyond the marine litter focus will help to address the problem from land-based sources, without focusing only on the sinks.

A global agreement can provide countries with the tools to regulate the products placed on their markets that will create a level playing field for industry and governments, avoid disputes under the WTO and assist in regulating the growing online sales platform. Most importantly, by addressing the issue at the design phase, all sources and pathways of marine plastic pollution can be addressed.

Thus, by going beyond merely closing existing governance gaps, a common agreed-

16. See <http://www.basel.int/?tabid=2334>

upon framework can more effectively measure the extent of the plastic pollution and the progress at the global level in prevention and mitigation. Commonly agreed targets and measures can help governments implement national actions.



Waste pickers often face social marginalization, low living and working conditions, and are subject to vector-borne diseases.

Photo: Unsplash.com

3. Possible objectives and approaches for a new global agreement

A core motivation for the development of a new global agreement is to address the environmental issues resulting from unsustainable plastic use and mismanaged plastic waste. The primary objective of an agreement would be to drive the strategic goals, priority actions and monitoring requirements. This, in turn, would influence to what degree the different life cycle phases would be addressed and what existing or new institutional arrangements are best suited. These approaches are summarised in Table 2 with reflections on the strengths and weaknesses of each approach.

3.1 Three approaches for objective and scope of a new agreement

When considering the possible primary objective of a new legally binding agreement, three broad objectives have been reviewed. These are:

1. **Reduction of marine plastic litter,**
2. **Sustainable waste management, or**
3. **Sustainable consumption and production (SCP) across the life cycle of plastics.**

Although the above are not mutually exclusive, it is important to differentiate how defining the primary objective may influence the scope of an agreement. This will also guide discussion on where the authority for a new agreement may come from and which existing institutions are best suited to manage particular elements of these approaches. In effect, the three approaches build on each other, with the third approach incorporating SCP principles as well as those elements that would have been included in a marine litter approach or a waste management approach. Because of this, and because the Declaration of the Nordic Ministers for the

Environment and Climate requested a new agreement provide a life cycle approach to the issue of marine plastic litter and microplastics, this report focuses on the third approach of sustainable consumption and production as the most appropriate holistic and long-term option.

A mandate of 1) reducing marine plastic litter may limit options for eliminating waste across the life cycle of plastics, particularly upstream activities. Primary activities are likely to focus on monitoring activities within the coastal and marine zones, with limited ability to address manufacturing processes at the global level in a harmonised manner.

Should the mandate be 2) sustainable waste management, it is unrealistic for a new global agreement to include measures and funding that target greater access to and technically enhanced waste management practices alone. This is, in part, because calculating the costs of addressing the necessary requirements to bring waste management services in all countries to an acceptable standard is challenging. In addition, a financial mechanism attached to a new agreement would likely not raise sufficient funds to cover these costs.

A new global agreement must consider the broader challenges that underpin the processes leading to leakage of plastics into the environment. All processes and relevant sectors throughout the life cycle of plastics must be addressed within the possibilities of an MEA. Therefore, a mandate of 3) sustainable consumption and production of plastics, incorporating a life cycle approach and resource efficiency is key.

Table 2: Alternate approaches for a global agreement to address land-based sources in relation to the life cycle of plastics.

Approach	Marine litter	Waste management	Sustainable consumption & production, full life cycle of plastics
Objective	Reduce leakage into the marine environment to prevent harm to marine ecosystems and the human activities that depend directly or indirectly on marine ecosystem services.	Reduce the generation of wastes to a minimum and ensure the availability of adequate disposal facilities within the country that generated the waste (Basel Convention)	Minimise residual waste across life cycle of plastics by implementing all principles of circular economy, based on design for recycling and reuse.
Strategic goals	<ul style="list-style-type: none"> – Prevent leakage into marine environment from land- & sea-based sources – Harmonised monitoring & assessment of coastal & marine zones – Environmentally sound removal and disposal of marine litter – Enhance knowledge, education & awareness 	<ul style="list-style-type: none"> – Reduction of waste generation – Sustainable waste management – Proximity of waste management 	<ul style="list-style-type: none"> – Elimination of problematic & avoidable plastic products. – Sustainable management of essential products. – Sustainable waste management. – Chemical hazard reduction.
Priority actions & monitoring	<ul style="list-style-type: none"> – Capacity building for appropriate national policies, legal instruments and institutional arrangements – Monitor impacts marine life and components of the marine environment, coastal zone, marine compartments to assess effectiveness, incl. developing indicators & reporting standards – Determine baselines for beach litter – Identification of sources & pathways Sharing of best practices Coordination with IMO, fisheries bodies and other marine industry sectors 	<ul style="list-style-type: none"> – Improve collection rate (land- & sea-based) – Improve sorting & contamination rate – Reduction of waste generated – Sustainable reuse of products – Sustainable recycling – Sustainable disposal of land- and sea-based sources of waste – Eliminate unsustainable practices (landfill, dumping, etc.) – Tracking of the above & additives of concern 	<ul style="list-style-type: none"> – Industry compliance with product sustainability criteria, including use of additives of concern – Reduction in residual waste across life cycle – National adoption of appropriate policies, regulations & market-based instruments – National inventories to track progress at national and global level
Life cycle phases	Downstream, restoration	Midstream, downstream	Upstream, midstream & downstream
Possible Institutional arrangements	<p>UNCLOS, Regional Seas. The regional approach promoted in UNCLOS is given effect through the adoption of 18 Regional Seas, comprising of more than 143 countries.</p> <p>CBD measures could focus on environmentally sustainable restoration activities (Art. 8(f)).</p>	Basel Convention (187 parties)	Existing or new global body

Approach	Marine litter	Waste management	Sustainable consumption & production, full life cycle of plastics
Weaknesses	<p>Existing geographical gaps do not provide for a robust global response. The high number of independent Regional Seas Programmes and the variability of their resources capability and performance could create challenges for coordination and harmonization of efforts to address upstream activities.</p> <p>Tracking progress at the global level will be difficult. Limited options for addressing manufacturing & eliminating waste across the life cycle of plastics.</p> <p>Primary activities are likely to focus on monitoring activities within the coastal and marine zones.</p>	<p>The Basel Convention is limited to downstream measures, focusing on transboundary movements of waste, with some articles that may allow for expansion to upstream and midstream measures. A full life cycle approach focusing on upstream measures may be questionable.</p> <p>Difficult to determine financial resources required to assist developing countries.</p> <p>The Basel Convention does not have a financial mechanism.</p>	<p>Precedents of international agreements that address life cycle of materials are limited. This presents both a challenge but also an opportunity to agree on global sustainability objectives and criteria across the value-chain, ensuring a rapid transition to a closed material cycle and the elimination of residual waste and leakage.</p>
Strengths	<p>Nine of the Regional Seas have adopted protocols related to land-based sources of pollution (of which four are not yet in force), which could be complemented with adoption of regional agreements to address geographical gaps.</p>	<p>The agreement could benefit from existing Rules of Procedure and other agreed modalities of the Basel Convention.</p> <p>Near-universal membership.</p> <p>The joint Secretariat of the Basel, Rotterdam & Stockholm Conventions (BRS) and physical proximity to the SAICM Secretariat could help to enhance a more coherent approach to addressing plastic polymers and chemical additives.</p> <p>The Stockholm Convention will also play an integral role in eliminating the use of POPs (persistent organic pollutants) in manufacturing, as well as the reintroduction of POPs through reuse and recycling.</p>	<p>This provides an opportunity to address plastic pollution at its source, focusing on production and redesign of plastics, towards elimination of residual waste.</p> <p>The agreement could be negotiated as a framework agreement in a relatively short time with implementation measures and product sustainability criteria specified in articles, aiming for later development of more detailed annexes and guidelines.</p> <p>The agreement could have broad scope, yet cooperation and coordination with existing agreements could be ensured with the adoption of memorandums of understanding or joint work plans.</p> <p>A holistic agreement could help to minimize impacts of plastic pollution across all environmental compartments while helping to reduce greenhouse gas emissions.</p>

3.2 Design approaches: Binding, voluntary or hybrid obligations?

The design of a new global framework to govern plastic pollution considered three approaches. These can be described simplistically, although variations are possible, as 1) a highly regulatory (top-down) approach, 2) a voluntary (bottom-up) mechanism, or 3) a hybrid formulation that combines the two approaches.

A new global framework for governing plastic pollution is presented in this report as a framework agreement that provides the legal basis for future development of enabling instruments over time. In this context, a voluntary approach would not allow for the development of obligations that countries would commit to. It is included in this section for reflection of the approaches considered in this study.

In contrast, a highly regulatory approach provides limited flexibility in the selection of national implementation measures, and the hybrid approach is therefore favoured in this report.

3.2.1 Binding – top-down

A negotiated agreement that sets a strong regulatory framework would include mandatory obligations to take specific actions towards achieving the agreed targets. A substantively-oriented agreement would be able to address gaps in the international regime. Obligations could include the development of national targets that indicate progress towards the global targets as set in the agreement. Monitoring and reporting procedures would be according to fixed indicators. Limited discretion is given to governments on how to meet these obligations.

3.2.2 Voluntary

A global framework that employs only voluntary mechanisms would allow governments to decide on how much action they wish to take and what kind of action that would include. Environmental, social and economic goals would be agreed and adopted but compliance mechanisms would not be in place beyond voluntary reporting by countries.

3.2.3 Binding-voluntary hybrid

A hybrid framework that combines elements from a binding agreement and a voluntary framework would set minimum targets and outcomes paired with procedural requirements e.g. for submitting national action plans or national reports. Governments would then have some discretion as to how they would achieve these outcomes and requirements but would need to provide a minimum level of reporting on specified activities.

Table 3 provides a summary of the high-level elements and the strengths and weaknesses of the three design approaches for a new global agreement.

Table 3: Summary of obligations under the three design approaches for a new global agreement.

	Binding top-down	Voluntary bottom-up	Binding-voluntary hybrid
Main Elements	<ul style="list-style-type: none"> – Binding agreement – Detailed targets, standards & measures negotiated & defined in the agreement & implementing instruments by subsidiary bodies. – Measures of implementation defined. 	<ul style="list-style-type: none"> – Voluntary framework – High-level goals adopted – Self-defined national targets – Selection of possible measures of implementation suggested 	<ul style="list-style-type: none"> – Binding agreement – High-level goals defined in agreement and set by subsidiary bodies – Self-defined national targets – Measures of implementation loosely defined.
Main operational implementation mechanisms	<ul style="list-style-type: none"> – Elements of National Action Plans are defined – Strict reporting according to defined indicators 	<ul style="list-style-type: none"> – Elements for National Action Plans may be loosely defined – Reporting format & indicators may be loosely defined 	<ul style="list-style-type: none"> – Elements of National Action Plans suggested – Reporting format & indicators loosely defined
Strengths	<ul style="list-style-type: none"> – Limited flexibility – Global tracking of progress strongly facilitated – Barriers to implementation and areas of assistance clearly identified – Legally on par with existing agreements 	<ul style="list-style-type: none"> – High level of flexibility – High feasibility 	<ul style="list-style-type: none"> – Greater flexibility – Some level of tracking towards global progress
Weaknesses	<ul style="list-style-type: none"> – Feasibility weaker than in other options, since negotiations could be politicized 	<ul style="list-style-type: none"> – Global progress difficult to track – – Barriers to implementation and areas of assistance less easily identified – – Limited effect in guiding other relevant conventions 	<ul style="list-style-type: none"> – Barriers to implementation and areas of assistance less easily identified
Examples	<ul style="list-style-type: none"> – Montreal Protocol – London Protocol – Minamata Convention – IMO Energy Efficiency Design Index (EEDI) 	<ul style="list-style-type: none"> – Honolulu Strategy – Regional ILand-Based Sources (LBS) Protocols – Regional Marine Litter Action Plans 	<ul style="list-style-type: none"> – Paris Agreement – Convention on Biological Diversity

*Adapted from Figure 3, *The WTO Agreements Series. Technical Barriers to Trade*. Available at: https://www.wto.org/english/res_e/publications_e/tbttotrade_e.pdf

3.3 Complementing the TBT Agreement of the WTO

The WTO Technical Barriers to Trade (TBT) Agreement would need to be taken into consideration, in particular, the WTO TBT Agreement Annex 3 *Code of good practice for the preparation, adoption and application of standards*.

The TBT allows for countries to develop technical regulations, standards and compliance assessment mechanisms when these are linked to national policies for the protection of human health and safety, as well as the environment. However, these must:

1. be non-discriminatory
2. not create unnecessary obstacles to trade
3. make use of international standards, and
4. be transparent.

Although the TBT Agreement may place constraints on countries when regulating

their domestic markets, there are elements that support the need for plastic sustainability objectives and criteria at the global level. The TBT strongly encourages basing national regulations on relevant international standards, thus reducing the risk of disputes under the WTO.

"Article 2.5 of the TBT Agreement is also relevant to the discipline on avoiding unnecessary barriers to trade, as it provides a form of "safe haven"; it states that if a technical regulation is in accordance with a relevant international standard, it is presumed (although this presumption can be challenged) not to create an unnecessary obstacle to international trade. Thus, the international standard provides a first line of defence against an eventual challenge that the measure is creating an unnecessary barrier to trade."

The TBT Agreement strongly encourages members to use "relevant" international standards, guides or recommendations "as a basis" for their regulations and standards (Articles 2.4, 5.4 and Annex 3, paragraph F of the TBT Agreement).

Source: The WTO Agreements Series. Technical Barriers to Trade.

The TBT Agreement differentiates between national measures, but supports the approach identified in the new global agreement to develop product performance objectives that are refined into design criteria which can, in turn, be included in national regulations. The recently adopted Canadian Strategy on Zero Plastic Waste lists Result Area 1 as "All plastic products are designed for greater durability, reuse and recycling."

In using standards to regulate imports, it has been noted that:

"one important avenue through which consistency can be achieved is by adherence to international standards harmonising the requirements imposed on imported products. Thus, the adoption of such international standards can be seen as another example ... of a coordinated green industrial policy, whereby many States decide to raise the bar for product characteristics and processes so as to reflect their desirable environmental and social implications" (PAGE, 2017).

Table 4: Linkages between national measures and the WTO's TBT Agreement.

TBT Measure	Description	TBT Agreement Text
Technical regulations	<ul style="list-style-type: none"> - Lays down product characteristics or their related processes and production methods - Compliance is mandatory - May address terminology, symbols, packaging, marking and labelling requirements. 	<p>Where technical regulations are required and relevant international standards exist or their completion is imminent, Members shall use them, or the relevant parts of them, as a basis for their technical regulations except when such international standards or relevant parts would be an ineffective or inappropriate means for the fulfilment of the legitimate objectives pursued, for instance because of fundamental climatic or geographical factors or fundamental technological problems. (Art. 2.4).</p>
Standards	<ul style="list-style-type: none"> - Approved by a recognized body responsible for establishing rules, guidelines or characteristics for products or related processes and production methods - Compliance is not mandatory - May address terminology, symbols, packaging, marking and labelling requirements. 	<p>Where international standards exist or their completion is imminent, the standardizing body shall use them, or the relevant parts of them, as a basis for the standards it develops, except where such international standards or relevant parts would be ineffective or inappropriate, for instance, because of an insufficient level of protection or fundamental climatic or geographical factors or fundamental technological problems. (Annex 3, para. F "substantive provisions").</p>
Conformity assessment procedures	<ul style="list-style-type: none"> - Used, directly or indirectly, to determine that relevant requirements in technical regulations or standards are fulfilled - Include procedures for sampling, testing and inspection; evaluation, verification and assurance of conformity; and registration, accreditation and approval.* 	<p>In cases where a positive assurance is required that products conform with technical regulations or standards, and relevant guides or recommendations issued by international standardizing bodies exist or their completion is imminent, Members shall ensure that central governments bodies use them, or the relevant parts of them, as a basis for their conformity assessment procedures, except where, as duly explained upon request, such guides or recommendations or relevant parts are inappropriate for the Members concerned, for, inter alia, such reasons as: national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment; fundamental climatic or other geographical factors; fundamental technological or infrastructural problems. (Art. 5.4).</p>



Low residual value of plastic waste is a key driver of leakage.

Photo: iStockphoto.com

4. Structuring a new global agreement

This section sets out an overview of how a new marine plastics pollution control agreement might be structured.

4.1 Elements of multilateral environmental agreements

Multilateral environmental agreements (MEAs) typically exhibit common structural features. These are usually elements of provisions that serve particular functions in the working of an MEA: general, management, supporting, institutional, assessment and final provisions.

- **General** provisions elaborate on the agreement's objective, principles and strategic goals, scope and definitions or use of terms.
- **Management** provisions provide the key mechanisms and operational commitments to be implemented by the parties and other partners in order to achieve their objectives and goals.
- **Supporting** provisions enable implementation of the key mechanisms and specific commitments, such as through advisory functions, international liaison, and technical and financial assistance, and education and awareness raising
- **Institutional** provisions set up the governing body, scientific and technical bodies, and secretariat.
- **Assessment** provisions track progress towards the objective of the agreement at the international and national levels through reporting (disclosure of standardized information), monitoring and research, and review (third-party verification).
- **Final** provisions describe the conditions for ratification, entry into force, amendment and withdrawal from the agreement.

These typical MEA structural features have been adopted here for the proposed new agreement on marine plastic litter and are illustrated in Figure 1.

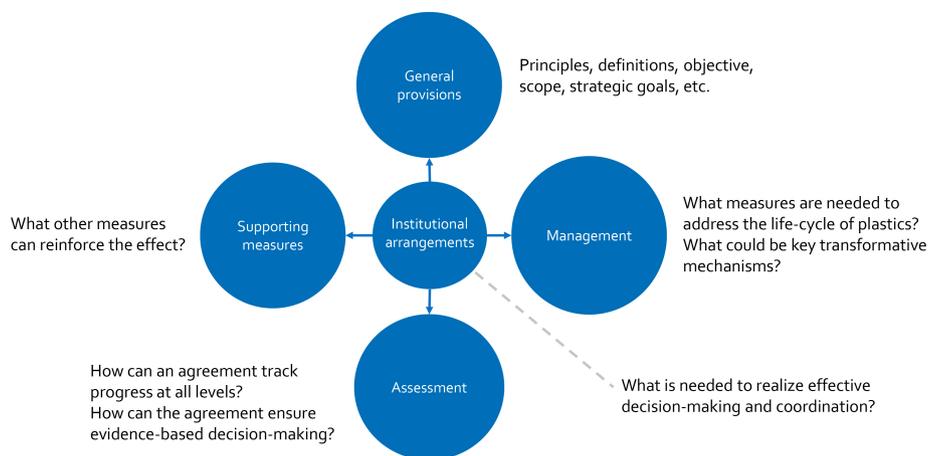


Figure 1: The main elements of an international agreement and main questions in focus of this report.

4.2 Scope of the agreement

The introductory block of provisions would elaborate on the agreement's objective, principles and strategic goals, scope and definitions. So as to establish common understanding and terminology, we begin here with the scope and definitions of some terms.

The scope of application of a new agreement on plastic litter can be framed across various dimensions, including types of materials, scale of litter, sources of plastics, environmental pathways, environmental sinks, intervention points, and national jurisdictions. Among these the most significant for consideration of negotiating parties concerns whether holistically to include all life cycle phases of plastic litter, from production to consumption and final treatment, whether directly or indirectly targeted.

Materials and substances

Plastics is a generic term used in the case of polymeric materials that may contain other substances to improve performance and/or reduce costs. On average, plastics contain 93% plastic polymers and 7% chemical additives, necessitating their joint consideration (Geyer et al., 2017).

Scale of litter

Plastic pollution manifests at different scales. Main categories of plastic debris based on diameter are listed below (GESAMP, 2015):

- Megaplastics (>1m): fishing nets, boat hulls, plastic films from agriculture, etc.
- Macroplastics (<1m): plastic bags, buoys, balloons etc.
- Mesoplastics (<2.5 cm): bottle fragments, cigarette lighters, toys, toothbrushes, etc.
- Microplastics (<5 mm size): all aquatic media, beverages, snow, atmosphere of

cities etc.

- Nanoplastics (<0.1 mm size): all aquatic media

Sources of plastics

In terms of leakage to the oceans, two main categories of sources exist. These include:

- Land-based sources: littering, extractive industries, inadequate wastewater treatment, inadequate stormwater management, poor landfill management, run-off from agriculture, and abrasion of plastic products during use, etc. (Gallo, et al., 2018).
- Sea-based sources: fisheries, aquaculture, shipping (Gallo, et al., 2018), offshore industry, discharge and dumping.

Pathways and sinks

Plastic pollution affects all environmental compartments. To this end consideration could be given to the following pathways and sinks:

- Marine plastics
- Freshwater plastics
- Terrestrial plastics
- Atmospheric plastics

Scope of measures

The value chain offers several points at which regulatory interventions can be considered. The following division provides a useful reference for consideration:

- Upstream: raw materials extraction and production of plastic pellets
- Midstream: manufacturing and consumption of plastic products
- Downstream: waste management of plastics, including trade

Geographical scope

The proposed agreement should apply globally, as plastic litter travels everywhere. Thus, it should apply to areas within national jurisdiction, areas beyond national jurisdiction, such as the high seas and Antarctica. Where existing instruments exist, these should be complemented by the agreement. For the purposes of implementing an agreement on marine plastic pollution, the national relevant jurisdiction of a country includes its land and full maritime jurisdiction, i.e. to the limits of the exclusive economic zone in the continental shelf, as well as its vessels, platforms and artificial islands.

Life cycle

To address the issue of marine plastic pollution comprehensively would need to shift focus from sea-based action alone to include also preventive measures on land (such as waste management) and further upstream to include the sources of plastic

waste and pollution (such as design), in order to be effective in the long-term. This raises the question of whether the scope of the agreement should holistically address plastic pollution and microplastic residual waste across the life cycle.

4.3 Definitions and terminology

A new agreement would need to be holistic in its inclusion of all life cycle phases of plastic production, consumption and final treatment, whether targeted directly or indirectly. Preventive and mitigative interventions must be considered that prevent the generation of residual waste across all life cycle phases, including chemicals, as well as leakage into the environment.

Sustainable consumption and production in upstream and midstream phase must address delivery on two of the strategic goals, namely:

1. elimination of problematic and avoidable plastic products, and
2. sustainable management of essential products.

Waste management (downstream activities) must address contamination, as well as the quality and quantity of recyclable materials with the goal of supporting viable end-markets for these materials.

Chemical hazard reduction is a cross-cutting issue and must be considered at the manufacturing phase, as well as during recycling and reuse processes. Greater transparency and traceability of chemical additives is also important to address, as well as complementarities with the Stockholm Convention and SAICM.

Microplastics are released into the environment intentionally and unintentionally during upstream, midstream and downstream processes. Elimination of primary microplastics must be targeted, while design standards and improved mitigative activities can further reduce losses of secondary microplastics into the environment.¹⁷

Trade of plastics wastes has been addressed under recent amendments to the Basel Convention. A new agreement must therefore support compliance with these measures, but also address the trade of problematic plastic products and primary materials.

Sea-based sources are partly regulated by existing international instruments, including MARPOL Annex V, London Dumping Convention and Protocol. Compliance with these measures must be supported and complemented with design standards and market-based instruments (MBIs) to prevent losses.

Sustainable removal of micro- and macroplastics is a last resort. Identification of hotspots can make removal efforts more cost-effective and provide opportunity for engagement, awareness-raising and data gathering.

17. GESAMP describes Plastic pellets and plastic particles manufactured for particular applications, such as cosmetic products and abrasives, are often called 'primary' microplastics. Microplastics produced as a result of fragmentation from larger items are called 'secondary' microplastics (see http://www.gesamp.org/site/assets/files/1720/24472_gesamp_leaflet_pq.pdf)

4.4 Fundamental objectives

There are various possible objectives that a new global agreement could adopt to ensure that plastic litter does not end up in the ocean. Three possibilities are suggested here that align with the progression of the three approaches discussed in section 3.1.

1. *Reduction of marine plastic litter: To reduce and eliminate marine pollution by plastic litter.*

This proposal is aligned with the goal agreed in Resolution 3/7 adopted by consensus at the third session of UNEA in December 2017. It “stresses the importance of long-term elimination of discharge of litter and microplastics to the oceans and of avoiding detriment to marine ecosystems and the human activities dependent on them from marine litter and microplastics” (UNEA Res. 3/7, para 1). The objective aligns with the SDGs, particularly target 14.1.

2. *Sustainable plastic waste management: To minimize plastic leakage into the oceans in accordance with binding, specific and measurable targets, focusing on waste management practices and waste minimisation.*

Management targets might be agreed. For comparison, other international specific and measurable binding targets have been agreed, including the Paris Agreement that sets “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

3. *Sustainable plastic consumption and production across the life cycle: To prevent reduce and eliminate plastic litter in the wider environment by ensuring high-recycling value of plastic and eliminating residual waste across the value chain.*

This proposal extends beyond the marine environment. It addresses the problem at the source through the elimination of high-risk products and additives, coupled with sustainable design principles at the production stage. It would seek to make collection, sorting and recycling of all plastics profitable, thus incentivizing efforts to eliminate leakage.

4.5 Strategic goals

The strategic goals outline high-level management targets. The following four components are suggested for elaboration of strategic goals:

1. Elimination of problematic and avoidable plastic products (reduction)
2. Sustainable management of essential plastic products (redesign)
3. Sustainable plastic waste management (reuse, repair, recycling)
4. Chemical hazard reduction.

The Strategic Goals could translate into operational implementation mechanisms. For example, Strategic Goal 3 (sustainable plastic waste management) could be implemented through the sustainable reuse and recycling of end-of-life products facilitated through one or more of the operational implementation mechanisms. Together these goals enable global coordination in addressing the entire life cycle of

plastics, helping to reduce residual waste from plastic products and associated additives, thereby reducing the risk of discharge into the environment.

4.6 International sustainability criteria

If a life cycle approach is to be adopted, it is essential that the parties develop and agree international sustainability criteria under the new agreement. These criteria would apply to economic activities along the value chain of plastics, to incentivise reusability, repairability and recyclability of products. The proposed new agreement's international sustainability criteria would be like the brain and nerve system, guiding how its other implementation measures apply to meet the strategic goals and to implement fundamental objectives.

International sustainability criteria could be directed at the operations of governments and economic activities of industry to reshape plastics production, consumption and waste management, 'upstream', 'midstream' and 'downstream' in the context of the flow of the plastics value chain. They would be formulated by the parties to the agreement, through open-ended technical working groups, and be supported by the development of related technical standards, testing protocols and certification schemes.

The obligation to formulate and adopt international sustainability criteria would be situated in the management provisions in the body of the proposed new agreement. They could be formulated subsequently at various levels of detail or compulsion; e.g.: binding high-level targets, voluntary international standards, aspirational targets. The structure and processes for the meetings of parties and for the open-ended technical working groups would be prescribed in the part of the agreement on institutional provisions.

4.7 National operational implementation mechanisms

Two national operational implementation mechanisms that can enable the delivery of measures across the life cycle of plastics are proposed here for consideration:

- **Develop National Plastics Management Plans (NPMPs)** that aim to address the main drivers of plastic pollution by helping countries to design a holistic and comprehensive strategy to manage plastics throughout the life cycle. The plans promote a bottom-up approach that provides flexibility at the national level for setting targets, identifying measures and mobilizing resources, while ensuring progression over time. NPMPs are submitted to the agreement and periodically updated.
- **Develop and fulfil National Plastics Sustainability Standards** that can be operationalized through the regulation of domestic markets in accordance with the sustainability criteria and deployment of market-based instruments to promote behaviour change by industry and consumers and provide funding mechanisms for waste management services. These may be elaborated in NPMPs.

Operational implementation mechanisms are discussed in detail in Section 6. At this

stage, it is necessary only to note that basic commitments with regard to these mechanisms could be set out in the proposed agreement and other detailed standards or guidance could be elaborated later.

4.8 Scientific and technical knowledge building

Scientific and technical knowledge is needed to support evidence-based decision-making. The following areas outline main areas to benefit from scientific and technical knowledge building:

- Assessment of the prevalence and impacts of plastic pollution, including development and use of commonly agreed methodologies for data collection
- Management of plastic pollution across the lifecycle with continuous development of global policy tools and guidance, in particular the international sustainability criteria

All countries are expected to participate to the provision of data by reporting on national performance and participation to monitoring on environmental status and trends to understand the effectiveness of the agreement. The agreement can also help to catalyze research at the national level, enabling to swiftly transition to sustainable management of plastics across the lifecycle.

The agreement can facilitate scientific and technical knowledge gathering, sharing possible and processing by using existing scientific possible when possible and by instituting independent or subsidiary scientific and technical bodies that provide advice to the parties. It can also be facilitated by national sharing of information, directly or through a central information exchange. Science and knowledge building are discussed further in section 7 of this paper. In addition, an MEA can include commitments on parties to collate and provide performance information in prescribed reporting formats to measure national progress, as discussed in section 8.

4.9 Measuring progress

Reporting is one of the key obligations at the global level undertaken by parties to MEAs to evaluate their performance of obligations under the agreement. The information provided by states about their individual national implementation processes could encompass implementation of NPMPs and international sustainability criteria. In addition, national inventories on material flows will enable to understand the movement of plastic across the value chain and identify potential points of leakage. In some MEAs, national reports are scrutinised by the Secretariat or a committee of other parties or a third party to verify it. This process can be a facilitative in nature, to help identify where assistance is needed. Lastly, a periodic global review is needed to aggregate national data to determine global progress, including identifying best practices and possible implementation gaps, helping to progressively scale up action. It is discussed in section 8 of this paper.

4.10 Supporting measures

The success of implementation measures can be promoted through a number of supporting measures. These include:

1. **Education and awareness-raising** – Training programs, workshops, labelling and other measures can assist the public, industry and government authorities to better understand the consequences of unsustainable consumption patterns coupled with poor waste management practices.
2. **Funding and capacity building** – A new global agreement can set the legal basis for a financial mechanism needs to assist countries to meet their obligations. At the national level, it can provide financial assistance for activities that contribute to developing context-specific NPMPs and designing regulatory and market-based instruments.

The above supporting measures are discussed further in section 9.

4.11 Institutional arrangements

A governing oversight body can guide collective action by the parties to a new agreement towards successful implementation of their agreed objectives and strategic goals. This body is typically a Conference of Parties established under the new agreement. It usually instructs and is assisted by a Secretariat that is a standing body of international civil servants. Given UNEP's engagement in this field, it would seem to be the most relevant choice for hosting the Secretariat. Its role would include liaison with other international bodies relevant to chemicals, waste and marine pollution control.

An agreement on marine plastic litter would entail substantial technical specificity and operational sophistication. Therefore, the diplomatic work of the Conference of Parties would need to be supported by specialist expert advice. A scientific committee to identify baselines, prioritise threats, and assess progress, as discussed in section 7, would likely be needed. A parallel technical and economic advisory committee could also be helpful in developing measures to implement sustainability criteria for plastic products.

Due to the central importance of industry engagement in the regulation of plastic products, it would also be necessary to liaise with private sector industry bodies relevant across the life cycle of plastic products. Due to convergences of their economic and market interests with those of the Conference of Parties, catalysed by sustainability criteria for plastic products developed under the proposed agreement, they might undertake technical work that would articulate into the technical and economic expert guidance under the agreement. This could include development by industry of codes for product design and labelling, or of guidelines for best environmental practice in conformity with the sustainability criteria. These instruments would form part of the cascade of measures implementing the sustainability criteria.

4.12 Final provisions

The final provisions set out the legal mechanics of the agreement: procedure for ratification, accession and withdrawal from the agreement; whether reservations are permitted; circumstances for entry into force; and conditions for amendment.

4.13 Summary of structuring a new global agreement

The key elements outlined in this section for the proposed new global agreement to combat plastic pollution across the life cycle of plastics and in all environmental compartments are summarised in Figure 2.

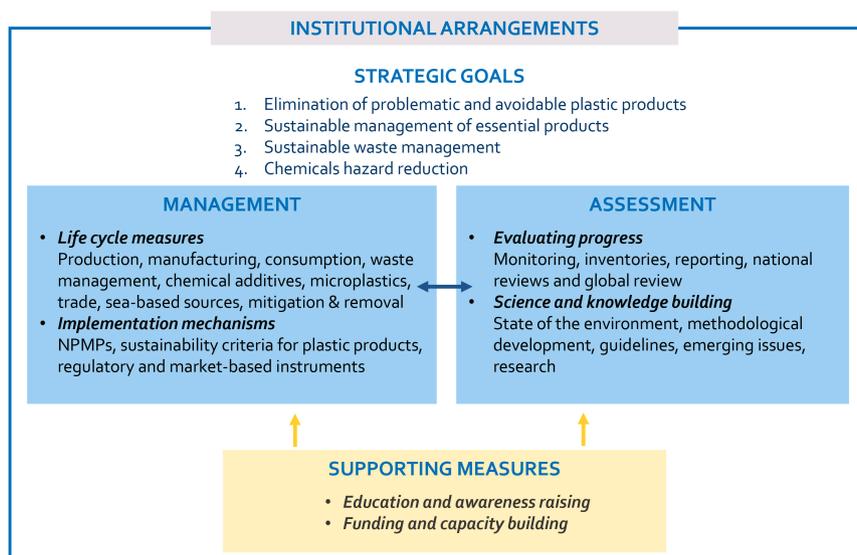


Figure 2: Key elements of a new global agreement to combat plastic pollution. A new agreement is structured to help its parties, once they have agreed on fundamental objectives, principles and strategic goals, to then progress through a cycle of elaborating and refining their commitments, implementing them and assessing progress, as illustrated in Figure 3. Setting common global targets and timeframes provides a goal against which to measure progress.

The implementation and review processes illustrated in Figure 3 are discussed in further detail in sections 6 and 7.

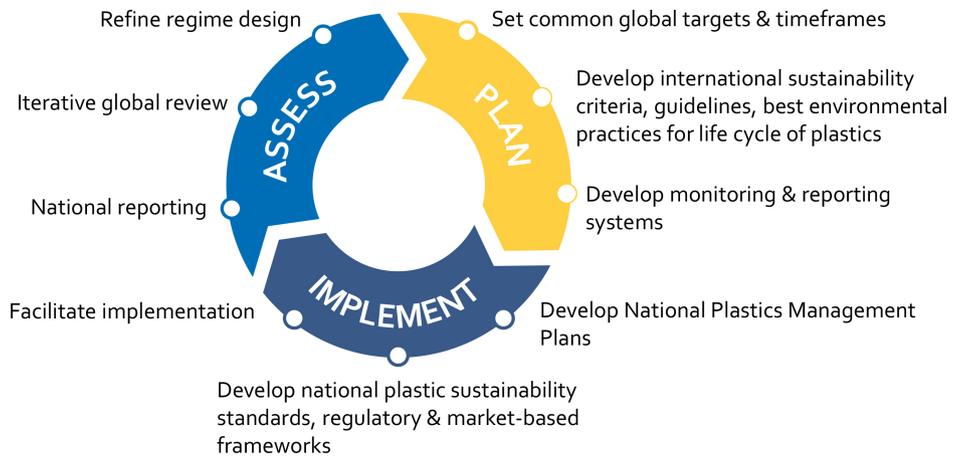


Figure 3: Overview of the primary phases of a new global agreement.



Ghost fishing by derelict fishing gear results in significant losses of potential food for human consumption.

Photo: Ritzau/Scanpix.dk

5. Key life cycle measures

Leakage of plastics into the ocean can occur at all stages of the life cycle and need to be considered when designing the implementing activities of the agreement (UNEP, 2016). Leakage consists of littering, mismanaged plastic waste, and releases of microplastics during production, product use and after disposal. Figure 4 illustrates the value-chain of plastics, which has been used to guide the mapping of proposed measures. Adequate waste management is a prerequisite for eliminating leakage but needs to be supported through additional measures to make the agreement effective. This includes minimizing material use through reduction and reuse, and by ensuring that new and recycled products placed on the market are designed to promote sustainable plastic use, e.g. repairability, reusability or recyclability. Trade, chemical additives and microplastics releases need to be addressed in various phases of the life cycle. In addition, supporting measures must give greater effect to measures across the life cycle, including education and awareness-raising and funding and capacity building. Focus on this section is on land-based sources. Sea-based sources are covered separately in section 5.6.

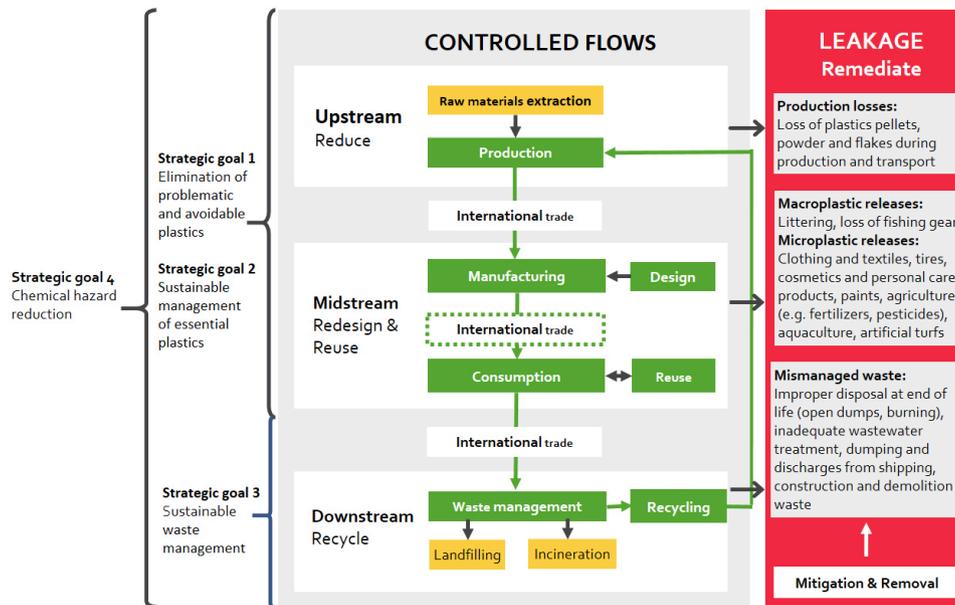


Figure 4: The value-chain of plastics, indicating circular materials flows in green.

It should also be noted that the design of the agreement targets the value chain of plastics, while addressing the life cycle of products. The activities considered as 'upstream', 'midstream' and 'downstream' are therefore considered in the context of the controlled flows of the plastics value chain.

Life cycle activities commonly referred to:	Value chain activities as referred to in this report:
<ul style="list-style-type: none"> – Upstream: production of virgin materials, design, retail, consumption – Midstream: waste management (collection, sorting, treatment) – Downstream: mitigation and removal post-leakage into the environment 	<ul style="list-style-type: none"> – Upstream: extraction, production of virgin materials – Midstream: manufacturing & design, consumption – Downstream: waste management – Post-value chain: mitigation and removal post-leakage into the environment

The activities within the value chain would be designed to prevent leakage, thereby minimising the need for mitigation and removal (remediation).

The following sub-sections briefly describes challenges related to the management of plastics in different phases of the value-chain and lists measures that could be included in the agreement to guide the development international sustainability criteria.

5.1 Sustainable consumption and production (Upstream and midstream)

A commonly used definition for sustainable consumption and production is: “the use of services and related products which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emission of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations” (ISSD, 1994). Sustainable production, consumption and use of plastics entails putting into place measures to deliver on two of the strategic goals, namely 1) elimination of problematic and avoidable plastic products, and 2) sustainable management of essential products. An examination of the value chain for plastics, including the production, manufacturing and consumption phases, is provided below to illustrate possible measures for the agreement. Dedicated measures are needed for plastic-intensive sectors (construction, agriculture and tourism, etc.) and nationally-determined problematic consumer product groups, including food and drink packaging, cosmetics and personal care products, and textiles and clothing (GESAMP, 2016).

5.1.1 Production of primary plastics

Today, 400 million tons of plastics are produced every year (Guyer et al., 2017). At the present growth rate, plastic production is expected to double by 2040 (Lebreton & Andrady, 2019). 99% of plastics derive from fossil-based feedstocks, including oil, natural gas and coal (Guyer et al., 2017). Reducing production will be the most effective way to tackle plastic pollution and it will simultaneously help to reduce greenhouse gas emissions. To this end, a more comprehensive and long-term governance strategy must address prevention as a primary approach by reducing the amount and types of plastics on the market. In addition, enhancing sustainable design and production of primary materials (including plastic pellets) is essential, including incorporation of recycled content in pellet production.

International sustainability criteria should aim to address the following

1. Produce less plastics
2. Limit use of fossil-based feedstocks
3. Increase use of sustainably sourced biomass-based feedstocks
4. Increase use of post-consumer resins
5. Simplify resin types produced
6. Prevent leakage of plastic pellets, powder and flakes from industrial processes.

Specific international workstreams could address the following

- Simplify guidance for the use and types of resins
- Improve on best practices for reducing loss of plastic pellets, powder and flakes during production and transport.

Links to other regimes

- Reducing plastic demand and decoupling plastic production from fossil feedstocks contributes to achieving the goals of the United Nations Framework Convention on Climate Change (UNFCCC).
- Prevention of leakage prevents negative impacts to biodiversity and ecosystems under the CBD and is relevant to the possible target to reduce plastic waste by 2030 that could be included in the post-2020 global biodiversity framework.

5.1.2 Manufacturing of plastic products

Environmentally sustainable management of plastics and plastic products is an important component in combating plastic pollution. Plastics are used in a variety of sectors, including packaging (45%), building and construction (19%), consumer and institutional goods (12%), transportation (7%), electrical and electronic products (4%), and others (14%) (Guyer et al., 2017).

Endeavouring to produce less plastics means that manufacturing could focus on plastics and applications that are deemed essential in the domestic context and cannot be eliminated or replaced by alternatives that are more environmentally sustainable. However, such manufacturing should be conducted within the constraints of agreed international sustainability criteria that ensures recyclability, at a minimum. For many countries, packaging is an obvious starting point for design change given its prevalence, short lifespan and tendency for leakage. Sustainability criteria may also be needed in other plastic-intensive sectors and across the value chain to stimulate manufacture of plastics that are manageable at the end of life.

International sustainability principles and criteria should aim to address the following

1. Develop design standards that enable reuse and economically feasible recycling
2. Increase incorporation of post-consumer resins
3. Prevent leakage during intended use, e.g. abrasion releasing microplastics
4. Develop labelling and certification schemes
5. Develop MBIs to incentivize behavior change by industry

Specific international workstreams could address the following

- Develop sector-specific guidance to promote sustainable design of essential plastics focusing on sectors that use large volumes of plastics or where leakage is high

Links to other regimes

- No legally-binding agreement exists that focuses specifically on sustainable manufacturing of plastics. Relevant voluntary approaches include the 10-Year Framework of Programmes on Sustainable Consumption and Production (10-YFP on SCP) and UNEA resolutions.

5.1.3 Consumption

The single-use throw-away culture is a primary contributor to the environmental toll of plastic pollution. Elimination of problematic and avoidable plastic products from domestic markets is essential to reduce unnecessary use of plastics. This includes products and materials that are known to cause adverse environmental and health impacts, have a high probability of leakage into the environment or have little/no chance of being reused, recycled or composted. Products already identified in this category and for which elimination efforts are underway in many countries using bans and other restrictions include bags, straws, cutlery, takeaway containers, polystyrene packaging, drinks bottles, earbuds and microbeads.

Furthermore, the current labelling system is diverse and generic, necessitating development of a simple, reliable and trustworthy labelling system to better guide consumer choices (EASAC, 2020), both at the purchase and disposal phases. Furthermore, ambiguous definitions (compostable, biodegradable, bio-based, etc.) can convey a misleading impression to consumers of environmentally benign properties, when in reality they may be degradable only under special conditions not encountered in the natural environment, and interfere with recycling processes (EASAC, 2020). In this life cycle phase, consumer behaviour can also be influenced through the use of market-based instruments, such as taxes and pay-as-you-throw waste collection.

International sustainability criteria should aim to address the following

1. Eliminate products and materials of concern from the domestic market.
2. Influence consumer choice based on product design, including likelihood of abrasion (release of microplastics).
3. Influence consumer choice based on cost of disposal (MBIs) and likelihood of leakage.
4. Incentivize sustainable consumption practices across the value chain.

Specific international workstreams could address the following

- Develop guidelines and tools for addressing problematic and avoidable plastic products. Global criteria could address the full life cycle of plastics e.g. encourage the use of one single type of polymer in packaging and encourage conduct of impact assessment before entering full-scale production, ensuring efforts enable and support the 3R waste hierarchy.
- Develop an inventory and harmonize existing labelling and certification systems, clarify definitions and develop other needed guidance.

Links to other regimes

No legally-binding agreement exists that focuses specifically on sustainable consumption of plastics. Relevant voluntary approaches includes the 10-YFP on SCP and UNEA resolutions.

5.2 Waste management (Downstream)

Today, 58% of plastic waste is mismanaged globally, either through disposal in landfills, open dumps or the natural environment, while 18% is recycled and 24% incinerated (Geyer et al., 2017). Effective waste management is critical to prevent leakage. It should start with a focus on waste prevention and continue with separation at source, collection, transport, sorting, storage and sustainable end-of-life treatment. Waste management is also closely linked to socio-economic considerations: poverty eradication, social equity, and job creation. Many factors contribute to the current low rates of reuse and recycling including the difficulty of establishing efficient collection, sorting and recycling technologies, and the price of virgin material (EASAC, 2020). Furthermore, materials at the end of life are often mixed and contaminated, making them impossible or expensive to clean and recycle, or reducing the quality of the recycled material. Waste management would benefit from following the waste hierarchy, which lays down the following priority order for plastics:

- **Prevention** constitutes the primary objective, including reducing the use of raw materials and avoidable and unnecessary plastic products and packaging.
- **Reuse** includes designing products for long life, repair and multiple usage.
- **Mechanical recycling** is dependent on efficient sorting into different plastic fractions. Once the different types of plastic are separated and the material is thoroughly cleaned it is melted down and reprocessed into pellets.¹⁸ It is a precondition that the plastic waste is uncontaminated. The use of recycled content in bottles manufactured from *polyethylene terephthalate* (PET) has been a first step for recycling in many countries. Downcycling¹⁹ is a challenge as many plastics degrade when heated and lose material value and can be recycled only once or twice.
- **Chemical recycling** breaks down the vast majority of polymers into their constituent molecules and removes undesired additives in the process, resulting in pellets of the same standard as virgin resin. However, the present technique is unlikely to be used at a larger scale, in particular because of the high energy consumption. Chemical recycling could be used more in the future if the technologies are developed.
- **Energy recovery** is not considered recycling, since it is a low-efficiency method of producing energy and results in airborne particulates and greenhouse gas emissions. However, when carefully controlled it may provide low- and middle-income countries the possibility to recover energy as an intermediary solution in transitioning to recycling (UNEP, 2016).

International sustainability criteria should aim to address the following

1. Increase collection rates
2. Minimize transportation costs
3. Identify means to reduce the costs and challenges of sorting
4. Increase decontamination and recycling of plastic waste

18. See Section 1.2.3 on use of terms for comparison of repurposing versus recycling for the purposes of this report.

19. See section 1.2.3 on use of terms for the purposes of this report.

Specific international workstreams could address the following

- The agreement can facilitate the development and application of best available techniques (BAT) and best environmental practices (BEP) for implementing the 3R waste hierarchy.
- Provide tools to improve their domestic waste management services by designing MBIs to eliminate problematic and avoidable plastic products, as well as regulate the features of products placed on their domestic markets and subsidize the costs of waste management.

Links to other regimes

- Article 4 of the Basel Convention requests Parties to minimize the generation of hazardous wastes and other wastes and to ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes. In 2019, the Parties of the convention adopted decision BC-14/13 on further actions to address plastic waste under the convention, including by updating the 2002 technical guidelines for the identification and environmentally sound management of plastic wastes and for their disposal.
- The Stockholm Convention addresses the reintroduction of regulated chemicals during reuse and recycling operations. It is important to include the management of legacy chemicals covered by this convention as well as those that fall outside the scope of the Stockholm Convention (Article 6.1.d(iii)).
- Recycling will help deliver on UNFCCC climate goals, since recycling waste to a new product can save up to 1.4 tons of carbon dioxide equivalent for each ton of plastic when a clean single-resin feedstock is available (Denkstaff, 2011).

5.3 Chemical hazard reduction

Chemical groups of concern used in the production of plastics include flame retardants, perfluorinated chemicals, phthalates, bisphenols and nonylphenols that are found in toys, packaging, electrical and electronic equipment, textile, upholstery and furniture, and plastics used in the construction sector (BRS, 2019). Plastic additives, such as phthalates and bisphenol A, are known for their estrogenic activity and further potential endocrine disruption in vertebrates and some invertebrate species (Sohoni & Sumpter, 1998). Chemical additives are released into the environment during manufacturing, use, landfilling, incineration and improper disposal (Groh et al., 2019). Plastic additives are now reported amongst the most commonly found anthropogenic substances in environmental samples (Whitacre, 2014). Harmful additives are also problematic in recycling as they can contaminate secondary raw materials, restricting downstream applications. Chemical additives enter the oceans via plastic debris, but plastics can also sorb trace contaminants already present in the ocean, including dichlorodiphenyltrichloroethane (DDT) and polychlorinated biphenyls (PCBs) (EASAC, 2020). To this end, there is a need to ensure that design standards restrict the use of hazardous additives. However, greater transparency is also needed of chemicals used in plastic products (Groh et al., 2019).

International sustainability criteria should aim to address the following

1. Ensure safety of chemical additives incorporated in plastic products
2. Ensure safe use of chemicals in different phases of the life cycle (production, recycling etc.)
3. Prevent reintroduction of regulated chemicals in recycling and reuse processes
4. Increase transparency and traceability of chemical additives along the value chain.

Specific international workstreams could address the following

- Identify criteria for hazardous plastic additives to address chemicals, as far as their use is not already prohibited by other international agreements, and restrict their use, as well as their recycling, reuse or repurposing to prevent re-entry of restricted substances onto the market, building on current initiatives, such as the Substitute It Now (SIN) List of hazardous chemicals (Chemsec, 2020).
- The development of a set of international standards to support sharing of information of chemical additives across the value chain could help increase transparency in the use of chemicals, ensuring the composition of chemicals in products is publicly available.

Links to other regimes

- The Stockholm Convention limits the production and use of persistent organic pollutants, including many additives, flame retardants and plasticizers used in plastics. However, most hazardous additives do not qualify for listing under the convention.
- The scope of SAICM encompasses all chemicals and it could address plastic additives as an emerging policy issue. The Beyond-2020 framework for sound management of chemicals and waste is under development that may contain strategic goals concerning plastic and/or plastic waste. However, the voluntary nature of SAICM and its successor sets limitations and it could lead to a fragmented approach to addressing plastic pollution.

5.4 Microplastics

Microplastics are grouped into primary microplastics that are plastic particles manufactured at 5mm or less for use in specific applications, and secondary microplastics at 5mm or less that result from fragmentation of larger items (GESAMP, 2016). A distinction can also be made between unintentional releases of secondary microplastics during the life cycle of products versus intentional releases of primary microplastics added voluntarily to products by manufacturers. Table 5 provides a categorization of microplastic releases, including possible response actions.

Secondary microplastics resulting from breakdown of mismanaged macroplastics

constitutes 69–85% of all plastics in the ocean (Boucher & Friot, 2017). Secondary microplastics deriving from abrasion of products during use is another major source, with largest releases deriving from wearing of tires and synthetic clothing and textiles (Boucher & Friot, 2017). Primary microplastic derive from various sources, including intentional-added microplastic releases from personal care and cosmetic products, detergents, controlled-release fertilizer encapsulates and granular infill material that is used in artificial turf pitches as well as, from unintentional production losses of pellets, powder and flakes.

The concern associated with microplastic particles derives from the potential environmental and human health risks. These include small size making them readily available for ingestion and potentially liable to transfer within food chains, strong resistance to biodegradation leaving them in the environment for a long period after their initial release, fragmentation in the environment progressively into nanoplastics that are practically impossible to remove from the environment after release (EU, 2019a). Nanoplastics are the least researched category of plastic debris, but potentially the most dangerous in terms of accumulation within the tissues and cells of organisms, as it is linked to reduction of growth of earthworms (Lwanga et al., 2016), toxicity to fungi (Miyazaki et al., 2015), mammal lung inflammation (Schmid & Stoeger, 2016) and broad cytotoxicity (Forte et al., 2016). However, there are many uncertainties and more research is needed to understand the potential effect of microplastics on the environment and human health.

Many high-income countries have taken action to restrict primary microplastic: Canada, New Zealand, Korea, USA have banned microbeads in cosmetic and personal care products (EU, 2019a). The EU is in the process to banning intentionally added microplastics in most products, including cosmetics, detergents, paints, polish and coatings, which could result in a reduction in emissions of microplastics of about 400,000 tonnes over 20 years (EU, 2019a). International research indicates that middle- and low-income countries will become a growing source of primary microplastics in the next years, with primary microplastic pollution projected to grow from 148 to 419 grams per capita between 2016 and 2040 (WEF, 2020).

Mitigation of microplastics from wastewater with advanced final stage treatment technologies enables to capture 99% of microplastic releases helping to avoid the vast majority of microplastic releases to aquatic ecosystems (Talvitie et al., 2017). However, wastewater treatment can lead to terrestrial contamination if sewage sludge is used as fertilizer and concerning levels of microplastics have been measured in farms and forests around the world (de Souza Machado et al., 2018; Horton et al., 2017). Stormwater overflows also constitute a significant pathway for microplastic releases.

Table 5: Categorization of microplastic releases and actions needed at the national level.

Category	Derivate	Intention	Examples of releases	Release phase	Actions needed
Primary microplastics Plastic pellets and plastic particles manufactured for specific applications, such as cosmetic products and abrasives	Voluntarily added to products	Intentional	3D-printing and printing ink, personal care and cosmetic products, detergents and maintenance products containing microbeads or encapsulated fragrance, fertilizers, controlled-release fertilizer encapsulates and fertilizer additives, capsule suspension plant protection products and coated products, paints and coatings, products used in the oil and gas industry, granular infill material in artificial turfs, waxes and polishes	Midstream	Ban or restrict intentionally added microplastics
	Production losses	Unintentional	Accidental loss of pellets during manufacturing, processing, transport and recycling	All phases, mainly upstream	Apply best practices to avoid accidental losses
Secondary microplastics Microplastics produced as a result of fragmentation from larger items	Abrasion during use	Unintentional	Wearing of tiers, synthetic clothing and textiles, painted surfaces (marine coatings and road markings) and agricultural plastic mulch	Midstream	Targeted policies, including labelling and product standards
	Breakdown after disposal	Unintentional	Breakdown of mismanaged macroplastics, including packaging and abandoned fishing gear	Downstream	Waste management and product standards

International sustainability criteria should aim to address the following

1. Eliminate primary microplastic releases.
2. Material and product redesign to minimize abrasion during intended use. This could include, inter alia, developing low-abrasion tyres and using natural fibers and improving fabric cuts and weaving style in textiles.
3. Ensure industrial standards mitigate release of microplastics to air, water and soil, including improving the capture of microplastics in wastewater treatment using best available treatment technologies giving due consideration to avoiding contamination of soils.

Specific international workstreams could address the following

- Lay down foundations to develop principles, guidelines and/or standards to cover the life cycle of microplastics. This could be achieved by setting up an ad hoc scientific or technical group under the agreement.

Links to other regimes

- Decision BC-14/13 (2019) of the Basel Convention emphasizes that work under the convention plays an important role in addressing the high and rapidly increasing levels of marine plastic litter and microplastics by preventing plastic waste from entering the marine environment.
- The UN Environment Assembly has explicitly addressed microplastics in its four consecutive sessions, including Resolution 3/7 (para 1) that stresses “the importance of long-term elimination of discharge of litter and microplastics”, and Resolution 4/6 (para 4) that invites States to a) reduce the discharge of microplastics into the marine environment, including phasing out of products that contain microplastics, b) foster innovation in product design to reduce secondary microplastics release c) prevent losses of primary microplastics, in particular pre-production pellets across the supply chain.
- The IMO recognizes the maritime sources of microplastics in the Action Plan to address marine plastic litter from ships.

5.5 Trade

A new global agreement for plastics could complement the global trade of plastics. As discussed in section 2.1.1, the measures of a new agreement could complement the Basel Convention, both in the trade of plastic waste and in the reduction of waste generation. However, plastic is not only traded in the form of waste, but also as products and primary materials, including pre-production pellets, semi-processed plastic, semi and fully assembled products, components of finished products (e.g. vehicles), clothing fibers and items within consumer products (e.g. microbeads), as well as primary, secondary and tertiary packaging²⁰ (Dauvergne, 2018). Exports of plastic items alone was worth USD 79 billion in 2018 (Workman, 2020). Cross-border movement of plastics may occur through traditional retail supply chains or more direct online sales. Better management of the characteristics of plastic products traded can be implemented through the regulation of domestic markets (see section 6.3 and 6.4).

International sustainability criteria should aim to address the following

1. Ensure compliance with Basel Convention amendments concerning trade of plastic waste.
2. Address particularly problematic environmental aspects of trade of plastic products and primary materials (pellets, powder and flakes).

20. Primary Packaging: Packaging that contains the finished or final products, sometimes called retail or consumer packaging. Secondary packaging: Packaging additional to the primary packaging and that is used for protection and collation of individual units during storage, transport and distribution. Tertiary packaging: Outer packaging, including pallets, slip sheets, stretch wrap, strapping any labels, used for the shipment and distribution of goods and is rarely seen by consumers. (<http://www.wrap.org.uk/sites/files/wrap/Definitions.pdf>)

Specific international workstreams could address the following

- Consider opportunities to develop tools to assist countries in regulating problematic plastic products and primary materials placed on their markets from international and domestic sources, including by developing international sustainability criteria and product certification schemes (see section 6.2 and Annex 2).
- Consider ways to enhance the traceability of the trade of all plastics.

Linkages to other regimes

- In 2019, the Basel Convention adopted amendments to Annexes II, VIII and IX that require countries to obtain prior informed consent from destination States before exporting hazardous plastic waste and plastic waste that requires special consideration.²¹
- The Organization for Economic Co-operation and Development (OECD) has published a number of reports on stimulating sustainable plastics, including Extended Producer Responsibility (EPR, revised 2016) and the Impact of Online Sales (2018).

5.6 Sea-based sources

Sea-based sources of plastic pollution include fisheries, aquaculture, shipping and offshore industry, discharge and dumping. Estimates of the contribution of maritime sources of leakage range between 10 and 30% of ocean leakage, but there is much uncertainty. Abandoned, lost or otherwise discarded fishing gear is a growing issue of concern for sustainable fisheries due to its subsequent effects on target and non-target species, habitats and human users in marine systems. 6% of all fishing nets, 9% of all traps, and 29% of all lines are lost around the world each year (Richardson et al., 2019). Furthermore, the continuous expansion of aquaculture contributes to leakage due to mismanagement of plastics used both in equipment and product packaging (Huntington, 2019).

International sustainability criteria should aim to address the following

1. Ensure sustainable design of fishing gear, including minimize use of hazardous chemicals that make recycling challenging (OSPAR, 2020)
2. Reduce the loss or abandonment of fishing gear, including through MBIs and by increasing their traceability
3. Use BEP to retain lost and abandoned fishing gear
4. Ensure compliance with existing conventions to prevent dumping and discharges of plastic waste

21. Decision BC-14/12

International action

- International sustainability criteria to address fishing gear by preventing use of plastic components that are more likely to be lost or break up during their use and explore the possibility of a ban on sale and use of such items (OSPAR, 2020).

Linkages to other regimes

- Sea-based sources are addressed in several legally binding instruments. Annex V (1988) of MARPOL (1973) specifically prohibits the discharges of any plastics at sea and the London Convention (1972) and the London Protocol (1996) prohibit dumping of any land-generated wastes containing plastics at sea. Other relevant conventions include UNCLOS (1982) and the UN Straddling Fish Stocks Agreement (1995).
- Relevant voluntary instruments include, inter alia, the FAO's (*The Food and Agriculture Organization* of the United Nations) Code of Conduct for Responsible Fisheries (1995) and the IMO Action Plan to address marine plastic litter from ships. The FAO has also published a report on Microplastics in Fisheries in Aquaculture (2017).

5.7 Sustainable removal

Prevention at source is the most cost-efficient strategy to reduce leakage. Removal of plastics should be considered as a supporting measure because the main emphasis must be placed on preventing the release of plastics and microplastics in the ocean from the outset. Removal is challenging and limited to a small portion of plastics in the ocean, as estimates show that 94% of the plastic that enters the oceans ends up on the sea floor and 1% is found at or near the ocean surface (Sherrington et al., 2016). Removal of lost and abandoned fishing gear is particularly important, since ghost fishing has detrimental impacts on fish stocks and potential impacts on endangered species and benthic environments. Macro- and microplastics removal programmes targeting hotspots, including rivers, waterways, coastal areas, oceans and land, can make removal efforts more cost-effective. Participatory removal programmes also encourage awareness-through-action and provide an opportunity to gather monitoring data.

5.8 Summary of measures

A summary of possible measures across the life cycle of plastics is provided in table 6. The table indicates with green measures that are covered by existing global agreements and with orange measures that are partly covered by existing global agreements. No coloring means that the measures are beyond the scope of existing global agreements.

Measures covered fully by existing global agreements (in green) focus predominantly on sea-based sources: Annex V of the MARPOL Convention prohibits the discharges of any plastics at sea and the London Convention and London Protocol prohibit

dumping of any wastes containing plastics at sea. Furthermore, the Basel Convention regulates trade of plastic waste by requiring countries to obtain prior informed consent before exporting contaminated or mixed plastic scrap.

Measures that are partly covered by existing global agreements (in orange) include downstream measures of land-based sources, in particular through the Basel Convention that includes general provisions (Article 4.2 a–b) to ensure minimum generation of hazardous and other waste, and to ensure the availability of adequate waste disposal facilities for their environmentally sound disposal. Furthermore, the Stockholm Convention restricts the production use and disposal of certain chemicals additives present in plastics listed under the convention, however, many plastic additives do not fall within the scope of Stockholm Convention

Nine out of the 14 Regional Seas Conventions and Action Plans that have adopted binding conventions have also adopted a protocol on land-based sources, each with varying mandates for upstream activities and four of which are not yet in force (UNEP, 2017). To this end, upstream and midstream activities are largely absent from existing global agreements, thus important measures for prevention are missing. The Regional Seas Conventions and Action Plans include varying provisions on research, public awareness and education and monitoring of marine litter, which are not shown in the table.

Table 6: Summary of options for action throughout the life cycle of plastics.

	= Measures that are fully covered by existing global agreements
	= Measures that are partly covered by existing global agreements
	= Measures that are predominantly beyond existing global agreements

	Upstream	Midstream	Downstream
Land-based sources	<ul style="list-style-type: none"> - Produce less plastics - Increase use of post-consumer resins - Increase use of sustainably sourced biomass-based feedstocks - Limit use of fossil-based feedstocks 	<ul style="list-style-type: none"> - Redesign plastic products to allow for greater durability, reuse and recycling - Instigate bans on problematic and avoidable plastic products - Create viable end-markets for recycled and bio-based plastics, including recycled content standards - Develop product labeling and certification schemes - Harmonize definitions and labels for ambiguous terms (compostable, degradable, etc.) 	<ul style="list-style-type: none"> - Expand separate sorting and collection systems - Increase material recovery through mechanical and chemical recycling - When other viable alternatives do not exist, increase energy recovery through waste-to-energy solutions - Reduce/eliminate landfilling of plastics
Chemical additives	<ul style="list-style-type: none"> - Instigate bans and restrictions on chemicals of concern in plastics 	<ul style="list-style-type: none"> - Eliminate the release of chemicals of concern in products during intended use (e.g. Bisphenol A (BPA), flame retardants) - Increase transparency and traceability of chemical additives throughout the value chain 	<ul style="list-style-type: none"> - Prevent reintroduction of regulated chemicals in recycling and reuse processes
Microplastics	<ul style="list-style-type: none"> - Prevent accidental loss of plastic pellets, powder and flakes using best practices 	<ul style="list-style-type: none"> - Instigate bans and restrictions on intentionally added microplastics (cosmetics, pesticides etc.) - Restrict secondary microplastic releases with proper design of products (textiles, tires etc.) 	<ul style="list-style-type: none"> - Capture microplastics in wastewater treatment - Prevent use of wastewater sludge as fertilizer to avoid contamination of soils
Trade	<ul style="list-style-type: none"> - Promote sustainable international trade of plastic pellets, powder and flakes 	<ul style="list-style-type: none"> - Promote sustainable international trade of plastic products 	<ul style="list-style-type: none"> - Regulate international trade of plastic waste
Sea-based sources	<ul style="list-style-type: none"> - Encourage use of bio-degradable components in fishing gear where possible 	<ul style="list-style-type: none"> - Promote sustainable design of fishing gear, including introduce bans or taxes on unsustainable fishing gear - Develop standards to encourage responsible use of plastics in aquaculture 	<ul style="list-style-type: none"> - Prohibit dumping and discharge of plastics at sea e.g. remove financial disincentives to bringing waste ashore - Ensure adequate port reception facilities

Options for addressing life cycle measures in the agreement include a) *conventional approach*: translating them into operative articles of the agreement, b) *bottom-up approach*: defining the life cycle measures as soft law, possibly as a tool-box to be included as an annex to the agreement, and c) *systems approach*: incorporating the life cycle measures within the international sustainability criteria. The options are not mutually exclusive and can be pursued in parallel. For instance, the life cycle measures could be defined in articles of the agreement at a general level, yet they could be simultaneously elaborated in greater detail in the toolbox and/or in conjunction with the sustainability criteria. To this end, the life cycle measures provide a broad suite of actions that can be incorporated into NPMPs to meet national needs and circumstances and/or they can be incorporated in sustainability

criteria, discussed in sections 6.1 and 6.2, respectively. Table 7 outlines pros and cons of different options.

Table 7: Options for addressing life cycle measures within the agreement.

	Conventional approach	Bottom-up approach	Systems approach
Description	<ul style="list-style-type: none"> – Articulates life cycle measures in the convention text setting obligations in form of hard law 	<ul style="list-style-type: none"> – Lists life cycle measures in form of soft law, possibly as a toolbox containing a selection of measures to address the life cycle of plastics 	<ul style="list-style-type: none"> – Targets the entire value chain in a holistic manner through incorporation of life cycle measures into international sustainability criteria
Strengths	<ul style="list-style-type: none"> – Provides clear guidance what is expected from governments, helping to harmonize implementation and follow-up efforts – Enables to outline the life cycle and adopt measures accordingly, which could ensure a balanced approach for tackling downstream and upstream measures – Could enable to prepare more detailed protocols and/or annexes on specific articles in a later stage e.g. microplastics 	<ul style="list-style-type: none"> – The content could be outlined between the time of adopting the agreement and the first meeting of the governing body, giving ample time for identifying measures – Could shorten the duration of the negotiations to ensure a swift adoption of the agreement – Could give more flexibility for implementation without risking contradiction with existing agreements, in relation to downstream measures 	<ul style="list-style-type: none"> – Provides an unconventional systematic and technical approach to address the life cycle at the international level that could attract broad interest across policy fields, sectors and stakeholders – Could elevate and give more teeth to the international sustainability criteria as the principal tool of the agreement – Could seal the connection between the agreement and its role in promoting industry engagement innovatively – Could better empower governments to lead efforts in ensuring sustainable design of plastic products – Could set a precedent for closing the loop of other materials that similarly suffer from linear material flows
Weakness	<ul style="list-style-type: none"> – The elaboration of the life cycle measures in the agreement could extend the duration of negotiations – Could result in duplication with other agreements, which could be avoided with MoUs or joint work programs 	<ul style="list-style-type: none"> – Follows the model of a voluntary framework questioning whether it would result in the desired impact – Risk resulting in a fragmented and piecemeal approach to addressing the problem with little if any impact on production and design – The absence of articulating measures in the agreement text could hinder efforts to measure progress 	<ul style="list-style-type: none"> – Agreeing on criteria at the international level could become subject of fierce lobbying of industry, weakening their potential to impact design – The industry is not directly bound by standards adopted at the international level and their implementation will require the development of necessary regulatory policies and use of market-based instruments at the national level
Existing models	<ul style="list-style-type: none"> – The Minamata Convention provides a useful reference for a life cycle agreement – The CBD outlines a broad scope and details measures in articles, but delegates certain activities to other MEAs 	<ul style="list-style-type: none"> – FAO Code of Conduct for Responsible Fisheries provides an example of a bottom-up approach, targeting an overall objective, supported by UNCLOS articles 116-120. 	<ul style="list-style-type: none"> – Existing agreements provide a plethora of elements that function as standards, thus affecting industry engagement (see table 8)



Microplastics are commonly released into waterways and enter drinking water.

Photo: iStockphoto.com

6. Operational Implementation Mechanisms

This section outlines the possibilities for the operational provisions that could be established in a new agreement on marine plastic pollution control. It proposes that the parties develop three key operational implementation mechanisms, two of which are national and one of which is international:

- **National Plastics Management Plans** (NPMPs);
- **International Sustainability Criteria** for plastics (including additives) to be elaborated into detailed cascading measures;
- **National Plastics Sustainability Standards** to be operationalized through the regulation of domestic markets and deployment of market-based instruments in accordance with the international sustainability criteria and the national context.

The implementation mechanisms could operate across the entire life cycle of plastics, as illustrated in Figure 4. Consideration is given to examples from existing agreements, bearing in mind that tailored solutions would be needed to address the specificities of marine plastic litter and microplastics in particular circumstances.

6.1 National Plastics Management Plans

The development of National Plastic Management Plans (NPMPs) is proposed as a central commitment under the new agreement. The NPMPs could provide a vehicle tailored to meet specific national needs and circumstances for developing and implementing national policies across the life cycle of plastics.

The NPMPs enhance national opportunities to design a holistic and comprehensive approach covering all sources and relevant sectors. The NPMPs could promote the fundamental objective and strategic goals of the agreement to tackle plastic pollution. NPMPs can also raise political awareness and preparedness to adopt national plastic policies, promote institutional innovation and more coordination across policy sectors, and grant better access to financial and technical support.

Procedural elements of the commitment could ensure that NPMPs aim to meet strategic goals, are updated regularly and are reported upon.

Key options for consideration include:

1. *Form and the structure*

Should the form of the NPMP be a high-level strategic document, or a detailed prescriptive action plan, or encompass elements of both? Functioning as a high-level strategic document would help to generate a cross-sectoral approach, leverage financial resources and engage relevant stakeholders. However, in practice, it might need to be underpinned with some form of detailed action plan to outline more specific measures, identify entities responsible for implementation, and to estimate financing sources for each of the measures, and specify institutional arrangements for implementation and monitoring, in order to fully operationalize the high-level strategic document in a meaningful way.

2. *NPMP content*

As an operational mechanism, the NPMP could set out either procedural commitments, or minimum substantive commitments. If the mechanism is limited to procedural commitments it will enable countries to quickly join in, as the content would rely completely on countries. However, the content could vary significantly between countries, raising questions as to whether the agreement is sufficient to promote the proposed strategic goals or to eliminate plastic leakage into the environment.

A lack of minimum common substantive commitments could also hinder the meaningful review of progress at the international level. Therefore, inclusion of some minimum substantive content commitments could be needed while retaining a level of flexibility for implementation of national target setting and action plans. The articulation into an NPMP of content derived from international sustainability criteria for plastic products management that could be adopted pursuant to the new agreement would be an effective use of some of those criteria.

6.1.1 How are NPMPs addressed in existing agreements?

National action plans are employed by many MEAs. Normally, the action plan mechanism is outlined in general terms in the agreement and specific guidance for their development, in terms of substance and procedure, is adopted at a later stage. This includes both global and regional conventions as exemplified below.

The CBD requires parties to develop National Biodiversity Strategy and Action Plans (NBSAPs). In 2010, the CBD adopted the Strategic Plan for Biodiversity 2011–2020 that includes 20 timebound Aichi Biodiversity Targets and parties were asked to develop and implement an updated NBSAP by 2015 and to set their own national targets in NBSAPs by using the Aichi Biodiversity Targets as a flexible reference.²² While the flexibility to develop national targets has helped parties take into account national priorities and capacities, it has led to the use of different

22. Decision X/2 (para 3b)

targets in NBSAPs that weakens comparability. Importantly, Parties are asked to reflect the full range of activities of all biodiversity-related conventions in NBSAPs helping to align activities conventions with related objectives.²³

The Paris Agreement on climate change obliges parties to regularly prepare their climate plan known as nationally determined contribution (NDC) that gives parties flexibility in developing NDCs and in determining their mitigation pledges, which has made it easy for countries to join the convention and to develop NDCs (Bodle et al. 2016). Many Parties have formulated their NDCs as high-level strategic documents and underpinned them by more detailed action plans or roadmaps that set out how the objectives will be met (Fuertes & Harries, 2019). An important feature of NDCs is that they need to represent a progression from previous NDCs and reflect the highest possible ambition. Annex 1 of the Paris Rulebook adopted in 2018 provides clarity on information required to facilitate clarity, transparency, and understanding of NDCs, but does not specify the content of measures.²⁴ In this sense, the Paris Agreement reflects a hybrid approach – blending bottom-up flexibility, to promote broad participation, with top-down rules, to promote accountability and ambition (Huang, 2019).

23. Decision X/20 (para 11b)

24. Decision 4/CMA.1 (Annex 1)

Table 8: Comparison between NDCs (Paris Agreement) and NBSAPs (CBD).

	NDCs	NBSAPs
Structure	<ul style="list-style-type: none"> – Many Parties have formulated their NDCs as a high-level strategic document and underpinned them by more detailed action plans or roadmaps that set out how the objectives will be met. However, it is worth noting that the preparation of an NDC implementation plan is not required under the Paris Agreement 	<ul style="list-style-type: none"> – Consists of a strategy to set out a vision, principles and priorities and targets, and an action plan to outline measures, identify resources, specify national coordination structures and establish a monitoring approach, including identify indicators by which progress towards national targets will be measured and reported.
Status of plans	<ul style="list-style-type: none"> – 186 Parties have submitted their first NDC 	<ul style="list-style-type: none"> – 185 Parties have submitted at least one NBSAP, from which 170 Parties have submitted a post-2010 NBSAP
Procedural commitments	<p>Article 4:</p> <ul style="list-style-type: none"> – Prepare, communicate, and maintain successive NDCs – Pursue domestic mitigation measures – Communicate NDCs every five years – Account for NDCs and promote environmental integrity, transparency, accuracy, completeness, comparability, and consistency and ensure the avoidance of double counting – Regularly provide information on national inventories of emissions – Information necessary to track progress made in implementing and achieving NDCs 	<p>Article 6:</p> <ul style="list-style-type: none"> – Develop NBSAPs for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes to reflect the measures set out in the Convention – Integrate biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies
Specification	<p>Annex I of the Paris Rulebook (2018):</p> <ul style="list-style-type: none"> – Reference points – Time frames – Scope and coverage – Planning processes for developing the plan – Assumptions and methodological approaches – How the plan is fair and ambitious – How the plan contributes towards achieving the objective of the Convention 	<p>Decision X/2 (2010):</p> <ul style="list-style-type: none"> – The Strategic Plan for Biodiversity 2011-2020 is a voluntary framework that includes 20 timebound Aichi Biodiversity Targets to be used as a flexible reference in setting national targets and measures when updating NBSAPs

In 2013, the Barcelona Convention Regional Plan on Marine Litter Management in the Mediterranean specifies that marine litter should be included in national action plans (NAPs) for land-based sources.²⁵ Table 9 lists measures to be included in the NAPs and outlines steps for preparing NAPs. The Regional Plan for Marine Litter Management includes several commitments for participating states to take future action to address the problem by firm deadlines, and/or develop specific types of instruments to do so.

25. Decision IG.21/7

Table 9: Measures and guidance for updating NAPs in Barcelona Convention Regional Plan on Marine Litter Management in the Mediterranean.

Measures (Art 7)	Secretariat's NAP guidelines
<ul style="list-style-type: none"> • Develop and implement policy, legal instruments and institutional arrangements • Monitor and assess programmes for marine litter • Develop measures to prevent and reduce marine litter • Develop programmes for removal and environmentally sound disposal of existing marine litter • Develop awareness raising and education programmes 	<ol style="list-style-type: none"> 1. Assess existing baseline and implementation of original NAP measures 2. Define quantifiable objectives & operational targets 3. Identify gaps that prevent the country from meeting the targets 4. Prioritize issues and identify potential measures 5. Select programme of measures 6. Develop a follow-up and reporting plan 7. Draft the action plans

6.1.2 Precedents for NPMPs for marine plastic litter and microplastics

In 2017, UNEA-3 encouraged countries "to develop and implement action plans for preventing marine litter and the discharge of microplastics" and specifies focusing of following measures:²⁶

- Re-design and re-use of products and materials
- Encouraging resource efficiency
- Increasing collection and recycling rates of plastic waste
- Avoiding the unnecessary use of plastic and plastic containing chemicals of particular concern

Many countries have pioneered national action plans with varying approaches taken, most notably in relation to the extent to which the life cycle of plastics is addressed and to what extent they address plastics beyond the marine environment. The following examples illustrate different approaches taken and elements included in some existing national and sub-national action plans on plastics:

- Indonesia's national action plan on marine plastic debris has been complemented with a multi-stakeholder action plan with targets across the life cycle aiming to create 150.000 jobs (Ministry of the Environment of Indonesia, 2017; WEF, 2020).
- Finland's national plastics roadmap focuses on the life cycle of plastics and includes sectoral measures for the building and construction sectors, as well as the agriculture and horticulture sectors (Ministry of the Environment of Finland, 2019).
- The Kenya plastic action plan consists of a three-year plan to set up an EPR scheme aiming to operationalize a producer responsibility organization to collect and manage the end-of-life of all streams of plastics (Kenya Association of Manufacturers, 2019).
- The Canada-wide action plan on zero plastic waste outlines six priority areas across the lifecycle, including development of design standards for recyclability (Canadian Council of the Ministers of the Environment, 2018).
- The Thailand plastic waste management roadmap 2018–2030 aims to ban certain plastics products and to make all plastic waste reusable by 2027.
- Norway has a national strategy that focuses on all sources of marine litter and

26. UNEP/UNEA/3/7 (para 4c)

microplastics.

- Subnational action plans have been developed in the United States in the states of Florida, California, Oregon, Hawaii, Washington and Virginia that focus on education, public awareness, and research.

6.1.3 What should be considered in designing a mechanism for NPMPs?

Based on existing national action plan mechanisms, several useful features and principles for the development of NPMPs can be identified. They could be embedded in the agreement and specified in subsequent guidance. The following principles and features could be considered in designing a national action plan mechanism.

Progression needs to be reflected as a key principle enabling action plans to function as a 'living document' that reflects the highest possible ambition and progression over time. This will ensure that targets and measures set by countries are incremental within successive plans. For this to happen, political support is needed for enhanced action.

Transparency means that information is presented in a way that is clear and can be understood and verified. Reporting on information necessary to track the implementation and achievement of action plans will help to further increase transparency. Agreeing on minimum common elements could help to avoid challenges deriving from the flexibility in the development of NPMPs that could lead to incomplete and incomparable information between countries. Possible minimum elements for consideration include:

- Baseline
- Timeframe
- Description of the methodology
- Description of scope
- Consideration of synergies with other relevant initiatives

Policy coherence across all relevant sectors can be achieved through a participatory approach to planning, implementation and review of NPMPs. Commitment and leadership at the highest political level is needed throughout the process. Coherence can also be achieved by allowing the plan to function as an overarching framework for all relevant international instruments, including relevant goals and targets of the 2030 Agenda on Sustainable Development.

Context-sensitivity in addressing national sources and pathways is important given that national priorities and circumstances vary greatly. In other words, the plans could promote a bottom-up approach that provides flexibility at the national level for setting targets and identifying measures. Annex 1 lists possible national measures grouped different categories.

Measurability through the use of quantified national targets could constitute an integral part of NPMPs. The strategic goals could provide a common framework for setting measurable targets to ensure convergence between plans, thus helping track global progress. Table 10 illustrates possibilities for setting targets and indicators at different levels in line with the proposed strategic goals. Furthermore, broad categories of indicators for different types of measures could be identified and countries would then define which indicators within these categories they will use to

track progress towards their action plans. Ideally, the targets should be formulated to be smart (specific, measurable, ambitious, realistic, and time-bound). Accountability is important to assess the achievement of national targets through the development of common methodologies for reporting (see section 7).

Table 10: Options for setting national targets and indicators.

Strategic goals	Targets	Outcome indicators	Impact indicators
Elimination of problematic and avoidable products	– Problematic and avoidable plastic products are phased out by 20xx	– Measurable quantitative reduction of problematic and avoidable plastic products	– An impact-oriented target would include detecting a x% decrease of microplastics and plastics present in the environment by setting a specific goal year. Some countries have already ambitious reduction targets, with Vietnam and Thailand striving for 50% reduction and Indonesia 70% reduction of marine plastic litter by 2025.
Sustainable management of essential plastics	– Plastics are designed to be reused and recycled by 20xx – Plastic products include x% recycled content by 20xx	– Loss of pellets, powder and flakes – Quantity of plastics produced, consumed and traded – Recycled content of plastics	– Thresholds for good environmental status identified in the EU Marine Strategy Framework Directive are relevant, including 20 pieces of litter along 100 meters of beach. A closely related national environmental target includes reducing plastic litter found on the shore in Finland by 30% by 2024.
Sustainable waste management	– Plastics are reused and recycled in practice by 20xx – An EPR scheme is developed by 20xx	– Rate of collection, reuse, recycling, landfilling, and incineration of plastic waste	– Thresholds for good environmental status identified in the EU Marine Strategy Framework Directive are relevant, including 20 pieces of litter along 100 meters of beach. A closely related national environmental target includes reducing plastic litter found on the shore in Finland by 30% by 2024.
Chemical hazard reduction	– Toxic chemical additives are phased out from plastic products by 20x	– Measurable quantitative reduction in use of toxic chemical additives	– Thresholds for good environmental status identified in the EU Marine Strategy Framework Directive are relevant, including 20 pieces of litter along 100 meters of beach. A closely related national environmental target includes reducing plastic litter found on the shore in Finland by 30% by 2024.

Long-term financial stability of the plans should be pursued by securing funding from all relevant sources, including public, private, international and domestic sources. The role of international funding will be pronounced in the initial phase, enabling the development of NPMPs and the introduction of relevant measures, including market-based instruments, that will help to generate a stable and long-term source of funding needed for ensuring sustainable management of plastics across the life cycle.

Strengthening of institutional capacity should be centrally featured in the preparation and implementation of NPMPs to minimize potential challenges that could present in terms of weak political support, lack of financial, human and technical resources; and analytical capabilities (Röser et al., 2020). Preparing NPMPs requires substantive amounts of data, knowledge and capacity to assess the potential outcomes of various policy options, as well as financial and human resources. Without proper analysis and data, goals, targets and policies risk being under- or over-ambitious, which in turn affects the chances of successful implementation.

6.2 Sustainability criteria for the plastic products life cycle

'Sustainability criteria' is a broad term for cascades of inter-related directives, guidelines, best practices, codes, standards, and procedures intended to enable environmentally sound management of plastics. A new agreement could include a commitment by parties to develop international sustainability criteria and flow-on implementing measures for sustainable management of plastic products.

6.2.1 The idea of Sustainability Criteria

Core sustainability criteria for plastic products would be formulated during the negotiation of the new agreement but these could create only a bare framework for the subsequent development of more specific technical measures by the State parties, in consultation with industry partners and civil society. The outputs of a time-bound multilateral negotiation for a new international agreement would most likely be limited to general directives for sustainability criteria. (An illustration is provided in box 1, which sets out Annex II of the UNECE Watercourses Convention.)

GUIDELINES FOR DEVELOPING BEST ENVIRONMENTAL PRACTICES

1. In selecting for individual cases the most appropriate combination of measures which may constitute the best environmental practice, the following graduated range of measures should be considered:

- (a) Provision of information and education to the public and to users about the environmental consequences of the choice of particular activities and products, their use and ultimate disposal;
- (b) The development and application of codes of good environmental practice which cover all aspects of the product's life;
- (c) Labels informing users of environmental risks related to a product, its use and ultimate disposal;
- (d) Collection and disposal systems available to the public;
- (e) Recycling, recovery and reuse;
- (f) Application of economic instruments to activities, products or groups of products;
- (g) A system of licensing, which involves a range of restrictions or a ban.

In determining what combination of measures constitute best environmental practices, in general or in individual cases, particular consideration should be given to:

- (a) The environmental hazard of:
 - (i) The product;
 - (ii) The product's production;
 - (iii) The product's use;
 - (iv) The product's ultimate disposal;
- (b) Substitution by less polluting processes or substances;
- (c) Scale of use;
- (d) Potential environmental benefit or penalty of substitute materials or activities;
- (e) Advances and changes in scientific knowledge and understanding;
- (f) Time limits for implementation;
- (g) Social and economic implications.

Negotiators might formulate an agreement that sets the sustainability criteria and requiring the formulation at a later stage of more specific measures to promote the agreement's fundamental objectives and strategic goals. These criteria could seek to promote the environmentally sound management of plastics through the detailed development at the national level of: (a) public information and education; (b) codes of best environmental practice across the life cycle; (c) environmental labelling; (d) collection and disposal; (e) reuse, repair and recycling; (f) economic instruments; or (g) licensing and restrictions.

A more specific example in relation to the application of 'best environmental practice' is the formulation of codes for particular plastic product types that promote their reuse, durability and repairability and that eliminate hazardous products. Should more detailed criteria, standards or guidelines be needed for particular product categories (additives, for example), these could be developed in stages and by different subsidiary or parallel bodies.

Additional measures giving effect to the sustainability criteria might be developed in the form of binding protocols or annexes to the agreement, or otherwise made mandatory through parallel industry standards. However, most measures that fulfil the criteria might be expressed through voluntary guidelines, best practices, and codes. The specific measures could be developed through decision-making mechanisms subsidiary to the agreement, such as decisions of the Conference of Parties informed by a technical and economic advisory group, or parallel to the agreement, such as by industry associations, as appropriate to the type of measure. The advantages of setting criteria for further measures include allowing for innovation and adaptation to new technologies.

Sustainability criteria

– Direct the outputs to be achieved

- Define performance outcomes
- Promote innovation
- Allow for adaptation to technology
- Provide for flexible, cost-effective measures

Sustainable management measures

– Define how the criteria are to be met

- Standardise performance
- More prescriptive, restrictive
- May mandate specific inputs
- May specify compliance with standards

6.2.2 Industry engagement

Engagement of industry at both the national and international levels is needed. Although industry is not directly governed through international agreements or financial mechanisms, industry is influenced by standards that are established and promoted globally through multilateral agreements, and their commerce is indirectly governed by standards or obligations established in national legislation (UNEP, 2013). International agreements do therefore influence industry and can spur the mobilization of resources and assist in a number of other ways, including (Ellen Macarthur Foundation, 2019):

- Increase participation by signalling market stability, fairness and known requirements for access.
- Streamline auditing by specifying measurement boundaries and information

requirements.

- Demonstrate compliance by clarifying adhesion to a set of mandatory or voluntary levels of performance.
- Build trust by informing customers and consumers about performance within a given context and removing uncertainty, thereby helping them make informed purchasing decisions.

The new agreement could formulate obligations or guidance for States to promote industry compliance with the performance measures set out in the sustainability criteria. This can be achieved through the development of national plastics sustainability standards that give effect to the international sustainability criteria. At the same time, the convergence of industry standards at the international level, harmonised by international sustainability criteria, could help create a level playing field for industry and governments, incentivize the design of products that generate less waste or waste that is more likely to be collected and recycled. This would ultimately reduce the burden of waste management on municipalities and taxpayers.

"[T]he single market provides a critical mass enabling the EU to set global standards in product sustainability and to influence product design and value chain management worldwide." (EU circular economy action plan)

Table 11 illustrates the possible stages that would address deeper levels of design criteria, the instrument type in which these could be reflected and in which fora they could be developed. Further standards could satisfy the needs for adoption within national legislation towards globally sustainable production of plastics (see row A in Table 13).

Table 11: Development of product sustainability criteria and standards.

A. Objectives, goals and criteria	<ul style="list-style-type: none"> - Fundamental objectives - Four strategic goals - Sustainability criteria directive (to be further expressed in other measures) 	- Defined in agreement
<i>For possible development post-adoption of global agreement:</i>		
B. Sustainability criteria outputs	<ul style="list-style-type: none"> - Performance outcomes - Address product categories, additives & transparency. - Promote reuse, durability, repairability & prevention of leakage. 	- Defined in annexes, guidelines, etc. by a technical and economic advisory committee with sector representation across life cycle, e.g. recyclability outcomes
C. Design standards for recyclability	<ul style="list-style-type: none"> - Product design standards - Defines desirable product and/or process characteristics - Address sectors, product categories & additives - Labelling standards 	- Defined in technical codes and standards by Technical Expert Committees with sector representation (e.g. tourism, agriculture, construction)
<i>National adoption of sustainability objectives and criteria:</i>		
D. National adoption measures	<ul style="list-style-type: none"> - National plastics sustainability standards - Technical regulations - Standards - Conformity assessment procedures 	- Defined by national standards setting bodies for use in regulatory, co-regulatory and voluntary mechanisms

The sustainability criteria may be grouped by the desired outcome and benefits of products on the wider environment, improvement to social conditions and economic enablers towards a circular economy. Alternatively, they could form categories of measures, cascading in groups according to the particular strategic goal, or the plastic product type or life cycle phase. A step-wise description (steps A–D) is set out below. Examples can also be found in existing global instruments (see Table 10).

A. The product sustainability criteria for plastic products, including additives, can be embodied in the text of a new global agreement.

B. The broad measures for achieving these product sustainability criteria can then be further detailed in annexes and guidelines developed by a subsidiary body. For the purposes of this report, the focus of the criteria is on "design for recyclability".

C. Technical standards and sectoral codes of practice can be developed to promote 'design for recyclability'. The aim of design for recyclability is to:

- enable economically viable collection and recycling, but also to
- set criteria against which products can be reduced on domestic markets.

By including 'design for recyclability' objectives and criteria in a global agreement, governments are provided a tool to 1) reduce products on the market that do not

meet the 'recyclability' criteria and 2) promote the circularity of the value chain through the reuse and recycling of products and components, with recycling being a 'catch all' for products for which reuse is not an option.

D. At the national level, countries develop national sustainability standards for plastics and additives in fulfillment of the international sustainability criteria. Countries may then choose to implement regulatory or voluntary measures, as well as market-based instruments, based on a product meeting, at a minimum, the agreed international product sustainability criteria.

Where packaging waste materials cease to be waste as a result of a preparatory operation before being actually reprocessed, such materials can be counted as recycled provided that they are destined for subsequent reprocessing into products, materials or substances, whether for their original or other purposes. End-of-waste materials which are to be used as fuels or other means to generate energy, which are backfilled or disposed of, or which are to be used in any operation that has the same purpose as recovery of waste other than recycling, should not be counted towards the attainment of the recycling targets. (DIRECTIVE (EU) 2018/852 Packaging and packaging waste)

6.2.3 Sustainability criteria to fulfil the agreed strategic goals

The sustainability criteria would be set out in the agreement text and logically reflect the strategic goals of the new agreement. They could provide a pathway to the development of tools to address all life cycle phases of plastic products. International sustainability criteria should aim to foster the following high-level outcomes:

1. Elimination of problematic and hazardous applications,
2. Transmission of information about material and chemical characteristics of product across value chain
3. High rates of waste collection,
4. Near-100% rates of recycling for collected wastes,
5. Creation of preconditions for functioning markets for secondary raw materials and
6. Sound management of wastes and export of wastes, where necessary, in compliance with the 2019 Basel Convention amendments.

Table 12 provides examples from existing global instruments to illustrate the use of performance outcomes as they may relate to the four strategic goals of a new agreement.

Table 12: Examples of sustainability objectives from existing instruments.

STRATEGIC GOAL 1 – ELIMINATION OF PROBLEMATIC AND AVOIDABLE PLASTIC PRODUCTS

Examples illustrate support for objectives that aim to reduce to a minimum those products manufactured or placed on the market that do not contribute to a circular plastics value chain

Strategy of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020	– To have phased out, by 1 January 2017, the discharge of offshore chemicals that are, or which contain substances, identified as candidates for substitution, except for those chemicals where, despite considerable efforts, it can be demonstrated that this is not feasible due to technical or safety reasons (OSPAR Recommendation 2006/3).
DIRECTIVE 2000/53/EC on end-of life vehicles	– Vehicles may be put on the market only if they are reusable and/or recyclable to a minimum of 85% by mass and are reusable and/or recoverable to a minimum of 95% by mass.
IMO, Briefing: 06 13/04/ 2018*	– Carbon intensity of international shipping to decline with reductions in CO2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008.

STRATEGIC GOAL 2 – SUSTAINABLE MANAGEMENT OF ESSENTIAL PRODUCTS

Examples illustrate support for objectives that aim towards improving design for recyclability and ensuring traceability

IMO, MARPOL Annex VI, Prevention of Air Pollution from Ships	<p>Energy Efficiency Design Index (EEDI):</p> <ul style="list-style-type: none"> – to reduce the amount of CO2 emissions from international shipping. – non-prescriptive, performance-based mechanism – choice of technologies for a specific ship design left to industry – provides specific figure for individual ship design (grams of CO2 per ship's capacity-mile – a smaller EEDI indicates more energy efficient ship design) – calculated by formula based on the technical design parameters for a given ships** – embraces 72% of emissions from new ships – Imposes increasing limits on the index to drive more energy efficient ship technologies over time.***
EU Circular Economy Action Plan. The European Green Deal (doi:10.2775/458852)	<ul style="list-style-type: none"> – Products placed on EU market will be designed to last longer, to be easier to repair and upgrade, recycle and reuse. – Driving new business models will boost sorting, reuse and recycling of textiles, and allow consumers to choose sustainable textiles. Ecodesign will apply to a broader range of products: clothes will be made to last longer. – Measures will be introduced for waste prevention and reduction, increasing recycled content, minimising waste exports outside EU. An EU model for separate collection and labelling of products will be launched.
DIRECTIVE 2000/53/EC on end-of life vehicles	<ul style="list-style-type: none"> – Aims at the prevention of waste from vehicles and at the reuse, recycling and other forms of recovery of end-of life vehicles and their components – Aims to reduce the disposal of waste – Aims to improve the environmental performance of all economic operators in the life cycle of vehicles, particularly those directly involved in of end-of life treatment. – Requirements for dismantling, reuse and recycling of end-of life vehicles and their components should be integrated in the design and production of new vehicles.

MSC Fisheries Standard v2.01, 2018	<ul style="list-style-type: none"> - The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing - The stock is at a level which has a low probability of serious ecosystem impacts. - Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe. - Serious or irreversible harm to "structure or function" means changes caused by the Unit of Assessment (UoA) that fundamentally alter the capacity of the habitat or ecosystem to maintain its structure and function. - For the habitat component, this is the reduction in habitat structure, biological diversity, abundance and function such that the habitat would be unable to recover to at least 80% of its unimpacted structure, biological diversity and function within 5–20 years, if fishing were to cease entirely. - For the ecosystem component, this is the reduction of key features most crucial to maintaining the integrity of its structure and functions and ensuring that ecosystem resilience and productivity is not adversely impacted. This includes, but is not limited to, permanent changes in the biological diversity of the ecological community and the ecosystem's capacity to deliver ecosystem services.
Operation Clean Sweep	<ul style="list-style-type: none"> - Aims for zero pellet loss - Resin pellets should be contained, reclaimed and/or disposed of properly

STRATEGIC GOAL 3 – SUSTAINABLE WASTE MANAGEMENT

Examples illustrate support for objectives that aim towards application of best practices, adequate processes and infrastructure to enable a circular plastics value chain

Basel Convention	<ul style="list-style-type: none"> - "Environmentally sound management of hazardous wastes or other wastes" means taking all practicable steps to ensure that hazardous wastes or 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. (Article 1. 8) - Each Party shall take the appropriate measures to: <ul style="list-style-type: none"> (a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects; b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal; (d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes and is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement (Article 4.2.).
General objectives of waste policy, Finland****	<ul style="list-style-type: none"> - The purpose of the Waste Act is to support sustainable development by promoting the rational use of natural resources and preventing and combating the hazard and harm to health and the environment arising from wastes. In general, it requires the recovery of waste if this is technically and economically feasible, primarily in the form of material and secondarily as energy. - Preventing the generation of waste through improved material efficiency - More efficient recycling - Promoting the management of hazardous substances from the waste point of view - Reducing the harmful climatic impacts of waste management - Reducing the health and environmental impacts of waste management - Putting trans-frontier waste shipments on a safe and well-managed basis

STRATEGIC GOAL 4 – CHEMICAL HAZARD REDUCTION

Examples illustrate support for objectives that aim towards elimination of harm to human health and environment from chemicals used in the manufacture, recovery, recycling, reclamation, direct reuse or alternative uses of plastic products, and enabling the tracking of legacy chemicals.

Stockholm Convention	<ul style="list-style-type: none">– Protect human health and the environment by taking the necessary measures to minimize or prevent releases (Article 3.2.b.II).– In order to ensure that stockpiles consisting of or containing chemicals listed either in Annex A or Annex B and wastes, including products and articles upon becoming wastes, ..., are managed in a manner protective of human health and the environment 6.1(d).– Each Party shall ... take appropriate measures so that such wastes, including products and articles upon becoming wastes, are:<ul style="list-style-type: none">(i) Handled, collected, transported and stored in an environmentally sound manner;(ii) Disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed so that they do not exhibit the characteristics of persistent organic pollutants ...;(iii) Not permitted to be subjected to disposal operations that may lead to recovery, recycling, reclamation, direct reuse or alternative uses of persistent organic pollutants; and(iv) Not transported across international boundaries without taking into account relevant international rules, standards and guidelines; (Article 6.1)– The Conference of the Parties shall cooperate closely with the appropriate bodies of the Basel Convention ...I to, inter alia:<ul style="list-style-type: none">(a) Establish levels of destruction and irreversible transformation necessary to ensure that the characteristics of persistent organic pollutants as specified in paragraph 1 of Annex D are not exhibited;(b) Determine what they consider to be the methods that constitute environmentally sound disposal referred to above; and(c) Work to establish, as appropriate, the concentration levels of the chemicals listed in Annexes A, B and C in order to define the low persistent organic pollutant content referred to in paragraph 1 (d) (ii). (Article 2.)
Background Document on CEMP assessment criteria for the QSR 2010, OSPAR Commission	<ul style="list-style-type: none">– GREEN – Concentrations of contaminants are at levels where it can be assumed that little or no risks are posed to the environment and its living resource at the population or community level. No significant risk of adverse effects to the environment, or to human health.– BLUE – Concentrations are close to background or zero, i.e. the ultimate aim of the OSPAR Strategy for Hazardous Substances has been achieved.
DIRECTIVE 2000/53/EC on end-of life vehicles	<ul style="list-style-type: none">– Hazardous materials and components shall be removed and segregated in a selective way so as not to contaminate subsequent shredder waste from end-of life vehicles (more details provided in Annex I (3)).

Notes:

* Available at: <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/06GHGinitialstrategy.aspx>

** <https://www.marpol-annex-vi.com/eedi-seemp/>

***IMO, 2016. Module 2 - Ship Energy Efficiency Regulations and Related Guidelines. Available at:

<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Air%20pollution/M2%20EE%20regulations%20and%20guidelines%20final.pdf>

**** Available at: https://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/finland/WASTE.pdf

It is important that the expected outcomes of the sustainability criteria support achievement of the strategic goals. These, in turn, would guide national measures, targets, indicators and reporting (see Section 6.2.7). The international sustainability criteria for plastics and the NPMPs are given effect through the development of national plastics measure. These measures are:

- Develop national plastics sustainability standards to fulfill international criteria for plastic products sustainability.
- Integrate the national plastics sustainability standards within regulations to eliminate problematic plastics that can be avoided.

- Integrate the national plastics sustainability standards within market-based instruments to support a sustainable market for plastic products, such as by increasing reusability, repairability and recyclability of products and support financial mechanisms to fund waste management services.

6.3 National plastics sustainability standards

International sustainability criteria for plastics and their additives can be given effect at the national level through the development of national standards that fulfill the international objectives and criteria. States have flexibility in designing their national plastics sustainability standards to reflect the prevailing legal, social and geographical conditions, including other MEAs they may be party to. This hierarchy of objectives, criteria and criteria could, in the future, lead to the development of international indicators which, in turn, can be used to determine national indicators.

National plastics sustainability standards can be integrated into national legal and policy instruments to suit the national circumstances. These can include regulations to minimise products that do not meet the standards, or incentivise design change through market-based instruments to promote new the development of new products that meet the national design standards.

To develop product design standards, a technical and economic advisory committee could be established as a subsidiary body to the new global agreement. As for any standard-setting organisation, this committee should consider the following when developing product design standards:

- define the scope, justification of the need for the standard, clear social, environmental and economic outcomes, assessment of the risks,
- level of performance expected and baselines (where appropriate)
- economic feasibility
- review and revision process – assess outcomes as well as relevance and effectiveness
- transition periods
- exceptions and exemptions
- resolution process
- assistance for developing countries.²⁷

Table 13 provides a high-level overview of some of the regulatory and market-based instruments in use in various countries, including strengths and weaknesses to consider when designing regulatory interventions and market-based instruments. The list is not exhaustive and examples exist of implementation that vary from what is provided in this summary.

27. Adapted from Social and Environmental Standards ISEAL Code of Good Practice, v6.0, 2014

Table 13: Regulatory and market-based instruments for consideration and their strengths and weaknesses.

Policy measure	Type of fund	Strengths	Weaknesses
Voluntary EPR (industry initiated)	Industry or government	Lower government administration. Schemes may be certified by government. May require cooperation between government and industry to set targets.	Transparency to ensure inflated waste management costs are not transferred to consumers. Opportunity for free-riders. May reduce waste-picker income.
Co-regulatory EPR	Industry or government	Medium government administration. Cooperation between government and industry to set targets.	Opportunity for free-riders. May reduce waste-picker income.
Mandatory EPR	Industry or government	High government administration. Third-party auditing. Certification of waste services.	Open tender for waste services to prevent monopolies and price increases. Opportunity for free-riders. May reduce waste-picker income.
Advanced recycling fee, licensing fees	Industry or government	Lower government administration.	May not incentivise design for recycling. May reduce waste-picker income.
Fixed taxes (volume or weight placed on market)	Government	Medium government administration.	May not incentivise design for recycling. May reduce waste-picker income.
Differential taxes	Government	High government administration to determine tax rates. Requires transparency on waste management costs.	Can incentivise design for recycling. May be combined with exemptions for low producers.
Deposit return scheme	Government	Consumer provides sorting and first-leg collection	New infrastructure and collection services required. Opportunity for free-riders.
Pay-as-you-throw (pre-paid garbage bags)	Government	Incentive to reduce waste generation and sort recyclables. Can be implemented where systems not in place to collect municipal rates.	Preferable to combine with separate collection of wet waste and recyclables to reduce volume in pre-paid garbage bags.
Landfill levies	Government	Incentive to reduce, repair, reuse, repurpose. Can apply higher rate to disposal of recyclables.	Requires infrastructure (weighing stations) and sorting. May increase illegal dumping.
Environmental levies	Government	Low government administration.	Funds may not be allocated to waste management only.
Fines	Government	High enforcement.	Fines often not sufficient to deter dumping.

6.3.1 Domestic regulatory measures to manage plastics sustainably

National regulatory measures are essential to achieving environmentally sound management of plastics, not only as waste, but also across the value chain of plastic products to implement international sustainability criteria. Environmentally sound management of plastics can be greatly enhanced by managing the products placed on domestic markets based on the following objectives:

1. Eliminating avoidable and problematic products and chemicals,
2. Increasing supply and quality of recyclable material for end-markets, and
3. Increasing demand (end-markets) for recycled materials.

To meet those sustainability criteria for plastic products formulated pursuant to a new international agreement, countries would regulate the products placed on their domestic markets with the aim of facilitating sustainable management of the product at the end of its intended life.

Elimination of avoidable and problematic products and chemicals

Domestic regulations can stimulate the use of systems that reuse products and promote the reparability of products. Where products are considered problematic within the domestic context, e.g. because they are not suited to reuse or reparability systems, a ban may be considered as a suitable way to implement sustainability criteria.

Domestic regulations can also reduce the use of hazardous substances associated with the production, use and recycling of plastic products. For example, sustainability criteria can provide a basis for assessing the reintroduction to the market of regulated substances through recycling processes.

Recyclability

Efforts are underway in many countries to increase the recycling rate of plastic products, particularly those that are not made of PET. A number of factors influence the recycling rate, including those that enhance the supply of quality recyclable material and the demand for such material. Regulations such as landfill taxes and bans on recyclable materials being disposed of in landfill or incinerated can ensure such materials are not lost to the economy. Up-take of these materials can be facilitated through regulations for minimum recycled content and procurement policies to sustain demand. See tables 11 and 12 for further examples of policy and regulatory options to support improved recycling rates.

Where a domestic market is not yet available for particular recycling processes or materials, products that meet the preferred design criteria can be more easily disassembled, sorted and traded. Thus, the transboundary movement of plastic waste as per the Basel Convention can be complemented.

6.3.2 Domestic market-based instruments to influence industry and consumers

Management and financing of solid waste management is predominantly the responsibility of local government. A lack of funding in many regions contributes to

an estimated 2 billion people globally not having access to adequate waste collection services (Wilson et al., 2015). International financial support alone cannot provide the necessary improvements to waste management that is required to 'catch up' to forecast increase in production rates of plastics.

A significant portion of finance for waste management therefore needs to come from domestic sources, coupled with strategies to reduce the volumes of plastic waste generated. The principles of polluter pays and EPR are instrumental in reducing the financial burden of the public sector in managing plastic wastes.

Market-based instruments can be efficiently utilised by governments to promote sustainable plastic management, incentivise residual waste minimisation, and to assist in subsidising the costs of end-of-life treatment of plastic wastes. The development and implementation of domestic market-based instruments relevant to the management of plastic products and residual wastes across the life cycle of plastics is a commitment that countries might undertake when becoming a Party to the new agreement.

It is for governments to determine which market-based instruments (MBIs) are best suited to their socio-economic context and how these are best designed. There are no international standards for MBIs that address sustainable management of plastics. However, national governments could be guided by international criteria and national plastics sustainability standards for sustainable management of plastic products when formulating their own domestic MBIs. International sustainability criteria can be integrated into national economic policies as countries consider appropriate within their domestic context.

Value chain entry-points for economic and regulatory policies could be mapped for each country but could include extended producer responsibility schemes that incorporate the producer and the consumer, as well as incentives to engage novel methods of transporting waste that go beyond traditional collection systems. The intention of such economic and regulatory policies would be to subsidise waste management processes where necessary to ensure long-term viability of the provision of waste management services and to stabilize end-markets and recycling industries.

By incorporating international sustainability criteria, governments can aim to allow products on the domestic market that fall within their 'preferred' category. This, in turn, will stimulate investment in end-markets, increase collection rates and reduce contamination through simplified sorting procedures.

A number of instruments are in use to varying degrees in different countries and can be applied at different entry points within the national value chain. Examples of such incentives can be found around the world. Some examples include: importers and manufacturers; distributors; retailers; and consumers.

Low-technology options should also be considered. In lower-income communities, services for collection, sorting and waste transport may not be available provided by the government or the private sector. Incentives to collect and return plastic waste will need to be suited to the socio-economic context. Many examples exist around the world that can be scaled and supported by government, including:

- India – school children are encouraged to bring plastic waste to school to pay for school fees (initially no school fees were imposed, but schools announced

children must bring plastic or pay cash)

- Indonesia – bus fares are paid with plastic waste
- Technology applications – participants are placed in direct contact with recycling facilities and can advertise collected material, which is then exchanged for cash

Economic interventions to drive the recycling rates for plastic wastes include (OECD, 2018a):

1. Mobilise investment for developing collection, sorting and processing systems, particularly in low-income contexts.
2. Use financial market mechanisms to increase the resilience of the market to fluctuations in prices (e.g. futures markets or centrally managed risk funds)
3. Support development of domestic reprocessing capacity to reduce reliance on global markets.
4. Use taxes or trading mechanisms to internalise the externalities associated with primary plastics. This will support the price of recycled plastics.
5. Tax additives that cause detrimental effects on recycled plastics (including degradability enhancers)
6. Incentivise recycling over energy from waste by introducing a tax to reflect the relative environmental burden/benefit.
7. Introduce tax incentives to encourage use of recycled plastics (e.g. VAT exemptions).
8. Charge waste producers for collection and disposal of non-recyclable waste.

How funds are collected pursuant to MBIs and the value charged for such funds is at the discretion of governments. These decisions should be based on robust socio-economic studies conducted within the context of each country to determine which sectors may benefit or be disadvantaged by such policy interventions. Consideration of vulnerable communities, particularly waste-pickers, is essential to ensure appropriate integration within sustainable waste management strategies. In most scenarios, waste management services need to be certified and the declared costs of services need to be transparent in order to prevent distortion of costs to the producer and consumer.

Figure 5 provides a high-level overview of the primary components of the plastics value chain associated with most market-based instruments, as well as examples of possible entry points for such instruments within the value chain of plastics.

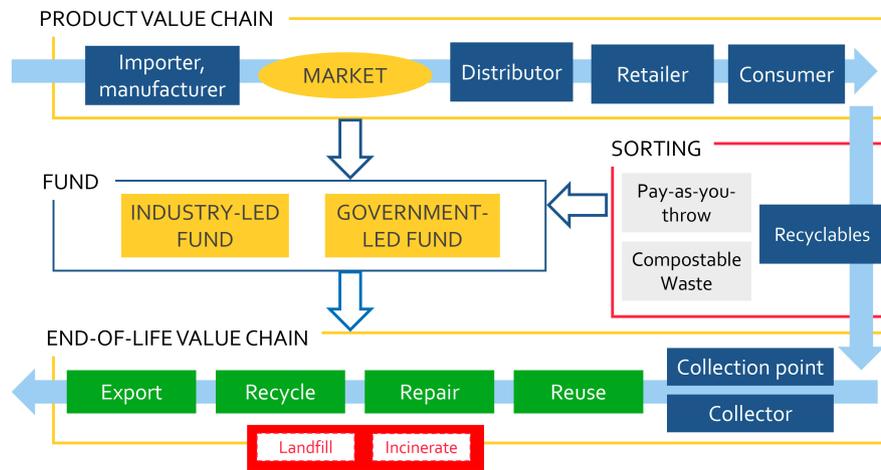


Figure 5: Illustration of the plastics value chain and entry points for market-based instruments shown in blue and green boxes.

Taxes, benefits and charges

Taxes, benefits and charges can stimulate desirable responses from industry and consumers. A product that is easily reused and repaired, or is more easily collected, sorted and recycled within the domestic context could gain easier access to the market, whereas those that are not easily collected, sorted and recycled may incur greater market restrictions, such as higher taxes. Those features that render a product unrecyclable within the domestic context may also be placed under a take-back scheme to cover the costs of sorting and exporting the resulting waste components.

Funds may be collected at the national level in the form of taxes, advanced recycling fees, deposits and levies. These funds can be administered by industry or government, but funds collected should be allocated to the improvement and subsidising of waste management services. Auditing of funds, certification of waste service providers and transparency of the costs of providing waste services must all be considered in the design of MBLs, where appropriate.

Extended Producer Responsibility

EPR schemes are one example of economic interventions available for consideration at the national level. Such schemes incentivise industry to change the design of products, particularly when based on the desirable characteristics of products (Kaffine & O'Reilly, 2015).

Mandatory EPR schemes may not be the preferred option for some countries or for some products. A voluntary mechanism to engage with industry may be considered more appropriate. Such mechanisms may also be required as a temporary measure to pilot industry-managed schemes or while mandatory and other requirements for implementation are developed. Voluntary measures can be migrated to co-

regulatory or mandatory programmes based on government and industry requirements.

An example may be found in South Africa where, in place of legislating EPR schemes, the government called for Industry Waste Management Plans. In response, Packaging SA and a number of producer responsibility organisations (PROs) co-operated in the development of their individual industry-led waste management plans and submitted these together as a Federation of Plans to the South African government. The Industry Waste Management Plan for PET bottles requires collaboration between multiple stakeholders, including brand owners, retailers PET converters and local councils. The plan aims to advance the circular economy, reduce the use of virgin materials and integrate the formal and informal sectors. The Industry Waste Management Plans have been submitted to government for review, including a Shared Cost plan.²⁸

Options for national measures towards a circular plastics value chain

The economic viability of most business models relies on the adequate supply of quality materials and a constant demand for these materials. Economic viability also varies with local circumstances. Therefore, optimal costing and funding models will vary. For example, funding models to support product end-of-life processes include:

- **Polluter Pays** – manufacturer, importer fee (differential);
- **User Pays** – pre-paid garbage bags (cost transferred to user);
- **Licensing fees** – producer pays for end-of-life treatment and places certifying label on product to inform consumer;
- **Deposit** – cost transferred to user, but refunded on return of item; and
- **Visitor, hospitality fees** (tourist arrival levy, service fee on accommodation, etc.).

Table 14 provides examples of national measures that could integrate international sustainability criteria, as well as national plastics sustainability standards. These can target specific outcomes that aim to minimise high-risk products and increase the supply and demand of recyclable plastics, thereby improving the economic viability of recycling operations.

28. <https://www.rpc-astropak.com/minimising-our-impact/>

Table 14: Approaches for national measures towards a circular plastics value chain.

SUSTAINABILITY OUTCOME - SUPPLY:		
Improve the quality of materials recovered for recycling in order to improve the quality of recycled material.		
Elimination and reduction	Remove problematic products from the market.	Ban problematic products. Encourage design for reusability, repairability, elimination of hazardous substances and leakage (incl. microplastics) through differential taxes/fees.
Improve sorting at facilities	Ease dismantling.	Incentives to design for components separation to assist in recycling processes.
	Ease identification of different polymers.	Marking of polymers to assist in separation for recycling processes.
	Reduce delays at sorting facilities due to entanglement.	Restrict lightweight and single use products. Provide alternate collection systems.
Enhance ease of recycling	Reduce number of polymers in separable plastic components.	Incentives for design (e.g. differential taxes/fees). Inclusion of design criteria in EPR schemes (mandatory, industry-led).
	Increases end-markets by producing recycled material in readily usable colours.	Use of colours of plastics and inks printed directly onto components.
	Improve ease of label separation, improve options for recycling labels, reduce toxicity.	Incentivise sustainable use of glues, printing inks.
	Use of non-recyclable materials. Reduce disposal costs by recycling facilities.	Incentives for design (e.g. differential taxes). Inclusion in EPR schemes for collection of non-recyclable material (mandatory, industry-led).
SUSTAINABILITY OUTCOME - DEMAND:		
Establish secure end-markets independent of virgin feedstocks.		
Increase uptake of recycled content	Procurement policies (mandatory or voluntary)	Inclusion of recycled content in products purchased. E.g. Government, universities, public events, Sectors (e.g. tourism, agriculture).
	Policies (mandatory or voluntary) for inclusion of recycled content in products manufactured	MoU with industry (targets, minimum quality standards, reporting). Industry-led commitments.
Improve consumer choice	Preference for recycled content, recyclability of product	Labelling (education).

The above measures can be further supported by additional actions that may not specifically target the quality of recyclable materials available or the uptake thereof. Table 15 highlights some additional strategies that can increase the quantity of recyclable materials returned to the economy and should be included in an integrated plastics management plan at the national level.

Table 15: National measures to support a circular plastics value chain.

SUSTAINABILITY OUTCOMES:

- Increase quantity and proportion of recyclable materials returned to the economy.
- Establish a holistic integrated management strategy to support measures to increase supply of and demand for recyclable plastics

Reduce contamination	By non-plastics: Separation at source of organic and other wastes.	Mandatory separation./Mandatory separate collection for organic and other wastes by councils.
	By other plastics: Separation at source of recyclable and non-recyclable plastics.	Mandatory separation./Mandatory separate collection of recyclable and non-recyclable plastics by councils.
Prevent loss of recyclables to economy	Disincentivise linear disposal models.	Landfill levies./Ban on sending recyclables to landfill or incineration.
	Improve correct disposal practices for product.	Labelling (education).
	Reduce the need for final disposal.	Increase reusability of products.
Improve collection rates	EPR Schemes.	Hold producers physically and/or financially responsible for collection.
	Return schemes.	Incentivise consumers to return containers, electronics, bulky items, etc.
Reduce transport costs	EPR schemes.	Hold producer completely/partially physically and/or financially responsible for collection.
	Advanced recycling fees.	Producer contributes to scheme for cost of collection (without physically responsibility).
	Reverse logistics.	Through deposit schemes or supply chain processes.
	Backloading.	Incentivise transport sector to participate in waste transport, particularly for remote/rural areas.

Labelling

In addition to the optional measures listed in tables 14 & 15, labelling can assist in promoting the use of recycled material in the manufacturing phase of the plastics life cycle and in the choice of purchases in the consumer phase. The types of labelling that may be considered within national standards and codes of practice include:

1. Ecolabels – links the product to the state of the resource and/or its related management regime, e.g. private standards and certification in fisheries and aquaculture.²⁹
2. Product content labels – provide advice on how a product is made up, such as the content, process or country of origin, e.g. regulatory compliance with design standards; energy usage; food ingredients.
3. Product usage labels – e.g. product safety.
4. Product disposal labels – educate the consumer on how to dismantle and/or dispose of the product and its components, e.g. How2Recycle.

The development of labelling standards can be considered at the international level by a subsidiary body or an expert group for inclusion within sustainability criteria or

29. UN FAO, 2011. Available at: <http://www.fao.org/3/i1948e/i1948e04.pdf>

standards. Suggestions provided in the OECD report on policy interventions that drive recycling rates for plastic waste (OECD, 2018a) can offer a basis for the development of National Plastics Management Plans, as well as regulatory and market-based instruments. These and further examples of policy interventions to manage domestic markets are provided in Annexes 2 and 3.

6.3.3 Achieving the four strategic goals through national implementation of sustainability criteria

The performance outcomes of sustainability criteria and their related technical design standards are fulfilled through adoption and implementation at the national level of national plastics sustainability standards. These may be integrated into regulatory, co-regulatory and voluntary mechanisms. Upstream design of products placed on the domestic market can be incentivised with the aim of reducing the number of products that do not meet the required characteristics, production methods or performance standards.

Strategic Goal 1 – Elimination of problematic and avoidable plastic products

Plastic products that fall into an 'undesirable product design' category will alert government authorities to assess the ability of domestic facilities to collect, sort and manage the waste component of the product at the end of its useful life. Where governments determine a product is not compatible with domestic processes for reuse, repair and recycling, international sustainability criteria and national plastics sustainability standards can support the decision to deny access to domestic markets through bans or differential taxes that strongly discourage consumption of the product, thereby working towards elimination of such products from the waste stream.

Strategic Goal 2 – Sustainable management of essential plastics, including resource efficiency and circular material flows

Products that fall into a 'preferred product design' category can be more readily allowed access to domestic markets, whether imported or produced locally. Such categorisation would indicate the product is more readily reusable, repairable, less likely to abrade or leak microplastics, etc. Products in this category would also be supported by domestic collection, sorting and recycling facilities. The uptake of secondary raw materials is facilitated by improved quality and performance of the recycled materials, reducing the need for virgin materials. This is also facilitated through Strategic Goals 1 and 4 of the new global agreement by removing products from the market that contaminate recycling processes with hazardous substances or non-recyclable materials.

Strategic Goal 3 – Sustainable waste management

Sustainable waste management requires efficient infrastructure and well-functioning institutions and include many steps e.g. collecting, sorting, reuse, repurposing and recycling processes. The cost burden has predominantly been left to local government authorities. By integrating international sustainability criteria into

domestic regulatory and policy instruments, governments can work towards ensuring products placed on their markets and entering waste streams have sustainable end-markets. Those products that have features rendering them difficult to collect, sort and manage sustainably within the waste stream are 1) prevented from entering the domestic market, or 2) subsidised by producers for end-of-life processes.

Strategic Goal 4 – Chemical hazard reduction

Global and regional instruments exist that can play a key role in reducing the risks to human and environmental health from chemicals. Not all additives and related chemicals used in the extraction, production and end-of-life treatment of plastics are addressed through existing global frameworks. A new global agreement for plastics would need to complement existing international and regional regulatory and policy instruments, including developments under the Stockholm Convention and SAICM. The use of chemicals and additives of concern must be integrated into the determination of a product's category. This may be based on white lists as for the London Protocol.³⁰ The intention of such categorisations would be to prevent the use of chemicals and additives of concern across the life cycle of plastics, but also prevent the re-entry of controlled substances through recycling processes or exposure through reuse or repurposing.

Further illustration of measures to implement sustainability criteria for management of plastic products are set out in the following subsections of Section 6, on national regulatory measures.

6.4 Summary of operational implementation mechanisms

Parties to the agreement might commit to develop:

- **National Plastics Management Plans (NPMPs)** that aim to address the main drivers of plastic pollution by helping countries to design a holistic and comprehensive strategy to manage plastics throughout the life cycle. The plans promote a bottom-up approach that provides flexibility at the national level for setting targets, identifying measures and mobilizing resources, while ensuring progression over time. NPMPs are submitted to the agreement and periodically updated.
- **International Sustainability Criteria**
- **National Plastics Sustainability Standards** that can be operationalized through the regulation of domestic markets and deployment of market-based instruments. These may be elaborated in NPMPs.

Figure 6 illustrates the interlinkages between the global commitments, national objectives and the global objective of a new global plastics agreement. For example, in addition to regulating the products placed on the market (based on the product's recyclability within the national context), modular fees can also be based on the likelihood of the secondary plastics being used within the domestic market. This considers local recycling capacity and end-markets, which may encourage

30. White lists provide the substances that are explicitly allowed. All other substances not listed are prohibited.

investment in recycling facilities (EASAC, 2020) if supported by a robust regulatory framework.

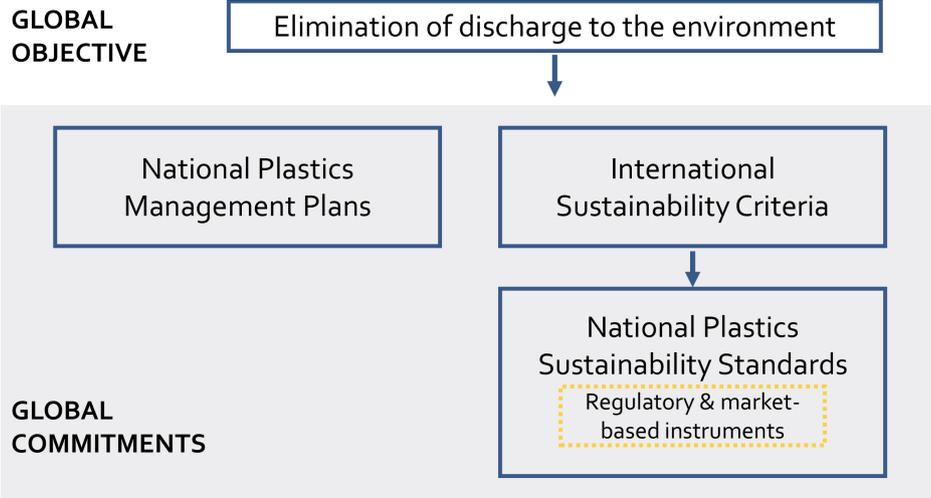


Figure 6: Linkages between implementation mechanisms, highlighting core global commitments.



800 species are affected by plastic pollution via ingestion or entanglement.

Photo: Unsplash.com

7. Science and knowledge building

The need for scientific information to assess the extent of plastic pollution, understand its effects and identify solutions has been acknowledged (UNEP, 2017). In 2019, UNEA-4 adopted Resolution 4/6 that stresses the urgent need to strengthen the science-policy interface at all levels and to do more to support science-based approaches, including enhance global cooperation, coordination and governance on marine plastic litter. Broader discussions on enhancing the science-policy interface for chemicals and waste are currently taking place in the Intersessional Process considering the Strategic Approach and the sound management of chemicals waste beyond 2020.

7.1 Science-policy interface

A strong science-policy interface should yield authoritative outputs through a credible, relevant, legitimate, transparent, iterative and inclusive process (Kohler and Templeton, 2020). Two principal forms of science-policy interfaces can be distinguished depending whether it functions in a subsidiary role or independently in relation to the governing body of the agreement. The principles, rules and procedures of a subsidiary body are generally outlined in the agreement and can be specified by subsequent decisions. Similarly, the relationship to relevant existing scientific bodies can be defined in the agreement.

7.1.1 Examples of science-policy interfaces in MEAs

MEAs rely on a science-policy interface that has been designed to engage scientists and policymakers in dialogue to ensure evidence-based decision-making, as exemplified in Table 16. While the Minamata Convention and Montreal Protocol are both lifecycle agreements, they have taken different approaches for scientific support: three assessment panels of the Montreal Protocol (Scientific, Environmental, and Technical) focus on the status, effects and solutions to protect the ozone layer, whereas, the Minamata Convention has not outlined a scientific

mechanism, but relies on a periodic effectiveness evaluation. The CBD and UNFCCC are supported by both subsidiary and independent scientific bodies. Useful examples from relevant regional agreements include the Convention on Long-Range Transboundary Air pollution (LRTAP) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).

Table 16: Examples of subsidiary scientific bodies in MEAs.

Agreement	Subsidiary scientific bodies	Timebound expert groups	External assessments / bodies
Montreal Protocol	<p>The agreement has three panels that carry out an assessment at least every 4 years:</p> <ol style="list-style-type: none"> 1) Scientific Assessment Panel assesses the status of the depletion of the ozone layer, 2) Environmental Effects Assessment Panel assesses effects of ozone layer depletion, and 3) Technology and Economic Assessment Panel provides technical information on alternative technologies. 	n/a	n/a
Minamata Convention	<p>The Effectiveness Evaluation is expected to include arrangements for producing comparable monitoring data and to be conducted based on available scientific, environmental, technical, financial and economic information.</p>	<p>The Technical Experts Group on Emissions was established by the Conference of Plenipotentiaries on the Minamata Convention that adopted the Convention in Kumamoto, Japan, in 2013, to prepare a set of guidelines for adoption at COP-1, including, on BAT/BEP and preparation of inventories on emissions.</p>	<p>The Global Mercury Assessments provides information on sources, pathways, and transport of mercury, as well as mercury levels in biota and humans. Four editions have been prepared by request of UNEP's governing body. The Minamata Convention COP has made no formal linkage to the global mercury assessment</p>
UNECE Water Convention	<p>The convention has two subsidiary bodies:</p> <ol style="list-style-type: none"> 1) Working group on Integrated Water Resources Management provides guidance for management of transboundary water resources, and 2) Working group on Monitoring and Assessment prepares periodic assessments of the status of transboundary waters and international lakes. 	n/a	n/a
CBD	<p>The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) provides the COP with advice relating to implementation and responds to questions presented by the COP. Parties and relevant organizations can submit proposals on emerging issues for consideration of the body that can elaborate a technical and scientific analysis and provide options for actions for the COP.</p>	<p>Ad Hoc Technical Expert Groups (AHTEG) are established on a needs basis to prepare specific assessments mandated by the COP. The assessments are prepared by a maximum of 15 experts nominated by parties and a limited number of experts from appropriate organizations.</p>	<p>The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) produces thematic reports on topics of interest and provides global overviews of biodiversity and ecosystem services, with its first global assessment released in 2019.</p>

UNFCCC	The Subsidiary Body for Scientific and Technological Advice (SBSTA) advises the COP on matters relating to science, technology and methodology. Key areas of work for include the impacts, vulnerability and adaptation to climate change, promoting the development and transfer of environmentally-sound technologies and conducting technical work to improve the guidelines for preparing inventories	n/a	The Intergovernmental Panel on Climate Change (IPCC) has three working groups: 1) The Physical Science Basis, 2) Impacts Adaptation, and Vulnerability, and 3) Mitigation of climate change. IPCC Task Force on Greenhouse Gas Inventories prepares methodologies for estimating and reporting emissions.
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7.1.2 Possible functions of a science-policy interface

To discuss the options for scientific support it is important to first clarify and understand prevalent needs for scientific and technical advice. These have been discussed in previous sections, which relate to: 1) assessment (prevalence of plastics in the environment, effects of plastic pollution on the environment, and socio-economic impacts), and 2) management (supporting the development of relevant policy tools and technologies needed to manage the life cycle of plastics). An important cross-cutting function could be participation in the preparation of the iterative global review (see section 8.3.2). Table 17 aims to illustrate possible functions for science-policy interface.

Table 17: Possible functions for science and knowledge building within the agreement.

Workstream	Scientific and technical activities
Environmental monitoring Strengthen the knowledge on the prevalence of plastic pollution and microplastics in the environment	<ul style="list-style-type: none"> - Compile national and regional monitoring data to increase the knowledge about the global status - Development of indicators for measuring progress, including standardization of methodologies for data collection - Identification of new and emerging problems based on the overall global status - Identification for hazardous chemical additives for possible restrictions, focusing on chemical groups
Scientific Assessment Strengthen the knowledge on the effects from plastic pollution and microplastics in the environment	<ul style="list-style-type: none"> - Collect and synthesize data and evidence from peer reviewed scientific publications, government reports and grey literature - Assessment of impacts of plastic pollution on human health and the environment - Assessment of impacts plastic pollution on livelihoods (agriculture, fisheries and aquaculture), tourism, traditional values, and cultural practices - Identification of new and emerging issues based on novel findings
Technical and Economic Management Support the development of technical and technological response guidance	<ul style="list-style-type: none"> - Support development of international sustainability criteria for plastic products - Develop guidelines and best practices (BAT/BEP) for other needs, including reducing loss of plastic pellets, labelling and certification schemes, end-of-life management of plastics, minimizing microplastic releases, increasing transparency and traceability chemical additives throughout the life cycle, etc.

7.1.3 Possible forms of a science-policy interface

Options for addressing scientific and technical needs of the agreement include a) use of existing scientific bodies, b) establishment of a permanent subsidiary scientific body, and c) development of an independent scientific body. A combination of different options could also be pursued.

The use of existing scientific mechanisms can help to address some needs for scientific and technical advice. The United Nations-sponsored Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) has supported the scientific basis on plastics pollution with several reports, including on sources, fate and effects of microplastics in the ocean, and on monitoring and assessment of plastic litter in the ocean. Opportunities to expand the use of existing mechanisms includes, inter alia, the example of the independent IPBES that could assess the status and effects of plastic pollution on in terrestrial and freshwater ecosystems. It is independent but has secretarial services provided by UNEP. In addition, the International Resource Panel an independent body launched and with secretarial services provided by UNEP, could assess ways to improve resource efficiency across the lifecycle of plastics.

The functions listed above could be delivered through a subsidiary or independent scientific body organized in 2-3 working groups. If the option for a subsidiary scientific body is pursued, the assessment panels of the Montreal Protocol could inspire the way forward. However, given the vast scope of the challenge, the development of a more robust science policy interface – that extends beyond the agreement - might be needed. To this end, the development of an independent science-policy body could be considered, but it could entail significant costs and require dedicating time for negotiations.

7.2 Monitoring

Monitoring is needed to assess the impacts of activities on the ground to understand if the agreement is on track to fulfil its intended goals. The agreement can help to coordinate monitoring efforts, fill in geographical gaps of current efforts, support technical and methodological development, and strengthen data collection capacities at the national and regional levels. In addition, monitoring can benefit from citizen science that can also function as an awareness raising tool.

Currently, there is no common agreed-upon methodology to measure the extent of the plastic pollution crisis (Boucher et al., 2019; GESAMP, 2015). The lack of quantitative baselines, as well as measures taken, prevents effective elimination of plastic leakage. This results from the inadequate development of harmonized protocols and standardization of data to measure trends over time in a consistent way that is conducive to data sharing and aggregation. The harmonization and standardization of global data collection is an area where the agreement could help to make significant progress.

The development of standardized methodologies for data collection will help to ensure verifiability, relevance, and consistency of information. The subsidiary scientific body of the agreement could help in standardizing and harmonizing methodologies building on existing efforts. Existing monitoring schemes, including

those developed under the regional conventions, should be used to the fullest extent. A formal, consistent monitoring program could help to focus on the following components:

1. **Monitoring of plastics in the marine environment**, in line with SDG indicator 14.1.1b (floating, water column, seafloor, and beach litter)
2. **Monitoring of plastics in other environmental compartments**, including freshwater, terrestrial ecosystems, and atmosphere
3. **Biological monitoring of plastics in biota**, including entanglement and ingestion

Monitoring levels of plastics in the marine environment should be aligned with SDG indicator 14.1.1b (plastic debris density) that focuses on floating plastics, water column plastics, seafloor litter and beach litter. SDG reporting is expected to collect data from relevant Regional Seas Programmes, but significant membership gaps exist and variation in methodologies sets limits to these efforts (UNEP, 2019). Furthermore, indicator 14.1.1b is limited to the marine environment and excludes microplastics and socio-economic impacts.

Gradually, expanding monitoring levels of plastics in other environmental compartments, including land, freshwater and atmosphere, will help to portray a more comprehensive picture of the extent of contamination by plastic pollution. Airborne microplastics have been observed in atmospheric fallouts and are present in outdoor and indoor air (Gasperi et al., 2018). In addition, researchers estimate that microplastic contamination on land might be 4-23-fold larger than in the ocean and that agricultural soils alone might store more microplastics than oceanic basins (Horton et al., 2017; Nizzetto, et al., 2016).

This monitoring of levels of plastic pollution in the marine environment could be complemented by biological monitoring of plastics in biota. Existing monitoring strategies include ingestion, entanglement and habitats (GESAMP, 2015). For instance, monitoring plastic ingestion rates in dead northern fulmars, collected during North Sea beach surveys, has been developed by OSPAR (GESAMP, 2015). Utilizing biota for monitoring requires the selection of a suitable species to act as a bio-indicator of plastic contamination.

In the long-run, human bio-monitoring could be introduced to assess microplastic levels and trends in human populations worldwide. The Stockholm Convention has a long tradition of monitoring concentrations of POPs in human milk under the global monitoring plan.

Furthermore, assessing socio-economic impacts of plastic pollution on fisheries and aquaculture sectors, tourism, traditional values, and cultural practices could help to better understand impacts and most efficient response options.

7.3 Research

Research needs to play a central role in the agreement. The agreement could be formulated to request parties to boost research at the national level so that universities and research institutions can develop multidisciplinary research programmes. The development and harmonisation of data collection methodologies will be important, necessitating international cooperation. Set up multi-disciplinary research programmes to serve national and international purposes to understand

the scientific underpinning for combatting plastic pollution. Below is a non-exhaustive list of possible research areas:

- Physical and chemical traits, life cycle, transport, quantity, and accumulation rate of plastics
- Impacts of microplastics on human health and the environment
- Effectiveness of policy measures across the life cycle of plastics
- Environmental and socio-economic impacts, including human health
- Environmentally sound solutions, materials and technologies focusing on degradability, product design, recycling technologies and processes to improve performance etc.

7.4 Summary on science and knowledge building

Incorporating science and knowledge building in the agreement is a crucial part of building a knowledge-driven and responsive agreement. The nexus between scientific and technical advice and decision-making can be reflected in the institutional arrangements of the agreement and/or it can be managed to function in cooperation with external scientific bodies. Areas that would benefit from technical and scientific advice include assessment of the status and effects of plastic pollution, as well as supporting the preparation of necessary technologies and policy tools, including sustainability criteria for plastic products. Taking full advantage of relevant existing scientific mechanisms is important.

Indicators provide information on the state of, or change in, the system that is being measured, thus they help to measure performance and impact. A suite of global indicators and common methodologies would ensure that that measurement of quantities of flows and sources of plastics is constant across countries. Challenges could be encountered in engaging national and regional institutions for collection, analysis and communication of needed data and information. Enabling funding and capacity support are needed to facilitate gathering of data and reporting in low- and middle-income countries.



44% of plastic waste consists of packaging that often ends up in the environment.

Photo: Ritzau/Scanpix.dk

8. Measuring progress

Currently, there does not exist a general overview of efforts taken by governments to combat plastic pollution, as information is scarce and scattered. Reporting requirements and associated protocols are needed to understand progress at the national level, facilitating a global synthesis of ongoing activities and trends.

8.1 Reporting national performance

A reporting scheme will help to collect information from countries and understand the collective performance of parties. Almost all MEAs require Parties to report on their national performance (UNEP, 2007). Reporting formats and intervals vary greatly between international instruments as they are designed to meet different needs. At minimum, the agreement should include an obligation to report and a mandate to negotiate the modalities and procedures for under the agreement. The subsequent negotiations under the agreement need to come up with rules and guidance on what is the subject of reporting and how reporting should be carried out.

The main components of national reporting for the agreement could focus on:

1. Progress towards general commitments and targets, including implementation of international sustainability criteria and NPMPs
2. Inventories of controlled flows (production, consumption, disposal, and trade), and leakage (sources, pathways, and sinks)

It is important to consider designing a comprehensive reporting system, while striving to minimize the reporting burden. Balancing between simplicity and comprehensiveness means essentially choosing to focus on outputs or outcomes in designing the reporting scheme. To this end, main options for reporting include:

1. Simple reporting: One option would be to go for a minimalistic reporting scheme that would consist of output-based binary questions (with yes/no responses) requesting information of products delivered from activities. This

could be coupled with descriptive questions on measures taken. While simple reporting would help to draw global progress maps, it would portray a very limited picture of progress excluding outcomes achieved and impacts on the ground. The limitations of output-based reporting are highlighted by the independent evaluation of SAICM (SAICM, 2019).

2. Results-based reporting: This option would focus on quantitative outcomes with numeric questions. This could be paired with descriptive questions for detailing outcomes achieved. This could include the preparation of national inventories that would help to focus on what is essential to prevent leakage, namely understanding the quantities of plastics across the value-chain from production to disposal. At the national level, statistical agencies and research institutes can play a central role in data collection.

The results-chain framework enables to illustrate different levels for measuring progress (see Figure 7). A simple reporting framework would focus predominantly on measuring outputs, whereas a results-based reporting framework would give greater focus on outcomes. Performance reporting needs to be complemented with a monitoring scheme to measure impacts.

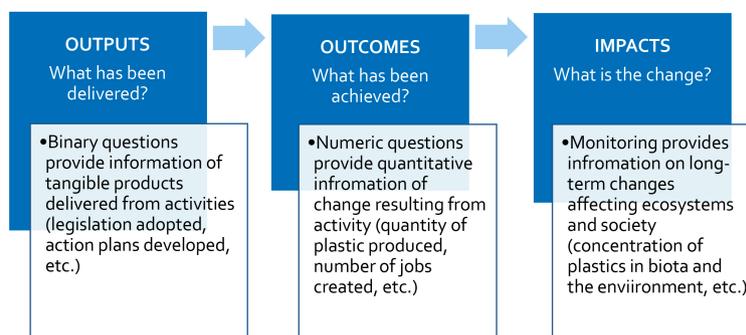


Figure 7: The results framework shows the difference between outputs, outcomes and impacts, helping to design a comprehensive scheme for measuring progress.

The agreement or an annex to it could incorporate basic principles and modes to report, as elaborated below:

- **Comparability** of information is essential for understanding and explaining performance across countries and regions through collection of quantitative and statistical data.
- **Transparency** is important to ensure that reporting data is made publicly available in a meaningful way to help in outreach, including the use of online databases.
- **Completeness** refers to full geographic coverage of implementation, as well as, acknowledgement of all sources of plastic pollution across the value chain.
- **Accuracy and consistency** are needed to reduce uncertainties as far as

practicable relying on use of harmonized and standardized data collection methodologies.

- **Stakeholder engagement** can help to minimize the reporting burden and engage a broad community in data collection, building on existing efforts.

Many MEAs include obligations for inventories that provide essential numeric data needed to track progress, as illustrated in Table 18. In context of plastics, inventories could focus on assessing controlled flows and leakage, as they are closely related to understanding the achievement of the proposed overall objective of the agreement.

Table 18: Examples of inventories under existing MEAs.

	Minamata convention	Paris Agreement	Montreal Protocol
Obligation	Articles 7 and 8 request parties to submit no later than five years after the date of entry into force of the Convention, and maintain thereafter, an inventory of emissions and releases of mercury.	Article 13 requests Parties to report emissions by sources and removals by sinks of greenhouse gases annually. The inventories undergo a technical expert review.	Article 7 requests parties to report annually statistical data on production, imports, exports and destruction of the nine groups of ozone-depleting substances regulated under the Protocol.
Resources	Countries can use the UNEP Mercury Inventory Toolkit (2017) to help establish a national inventory of mercury uses, emissions, and releases.	Inventories must be prepared using good practice methodologies accepted by the IPCC and agreed by the governing body.	An online reporting tool has been developed and the reporting data is displayed online in the Ozone Data Access Center that visualizes real-time trends.

Inventories of controlled flows could include upstream, midstream and downstream processes, including the production of virgin pellets, compliance with international design standards, resin types and volumes in use, elimination of problematic and avoidable plastic products, reduction of chemical hazard, as well as rates of collection, reuse, recycling, landfilling and incineration, amongst others. The minimum design criteria for inventories must therefore be based on the agreed global reporting requirements. Individual countries may add additional national data to inventories where appropriate and where data is available. Understanding controlled flows of plastics in the value chain is essential to determine leakage.

Inventories of leakages into the marine environment are needed to measure progress. Estimates of the magnitude of different sources of leakage have been made in several countries, but there is scarce information on measurements of leakage along different pathways (Jambeck et al., 2015; GESAMP, 2015). Inventories can provide information of leakage across the life cycle, including upstream (e.g. loss of plastic pellets during production), midstream (e.g. leakage from sectoral and individual consumers) and downstream (leakage from unmanaged or poorly

managed waste disposal and wastewater treatment). The scope for assessing sources can range from macroplastics (lost fishing gear, dumping, medical and personal hygiene products, packaging and other household products, etc.) to microplastics (textile abrasion, tire abrasion, plastic pellet production, road markings, artificial turf, etc.).

In essence, inventories could help to understand the flows of plastic across the value chain and various sectors and assist in informing the process of reviewing the efficiency and effectiveness of policy interventions. Figure 8 summarizes information that could be collected in inventories, including controlled material flows and leakage focusing on sources, pathways, and sinks.

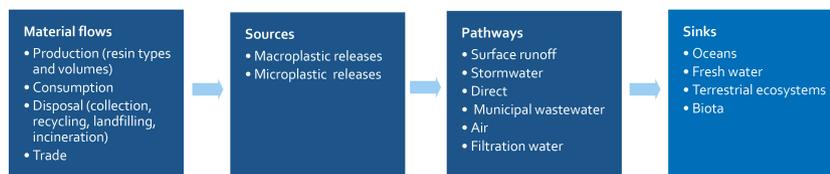


Figure 8: Summary of information that could be collected by inventories on controlled flows and leakage.

8.2 Verification of national reporting

Third-party verification of data submitted by parties in the reports can induce transparency and accountability (UNEP, 2007). Verification of national reports can provide feed-back on progress for individual countries to inform the future development of their NPMPs. Most MEAs have subjected their reports to a systematic review process, which is often led by the secretariat, the governing body or a specific subsidiary body established within the agreement. The content of the review can focus on procedural and/or substantive aspects of implementation. At minimum, third-party verification could focus on compliance with obligations for reporting (submission of reports, adherence to reporting guidance etc.) and preparation of NPMPs (preparation of plans, adherence to structure, form, and content requirements, etc.). More ambitiously, the national reviews could provide a comprehensive, technical assessment of a state's implementation of its commitments, including comprehensiveness and effectiveness of measures at the domestic level.

8.3 Global review

A periodic global review process synthesises information from various sources to provide feedback on collective progress towards the overall goal of the agreement. The process enables the parties to refine the design of the agreement to address implementation challenges and new related environmental problems, and by optimising efficiency and effectiveness.

Table 19 provides examples of existing global review processes. The Global Stocktake of the Paris Agreement aims to factor in the obligation to increase ambition over time making it a hybrid between an effectiveness review and a progressive increase in commitments mechanism (Milkoreit & Haapala, 2018). The first Global Stocktake will set the minimum standard defined by the level of action, which is to be succeeded by increased commitments in the future (Milkoreit & Haapala, 2018). Its dynamic nature is also given effect by functioning as a peer-learning platform to increase shared understanding among all Parties of the meaning, measurement and status of progress (Milkoreit & Haapala, 2018). The effectiveness evaluation of the Stockholm Convention provides a valuable model but does not include a progressive increase in commitments mechanism. The Montreal Protocol relies on implementation review based on an aggregation of emission and production data reported annually by each party, complemented by information produced by three subsidiary scientific and technical panels.

Table 19: Examples of existing global review mechanisms within MEAs.

	Overview	Scheduling
Paris Agreement	The Global Stocktake aims to assess collective efforts of parties every five years based on information from NDCs, national reports, IPCC, and other sources. It consists of two phases: technical assessment (information collection and preparation) and political phase (consideration of outputs).	The outcome of the global stocktake is intended primarily to inform the preparation of NDCs. The first global stocktake has been scheduled for 2023, to allow for inclusion of the results in the preparation of the next round of NDCs in 2025.
Stockholm Convention	The Effectiveness Evaluation aims to assess how the convention has succeeded in achieving its objectives and identify ways to improve effectiveness. It draws from national reports, monitoring information, national implementation plans, and non-compliance information.	The effectiveness evaluation has produced two reports (2009 and 2017). The second report relied on a framework adopted in COP-6 in 2013 and was carried out by a committee of fourteen members (ten parties and four other experts) confirmed by the COP.
Montreal Protocol	The Implementation Review considers the adequacy of parties' collective contribution to achieve shared emission reduction goals for ozone-depleting substances. Furthermore, the three assessment panels provide an independent assessment drawing data from industry and other sources, as well as data reported by the parties under the Protocol.	The Implementation Review is based on an aggregation of emission and production data reported annually by each party. The Scientific Assessment Panel and Environmental Effects Assessment Panel produce reports every four years, and the Technology and Economic Assessment Panel produces reports annually.

A periodic global review could help to track collective progress against obligations and targets of the agreement and reveal remaining action gaps. The global review could draw information from a variety of sources both within the agreement and beyond, including scientific literature, national reporting, inventories, monitoring data and NPMPs.

The review mechanism could be accompanied with a progressive increase in commitments mechanism (following the model of the Paris Agreement) to increase transparency and peer-pressure as states' motivators for treaty compliance. The first global review would set the "minimum baseline" for global action and ambition

that would need to be surpassed consecutively. The progressive increase in commitments mechanism would include a direct and transparent link between Parties' actions and global outcomes inspiring new activities that close any potential gaps between what countries have committed to in their NPMPs and what it will take to achieve the strategic goals and elimination of leakage.

The design of the global review mechanism will be influenced on whether the agreement includes substantive commitments or if they are limited to the procedural level. If the agreement includes substantive commitments, a "traditional" review mechanism could suffice. Whereas, if the agreement relies solely on procedural commitments, it could be coupled with a progressive increase in commitments mechanism to motivate states to act.

It could be worthwhile to consider possibilities to execute the global review as a living online platform, which could bring together the information needed to provide an ongoing assessment of progress towards the agreement in an accessible and visually compelling way. This could provide many benefits, including increase meaningfulness of reporting as well as help in outreach and communication. A valuable example is provided by the Global Health Observatory that has interactive online progress maps that display information of country performance of implementing World Health Organization's (WHO) International Health Regulations (IHR). Similarly, the Ozone Secretariat displays information on Montreal Protocol national reports to show real-time trends and country profiles.

8.4 Summary of measuring progress

Figure 9 summarizes a holistic system for measuring progress. Research plays an important role in supporting methodological development and data collection. The global review will aggregate data from performance, monitoring schemes and other sources to assess the effectiveness of the agreement.

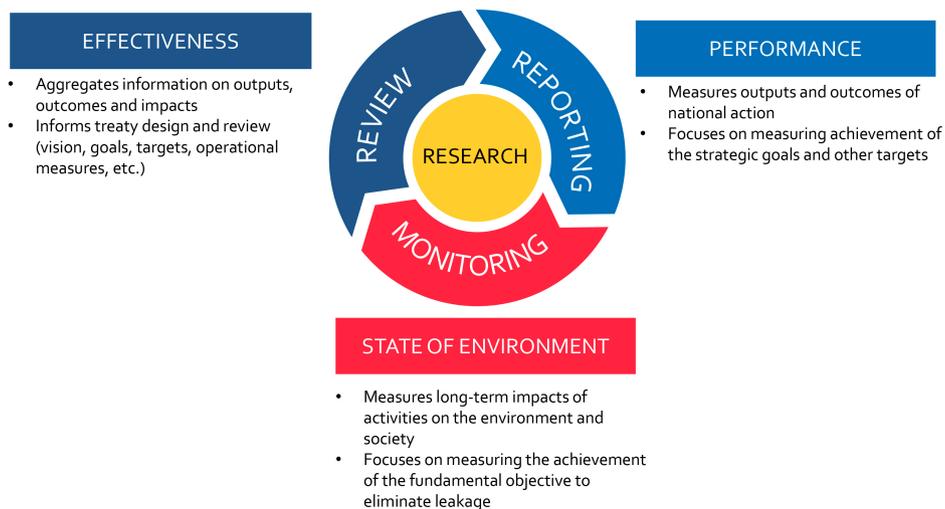


Figure 9: Main elements for measuring progress in a holistic manner.



4% of the world's oil production is used as feedstock to make plastics and a similar amount is used as energy in the process.

Photo: Ritzau/Scanpix.dk

9. Supporting measures

Supporting measures can enhance the effectiveness of measures across the life cycle of plastics. These include 1) education and awareness-raising, and 2) funding and capacity building.

9.1 Education and awareness-raising

Education and awareness raising have important roles, thus the agreement could request parties to take activities in this regard to support measures relating to both management and assessment.

Education is needed to guide consumer behaviour, including purchasing, use and disposal of plastic products. Education through labelling can inform consumers and should be centrally featured in the agreement. For instance, labelling can inform consumers of the product content, including any hazards that the product may present to human health through intended use or incorrect use of the product (e.g. use in a microwave), as well as hazards to the environment should the product not be disposed of properly. Education can inform consumers on the required separation of components, which bin to dispose of a product (recycling or landfill), where collection points are located and whether a deposit can be claimed by the person returning the item.

Awareness-raising allows the public, industry and government authorities to better understand the consequences of unsustainable consumption patterns coupled with poor waste management practices. Public awareness is therefore important to facilitate recycling and to stimulate a reduction in our consumption of materials, in line with the waste hierarchy.

9.2 Funding and capacity building

Some MEAs include a financial mechanism to enable developing country parties to meet the agreed incremental costs of implementing measures which fulfil their obligations under the convention. Supporting low and middle-income countries will be important to achieve the objective of a new global plastics agreement. A new global agreement could set the legal basis for a financing mechanism to assist implementation of obligations under the new agreement by parties lacking the necessary capacity to do so. Waste management is a vast socio-economic enterprise with huge and increasing costs in modern consumer societies. It is important that contracting parties to the new agreement are clear on the limits to what activities the financial mechanism under the agreement will apply to.

Ultimately, the agreement will need to channel investments of all kinds: public and private, domestic and international. Involving the private sector will be critical to complement development efforts funded through domestic resources and official development assistance. The use of market-based instruments has been highlighted throughout this report. Other viable sources include the use of blended finance that is the strategic use of development finance and philanthropic funds to mobilize private capital flows that is already having a significant impact in the climate and energy sectors (WEF, 2015).

The agreement will have an important role to provide necessary funding to formulate the national operational implementation mechanisms, i.e. NPMPs and national plastics sustainability criteria, and to assist in national reporting the evaluation of national implementation. Thus, the activities proposed for funding could target the following:

1. scientific and technical assessments to inform the formulation of policy and legal instruments to implement the agreement;
2. technical assistance for the formulation of those instruments, i.e. NPMPs and national plastics sustainability criteria; and
3. scientific and technical evaluation of subsequent implementation outputs and outcomes required as part of national reporting on outputs and national assessment of environmental outcomes pursuant to the agreement.

The costs funded should be limited to incremental costs incurred by governments in the implementation of the agreement, i.e. costs above and beyond those of business as usual in projected national plastics waste management activities.

The related activities, with some examples listed below:

1. Mapping of:
 - Waste profiles and trends,
 - Flow of plastics through the domestic market,
 - Market entry points for application of MBIs, and
 - Import and export of plastic wastes (current and projected under different intervention scenarios).
2. Design of national inventories, data collection and reporting.
3. Identification of potential regulatory & policy requirements
4. Identification of capacity needs (customs, treasury, etc)

5. Conducting socio-economic studies on the positive and negative impacts of regulatory and economic interventions, including job losses and job creation.
6. Planning of transition periods for implementation of regulatory and economic interventions based on socio-economic studies and stakeholder engagement.
7. Establishment of a review process based on agreed and harmonised timeframes at the international level.
8. Improve capacity building for trade-related aspects of reducing plastic pollution.

Against this backdrop, it is important to identify credible funding options for supporting low and middle-income countries. A non-exhaustive list of options includes:

- **UNEP's integrated approach to the financing of sound management of chemicals and waste** is relevant in context of funding the activities of the agreement. It includes three mutually reinforcing components: mainstreaming, industry involvement and dedicated external finance. The component of external finance is delivered by the Special Programme on institutional strengthening for the sound management of chemicals and waste, which has helped many low- and middle-income countries set in place needed implementation structures and mechanisms.
- **The Global Environment Facility (GEF)** could be entrusted to serve as financial mechanism of the agreement, through its international waters program. It would also make sense in terms of ensuring institutional efficiency as its sustainment would not depend solely on the plastic agreement.
- **Technical support and training** could be delivered by establishing a specialized unit within the secretariat, or it could be decentralized to function in conjunction with select universities or research institutions, if funding is made available.
- **Bilateral arrangements** can be used for the transfer of technology and improvement of waste management services to assist in meeting the self-determined targets set by countries under the possible new global agreement.
- **International financial institutions, foundations, and philanthropies** could help to leverage financial resources. There is growing momentum in support of blended finance as a systemic approach for development finance, with a range of development funders already showing strong will and allocating funds to innovative financing mechanisms.



Only 9% of all plastic waste generated has been recycled.

Photo: iStockphoto.com

10. Institutional arrangements

10.1 Structure

To successfully deliver the key elements outlined in this report, an institutional structure can be envisaged. It could consist of the following bodies:

1. **A governing body** that meets at periodic intervals to review implementation and consider and adopt necessary decisions and annexes to further the work of the agreement. The governing body is facilitated by a bureau that needs to represent all five UN regions, but could also consist of ex-officio members.
2. **A secretariat** that assists the governing body in carrying out its functions. The Secretariat could be hosted by an existing intergovernmental organization.
3. **Subsidiary bodies** can be established to assist the governing body, through expert research and recommendations, as deemed appropriate. This could include, inter alia, a subsidiary scientific committee to assess status and impacts of plastic pollution, as well as, a subsidiary technical and economic advisory committee to help develop and elaborate sustainability criteria for plastic products and other necessary technical response guidance.

The membership of the governing body is limited to governments that have ratified or acceded to the agreement. The scientific community would participate through the subsidiary scientific and technical bodies. The relationship to relevant external scientific bodies can also be defined in the agreement. For example, the UNFCCC COP has called on the Subsidiary Body for Scientific and Technological Advice (SBSTA) to seek advice from the IPCC, which has led to incorporating some of its findings to the agreement, including the IPCC guidelines for greenhouse gas inventories.

Industry experts and civil society would have roles in the subsidiary technical and economic advisory committee, if nominated by parties to serve on them. In addition, they may act in parallel cooperation with the parties through international industry bodies responsible for establishing technical standards for plastics and the products incorporating them, and through civil society bodies that inform consumers as to the sustainable management products.

10.2 Rules of Procedure

When States first form an intergovernmental negotiating committee (INC) to negotiate a new agreement, one of the first items on the agenda is to adopt rules of procedure (RoP) for the conduct of meetings during the negotiations. If the negotiations lead to an MEA, the latter typically provides that the first session of the governing body adopts by consensus its own RoP. Subject to rules in the agreement itself, the RoP will define, inter alia, the frequency of meetings of the governing body, structure of the bureau and voting rules.

10.3 Coordination

The evaluation of the effectiveness of existing international frameworks delivered for UNEA-3 highlights the absence of a "global institution with the mandate to coordinate current efforts" as a major gap for governing marine plastic pollution (UNEP, 2017). The development of a new agreement could provide a valuable opportunity to enhance coordination among relevant MEAs and other initiatives to maximize policy coherence. Ideally, the institutions established under the agreement could fill the governance void and connect the work of other relevant institutions and initiatives. To this end, the need for coordination could be outlined in the agreement and detailed after its adoption.

10.3.1 Synergies with MEAs

This report has referred to various MEAs and other instruments that govern specific areas of plastic pollution. The development of synergistic relationships between institutions established under these MEAs within the existing plastics governance landscape would promote a coherent and comprehensive approach to combat plastic pollution. At the international level, programmatic synergies could be pursued by developing bilateral memorandums of understandings (MoU) between relevant MEA secretariats to outline clearer divisions of labour. The proposed agreement could require that the parties seek such programmatic synergies and that the secretariat report on them to the governing body.

At the national level, immediate gains can be made through improved communication, coordination and collaboration between relevant national MEA focal points. Inter-ministerial committees could be established to oversee national implementation by regularly convening national MEA focal points and other relevant stakeholder. The synergistic implementation of NPMPs could be achieved by the integration of convention-specific targets, objectives and commitments into the NPMPs. However, these are discretionary matters for national governance and need not be prescribed in the agreement.

10.3.2 Industry and civil society partnerships

During the past decade, there has been a phenomenal proliferation of multi-

stakeholder partnerships and other voluntary initiatives aiming to tackle plastic pollution. The surge in partnerships and initiatives is positive, but their non-hierarchical nature has not enabled a coordinated and effective response (Biermann et al., 2009). The proposed agreement could serve stakeholders by providing them with a forum parallel to the institutional arrangements under the agreement to collaborate with governments and with each other within a structured framework.

In 2019, UNEA-4 decided to establish a multi-stakeholder platform within UNEP to facilitate cooperation and coordination by serving as a forum for, inter alia, sharing experiences, coordinating actions and raising global awareness.³¹ The modalities of the multi-stakeholder platform are currently being discussed. The proposed agreement could seek to engage with stakeholders and the private sector, potentially through the multi-stakeholder platform. This forum could catalyse and facilitate operational ventures and serve as an information hub or clearinghouse.

31. Resolution 4/6 (para 3)

Annex 1.

Possible elements and actions to consider in preparation of NPMPs.

Elements	Actions	Examples
Targets	<p>Specify one or more high-level targets. The strategic goals provide guidance for enabling to address all areas of the life cycle:</p> <ul style="list-style-type: none"> • Elimination of problematic and avoidable plastic products • Sustainable management of essential plastics • Sustainable waste management • Chemicals hazard reduction 	
Scope	<p>Outline the scope of the plan. The following areas can be considered in defining the scope:</p> <ul style="list-style-type: none"> • Materials and substances: are plastic polymers and chemical additives in focus? • Scales: are both macroplastics and microplastics covered? • Sources: are land-based and sea-based sources included? • Pathways and sinks: which environmental compartments are targeted? • Measures: what areas of life cycle of plastics are in focus? 	
Preparatory process	<p>Describe the preparatory process for the NPMP. The following measures can be considered in this context:</p> <ul style="list-style-type: none"> • Develop a cross-sectoral coordination mechanism to prepare and implement the plan • Prepare a national profile to identify strengths and challenges • Review existing legislation for its effectiveness and identify gaps 	
Elements	Actions	Examples
Life cycle measures	<p>Production</p> <ul style="list-style-type: none"> • Limit the use of virgin material, in particular fossil-based raw materials, by decoupling plastic production from fossil feedstocks. • Explore options for replacing fossil-based plastics with more sustainable alternative raw materials. Bio-based feedstocks derived from biological materials (e.g. cellulosic fibers, organic wastes) provide a viable option to replace fossil-based feedstocks, given possible negative impacts on food security and biodiversity are minimized. A full life cycle assessment is needed before introduction of alternative materials to ensure their sustainability. • Promote sustainable design of plastic pellets, powders and flakes to enhance recyclability and safety, including by prohibiting the use of harmful polymers. • Incorporate measures within domestic regulations contained in Operation Clean Sweep and additional measures under development by OSPAR in this regard. • Set minimum inclusion targets for recycled content in pellet production. 	<ul style="list-style-type: none"> • Operation Clean Sweep is a voluntary international initiative of the plastics industry that aims to prevent the loss of plastic pellets, flakes and powder through good housekeeping and containment practices by all parts of the plastics industry (GESMAP, 2016). OSPAR is currently exploring options to strengthen and expand on Operation Clean Sweep.

Manufacturing

- Design products to facilitate reuse, recycling and, to a lesser degree, repurposing, can enhance end-markets for plastic products and improve the economic feasibility of collection.
- Develop policies to support sustainable management of plastics, including setting up requirements on packaging to reduce generation of waste, recycling and reduction targets, increasing use of reuse models and incorporation of market-based instruments to support the design and production of recyclable products.

- In India, the Plastic Waste (Management and Handling) Rules 2011 phase out the manufacture and use of non-recyclable, multi-layered plastics (Madhya Pradesh Pollution Control Board, 2016). Some states in India have separately banned the manufacture and use of specific types of plastic.

Consumption

- Instigate bans or reduction targets on problematic and avoidable plastic products for which environmentally sustainable alternatives exist on the market, including products made of oxo-degradable plastic. NPMPs should provide flexibility to determine products to be targeted for reduction, elimination or replacement, including products used in the fishing sector.
- Develop simple product labelling schemes to guide consumers in recycling options and product recycled content. Such schemes can support responsible consumer choices that shift industry manufacturing practices through consumer demand. Examples include product recyclability, recycled content, producer advanced recycling fees, consumer deposit fee, polymer content.
- Create strategies to target plastic-intensive sectors (construction, agriculture and tourism, etc.) and problematic consumer product groups (food and drink packaging, cosmetics and personal care products, and textiles and clothing, etc.).
- Set up policies on sustainable public procurement to create demand for recycled plastics.

- In 2017, Costa Rica announced a national strategy to phase-out all forms of single-use plastics, including bags, bottles, cutlery, straws, Styrofoam and stirrers by 2021 and replace them with alternatives that biodegrade within six months (UNEP, 2018).
- 91 countries have some type of ban or restriction on the manufacture or production, importation, and retail distribution of plastic bags (UNEP, 2018). Africa stands out as the continent where the largest number of countries (34) have instituted bans or restrictions.

Waste management

- Increase collection, sorting, recycling, recovery and environmentally sound disposal capacity of plastics to prevent leakage.
- Create viable end-markets for recycled and renewable plastics, such as through recycled content standards, voluntary commitments, minimum requirements and sustainable public procurement.
- Design and adopt context-suited MBIs to incentivize collection by civil society (e.g. drop-off locations for bottles or fishing gear) and the private sector; sorting in household and commercial settings; use of existing transport services (reverse logistics, backloading); and avoidance of landfilling or illegal dumping.
- Design and adopt MBIs to financially subsidize waste management services and certification schemes.
- Develop recycling systems to deal with all waste plastics following the waste hierarchy prioritizing material recovery through mechanical recycling and chemical recycling. When no other viable alternatives exist waste-to-energy solutions can be considered. Landfilling is the last option that should be avoided.

- In 2020, China released a plan to, substantially reduce the amount of plastic waste in landfills of key cities, establish a complete plastics management system and make progress in the development of alternative products, by 2025.

Elements	Actions	Examples
	<p>Chemical additives</p> <ul style="list-style-type: none"> • Instigate bans and restrictions on hazardous chemical additives. • Eliminate the release of chemicals of concern in products during intended use through sustainable product design (e.g. BPA, flame retardants). • Recover chemical constituents in recycling to ensure safety of secondary raw materials and products. • Increase transparency and traceability of the use of chemical additives in plastic products enabling the tracking of their presence across the value chain. 	<ul style="list-style-type: none"> • Bisphenol A (BPA) is used in the manufacturing of polycarbonate plastics materials, such as baby bottles, but studies have shown it to be an endocrine disruptor prompting many countries in Asia, Europe and North America to ban or restrict the production and sale of products containing BPA (UNEP, 2019). • Phthalates are a group of plasticizers with softening and elastic effects used commonly in many consumer products, but their use has been limited in some applications in several countries as concerns have arisen of their possible endocrine disrupting properties in humans (UNEP, 2019).
	<p>Microplastics</p> <p>The agreement could promote a step-by-step approach of minimizing microplastic releases:</p> <ul style="list-style-type: none"> • Restrict the use of intentionally added microplastics, including cosmetics, personal care products, pesticides etc. • Introduce policies to reduce secondary microplastics, resulting from abrasion of plastic products during use, focusing on major sources of releases. This could include, inter alia, the introduction of labelling and specific requirements for tires and minimum requirements on the release of microfibers from textiles. • Improve filtration of microplastics from the wastewater treatment systems using best available treatment technologies. Given that wastewater treatment is in its infancy in many low- and middle-income countries, the justification for introducing more effective filtration systems in terms of cost-benefit must take into consideration the social and economic context of the municipality or country. 	<ul style="list-style-type: none"> • As of July 2018, eight countries have established legally binding bans of microbeads through national laws or regulations, but many other countries are in process instigating bans (UNEP, 2018). • The European Chemicals Agency has submitted a restriction proposal that covers 90% of intentionally added microplastics including 400 items with the potential to reduce releases by 400,000 tonnes over 20 years (EU, 2019a).
	<p>Removal</p> <ul style="list-style-type: none"> • Support plastic litter removal programmes targeting hotspots, including rivers, waterways, coastal areas, oceans and land. 	<ul style="list-style-type: none"> • In 2019, the EU adopted the Directive on the reduction of the impact of certain plastics products that expands EPR schemes by applying it to tobacco filters and fishing gear to cover the cost of cleaning up litter (EU, 2019b).
Elements	Actions	Examples
Sectoral measures	<p>Building and construction sector</p> <ul style="list-style-type: none"> • Identify plastics used in construction and recover plastics when buildings are demolished. Expand stormwater management to prevent plastics reaching the marine environment. 	
	<p>Agriculture</p> <ul style="list-style-type: none"> • Restrict the use of wastewater treatment sludge as fertilizer. • Recycle plastic packages used for fertilizers and pesticides. • Develop and use bio-based and fully biodegradable mulch. 	
	<p>Textile and clothing</p> <ul style="list-style-type: none"> • Phase out microfiber releases, improve clothing design, collection, reprocessing and recycling. 	
Supporting measures	<p>Public awareness</p> <ul style="list-style-type: none"> • Develop public awareness and outreach campaigns to support educational programmes for consumer behavior change. 	
	<p>Education</p> <ul style="list-style-type: none"> • Develop educational programmes targeting behavior change in specific sectors and audiences. • Develop educational curricula in primary and secondary education. 	

Science and knowledge building	<p>Research</p> <ul style="list-style-type: none"> • Set up multidisciplinary research programmes. • Investigate the physical and chemical traits, life cycle, transport, quantity, and accumulation rate. • Investigate environmental, economic and social impacts, including human health. • Develop sustainable solutions, materials and technologies to replace plastics, reduce the risk of discharges and remove plastics. 	
	<p>Monitoring</p> <ul style="list-style-type: none"> • Harmonize methodologies with international standards. • Develop monitoring programmes to assess prevalence of plastics in the environment. 	
Financial measures	<p>Market-based measures</p> <ul style="list-style-type: none"> • Promote EPR to encourage design for reuse and recycling, while taking care of end-of-life products by setting up collection and recycling systems. • Introduce deposit-refund systems for bottles, containers and cans. • Use taxes and fees e.g. tax on disposable plastic packaging. • Reform the subsidy system to favor use of beneficial subsidies and eliminate harmful subsidies. • Incentivize the organization of informal waste collectors and sorters. 	<ul style="list-style-type: none"> • The Kenya plastic action plan consists of a three-year plan to set up an EPR scheme aiming to operationalize a producer responsibility organization financed by producers to collect and manage the end-of-life of all streams of plastics on their behalf (Kenya Association of Manufacturers, 2019).
	<p>Domestic budget</p> <ul style="list-style-type: none"> • Allocate resources for plastic pollution in budgeting processes and development planning. 	
	<p>International cooperation</p> <ul style="list-style-type: none"> • Provide financial and capacity support to low- and middle-income countries. 	
Measuring progress	<p>Reporting</p> <ul style="list-style-type: none"> • Report on implementation, including preparation of NPMPs and international sustainability criteria. • Carry out inventories of sources, pathways and sinks of plastic litter. • Carry out inventories of production levels of plastics as well as levels of recycling, incineration and landfilling. 	

Annex 2.

Application of the design for recyclability standards

A primary goal of developing international sustainability criteria is to assist countries in determining nationally relevant design-for-recyclability standards in order to regulate what products are placed on their markets. Such regulation can make use of standards for recyclability to first reduce, remove or redesign avoidable, problematic and other plastic products placed on domestic markets that do not meet these standards, thus enabling governments to reduce plastic consumption and minimize the burden of waste management. Governments can use global sustainability criteria to ensure products are designed to promote durability, reparability, recyclability and reusability. To this end, design standards affect the selection of feedstock, production and manufacturing, product use and end-of-use management.

This is achieved through applying *international sustainability criteria* at the national level by using suitable regulatory policies and market-based instruments. Countries would need the flexibility to choose how these policies are implemented and could adopt such policies within voluntary, co-regulatory or mandatory frameworks. Such national strategies can be supported by global guidelines and roadmaps.

International sustainability criteria could cover, inter alia, the following product features:

- **Physical features**
 - Reusability and reparability of products
 - Recyclability of products (e.g. number of resins, layering, labels, inks, glues, microplastics) considering domestic circumstances (collection, sorting, recycling)
 - Rate of leakage, including abrasion that produces secondary microplastics (tyres, textiles, artificial turf, etc.)
 - Inclusion of post-consumer resin (PCR) - recycled content
- **Chemical features**
 - Use of non-toxic chemical additives
 - Rate of leakage of additives during intended use

By regulating the type and design of products placed on the market, the amount of residual waste generated can be minimised. In addition, the value of the residual waste that is generated can be increased, improving the likelihood of the waste being collected for reuse, repurposing or recycling. This is supported by recent research suggesting that plastic with low residual value is prone to leak into the environment because it does not incentivize collection.

Low, medium and high residual value applications and polymer can be defined as follows:

- Low value: applications and polymer with a low recycling potential in a given market
- Medium value: polymer with a recycling potential but associated with an application which is not easily collected nor recycled
- High value: application and polymer that is easily collected and recycled in a given market

The report provides further research supporting a possible matrix for the rate of release into the marine environment under a given approach. Table 20 highlights these findings (Quantis & EA, 2020).

Table 20: Matrix estimating release rates of plastics to the environment.

Release rate		Low residual value	Medium residual value	High residual value
Small Size /(<5cm)	Ocean & Freshwater	40%	25%	15%
	Terrestrial	60%	75%	15%
Medium Size /(5-25cm)	Ocean & Freshwater	25%	15%	10%
	Terrestrial	75%	85%	5%
Large Size (>25cm)	Ocean & Freshwater	5%	5%	1%
	Terrestrial	95%	95%	1%

Figure 10 illustrates how the global agreement can nurture the development of international sustainability objectives, sustainability criteria and design for recyclability standards, which can assist in regulating domestic markets. This, in turn, can simply sorting and improve recycling profitability, while also facilitating compliance with relevant regulations.

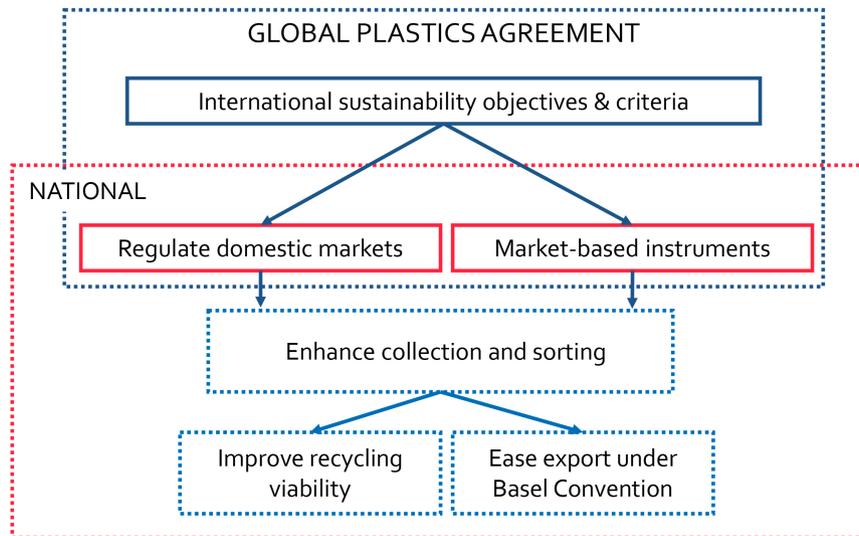


Figure 10: Overview of the role of international sustainability objectives and criteria.

Examples of design standards

Recyclability provides an illustrative case study of the application of sustainability criteria to meet a strategic goal, e.g. sustainable management of essential plastics. The criteria for designing plastic products that are recyclable can be elaborated in standards, guidelines and codes of practice. Product-related international standards at the global level are primarily the ISO/IEC Guide 59 *Code of good practice for standardization*. See also Annex F Checklist with criteria for eco-design in the OSPAR scoping study on best practices for the design and recycling of fishing gear (OSPAR, 2020).

Criteria for recyclability in a new agreement might address the processes and inputs of a product with regards to: 1) virgin material; and 2) recycled materials. Quality standards and technical specifications would match the product and processes within both categories. Reporting standards and methods of tracking would be required for compliance monitoring and tracking of substances of concern.

Where recycled material replaces virgin material, design standards could include the development of quality standards for:³²

- sorted plastic waste
- recycled plastics
- food contact materials
- inclusion of substances of concern, including legacy substances.

There have been repeated calls for global standards to guide production of plastic products. The purpose is to establish design standards that can allow for innovation to minimize the environmental burden during production, use and end of life phases. Design standards can stimulate industry innovation and drive markets towards

32. EU Strategy for plastics in circular economy-staff document

more sustainable products, particularly when supported by policy (OECD, 2019).

There are a number of standards-setting bodies that have developed a number of tools that could provide a basis for developing international sustainability objectives, sustainability criteria design standards. These include, but are not limited to, those standards set in the European context by CEN, CENELEC and ETSI, as well those developed by the International Organization for Standardization, namely:

- ISO 9001, Quality management systems – Requirements
- ISO 14001, Environmental management systems – Requirements with guidance for use
- ISO 14020:2000, Environmental labels and declarations – General principles
- ISO 14021:2016, Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)
- ISO 14031, Environmental management – Environmental performance evaluation – Guidelines
- ISO 14040, Environmental management – Life cycle assessment – Principles and framework
- ISO 14044, Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 14064 (all parts), Greenhouse gases
- ISO 14067, Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification
- ISO 26000:2010, Guidance on social responsibility
- ISO Guide 64, Guide for addressing environmental issues in product standards

Efforts are already underway by a number of organisations to assess (OECD, 2018b) and develop design guidelines specific to plastics. These include the Ellen MacArthur Foundation, Association of Plastics Recyclers (APR) and RECOUP³³, which together with the British Plastics Federation (BPF), has released a Recyclability by Design guide³⁴. In South Africa, the PET Plastic Recycling Company (PETCO) released a guide for packaging design targeting the PET manufacturing sector. All guidelines aim to ensure an adequate quality for recycled materials.

A definition of 'recyclable' was developed by the APR and Plastics Recyclers Europe (PRE) and is supported by Petcore Europe. As per the agreed definition, four conditions must be met before plastics can be considered recyclable. These are:³⁵

1. The product must be made with a plastic that is collected for recycling, has market value and/or is supported by a legislatively mandated program.
2. The product must be sorted and aggregated into defined streams for recycling processes.
3. The product can be processed and reclaimed/recycled with commercial recycling processes.
4. The recycled plastic becomes a raw material that is used in the production of new products.

APR includes in the definition of recyclability the percentage of the community that

33. <http://www.recoup.org/>

34. See <https://www.bpf.co.uk/eco-design.aspx>

35. RecyClass. <https://recyclass.eu/recyclass/definition/#>

has access to a collection system that accepts the item.

In addition to defining recyclability, APR have developed freely available guidelines and testing protocols for different resins and physical features of products.³⁶ These provide a rating of a product based on four categories:

1. **APR Design Guide® Preferred** – The design features of the product are readily accepted at sorting facilities and recyclers. The product is likely to pass through the recycling process into the most appropriate material stream with the potential of producing a high-quality material.
2. **Detrimental to Recycling** – The product has features that present known challenges to the yield of a sorting or recycling facility, its productivity or final quality produced.
3. **Renders Package Non-recyclable per APR Definition** – The product has features that have a significant adverse technical impact on a sorting or recycling facility's yield, productivity or final quality produced. The majority of facilities cannot remove these features sufficiently in order to generate marketable end-products.
4. **Requires Testing** – The product is still to be tested as per an APR testing protocol.

Product certification

Certification schemes can provide transparency on the recyclability of products. Such schemes should be based on the agreed international design standards developed under the new global agreement in order to 'be credible and ensure consistency across sectors' (OECD, 2019). Methods for determining certification must be standardised and preferably outsourced to independent certifying bodies. The ISO 14020 series on environmental labels and declarations³⁷ can also play a role.

Certification is required for the following processes, at a minimum:

1. Products: Compliance with design standards (physical features, including leakage and abrasion).
2. Materials: Transparency of post-consumer resin (PCR) - recycled content.
3. Chemicals: Compliance with use of non-toxic chemical additives.

The linkages between design standards and product certification are illustrated in Figure 11, highlighting the need to improve the quality of collected material as a feedstock for recycling facilities.

36. Association of Plastics Recyclers (APR) <https://plasticsrecycling.org/apr-design-guide/apr-design-guide-home>
37. <https://www.iso.org/standard/34425.html>. See also https://www.iisd.org/business/markets/eco_label_iso14020.aspx for more.

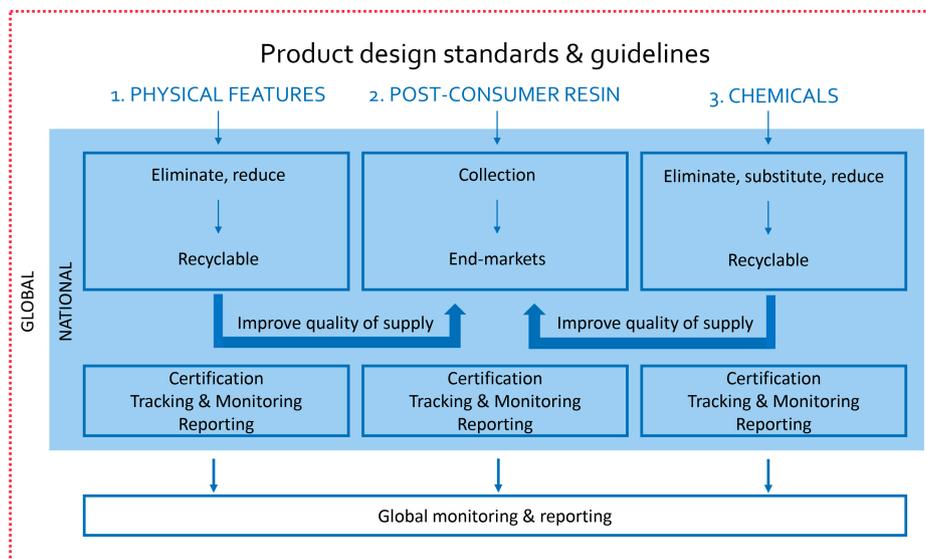


Figure 11: Linking design standards and guidelines to product certification.

Compliance with sustainability objectives, criteria and standards

The design guides developed by APR and others can be used to certify products into agreed categories, as illustrated by the four APR categories of preferred, detrimental, non-recyclable and not tested.

For some product categories, an industry self-certification process may be appropriate, whereas others may require authorised institutions to perform certification tests paid for by the producer. The former may apply to products that are likely to fall within the preferred category, with random checks by authorised testing institutions and non-governmental organizations (NGOs).

Examples exist of changes in product design based on environmentally sound end-of-life treatment of packaging. Toothpaste tubes are traditionally produced using multiple layers of plastic and aluminium, rendering them unrecyclable. Colgate has designed a tube using multiple layers of a single resin, HDPE (high-density polyethylene) (resin #2), that meets Colgate's criteria of allowing consumers to comfortably squeeze out all toothpaste, while protecting integrity of product and meet high-speed production demands. The tube was recognised by APR for its recyclability.³⁸ APR has also recently certified three shrink films for PET bottles and a number of label inks.³⁹

Product certification that is based on international design standards can assist in standardising the methods of determining hazard classification of chemicals and waste. Countries may classify such wastes differently due to inconsistent classification methods, resulting in variations in the management of wastes that contain substances of concern (OECD, 2019).

38. <https://www.plasticstoday.com/packaging/colgate-s-fully-recyclable-toothpaste-tube-first-receive-apr-recognition/115992632861006>

39. <https://resource-recycling.com/plastics/2020/03/25/pet-bottle-label-innovations-achieve-apr-recognition/>

Preliminary work has begun on determining methods for calculating leakage from corporate value chains for both macro- and microplastics. The Plastic Leak Project⁴⁰ has published standardised guidelines, providing a method to calculate and report estimated leakage at each life cycle stage and at both product and corporate levels. A number of methods for determining plastic leakage (footprint), including microplastics, have also been developed and which have been assessed by the International Union for Conservation of Nature (IUCN, 2019). These guidelines could provide a starting point for developing harmonised certification standards, particularly for plastic pollution resulting from abrasion of microplastics.

Transparency of post-consumer recycled content (PCR)

While preventive measures that promote the phasing out of plastics and hazardous substances are important, there will likely always be a need to trace recycled content in order to establish compliance with declarations, labelling and reporting. Tracing the use of recycled content through the value chain presents challenges. It is not always possible to identify the chemical content within a final product that comes from virgin feedstocks versus recycled feedstocks. Chemical recycling (also referred to as advanced recycling) provides some opportunities to apply one of the chain of custody models known as mass balancing and important work has begun to investigate these options (Ellen Macarthur Foundation, 2019). As per the American Chemistry Council (ACC), "the flow of molecules through the advanced recycling process and back into the production of plastics, chemicals and fuels should be tracked from start to finish in order to certify recycled content in end products." Core principles have also been suggested by the ACC, as well as enabling principles. The latter are listed by the ACC as:⁴¹

- Broad global adoption of a small number of harmonized standards preferred.
- Certification process and standards are compatible with applicable regulatory and compliance requirements utilizing clear global definitions.
- Transparent public certification standard and certification methodology.
- Standard developers who are independent from certifying organizations preferred.
- Inclusive approach to standard development; balance engagement of stakeholders and internal standard consistency for standards organization.
- Standard can be linked to other certification elements that are verifiable if claimed including: greenhouse gas emissions, sustainable supply chain, LCA, labor, and human rights.
- Standard does not accommodate the creation of a separate market for the sale and transfer of credit certificates outside of their direct use within product value chains.
- Flexibility to adopt future technology innovations in standard.

40. See <https://quantis-intl.com/metrics/initiatives/plastic-leak-project/> for more. The strategic committee for the Plastic Leak Project includes IUCN, the Life Cycle Initiative, the United Nations Environment Programme, and the World Business Council For Sustainable Development. The advisory board includes, among others, experts from CIRAI, European Commission Joint Research Centre, Massachusetts Institute of Technology, National Geographic Society and WWF.

41. <https://www.americanchemistry.com/Media/PressReleasesTranscripts/ACC-news-releases/Mass-Balance-Certification-Principles-Will-Support-Plastic-Recycling-Growth-and-Accelerate-Advanced-Recycling-Development.html>

Further to this, APR has devised a Post-consumer Resin (PCR) Certification Program to endorse companies that provide third-party certification of PCR. The objective is to assist in ensuring the PCR certification processes is “reliable, consistent, and accessible by both producers and users of recycled plastic resins.” To achieve this, APR’s PCR Certification Program is reported to include the following three components:⁴²

- Endorsement of third-party qualified companies to conduct certifications, providing APR members with the “confidence that endorsed certification companies adhere to a clear, consistent definition of PCR that aligns with the ISO 14021:2016 definition”.
- Use of APR endorsed companies by Plastic Reclaimers to conduct certification.
- Recognition by APR of members that are awarded certification.

Compliance with standards for use of non-toxic chemical additives

The number of chemicals added to plastic resins is substantial. Similar challenges and solutions are presented as for the certification of PCR. Examples of MEAs that regulate the use of chemicals at the global level include the Montreal Protocol and the Stockholm Convention. Both these instruments apply to plastics in different ways and may provide options for consideration or expansion in a new global agreement to manage plastics (Raubenheimer & McIlgorm, 2017; 2018). The Stockholm Convention specifies that environmentally sound disposal of wastes containing chemicals regulated by the Convention does not include recovery, recycling, reclamation, direct reuse or alternative uses (Article 6.d(iii)).

This concept could be expanded in the new agreement to ensure only chemicals allowed under the new agreement may be included in products recycled, etc, with testing processes developed to promote adherence with standards developed under the agreement for use of non-toxic chemicals.

In addition, the London Protocol provides a model that may be considered in the new agreement, in which all substances regulated by the Protocol are banned from being dumped in the oceans unless they are explicitly specified in a ‘white list’ of substances allowed to be dumped, subject to a permit from relevant authorities. A new agreement for plastics could simplify certification processes by developing a white list of chemical groups that are considered safe to include in plastic products, as well as manufacturing and recycling processes. Authorised independent certifiers would need to verify this content and transparent processes agreed at the global level providing and assessing such claims. Such processes would be similar for PCR certifications discussed in the next section.

42. <https://plasticsrecycling.org/pcr-certification/overview-application>

Annex 3.

Examples of regulatory measures to manage domestic markets

Regulatory measures to manage domestic markets

Regulatory measures are fundamental to achieving environmentally sound management of plastics, not just as waste but across the life cycle of plastic products. Such measures can encourage supply and demand of recycled plastics, as well as promote positive behaviour and penalise unfavourable activities.

Environmentally sound management of plastics can be greatly enhanced by designing markets based on the following objectives:

1. Eliminating avoidable and problematic products and chemicals
2. Increasing supply and quality of recyclable material to end-markets
3. Increasing demand to recycled materials.

By providing a stable economic environment through a suite of regulatory measures, investor confidence in waste management services can be boosted and behaviour can be stimulated within production, manufacturing and consumption phases of the plastics life cycle. Importantly, by promoting the supply of recyclable materials on the market, regulatory measures that promote the demand for recycled materials can assist in driving investment security by enhancing long-term end-markets for plastic waste that is collected, sorted and recycled appropriately.

Examples of regulatory measures that increase supply of recycled materials on the market include:

- 100% of packaging is recyclable or reusable, and
- ban of recyclable plastics being disposed in landfill or used in waste-to-energy facilities.

Examples of regulatory measures that increase demand for recycled materials include:

- mandatory recycled content for manufacturers, and
- public procurement policies will drive demand for the recycled materials.

Policy interventions that drive recycling rates for plastic waste can include (OECD, 2018a):

- Drive supply of material, increase economies of scale, reduce costs and increase resilience through setting of statutory targets for recycling, banning plastics from landfill and adopting EPR regulation.
- Mandate requirement for recycled content to create demand.
- Use public sector procurement policies to create demand for recycled content
- Set targets (including using EPR) for recycling thermosets to drive supply.

- Obligate monomer manufacturers to buy back recycled plastics
- Ban or reduce problematic and hazardous additives in primary plastics.
- Mandate labelling for biodegradable plastics and improve associated standards.
- Introduce mandatory data reporting mechanisms for plastics recycling.
- Ban use of plastics in energy-to-waste facilities.
- Enforcement action to reduce illegal dumping.
- Enforcement action to reduce illegal waste trafficking.
- Standardise waste collection systems to increase economies of scale and reduce costs.
- Regulation and enforcement to ensure consistent environmental standards in global markets

Regulatory measures should aim to increase the quantity of recyclable materials on the market, replacing non-recyclable materials for products where alternatives to plastics are not feasible. In addition, the quality of the recyclable material must also be improved. This can be achieved through regulating the products placed on the markets, but also through reducing contamination of plastic wastes within the waste stream. Regulatory measures, such as separate collection of organic wastes, can further support improvements to the recycling rate.

Table 21: Table of possible national measures across the life cycle of plastics.

	Regulatory measures	Market-based measures
Production	<p>Ban on single-use plastics Ban on manufacturing, distribution and import of defined problematic and unnecessary single-use plastic. The policy is usually directive in nature at the national level and administered or enforced at the city level</p> <p>Decentralized repurpose and reuse Transforming plastic waste or unwanted plastic products into new materials or products</p>	<p>Virgin material tax Taxes imposed on either resin manufacturers, packaging manufacturers, brand-owners and importers on production or plastic packaging elements which are either difficult-to-recycle or contain undesirable content</p> <p>Anti-littering and anti-dumping levies Taxes and fines imposed on serious litterers with the aim of preventing, eliminating and reducing of illegal dumping and littering</p> <p>Sustainable conversion and offtake markets Incentives in the form of subsidies, tax exemptions for intake of low-value, non-recyclable plastic to stimulate their sustainable end-of-life treatment markets</p>
Manu- facturing	<p>Eco-design standards Policy measures setting plastic packaging material and design standards to improve recyclability and minimize overall environmental footprint</p> <p>Recycling content standards Requiring a certain level of recycled material to be used in plastic applications. Potential incentives or penalties could be levied on the producers and importers of plastic products to meet their recycled content levels</p> <p>Ban on primary microplastics Prohibition on the use of plastic fragments or particles less than 5mm in size (pre-production plastic pellets not included), which are purposefully manufactured for uses in cosmetic products and toiletries, vector drugs and air-blasting technologies</p>	<p>Taxes and levies on single-use plastics Taxes and/or levies imposed on manufacturers, retailers or consumers for use of specific types of single-use plastic elements, including but not limited to, plastic bags, straws, cups and polystyrene food packaging</p>

Con- sumption	<p>Eco-labelling standards Standards or guidelines imposed on packaging product labelling in order to inform consumers on packaging content and/or proper disposal methods, with the goal to eventually drive more environmentally friendly consumer-behavior</p>	<p>Advanced Disposal Fees Non-refundable fees levied on individual products at the point of purchase. The fee is inbuilt in the pricing of the product based on estimated costs of collection and treatment</p>
Disposal	<p>Takeback obligations Mandatory obligations on producer brands to take back their products from end-users at the end of the product's useful life</p> <p>Source segregation Rules to govern quality of garbage collection at the household or institutional level, which mandates or incentivizes waste stream separation at the source of generation</p> <p>Municipal collection points and MRFs Requirements to set up dedicated collection points or recovery facilities by municipalities at a sub-district or city level where waste can be separated for further recycling or treatment</p> <p>Regulations on waste import Policies governing waste shipment into the country with the aim of prohibiting the import of solid waste or post-consumer recyclables</p> <p>Sanitary landfills Policy instrument to provide legal basis and funding for construction, operation and maintenance of sanitary landfills and the conversion of existing open and uncontrolled dump sites into sanitary landfills</p>	<p>Preferential procurement Mandates on public sector organizations for supporting or procuring repurposed plastic in their procurement contracts for products and services</p> <p>Deposit return scheme Refundable fee levied on an individual product at the point of purchase. The entire fee, or a portion of it, is refundable when the used product is returned to the point of sale or at a specified drop-off site</p> <p>Packaging material fees Producers pay fees depending on the amount of packaging material put on the market or their plastic recycling/recovery targets. Pooled fees are used to fund packaging waste management activities through a producer responsibility organization (PRO)</p> <p>Plastic credits system Producers meet their obligations by purchasing recycling certificates issued by accredited re-processors or recyclers based on the amount of plastic waste recycled</p> <p>Incentives for recycling industry Financial instruments such as credits, deductions, tax exemptions, as well as shortened depreciation lifetime, are designed to stimulate growth of the plastic recycling industry</p> <p>Landfill taxes Taxes charged by national governments to private or public landfill operators to help drive waste away from landfill towards preferable disposal alternatives, such as composting, recycling, and reuse</p> <p>Pay as you throw A policy instrument, typically used at the local level, whereby households are charged a fee for waste collection. These could be a flat monthly fee, an amount based on the frequency of waste collection, or an amount calculated per the measure of the generated waste (e.g., weight, number of bins, etc.)</p>
Funding	<p>Municipal bonds Debt instruments issued by the local or national government to finance capital expenditure for waste management (e.g., construction of recycling plants, MRFs, etc.) that are usually exempt from national and local taxes</p> <p>Government grants and funds Special funds established by the national government for solid waste management, which are used to provide grants, subsidies or special interest loans to municipalities, private sector and NGOs to scale waste management initiatives</p> <p>Research and development incentives Financial incentives, like tax cuts or rebates on R&D expenses, designed to encourage innovation and development of resource-efficient materials and cutting-edge treatment technologies</p>	

Social inclusion	Informal sector inclusion Set of rules, such as workforce mandates, service fees, work permissions and health insurance, allowing for official recognition and inclusion of independent waste collectors into the formal waste management chain
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Table 21 reflects suggestions from the Ocean Conservancy's "Plastics Policy Playbook" (Ocean Conservancy, 2019), and regrouped for the purposes of this study

Annex 4.

List of relevant UNEA articles

Introduction

- Recognizes that the presence of plastic litter and microplastics in the marine environment is a rapidly increasing serious issue of global concern that needs an urgent global response taking into account a product life cycle approach, and acknowledging that the levels and sources of marine plastic litter and microplastics, and the resources available to tackle the issue, can vary between regions, and that measures need to be taken and adapted as appropriate to local, national and regional situations (UNEA Res. 2/11 para 1).
- Consider the feasibility and effectiveness of a potential international legally binding agreement on marine litter and microplastics (Draft outcome document of AHEG2 meeting, para 4, Governance).

Guiding elements

- Resolution 2/11 adopted at the second UNEA meeting called for "an urgent global response taking into account a product life cycle approach" to the issue that takes into account the varying resources available and highlighting that measures "measures need to be taken and adapted as appropriate to local, national and regional situations". (UNEA Res. 2/11, para 1)
- Resolution 3/11 adopted at the third meeting of UNEA noted the "important role of key sectors such as plastics producers, retailers and the consumer goods industry, as well as importers, packaging firms and transport firms, to contribute to the reduction of marine litter, including microplastics, arising from their products and activities." The resolution called for sectors to disclose the resulting impacts across the life cycle of their products, to adopt innovative approaches including the use of extended producer responsibility schemes. (UNEA Res. 3/7, para 6)
- Resolution 4/6 adopted at the fourth UNEA meeting stressed the need for sustainable consumption and production patterns to be adopted across the life cycle of plastics, also raising the need for environmentally sound waste management, resource efficiency and adherence to the 3R waste hierarchy. (UNEA Res. 4/6, intro)
- The need for a life cycle and resource efficiency approach to addressing the problem is again agreed in Resolution 4/6 adopted at the fourth UNEA meeting. This should build on existing initiatives and instruments, and be "supported by and grounded in science, international cooperation and multi-stakeholder engagement" (UNEA Res. 4/6, para 1).

Vision

- A new global agreement should include an overall vision that aligns with the

goal agreed in Resolution 3/7 and adopted at the third UNEA meeting in December 2017. This resolution, adopted by consensus, "stresses the importance of long-term elimination of discharge of litter and microplastics to the oceans and of avoiding detriment to marine ecosystems and the human activities dependent on them from marine litter and microplastics. (UNEA Res. 3/7, para 1)

Principles and approaches

Precautionary approach

- Stresses the importance of the precautionary approach according to which lack of full scientific certainty should not be used for postponing cost-effective measures to prevent environmental degradation, where there are threats of serious or irreversible damage. (UNEA Res. 2/11 para 7)

Prevention

- Stresses that prevention and environmentally sound management of waste are keys to long-term success in combating marine pollution, including marine plastic debris and microplastics, calls on Member States to establish and implement necessary policies, regulatory frameworks and measures consistent with the waste hierarchy, and in this context stresses the importance of providing capacity-building and that Member States should consider financial assistance to developing countries, least developed countries and in particular small island developing States for the realization of these objectives. (UNEA Res. 2/11 para 7)
- Underlining that preventive action through waste minimization and environmentally sound waste management should be given the highest priority and that that is especially important in geographical areas with the largest sources of marine plastic litter and recognizing that technology and effective measures already exist that may provide cost-effective, environmentally sound and locally and regionally adapted solutions. (UNEA Res. 3/7, intro)
- Stressing also the importance of the prevention and reduction of marine litter, including plastic litter and microplastics, from both land and sea-based sources, for the 2030 Agenda for Sustainable Development and the Sustainable Development Goals. (UNEA Res. 4/6, intro)

Polluter pays

- Recognizes the need to identify transport and distribution pathways and hotspots of marine litter, to cooperate regionally and internationally to clean up such hotspots where appropriate, and to develop environmentally sound systems and methods for removal and sound disposal of marine litter; stresses that removal is urgent in areas where it poses an immediate threat to sensitive marine and coastal ecosystems or marine-based livelihoods or local societies; and recognizes that removal actions should, as far as possible, be risk-based and cost-effective, following best available techniques and environmental

practices and the polluter pays approach. (UNEA Res. 2/11, para 12)

Best available techniques, best environmental practice

- Recognizes the need to identify transport and distribution pathways and hotspots of marine litter, to cooperate regionally and internationally to clean up such hotspots where appropriate, and to develop environmentally sound systems and methods for removal and sound disposal of marine litter; stresses that removal is urgent in areas where it poses an immediate threat to sensitive marine and coastal ecosystems or marine-based livelihoods or local societies; and recognizes that removal actions should, as far as possible, be risk-based and cost-effective, following best available techniques and environmental practices and the polluter pays approach. (UNEA Res. 2/11, para 12)
- Underlines the need for the sharing of knowledge and experience on the best available techniques and environmental practices for reducing littering from the fishing industry and aquaculture, and for implementation of pilot projects where appropriate, including in respect of deposit schemes, voluntary agreements and recovery, in particular through prevention and, reduction, reuse and recycling (the "three Rs") (UNEA Res. 2/11 para 15).

Waste management

- Waste management is a fundamental component of a circular approach to addressing marine plastic litter and microplastics. The importance of environmentally sound management of plastic wastes has been stressed in numerous forums, particularly under the Basel Convention. The need for including marine litter and microplastics in local, national and regional waste management plans was agreed in UNEA Res. 3/7 (para 4d). Wastewater treatment was also highlighted, being a pathway for microplastics into the marine environment.
- Stresses that prevention and environmentally sound management of waste are keys to long-term success in combating marine pollution, including marine plastic debris and microplastics, calls on Member States to establish and implement necessary policies, regulatory frameworks and measures consistent with the waste hierarchy, and in this context stresses the importance of providing capacity-building and that Member States should consider financial assistance to developing countries, least developed countries and in particular small island developing States for the realization of these objectives. (UNEA Res. 2/11, para 7).

Sustainable consumption and production

- Encourages Governments at all levels to further develop partnerships with industry and civil society and establish public-private partnerships, including with regard to environmentally friendly alternatives to plastic packaging and deposit refund systems; to raise awareness of the sources and negative effects of and possible measures for reducing marine plastic debris and microplastics; to promote change in individual and corporate behavior; and to cooperate in the prevention and clean-up of marine plastic debris; and, in that regard, invites

initiatives for the development of sustainable tourism, including through the Sustainable Tourism Programme of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns. (UNEA Res. 2/11, para 13).

- Stressing further the importance of more sustainable management of plastics throughout their life cycle in order to increase sustainable consumption and production patterns, including but not limited to the circular economy and other sustainable economic models, and the importance of environmentally sound waste management, resource efficiency, the "three Rs" (reduce, reuse, recycle), sustainable materials management, innovation in related technologies, the environmentally sound clean-up of marine plastic litter, and international cooperation for effectively preventing pollution from marine litter, including plastic litter and microplastics. (UNEA Res. 4/6, Intro).
- Raise awareness of the importance of, and encourage, sustainable consumption and production, in line with Environment Assembly resolution 4/1 on innovative pathways to achieve sustainable consumption and production, with regard to products likely to generate marine litter, including plastic litter and microplastics. (UNEA Res. 4/6, para 6b).

Elimination of problematic and avoidable products

- *Acknowledging* the challenges of addressing marine plastic pollution in the face of increasing production and consumption of plastic in products and packaging, and urging all countries and other stakeholders to make responsible use of plastic while endeavoring to reduce the unnecessary use of plastic and to promote research and application of environmentally sound alternatives. (UNEA Res. 3/7, intro).
- To develop and implement action plans for preventing marine litter and the discharge of microplastics; encouraging resource efficiency and increasing collection and recycling rates of plastic waste and re-design and re-use of products and materials; and avoiding the unnecessary use of plastic and plastic containing chemicals of particular concern where appropriate. (UNEA Res. 3/7, para 4c).
- Stresses that prevention and environmentally sound management of waste are keys to long-term success in combating marine pollution, including marine plastic debris and microplastics, calls on Member States to establish and implement necessary policies, regulatory frameworks and measures consistent with the waste hierarchy, and in this context stresses the importance of providing capacity-building and that Member States should consider financial assistance to developing countries, least developed countries and in particular small island developing States for the realization of these objectives. (UNEA Res. 2/11, para 7).
- Underlines the need for the sharing of knowledge and experience on the best available techniques and environmental practices for reducing littering from the fishing industry and aquaculture, and for implementation of pilot projects where appropriate, including in respect of deposit schemes, voluntary agreements and recovery, in particular through prevention and, reduction, reuse and recycling (the "three Rs"). (UNEA Res. 2/11, para 15).

Chemical hazard reduction

- To develop and implement action plans for preventing marine litter and the discharge of microplastics; encouraging resource efficiency and increasing collection and recycling rates of plastic waste and re-design and re-use of products and materials; and avoiding the unnecessary use of plastic and plastic containing chemicals of particular concern where appropriate. (UNEA Res. 3/7, para 4c).
- Underlines that, while research already undertaken provides sufficient evidence of the need for immediate action, more research is needed on marine plastic debris and microplastics, including associated chemicals, and especially on environmental and social impacts – including on human health – and on pathways, fluxes and fate, including fragmentation and degradation rates, in all marine compartments and especially in water bodies and sediment deposits of the coastal and open ocean, as well as on impacts on fisheries, aquaculture and economy; and urges Governments at all levels and Member States in a position to do so to support such research. (UNEA Res. 2/11, para 20).

Mitigation and removal

- Stressing further the importance of more sustainable management of plastics throughout their life cycle in order to increase sustainable consumption and production patterns, including but not limited to the circular economy and other sustainable economic models, and the importance of environmentally sound waste management, resource efficiency, the "three Rs" (reduce, reuse, recycle), sustainable materials management, innovation in related technologies, the environmentally sound clean-up of marine plastic litter, and international cooperation for effectively preventing pollution from marine litter, including plastic litter and microplastics. (UNEA Res. 4/6, Intro).

National Plastic Management Plans

- To develop and implement action plans for preventing marine litter and the discharge of microplastics; encouraging resource efficiency and increasing collection and recycling rates of plastic waste and re-design and re-use of products and materials; and avoiding the unnecessary use of plastic and plastic containing chemicals of particular concern where appropriate. (UNEA Res. 3/7, para 4c).
- To include marine litter and microplastics in local, national and regional waste management plans and in wastewater treatment where appropriate. (UNEA Res. 3/7 para 4d).

Science and knowledge building

- Requests the ED of UNEP, subject to the availability of resources and benefiting from the work of existing mechanisms, to immediately strengthen scientific and technological knowledge with regard to marine litter, including marine plastic litter and microplastics, through the following activities (UNEA Res 4/6, para 2):

(a) Convening existing relevant science advisory initiatives with input from Member States, as appropriate, to provide input into the activities outlined in paragraphs 3 and 7 of the present resolution;

(b) Compiling available scientific and other relevant data and information to prepare an assessment on sources, pathways and hazards of litter, including plastic litter and microplastics pollution, and its presence in rivers and oceans; scientific knowledge about adverse effects on ecosystems and potential adverse effects on human health; and environmentally sound technological innovations;

(c) Recommending indicators to harmonize monitoring, reporting and assessment methodologies, taking into account key sources of marine litter, including plastic litter and microplastics, in cooperation with relevant international organizations;

(d) Gathering information with a view to informing policies and action regarding environmentally sound technological innovations, options and measures for reducing the risk of discharges of litter, including plastic litter and microplastics, into the marine environment, taking into account the whole life cycle of plastics, in support of local, national, regional and global action.

Funding and capacity building

- *Emphasizing* that technology transfer on mutually agreed terms and resource mobilization from all sources are important elements to combating marine litter and microplastics. (UNEA Res. 3/7, intro).

Industry responsibility

- *Recalls* its resolution 2/11 on marine plastic litter and microplastics and invites Member States, in close collaboration with the private sector, to: (a) Reduce the discharge of microplastics into the marine environment, including, where possible, through the phasing out of products that contain microplastics; (b) Foster innovation in product design to reduce secondary microplastics release from land- and sea-based sources and improve waste management where needed; (c) Prevent losses of primary microplastics, in particular pre-production pellets (flakes and powders), to prevent spillage into the environment across the whole manufacturing and supply chain. (UNEA Res. 4/6, para 4).
- *Requests* the Executive Director, through the United Nations Environment Programme's 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, to develop guidelines for the use and production of plastics in order to inform consumers, including about standards and labels; to incentivize businesses and retailers to commit themselves to using sustainable practices and products; and to support governments in promoting the use of information tools and incentives to foster sustainable consumption and production. (UNEA Res. 4/6 para 5).
- *Notes* the important role of key sectors such as plastics producers, retailers and the consumer goods industry, as well as importers, packaging firms and transport firms, to contribute to the reduction of marine litter, including

microplastics, arising from their products and activities, as well as to provide information on the impacts arising from their products throughout their life cycle, and encourages innovative approaches such as the use of extended producer responsibility schemes, container deposit schemes and other initiatives. (UNEA Res. 3/7, para 6).

Measuring progress

- Also encourages the establishment of harmonized international definitions and terminology concerning the size of, and compatible standards and methods for the monitoring and assessment of, marine plastic debris and microplastics, as well as the establishment of and cooperation on cost-effective monitoring, building as far as possible on ongoing related monitoring programmes and considering alternative automated and remote sensing technology where possible and relevant. (UNEA Res. 2/11, para 19).

Institutional elements

- UN Environment Assembly resolutions call for action from the UN system. UNEA Res. 2/11 (para 14 and 16) highlights the role of FAO in mitigating and cleaning up abandoned, lost or discarded fishing gear, and IMO in mitigating marine litter. UNEA Res. 4/6 (para 6) invites UN agencies to contribute to addressing marine litter through activities such as raising awareness and promoting environmentally sound management and marine plastic prevention.
- UN Environment Assembly Res. 2/11 (para 5) welcomes the work under the aegis of the CBD, the International Whaling Commission and the Convention on Migratory Species (CMS) on impacts of marine debris on marine biological diversity. Also, the work under the aegis of regional frameworks is welcomed, including the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region on pollution from vessels and from land-based sources.

Annex 5.

Principles and approaches to guide a new global agreement

Integral to the long-term success of the agreement are the principles of Extended Producer Responsibility, Sustainable Consumption and Production and Social Equity. These have been agreed in resolutions adopted at UNEA meetings and are summarized below. Also included are supporting principles and approaches agreed in various UN resolutions. Together the principles and approaches play a key role in guiding interpretation of the new agreement to ensure implementation at all levels is effective in achieving the goals of the agreement.

1. Extended Producer Responsibility

An environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle (OECD)

2. Sustainable Consumption and Production

The use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations (UNEP)

3. Polluter Pays Principle

The polluter should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution (OECD)

4. User Pays Principle

Calls upon the user of a natural resource to bear the cost of running down natural capital (OECD)

5. Proximity Principle

Treatment and disposal of waste takes place as near as possible to the point of production as is technically and environmentally possible (Basel Convention guidelines on waste management)

6. Principle of Self-sufficiency

The principle of self-sufficiency requires that most waste should be treated or disposed of within the region in which it is produced (European Environment Agency Glossary)

7. Social Equity

Inter- and intra-generational equity, job protection and creation (particularly informal sector)

The inclusion and empowerment of waste pickers, along with recognition of their working conditions and long-term plans to upgrade those conditions, should be featured in the agreement (Ocean Conservancy, 2015).

8. Principle of Progression

The principle of progression aims at the continued improvement of environmental legislation on the basis of the most recent scientific knowledge (UN, 2018). The agreement should acknowledge that parties need to progress successively so that action at any given point of time reflects the highest level of ambition. To this end, each successive NPMPs need to represent a progression in relation to the preceding plan. This also relates to the principle of no regression.

9. Access to Information

For the purposes of this Convention, information on health and safety of humans and the environment shall not be regarded as confidential (Stockholm Convention)

Annex 6.

The contribution of a new global agreement to achieving the SDGs

The adoption of a new agreement can help to deliver the 2030 Agenda for Sustainable Development, in particular Target 14.1 that outlines a commitment for 2025 to “prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.” Moreover, elimination of leakage helps achieving many other Sustainable Development Goals (SDGs), as illustrated in Table 22.

Table 22: Relevance of plastic pollution to the 2030 Agenda and ways a new agreement can contribute to delivering SDGs.

	Relevance of plastic pollution to SDGs	How the agreement can contribute to SDGs
	<p>Poor communities commonly do not have access to effective waste management, resulting in plastic waste polluting the surrounding environment. In addition, waste pickers often face social marginalization, low living and working conditions, and are subject to vector-borne diseases (Cruvinel et al., 2020)</p>	<p>Promotes recycling schemes that provide people living in poverty with additional income-generating possibilities, while improving the environmental quality of their surroundings. Integration of waste pickers in formal waste management systems can provide improved sanitary work environments.</p>
	<p>Ghost fishing by derelict fishing gear results in significant losses of potential food for human consumption (Beaumont et al., 2019). Plastic mulching can significantly increase crop yields, but the accumulation of residual plastic film seriously affects crop yields over time (Gao et al., 2019).</p>	<p>Prevents leakage by facilitating policies to prevent loss of fishing gear and promote removal of abandoned fishing gear from the ocean, particularly through market-based instruments. Improve the technology for recovering residual plastic film to protect the environment</p>
	<p>Potentially concerning impacts of microplastics include enhanced inflammatory response, size-related toxicity of plastic particles, chemical transfer of adsorbed chemical pollutants, and disruption of the gut microbiome (Wright & Kelly, 2017). In addition, waste in the environment can promote water-borne and other diseases, e.g. malaria (Cruvinel et al., 2020; Krystosik et al., 2020).</p>	<p>Helps to reduce adverse health effects by restricting the use of hazardous additives and minimizing microplastic releases. By reducing plastics on the market that are not recyclable and stimulating end-markets for plastic wastes, the collection rate of plastic of waste will increase, reducing the risk of water-borne diseases resulting from uncollected waste.</p>
	<p>Microplastics are commonly released into waterways and entering drinking water (Koelmans et al., 2019). In addition, Plastic waste clogs sewers that results in stormwater overflows (Clapp & Swanston, 2009).</p>	<p>Helps to design policies to reduce the release of microplastics and restrict the use of plastics bags and other disposable plastic products, minimizing the risk of clogging sewers and associated problems.</p>



Two billion people globally do not have access to adequate waste collection services (Wilson et al., 2015).

Provides increased value to all plastic waste, increasing the potential to profit from collected waste, enhancing investment in services and facilities and providing greater job opportunities in the waste sector.



44% of plastic waste consists of packaging, which has a short life-span and often ends up in the environment (Geyer et al., 2017). Other plastic-intensive sectors include building and construction, clothing and textiles, agriculture and transportation.

Promotes sustainable product policies that will foster prevention, reuse and recyclability helping to minimize waste streams, increase resource efficiency and accelerate the development of closed loop systems.



4% of the world's oil production is used as feedstock to make plastics and a similar amount is used as energy in the process (Thompson et al., 2009).

Functions as a strong ally in the fight against climate change by decoupling plastic production from fossil feedstocks and by promoting recycling to prevent carbon dioxide emissions from incineration and methane emissions from landfilling.



800 species are affected by plastic pollution via ingestion or entanglement resulting in death of one million marine animals each year (CBD, 2016; Ocean Conservancy, 2019).

Prevents leakage of plastics to the environment and promotes removal of plastics that will prevent entanglement and indigestion of marine animals.



The density of microplastics in soil is significantly higher than in the ocean with potentially damaging effects on terrestrial ecosystems (Horton et al., 2017).

Reduces terrestrial contamination by helping to design preventative policies, in particular minimizing the use of intentionally-added microplastics in agriculture.

Governments perceive Goal 12 on responsible consumption and production the most challenging one to implement and it has major performance gaps across regions (Sachs et al., 2019). The agreement can help to boost implementation of Goal 12 focusing on reducing residual waste and achieving sound management of chemicals across the life cycle, thus helping to specifically achieve the following targets:

- **Target 12.4** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
- **Target 12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
- **Target 12.6** Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

In addition to working towards achievement of the principle of sustainable consumption and production, reducing residual waste and the use of chemicals of concern will incorporate the principles of precaution, inter- and intra-generational equity, conservation of biological diversity and ecological integrity.

Annex 7.

Examples of Trade Related Environmental Measures (TREM)s

Trade measures have been included in MEAs to assist in achieving the goals of the agreement, often incentivising states to sign the agreement and thereby preventing an increase in production within non-signatory states. Trade related environmental measures can take the form of trade restrictions, prior informed consent (PIC)⁴³, licenses/permits for import and export, and requirements for labelling and packaging. MEAs that have adopted trade related environmental measures include the Basel Convention, the Rotterdam Convention, the Cartagena Protocol, the Montreal Protocol, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Kyoto Protocol.

Regulating trade in plastic waste

The Basel Convention prohibits party states to export or import hazardous wastes and other wastes to or from non-party states. Where trade is allowed and where wastes are considered hazardous under the convention, the exporting state must provide prior written notification to the competent authority of the importing state and trade may only take place once prior informed consent has been received from the importing state (Article 6.3). Prior informed consent must also be received from any states through which the waste may transit.

Information provided must include, inter alia, the generator of the waste, the designation and a physical description of the waste, method of disposal and the disposer of the waste (Annex V.A). Upon receiving the information, the importing country must respond providing consent (possibly with conditions), denying permission for the import, or requesting further information (Article 6.2). The exporting country, upon receipt of written consent, must then confirm a contract is in place between the exporter and the disposer of the waste, indicating procedures for the environmentally sound management of the waste (Article 6.3). Should parties judge that the wastes will not be managed in an environmentally sound manner, the import or export of that waste should not be permitted (Article 4.1).

Also relating to international trade of waste is the requirement for hazardous and other wastes that are traded to be packaged and labelled in line with generally accepted and recognized international rules and standards (Article 4.7(b)). In addition, a movement document must be included with the shipment from the initial point of export to the point of disposal (Article 4.7(c)).

43. Prior Informed Consent and Advanced Informed Agreement procedures provide for the regulation of international exchange of resources or products that could have adverse effects on human health and the environment. Such exchange may not proceed without the informed agreement or consent of, or contrary to the decision of, the competent authority in the recipient country. (Source: InforMEA glossary)

Trade with non-parties (import or export) is prohibited (Article 4.5) unless bilateral, multilateral or regional arrangements are in place that at a minimum meet the provisions of the Basel Convention (Article 4.5).

Regarding plastic waste specifically, amendments to the Basel Convention adopted in May 2019⁴⁴ provide for plastic wastes to be categorized into three groups for export, two of which require PIC. These categories are

1. Non-hazardous and difficult to recycle plastics (as defined in Annex II) will require PIC,
2. Hazardous plastics (as defined in Annex VIII) will require PIC, and
3. Non-hazardous and easy to recycle plastics (as defined in Annex IX) are exempted from PIC.

Plastic wastes that fall under the first two categories will trigger the PIC procedures described above. These measures will become operational on 1 January 2021.

Regulating trade in plastic products

No international mechanism exists for regulating the global trade of plastics as products or packaging. National measures have been adopted, such as bans and differential taxes, usually applied equally to products imported or manufactured domestically. The Stockholm Convention regulates a limited number POPs that may be added to plastic products during manufacture.

Examples can be found in existing MEAs that provide trade related environment measures that allow a country to regulate what products are allowed to be placed on their domestic market. The mechanisms are based on 1) written notification by the exporting country and 2) consent from the importing country, similar to the Basel Convention. These are outlined briefly below. These mechanisms are usually supported by measures that promote information sharing and for providing assistance in complying with obligations agreed to.

PIC under the Rotterdam Convention

The Rotterdam Convention aims to prevent harm to human health and the environment from certain hazardous pesticides and industrial chemicals by regulating international trade thereof. The convention provides for information to be made available to importing countries on listed chemicals and pesticides in order that a country may accept or refuse such trade based on risks and available national facilities to manage and dispose of the chemicals safely. Chemicals that are given consent for import must be labelled according to standards.

A decision guidance document is developed for chemicals specified under the Rotterdam Convention for PIC procedure. This document outlines the regulatory requirements for prohibition or restriction as per the Convention. Within nine months, receiving countries must decide if import of the chemical will be allowed, prohibited or allowed under specific conditions. Such measures must also be applied in the same manner if produced domestically. Alternately, countries may ask for additional information (Article 10).

Exporting countries must ensure that those operating under their jurisdiction and

44. BC-14/12: Amendments to Annexes II, VIII and IX to the Basel Convention

exporting chemicals covered by the Convention comply with PIC procedures and with the decisions of each of the importing countries. If a country has not provided information in response to the decision guidance document developed by the Secretariat, the exporting country must obtain permission from the importing country to explicitly allow the movement of such chemicals into their territory (Article 11). Where a chemical not regulated under the Rotterdam Convention is prohibited or strictly regulated within an exporting country, particular reporting requirements must be met by the exporting country (Article 12). Exporting countries must also provide adequate labelling if chemicals being exported are listed in Annex III of the convention or within their own territory are prohibited/strictly regulated or subject to labelling requirements (Article 13).

Advance Informed Agreement under the Cartagena Protocol

The Cartagena Protocol on Biosafety is an implementing agreement to the Convention on Biological Diversity (CBD). The protocol aims to protect biodiversity from the risks associated with the introduction of living modified organisms (genetically modified) while taking into account any risks posed to human health and, in particular, the transboundary movement of such organisms (Article 1).

Similar to the Rotterdam Convention, the Cartagena Protocol seeks to ensure importing countries are provided with sufficient information to make appropriate decisions. This is achieved through the advance informed agreement (AIA) procedure. Exporting countries are to provide the country of import with information listed in Annex I. This includes the characteristics of the living modified organism (LMO), the techniques used to derive the LMO, the intended use and the potential risks of introducing the LMO into the environment (Article 8). If an LMO has not been listed by the Parties as being unlikely to cause harm, the first import must comply with AIA procedures (Article 7). Where LMOs fall under the scope of the protocol, their transboundary movement must follow packaging and labelling standards (Article 18).

The protocol outlines a risk assessment procedure to assist the importing country in making a decision on whether to allow the import, to place certain conditions on the import or to request additional information or time (Article 10). LMOs imported for particular uses are subject to more relaxed procedures. Parties may apply their own legislation to the import of LMOs and may enter into bilateral, regional or multilateral agreements if these agreements or national legislation are consistent with the protocol. Trade with non-Parties is not prohibited but must be consistent with the objectives of the protocol (Article 24).

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