Marine Litter and Plastic Pollution – Legal Frameworks

Course Workbook
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Lesson 1 - Introduction

Learning Objectives

- Outline the main sources of marine plastic pollution.
- Explain the impacts of marine plastic pollution.
- Describe the relevant environmental law principles and approaches to plastic pollution and marine litter.
- Recognize the human rights impacts of plastic pollution and marine litter and the associated obligations on States and businesses.
1.1 Overview

SDG Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

Indicator 14.1.1 (b): Plastic debris density

Introductory video lecture by Dr. Daniela Diz Pereira Pinto, Strathclyde Centre for Environmental Law and Governance, University of Strathclyde, Glasgow.

https://www.youtube.com/watch?v=8d1uuVZOhew&feature=emb_title
The Plastics Problem

We begin this course with a detailed introduction to marine litter and plastic pollution, including the key facts and figures, the main sources and impacts (including on human rights) and some of the applicable environmental law principles and approaches. We then move on to consider the legal and policy frameworks and approaches at the global, regional and national levels. As you will see, despite all of this varied and wide-ranging action at all levels, the high and rapidly increasing levels of plastic pollution continue to represent a serious environmental problem on a global scale, negatively impacting the environmental, social and economic dimensions of sustainable development. This prompted the international community recently to agree to develop a new international legally binding instrument, recognizing the urgent need to strengthen global coordination, cooperation and governance towards the long-term elimination of plastic pollution in marine and other environments [see here and more information on this process is in Lesson 2 below].

Key Facts and Figures

Approximately 9.2 billion tonnes of plastics have been produced since 1950. Only about 30% of these plastics remain in use, resulting in the generation of some 6.9 billion tonnes of primary plastic waste around the world to date. More than three-quarters of this plastic waste was discarded and ended up in landfills, dumps, uncontrolled or mismanaged waste streams, or the natural environment, including the oceans. In 2018 alone more than 343 million tonnes of plastic waste were generated [UNEP, 2021], and demand for plastic continues to grow.

The volume of plastics in the oceans is estimated to be between 75 and 199 million metric tons, and emissions of plastic waste into aquatic ecosystems are projected to nearly triple by 2040 without meaningful action [UNEP, 2021]. Marine plastic litter comes mainly from land-based sources, including:
<table>
<thead>
<tr>
<th>Agriculture</th>
<th>Wastewater treatment plants</th>
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<tr>
<td>Construction</td>
<td>Transportation</td>
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The images illustrate various industries and processes, including agriculture, wastewater treatment, construction, and transportation.
Plastics make their way into the marine environment via storm water run-off, rivers or are directly discharged into coastal waters. Uncollected waste is thought to be the major source, with lesser amounts coming from collected waste re-entering the system from poorly operated or located formal and informal dumpsites. Sources of marine litter can generally be correlated with the efficiency of solid waste management and wastewater treatment. Solid waste generation per capita is 0.6-1.0 kg/day in low-income countries, 0.8-1.5 kg/day in middle income countries, and 1.1-4.5 kg/day in high-income countries. On average, 12% of the mass of all municipal solid waste (MSW) consists of plastics [UNEP, 2021]. Only fifteen countries export 73.9% of plastic waste.

Sea-based pollution from sources such as shipping, fishing, offshore installations or dumping of refuse at sea also contributes significantly to the loss of plastics to the environment [UNEP, 2021].
The scale and rapidly increasing volume of marine litter and plastic pollution are putting the health of all the world’s oceans and seas at risk. Marine plastic litter has been found at all ocean depths and on the ocean floor and on the shores of even the most remote Pacific islands [UNEP, 2019].
Plastic and Climate Change

The links between climate change and the plastic life cycle have also been underscored. Using a life cycle analysis, in 2015 greenhouse gas emissions from plastics were 1.7 gigatonnes of CO2 equivalent (GtCO2e), and are projected to increase to approximately 6.5 GtCO2e by 2050, or 15 percent of the global carbon budget [UNEP, 2021].

In addition, ocean plastics undermine the marine ecosystem services that can support climate change mitigation. Plastics can alter the global carbon cycle through effects on plankton and primary production in marine systems (notably, mangroves, seagrasses, corals and salt marshes that sequester carbon).

Plastic and Chemicals

Every plastic item contains additives that determine the properties of the material and influence the cost of production. Typical additives include stabilizers, fillers, plasticizers, colourants, as well as functional additives such as flame retardants and curing agents. Some plastic additives are hazardous to human health and the environment [UNEP, 2021]. Additives can leach out of the plastics during normal use, when in landfills, or following improper disposal in the environment. Additives may also degrade to form other toxic molecules. Plastic fragmentation into microplastics and nanoplastics (which we will examine further below) can allow chemical additives to move in the environment far from the point of use.
The UN Special Rapporteur on Toxics in a recent report on the environmentally sound management and disposal of hazardous substances and wastes, concluded that:

1) There is currently no commercially available waste management method capable of solving the global plastic pollution crisis. Toxic additives and micro-plastics contained in...oceans...cannot be eliminated by recycling, landfilling or incineration;

2) Only about 9% of all plastic waste ever produced has been recycled;

3) Existing recycling practices pose health threats from volatile organic compounds and they concentrate toxic additives in plastics, generating new hazardous products so “recycling practices implemented to date are...an optical illusion that perpetuates the severe human rights impacts of plastics”.

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As the diagram shows, personal protective equipment, widely used during the COVID-19 pandemic, has added significantly to current volumes of plastic waste [UNEP, 2021].
1.2. Sources of Marine Plastic Pollution

As we have seen, the majority of marine plastic litter comes from land-based sources. The input of plastics from sea-based activities (e.g. the fishing and shipping industries and recreation) is unknown, but it has been estimated to account for around 20% of all plastics reaching the ocean. The fishing industry in particular is a significant source of plastic pollution. In 2017, 5.7% of all fishing nets, 8.6% of all traps and 29% of all lines were lost to the world’s oceans [UNEP, 2021]. Plastic litter can wind up in the water through system or mechanical failure, obsolete waste management practices or through illegal littering and dumping.

When plastics break down in the marine environment, they transfer microplastics, synthetic and cellulosic microfibres, toxic chemicals, metals and micropollutants into waters and sediments and eventually into marine food chains [UNEP, 2021].
The diagram above gives you a broad overview of the main sources, pathways and sinks of marine plastic pollution. We are now going to look in more detail at some of the specific types of marine plastic pollution, including microplastics, persistent organic pollutants and single-use plastic packaging.

**Microplastics**

Microplastics are very small pieces of plastic commonly defined as less than 5 millimetres (mm) in size. They include nanoplastics, which are generally agreed to be less than 1 micrometre (μm). Microplastics exist in many forms, including fragments, fibres (referred to as “microfibres”), spheres, films and pellets. Now ubiquitous in the environment, they are present in food, water and air [UNEP, 2021]. Furthermore, microplastics are:

*Read the boxes on the right to learn more*

Either purposefully manufactured (primary microplastics) for use in various industrial and commercial products (e.g. pellets, micro-beads in cosmetics) or;

The result of weathering of plastic products and synthetic fibers that can produce micro- and nano-plastic particles.
Microplastics often contain a complex cocktail of chemical additives and they can absorb organic matter, bacteria and additional chemical contaminants from the surrounding seawater. Depending on their size, shape, surface area and toxicity, microplastics can have both physical and chemical effects on animals. Marine organisms can ingest this plastic directly or by consuming other organisms that contain plastic. Accumulation of microplastics by phytoplankton interferes with metabolism and photosynthesis and (in the case of both phytoplankton and zooplankton) directly impacts their growth, body weight and reproduction and increases mortality. These effects combined potentially threaten the very bottom of the marine food chain. There is also growing evidence of the bioaccumulation of microplastics at other levels in the food chain [UNEP, 2021]. Furthermore, microplastics can adsorb and transport contaminants such as POPs (which we will learn about below) from the surrounding environment, adding to the many chemical additives incorporated in plastics during their production.
Sources of microplastics in the marine environment

**Land-based sources**
- **UV radiation**: Breaks down macroplastics into microplastics.
- **Wind**: Wind transports microplastics across the Earth.
- **Precipitation**: Precipitation flushes microplastics from land into aquatic environments like rivers and lakes.
- **Artificial turf**: Abrasion of artificial turf contributes to the release of microplastics into the environment.
- **Tyres**: Abrasion of tyres is a major source of microplastics. Particles may be transported to aquatic environments draining into the ocean.
- **Comestics**: Intentionally added plastic particles in cosmetics are released into wastewater systems.
- **Synthetic clothing**: Abrasion, for example during washing and drying, releases microfibres into waterways, wastewater systems and the air.
- **Industry**: Leakage of small plastic pellets during industrial manufacturing processes, at production facilities or during transportation.
- **Agriculture**: Plastics used in agricultural processes and applications, e.g., mulching, fertilizers, greenhouses.
- **Wastewater**: Capture of microplastics by wastewater treatment systems prevents releases to the oceans via outfalls; however, many are still lost, especially during heavy rain events. Microplastics wash off agricultural soil where sewage sludge is used as fertilizer.
- **Macroplastics**: Degradation of macroplastics on beaches releases microplastics.

**Marine-based sources**
- **Fishing**: Abandoned, lost, discarded fishing gear or abrasion of fishing equipment, such as ropes and buoys, release microplastics.
- **Shipping**: Wear and tear on synthetic polymers, including paints, used in the maritime industry releases microplastics.
- **Aquaculture**: Abrasion of aquaculture gear such as buoys made of expanded polystyrene contributes to microplastic releases.

**Persistent Organic Pollutants (POPs)**

Persistent organic pollutants (POPs) are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment. Many of these chemicals are contained in plastics and plastic waste, and they are released by the slow disintegration of discarded plastics. Mounting evidence suggests that some plastics containing POPs also contain endocrine disrupting chemicals. We will learn more about POPs and the international legal framework which seeks to regulate them in Lesson 2.

**Single-use Plastic Packaging**

A large proportion of post-consumer plastic waste consists of plastic packaging. Plastic packaging is everywhere. It envelops many of the products we buy at the shops and almost all those delivered to our front door. Since the 1950s plastic packaging has replaced paper, glass, metal and other reusable materials. It is estimated that 3.4 billion tonnes of plastic packaging were introduced into our lives between 1950 and 2017 [UNEP, 2021]. Today packaging is the largest use of plastic resins. It is used in the commercial, retail, household, tourism and agricultural sectors. Waste plastic packaging makes up a considerable portion of collected aquatic litter.

Many governments are therefore scaling up their efforts to phase out single-use plastic packaging and to manage plastic packaging waste in an environmentally sound manner. We will explore the main regulatory approaches they are taking in Lesson 4.
1.3. Impacts of Marine Plastic Pollution

Although the greatest accumulation of marine litter is in coastal environments, plastic (including microplastic) is distributed worldwide in the ocean, with increased accumulation in the convergence zones of each of the five subtropical gyres. See UNEP, 2019. Plastic pollution has been recognized for decades now as a major threat to marine biodiversity.
Specifically, the impacts of marine plastic pollution include:

**Death or injury of marine life**
Caused by entanglement with derelict fishing gear and plastic packaging or ingesting litter, either accidentally or intentionally when it is mistaken for food. This can cause starvation due to intestinal blockage or lack of nutrition. A growing number of turtles, marine mammals and seabirds are endangered or killed by floating litter. Ingestion of microplastics is of particular concern because their size is within the optimal prey range for a wide variety of marine animals. As we saw earlier microplastics often contain a complex cocktail of chemical additives and can adsorb and transport contaminants such as POPs from the surrounding environment. There is growing evidence that the bioaccumulation of microplastics is affecting all levels of the food chain.

![Image of a seal]

**Pollution of human food**
Microplastics are now appearing in food consumed by humans; however, the impact on human health is uncertain [UNEP, 2019]. A recent review of microplastics in wild caught fish reported evidence of plastics in the intestinal tract of 65% of the 496 species examined [UNEP, 2021]. Studies suggest that eating whole organisms (e.g. mussels and oysters) as opposed to gutted animals provides the highest potential exposure to both physical and chemical toxicity. Toxicological studies using a range of organisms (including mammals), as well as cell cultures, have shown that micro and nanoplastics can initiate adverse cellular events in humans (oxidative stress and inflammation responses). However, there is currently insufficient information to connect plastic particle toxicity with adverse human health outcomes [UNEP, 2021].
Source of dangerous chemicals
As we learned earlier plastics can contain many chemicals, some of which are hazardous. Chemicals are added during production (e.g. additives) and leach out rapidly upon arrival in the marine environment. Some will accumulate as a result of sorbing (e.g. POPs) onto plastics residing in the water. However, the fraction of chemicals contained in plastic or sorbed to plastic in the ocean, is currently considered to be small compared to the chemicals found in seawater and organic particles that originate from other land-based sources of pollution. More data is needed to fully understand the relative importance of exposure to sorbed chemicals from microplastics compared with other exposure pathways.
Mental health impacts
There is evidence that the presence of marine litter can undermine the mental health benefits generally provided by the aesthetic and restorative value of the ocean for people. There is also evidence of how ocean plastic may underline traditional uses and cultural and spiritual practices related to the ocean [Secretariat of the Convention on Biological Diversity, 2018].

Economic and socio-cultural costs
Marine litter also has indirect effects, such as interfering with small-scale fishing opportunities, tourism and recreation. These costs are generally unquantified but may fall disproportionately on those with livelihoods most closely tied to coastal activities. Some direct economic costs include the cost of beach cleanup and accidents related to navigation hazards or fouling. The European Union has estimated that every year up to €62 million is lost to the fishing industry from damage to vessels and gear and reduced catch due to ghost fishing (abandoned gear that continues to catch marine organisms as it drifts) and up to €630 million is spent on beach cleaning [UNEP, 2019].

That said, cleaning up coasts and beaches can provide environmental and economic benefits (e.g. Orange County California estimated an economic benefit of more than US$140 million could be generated annually from the increased number of visitors attracted to cleaner beaches.

The diagram below provides a concise overview of some of the economic costs of marine plastic pollution. More research is needed to better understand the direct and indirect costs of losses to ecosystem services resulting from marine litter and plastic pollution, together with socioeconomic costs to communities that depend on these services for their livelihoods [UNEP, 2021].
What are the different economic costs of plastic pollution?

**Prevention cost**
- Reduce the likelihood of plastic waste leaking into the environment (pre-leakage)

**Remediation cost**
- Reduce the risks posed by plastic pollution leaked into the environment (post-leakage)
- All forms of costs incurred by various sectors and the environment resulting from the presence of plastic pollution in the environment (post-leakage)

**Damage cost**
- Municipal clean-up
  - Prevention costs
    - Costs of collecting, sorting and disposing of household and commercial wastes
- River clean-up
  - Remediation costs
    - Costs of installing and maintaining litter traps, cost of collecting and disposing of wastes before entering the ocean
- Beach clean-up
  - Remediation costs
    - Costs of cleaning beaches of plastic waste and marine litter
- Marine tourism
  - Damage costs (lost opportunity)
    - Lower aesthetic value of beaches polluted by waste reduces tourism numbers and income for this sector
- Marine transport
  - Damage costs
    - Removal of marine litter from propeller and anchor entanglement and intake valve blockages
- Marine ecosystem services
  - Damage costs (indirect)
    - Marine litter reduces the services marine ecosystems provide, including fish nursery habitats
- Aquaculture
  - Damage costs
    - Costs of time to remove marine litter from nets, propellers and intake pipes
- Fisheries
  - Damage costs (lost opportunity)
    - Costs of time to remove marine litter from fishing gear
  - Damage costs (indirect)
    - Reduced fish populations due to catch by derelict fishing gear
  - Damage costs
    - Cooling systems clogged by plastic litter

**Recycling**
- Damage costs (lost opportunity)
  - Landfilling, incineration and open burning reduce the feedstocks and profits of the recycling sector

**Agricultural**
- Damage costs
  - Ingestion by livestock of litter blown onto land from beaches

Limiting plastic pollution and developing a circular plastic economy require multilevel actions by different stakeholders ranging from waste management and other government authorities to chemical and plastic manufacturers, as well as consumers and companies that produce consumer goods. Actions are needed at many levels including:

- Greater use of renewable energy in materials production;
- Recycling and demand management strategies;
- Replacing fossil fuel feedstock for plastics with alternatives;
- Improving standards for design and recycling;
- Reducing the content of hazardous additives in plastic products;
- Valuing the price of plastics more effectively;
- Strengthening plastic waste management infrastructures;
- Increasing public awareness;
- Shifting to business models, such as reuse systems, that keep plastic products at their highest value within the economy for a longer time.

In Lessons 2-4 of this course we will learn about the relevant legal frameworks at the global, regional and national levels and which contribute to the above required actions. Before we consider these frameworks however, it is important to understand the general environmental law principles and strategies or approaches which inform them, and also the relevance and applicability of human rights law.
1.4. Guiding Principles and Approaches

Some key environmental law principles and approaches of relevance to plastic pollution and marine litter are outlined below. These have helped to shape the global, regional and national frameworks to tackle the issue.

Ecosystem approach

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. We will consider its relevance to plastic pollution and marine litter in relation to the following international legal instruments.

The Convention on Biological Diversity (CBD)

Parties to the CBD have clarified that the ecosystem approach entails the following:

1) Management of living components is considered alongside economic and socio-cultural considerations at the ecosystem level, not simply a focus on managing species and habitats;
2) Management of land, water and living resources in equitable ways must be integrated, taking into account natural limits and the natural functioning of ecosystems;
3) Fair and equitable benefits-sharing as reward for integration of traditional knowledge of indigenous and local communities in planning and management, or more generally for ecosystem stewardship efforts, such as the maintenance or restoration of ecosystem management functions (CBD Decision VII/11);
4) Full and effective participation of indigenous peoples and local communities and other stakeholders, including with a view to respectfully integrating their knowledge in integrated management;
5) Ecosystem management is a social process. There are many interested communities, which must be involved through the development of efficient structures and processes for decision-making and management.

In relation to marine plastics, the CBD has stated that the following can support the application of the ecosystem approach:

1) Monitoring and modelling:
   Monitoring and modelling of marine debris. Combined monitoring and modelling information for both marine species and debris types can enable the production of risk assessments for vulnerable marine taxa.
2) **Identifying impacts:**
Identifying the impacts of ocean plastics at the ecosystem level, including the evaluation of the loss of ecosystem services that can be attributed to ocean plastics.

3) **Management tools:**
Defining the role of marine debris prevention strategies within the context of cross-sectoral and area-based management tools, based on the ecosystem approach.
4) **Management system:**
Ensuring an adaptive management system that relies on continuous improvement of scientific evidence. This requires addressing the “still extensive gaps in our knowledge, particularly for microplastics, transport pathways and sources/sinks of microplastic particles” with a view to re-evaluating and adapting current management approaches as new scientific evidence becomes available.
**The General Assembly**

The General Assembly in resolutions 61/222 and 62/215 invited States to:

1) Be guided in the application of ecosystem approaches by a number of existing instruments, in particular UNCLOS and its Implementing Agreements;
2) Cooperate and coordinate their efforts and take all necessary measures, in conformity with international law;
3) Address impacts on marine ecosystems in areas within and beyond national jurisdiction, taking into account the integrity of the ecosystems concerned.

**UN Fish Stocks Agreement**

In effect, the UN Fish Stocks Agreement requires parties to adopt an ecosystem approach to fisheries, which can also support the prevention of ocean plastics pollution and the assessment of its impacts.

In order to conserve and manage straddling fish stocks and highly migratory fish stocks, coastal States and States fishing on the high seas shall:

1) Assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks;
2) Minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, hereinafter referred to as non-target species; and
3) Minimize impacts on associated or dependent species, in particular endangered species, through measures including to the extent practicable, the development and use of selective environmentally safe and cost-effective fishing gear and techniques (Article 5(d)(f)).

All these obligations have relevance to ocean plastic pollution caused by fishing gear and other operations related to ocean plastics on fishing vessels.

**Prevention and Precaution**

| NB You can learn in more detail about the general principles of international environmental law in Lesson 3 of the ‘Introduction to Environmental Governance Course’, also available on this platform [here]. |

The UN Special Rapporteur on toxics in his recent report to the General Assembly emphasized that both the principles of prevention and precaution are directly applicable to the plastics crisis, as “[m]any of the risks and harms of plastics are clearly established by science, and while others are not definitively established, scientific evidence points to serious harms.”

He therefore identified the following series of “urgent and robust measures” to protect human rights and the environment from plastics and their toxic additives:
1) Assessing the potential impacts of solutions on human rights to prevent unintended consequences and the shifting from one form of toxic exposure to another;

2) Designing products that reduce material input, avoid the use of toxic chemicals and enable reuse and recycling;

3) Addressing the hazards of toxic chemicals by class, instead of individually, as the physical ability to recycle polymers is significantly reduced or outright impeded when incompatible types of plastic are mixed, and as the use of toxic additives in plastics means that if such plastics are recycled, the toxics in them will form part of new hazardous products.

These human rights considerations can be read together with the obligations related to prevention and precaution that can be found in the law of the sea and international biodiversity law, which are outlined below.

In addition, although research suggests that up to 95 per cent of the plastic entering the ocean does not remain in surface waters, there is a major knowledge gap in understanding the behaviour and breakdown of plastic in the ocean and where it eventually ends up. It has therefore been argued from an environmental perspective that efforts to address marine litter should focus primarily on its prevention at source through:

- Sustainable consumption and production patterns;
- Sound waste management;
- Wastewater treatment, and;
- Resource recovery using the principles of a circular economy [UNEP, 2019].

**Law of the Sea**

UNCLOS includes an extended provision on prevention of marine pollution from any source (Article 194), noting the need to use the best practicable means and to endeavor to harmonize policies in this connection.

These obligations of prevention include the adoption of measures necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

**International Biodiversity Law**

The CBD obligation to carry out environmental impact assessments (Art. 14) can also be considered an expression of the prevention principle in requiring “introduce[ing] appropriate procedures requiring environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects.”
The CBD also refers to prevention and precaution in its preamble, by noting that “it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source” and “where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.”
Polluter Pays and Extended Producer Responsibility

The UN Special Rapporteur on toxics considered the polluter-pays principle to have a “major role in the design of plastics policies capable of addressing the risks and harms caused by plastics along their cycle.” He recalled that the principle implies that the polluter should bear the costs of preventing and implementing control measures for pollution, thereby serving as a basic cost internalization tool to avoid distortions on international trade.

Read the following boxes to learn more about the Polluter Pays Principle

1) The polluter-pays principle can be found in Principle 16 of the Rio Declaration on Environment and Development, which reads: “National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”

2) It has been included, as a principle, under the London Protocol on Ocean Dumping (Art. 3(2), discussed in Lesson 2 below), as well as in regional seas conventions (introduced in the SDG 14 course available on this platform), such as the Convention on the Protection of the Marine Environment of the Baltic sea area and the Convention for the Protection of the Marine Environment of the North-East Atlantic.

3) An application of the polluter pays principle that has been particularly discussed in the context of ocean plastics pollution is extended producer responsibility. The Organisation for Economic Co-operation and Development (OECD) defines extended producer responsibility as a “policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle.”

We consider EPR in more depth in Lesson 4 below on national regulatory approaches.

Circularity/Circular Economy Approach

The Circular Economy Approach has been defined as an economic model that focuses on:

- Eliminating waste;
- Increasing reuse;
- Recycling and recovery of materials;
- Reducing use of finite resources and shifting to renewable alternatives, and;
- Decreasing negative elements such as pollution.

The concept is integral to many of the legal and policy approaches being taken to tackle plastic pollution and marine litter which we will explore in the next lessons (for example the European Union’s Strategy for Plastics in the Circular Economy which we explore in Lesson 3 on Regional Approaches).
Overall reductions in the total amount of plastic pollution generated will mean phasing out specific plastic products, introducing EPR, and reshaping the established linear take-make-dispose economy to one in which material flows are part of closed-loop, resource-efficient, or circularity approaches [UNEP, 2021]. Concerted efforts at many levels will be needed to move towards circularity with respect to plastics which link business processes and social awareness with policies and consumer actions to:

- Significantly reduce the volume of fossil fuel-based plastics being produced;
- Improve the design of products to reduce levels of waste;
- Enhance decentralized recycling of materials;
- Eliminate unnecessary, avoidable and problematic plastic waste streams, and;
- Improve standards for the regulation of materials such as biodegradable plastics.

Building circularity in support of sustainable consumption and production objectives across the life cycle of plastics means going beyond the 3Rs (Reduce, Reuse and Recycle), to 5Rs with Recover and Redesign, and further to 7Rs with Refuse and Rethink. Other patterns of Rs have also been designed for circularity, such as Receive, Recycle, Repair, Refill, Rent and Resell. These are now being used to deliver new kinds of services, for example short-term loans of branded products can that be reused by different consumers from luxury fashion to furniture (e.g. from IKEA) and toys (e.g. Lego has a service called Netbricks for rental of its little plastic building blocks) [UNEP, 2021].

Another important part of building circularity for plastics is improving the traceability of products and their constituent parts. Green chemistry can provide innovative molecules that ensure traceability and can be used to create product digital passports (e.g. composition of products, components, and processes). These and other key technologies can enable end-to-end traceability of supply chains, which will help improve supply chain quality control and protect the environment and human health as well as building consumer confidence [UNEP, 2021].
1.5. Human Rights Impacts

Marine plastic pollution threatens the ability of people to enjoy and exercise several fundamental human rights which are protected under international human rights law, specifically the International Covenant on Economic, Social and Cultural Rights (ICESCR) and the International Covenant on Civil and Political Rights (ICCPR). These rights include:

*Click on each tab below to learn more*

1) **The human right to health**
   Fully entitled “the right of everyone to the enjoyment of the highest attainable standard of physical and mental health” — comprises a right to the “underlying determinants” of health, including “food and nutrition” and “a healthy environment” [ICESCR, Article 12(1)] and General Comment No.14 on the Right to the Highest Attainable Standard of **Health**.

![Image source: UN-news](image)

2) **The right to adequate food**
   Protects “the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture” [ICESCR, Article 11(1) and General Comment No.12 on the right to adequate **food**].
3) **The right to life**

“The entitlement of individuals to be free from acts and omissions that are intended or may be expected to cause their unnatural or premature death, as well as to enjoy a life with dignity” [*ICCPR*, Article 6 and HRC General Comment No.36].

4) **The right to culture**

“The right of everyone to take part in cultural life,” such as belief systems, rites and ceremonies, sports and games, customs and traditions, and arts. These includes the right of indigenous peoples to their ancestral lands, natural resources and their knowledge (Article 15 of the International Covenant on Economic, Social and Cultural Rights; General Comment No 21 of the Committee on Economic, Social and Cultural Rights, 2009; and UN Declaration on the Rights of Indigenous Peoples, Articles 5, 8 and 10-13).

Marine plastic pollution can bring about a series of changes in the marine environment as we learned about above, that threaten enjoyment of these rights. For example:
Plastic marine pollution poses an array of risks to marine life through ingestion, suffocation and entanglement. The accumulation of marine plastics across the marine environment can also impact habitats of marine species, undermining their capability to support life.

This reduction in marine biomass through increased mortality of marine species means that;

1) There are fewer resources available to meet human needs as a food source;
2) There is an increased risk to human health from contact with or close proximity to the marine environment, due to increased incidence of harmful contaminants;
3) There is reduced availability, accessibility or acceptability of marine spaces and marine resources that are essential for cultural activities, including indigenous peoples’ cultural activities on which their identity, well-being and development depend on.

Negative impacts of ocean plastic pollution on livelihoods and culture, including of small-scale fishing communities, also have impacts on economic, social and cultural rights.

The adverse impacts on human rights do not result from plastic waste and exposure to toxics in plastics alone. The whole cycle of plastics, at its various stages, has become a global threat to human rights. These include the extraction of oil and gas used to make the chemicals from which plastics are made; the release of toxic pollutants into the environment during production; the transportation of plastics and plastic pellets that contaminate coastal communities; waste mismanagement and dumping; and the release of hazardous emissions after disposal, including incineration and open burning. As a result, plastics are accumulating in food chains, contaminating water, soil and air, and releasing hazardous substances such as persistent organic pollutants into the environment.

It is also important to note that human rights impacts are not likely to be felt equally. At an international level, developing nations will likely bear the greatest burden. Nationally in both developed and developing nations, the greatest burden will likely be borne by already vulnerable groups, including women, children, the elderly, indigenous and local communities, and economically challenged coastal communities [UNEP, 2021]. We consider this issue in more depth below, in relation to the impacts of plastic pollution on children and women.
Based on the above-described negative impacts, States are obliged to:

1) Take effective, non-retrogressive and non-discriminatory measures to protect marine biodiversity from marine plastics and protect people who depend on it for the protection of their basic human rights;
2) Take urgent and immediate actions on the production, use and disposal of plastics, on the basis of the best scientific evidence available, including additional, effective and timely measures justified by scientific breakthroughs;
3) Establish controls and bans on non-essential plastic pollution (see here);
4) Avoid any storage or disposal of plastic in coastal and marine areas traditionally used by indigenous peoples without their free, prior informed consent [UN Declaration on Rights of Indigenous Peoples, Article 29(2)]
5) Use “maximum available resources” (including not only financial resources, but also human, technological, organisational, natural and information resources) to prevent negative human rights impacts of plastics [ICESCR, Article 2(1)].

From a procedural perspective, States must:

1) Ensure access to information along the entire plastics cycle, such as information on environmental and health hazards posed by toxic chemicals in plastics, by:
   - Disseminating scientific findings on ocean plastics in a language understandable to the general public and actionable, supporting public engagement in decision-making;
   - Making it common knowledge that recycling is not a solution to (ocean) plastics;
   - Requiring companies to reveal all they know about toxic effects of their products.
2) Ensure meaningful and effective participation of stakeholders in decision-making on ocean plastics, including indigenous peoples (see here);
3) Assess potential impacts on human rights of plastic solutions to prevent unintended consequences (eg. impacts on persons with disabilities of the bans on single-use plastics), and;
4) Ensure access to justice.

Knowledge gaps and the right to science

In a recent assessment report, UNEP identified a number of social issues related to marine litter and plastic pollution which would benefit from further investigation. They include:

- Cross-cutting issues such as gender and intersectionality (age, marginalized and vulnerable groups), especially in relation to exposure;
- Health effects;
- Attitudes to new innovative technologies, and;
- Integrating a human rights-based approach that includes meaningful public participation and access to remedies.
We consider some of these issues in more depth below.

Considering these and other key knowledge gaps about the impacts of ocean plastics, the UN Special Rapporteur on Toxics in his recent report on the environmentally sound management and disposal of hazardous substances and wastes listed a number of further obligations on States, derived from the human right to science (right to benefit from scientific advancements), namely to support:

- International research cooperation (particularly because of environmental injustices arising from insufficient institutional capacities and resources across countries);
- The integration of indigenous and local knowledge in research and decision-making on ocean plastics;
- Scientific research on ocean plastics that creates public benefits, such as on human health and environmental risks of ocean plastics.

UNEA Resolution 5/14 in which Member States agreed to develop an international legally binding agreement to end plastic pollution (mentioned above and explored in more detail in Lesson 2 below) stressed the urgent need to strengthen the science-policy interface at all levels and improve understanding of the global impact of plastic pollution on the environment.

**Rights of the child**

Marine plastic pollution may also undermines the protection of several human rights in the Convention on the Rights of the Child, notably the child’s right to life, survival and development, as well as children’s right to health.

As highlighted by the UN Special Rapporteur on Toxics, children exposed to hazardous substances in the plastics cycle suffer a violation of their rights to a toxic-free environment, among others. In particular, microplastics have been found in sections of the human placenta for the first time and have generated concerns relating to the potential impact on the health of the foetus.
Addressing ocean pollution requires engagement with a variety of sections of society, including the youth, in order to realise the following relation child’s rights [UNEP, 2017]:

**Article 12**: Right to have their views seriously considered;

**Article 13**: Right to freedom of expression, which includes the ability to seek, receive and communicate ideas and information of all kinds;

**Article 14**: Right to freedom of thought and conscience;

**Article 15**: Right to freedom of assembly and association;

**Article 17**: Right to access information from a variety of sources; and

**Article 29(1)(e)**: Right to environmental education, which should aim to develop the child’s respect for the natural environment. Environmental education is a key source of environmental information for children and enables them to become meaningful actors in the protection of the environment, including the marine environment.

States therefore need to:

1) Integrate child-specific scientific evidence in risk assessments and decision making on ocean plastics;
2) Support the inclusion in primary and secondary education of age-appropriate materials concerning hazardous substances, such as ocean plastics, paying particular attention to the specific needs of impacted communities.

In consideration of the potential impacts of ocean plastics on children’s substantive rights, the UN Special Rapporteur on Toxics emphasised that States should ensure that children’s views are seriously considered in decisions on ocean plastics (including the post-2020 global chemicals and waste strategy and any new global treaty on plastics), on the basis of their rights to information, expression and education outlined above.
This should be put in place given full consideration to the fact that “children have limited possibilities to exercise their rights to information, participation and access to remedies so States should take enhanced measures to protect their rights in relation to plastics”.

Gender and plastic pollution

Women and men are impacted differently by plastic pollution and marine litter. This is due in part to physiological differences, but also social factors such as different levels of access to participation, decision making, information, education or justice.

Physiological factors

Both men and women are vulnerable to marine debris, microplastics and chemicals, yet, the health of the oceans has a differentiated effect on their health and well-being. Pregnant women and children are most sensitive to the toxic materials contained in fish. In particular, microplastics have the ability to cross the placental barrier and affect unborn children [OECD, 2021]. Studies have also shown that women are more detrimentally affected in terms of the effects and elimination of toxic substances in the body. Women’s higher proportion of body fat provides a greater reservoir for bioaccumulating and lipophilic chemicals [UNEP, 2021]. The United States Centres for Disease Control and Prevention reported that women, in comparison to men, had significantly higher levels of 10 of the 116 toxic chemicals tested, three of which were phthalates commonly found in health and beauty products [UNEP, 2021].
Fishing
At the global level, women seem to be more engaged in fisheries-related activities close to the household and when women are directly engaged with fishing, they seem to focus more on small catches of highly nutritious fish and other aquatic animals for immediate household consumption, instead of trade-oriented activities [FAO, 2018]. In addition, women represent more than half the workforce in processing, cleaning and trading fish. The detrimental impacts to marine ecosystems caused by marine plastic pollution therefore impact the ability of women to look after the immediate needs of themselves and their families. Women are also likely to be more adversely affected by close contact with marine plastic pollution due to their role as supplementary fishers (partaking in income-generating activities such as shrimp farming, shellfish collection or ornamental pisciculture along coastlines) [OECD, 2021].
**Waste management**

One of the most effective tools for combatting plastic waste entering the ocean is by improving waste management and women have an important role to play. Food, health, clothing or household products are often packaged in or made up of plastic components. Women drive the majority of consumer purchasing and predominately manage their households meaning that they have a strong impact on perpetuating or curbing plastic waste [OECD, 2021]. While women tend to be visibly involved at the household level – as recycling activists and participants in informal recycling activities – they tend to be under-represented in formal employment in the waste management and recycling sector. A traditional gendered division of labour exists throughout the waste management and recycling value chain globally. Women are represented in the greatest numbers at the base of the recycling chain, most often as informal waste pickers and sorters of recyclables, with limited upward mobility. For example, in Pune, India, 90% of street recycling pickers in 2012 were women and in Arequipa, Peru, 80% of waste pickers were women [UNEP, 2021]. See the overview diagram below.
**Gender and plastic waste management**

**Decision-makers**
- Tend to occupy higher decision-making positions in the waste management sector.
- Tend to be less visible as decision-makers.
- Zero tolerance for sexual harassment.
- Actively include women experts in panels, events, advisory committees, etc.

**Formal waste workforce**
- Mainly occupy technical jobs.
- Mainly occupy non-technical jobs. Women are also strongly represented as unpaid activists and advocates for reducing plastics waste and recycling.
- Zero tolerance for sexual harassment in the workplace supported by policies and leadership commitment.
- Actively recruit women to apply for technical jobs and men in marketing and communications jobs.

**Households**
- Tend to be responsible for taking waste outside the home.
- Tend to be responsible for waste prevention and sorting in the home.
- Educate all household members in sorting and waste prevention as well as about the safe disposal of non-recyclables.

**Informal waste workers**
- Hazardous work conditions, social stigma.
- Invisibility, poor working conditions, unstable income, limited access to resources such as capital to purchase equipment to increase efficiency in processing recyclables.
- Increase awareness of the key role played by women and men informal waste pickers in supporting the effectiveness of the circular economy.
- Support programmes to reduce gender based violence (GBV) for women waste pickers. Increase their visibility, safety, status and income.

**Consumer patterns**
- Tend to buy more expensive goods with a longer lifetime.
- Tend to buy more basic consumer goods such as food, household products, etc.
- Raise awareness regarding different types of goods, their shelf lives and options for recycling especially for expensive goods.
- Increase the ease in recycling basic consumer goods such as by clear product coding and sorting options.

**Personal actions**
- Tend to litter more and are less likely to participate in recycling.
- Tend to be more environmentally aware and more likely to participate in clean-up activities but are less likely to occupy paid or decision-making positions.
- Targeted male-focused campaigns to encourage men to increase recycling.
- Recruit women activists into paid positions and provide mentoring and training programmes to advance women into greater decision-making positions.

Understanding gendered influences on behaviour and attitudes in different cultures can lead to more effective policymaking and promote the involvement of women along the waste management and recycling value chain. Greater formal engagement of women in the waste management sector could significantly contribute to the fight against plastic pollution [UNEP, 2021]. Policy solutions to better conserve the oceans require a gender-lens, addressing the gender-specific concerns of degrading oceans, including in regard to the increase in marine litter. [OECD, 2021].

These considerations mean that public authorities need to ensure that:

- Gender-disaggregated data on the impacts of ocean plastics is gathered and women are provided with information about the risks that ocean plastics pose to them, including actual and potential impacts on rural women’s ownership, acquisition, management, administration, enjoyment and disposition of natural resources;
- Women are effectively consulted before decisions are made on ocean plastics;
- The impacts on women’s human rights of proposed solutions to ocean plastics are assessed prior to decision-making;
- Gender-responsive measures are adopted and their impacts on women are monitored.

Business and human rights

The UN Special Rapporteur on toxics underscored that “the plastics industry has deliberately spread disinformation on the false premise of recycling in order to delay controls, divert attention to consumer responsibilities and escape effective accountability for the risks and harms posed by plastics”.

The following areas of business responsibility for human rights can be identified in relation to ocean plastics. These apply to;

- Petro-chemical companies producing plastics,
- Packaging manufacturers, and;
- Manufactures of consumer-products containing plastics that are dumped into the ocean (cosmetics, fishing gear etc).

Read each number below to learn more

1) Ensuring access to accurate and accessible information along the plastics cycle, including specific information on environmental and health posed by ocean plastics that they may be contributing to;

2) Assessing real and potential impacts of business activities on ocean plastic pollution and related human rights impacts, including adult and children’s health and livelihoods of coastal communities, with a view to integrating the findings into their due diligence processes;

3) Developing plans for the: (i) Sound management of plastic products (phasing out plastic production and products; product design) (ii) Sound and safe disposal of plastics
to avoid ocean plastic pollution, on the basis of best available scientific evidence, for workers, regulators and the public;

4) Developing human rights defenders protections, including a prohibition on retaliation, and regular review of effectiveness;

5) Co-developing with affected communities a sustainable and safe clean-up plan of existing ocean plastic pollution and fund it, together with monitoring.

6) Routinely monitoring for potential contamination of the ocean from toxic substances;

7) Developing secure and effective reparations for harm from plastics;

8) Funding research to fill gaps in understanding of the impacts of ocean plastics on human rights, with a view to updating due diligence processes and sharing with authorities and the public.
1.6. Recap

**Facts and Figures**
- Of the nearly 10 billion tonnes of plastic produced since 1950 more than three-quarters was discarded and ended up in landfills, dumps, uncontrolled or mismanaged waste streams, or the natural environment, including the oceans.
- Emissions of plastic waste into aquatic ecosystems are projected to nearly triple by 2040 without meaningful action.

**The main Sources of Marine Pollution**
- There are two main sources of marine plastic pollution: land-based sources and marine-based sources.
- The vast majority of marine plastic pollution comes from land-based marine plastic pollution, particularly via uncollected or mismanaged waste.
- Marine based pollution comes from activities carried out on the ocean such as fishing, water sports, cruises, offshore fossil fuel extraction, and transportation.
- Microplastics and persistent organic pollutants have harmful physical and chemical impacts on all levels of the food chain.
- Plastic packaging accounts for the largest use of plastic resins today, and waste plastic packaging makes up a considerable portion of collected aquatic litter.

**The Impacts of Marine Pollution**
- Death or injury of marine life from entanglement with derelict fishing gear and plastic packaging.
- Some plastic products contain dangerous chemicals (included in plasticizers and fire retardants, among others).
- The presence of marine litter can undermine the mental health benefits provided by the aesthetic and restorative value of the ocean for people.
- The economic and socio-cultural costs of marine litter causes indirect effects, such as interfering with small-scale fishing opportunities, tourism and recreation.

**Key principles and approaches**
- **The ecosystem approach** - a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Applied in relation to marine plastic pollution by the CBD, General Assembly and the UN Fish Stocks Agreement.
- **The principles of prevention and precaution** which are relevant in relation to the impacts of plastic pollution on human rights, on rare or fragile ecosystems and habitats (UNCLOS) and on biodiversity (CBD).
- **The polluter-pays principle** in regard to the design of plastics policies capable of addressing the risks and harms caused by plastics along their cycle (e.g. extended producer responsibility).
Human Rights Implications of Plastic Pollution and Marine Litter

- Marine plastic pollution threatens the ability of people to enjoy and exercise several fundamental human rights which are protected under international human rights law.
- The whole cycle of plastics, at its various stages, has become a global threat to human rights - with developing countries bearing the greater burden.
- The rights of certain vulnerable groups including children, women and economically disadvantaged communities are impacted more by plastic pollution and marine litter.
- States have both substantive and procedural obligations in relation to these human rights impacts. Businesses also have responsibilities in relation to the human rights impacts of ocean plastics.
- There are key knowledge gaps in relation to social issues surrounding marine litter and plastic pollution and human rights impacts. Further research into these areas is needed.
1.7. Knowledge Refresher
This section is intended to consolidate the knowledge you have gained throughout the lesson. You will find the answer key below the final question.

1) All marine litter is composed of plastic.
Select one:
   - True
   - False

2) Match each of the following activities by indicating if they are marine or land-based sources of marine pollution

   - Industrial activities  
     Marine based
   - Water sports  
     Land based
   - Fishing  
     Marine based
   - Uncollected waste  
     Land based

3) The majority of marine plastic pollution comes from marine-based sources.
Select one:
   - True
   - False

4) Ocean plastics and climate change are connected because:
Select all that apply:
   • Greenhouse gases are emitted during the life cycle of plastics
   • Ocean plastics undermine the marine ecosystem services that can support climate change mitigation
   • Fossil fuel production and plastic production are linked
   • Plastic waste in the ocean emits carbon dioxide.
5) Which of the following are proven impacts arising from marine plastic pollution? Select all that apply:
   A) Death or injury of marine life from entanglement with derelict fishing gear and plastic packaging
   B) Turtles, marine mammals and seabirds endangered or killed by floating litter
   C) Impairment of human health due to the presence of ocean plastics in food consumed by humans
   D) Diminished mental health generally provided by the aesthetic and restorative value of the coastal areas for people due to the presence of marine litter
   E) Diminished economic returns from small-scale fishing and tourism

6) Which key principles and approaches in international environmental law and policy are relevant to plastic pollution and marine litter?
   • State sovereignty
   • Polluter pays principle
   • Ecosystem approach
   • Right to self-determination
   • Precautionary principle
   • Principle of prevention

7) The impacts of plastic pollution and marine litter affect all countries and all people equally. Select one:
   - True
   - False

8) States have obligations to consider the negative impacts of ocean plastic pollution on human rights, including making specific provisions for the protection of the human rights of children. Select one:
   - True
   - False
1) All marine litter is composed of plastic.
   - **True**
   - **False**
   The correct answer is **False**: three-quarters of all marine litter is composed of plastic.

2) Match each of the following activities by indicating if they are marine or land based sources of marine pollution:
   
   [correct matches are below]

   - ✔ Fishing: Marine based
   - ✔ Uncollected waste: Land based
   - ✔ Water sports: Marine based
   - ✔ Industrial activities: Land based

3) The majority of marine plastic pollution comes from marine based sources.
   - **True**
   - **False**
   The correct answer is **False**: The vast majority of marine plastic pollution comes from land-based marine plastic pollution, particularly via uncollected or mismanaged waste.

4) Ocean plastics and climate change are connected because:
   - Greenhouse gases are emitted during the life cycle of plastics
   - Ocean plastics undermine the marine ecosystem services that can support climate change mitigation
   - Fossil fuel production and plastic production are linked
   - Plastic waste in the ocean emits carbon dioxide.

5) Which of the following are proven impacts arising from marine plastic pollution?
   
   **A)** Death or injury of marine life from entanglement with derelict fishing gear and plastic packaging
   
   **B)** Turtles, marine mammals and seabirds endangered or killed by floating litter
C) Impairment of human health due to the presence of ocean plastics in food consumed by humans

D) Diminished mental health generally provided by the aesthetic and restorative value of the coastal areas for people due to the presence of marine litter

E) Diminished economic returns from small-scale fishing and tourism

Correct options are A, B, D, and E. Even if there is evidence of microplastics in food consumed by humans, the impact on human health is still uncertain.

6) Which key principles and approaches in international environmental law and policy are directly relevant to plastic pollution and marine litter?
   • State sovereignty
   • Polluter pays principle
   • Ecosystem approach
   • Right to self-determination
   • Precautionary principle
   • Principle of prevention

7) The impacts of plastic pollution and marine litter affect all countries and all people equally.
   - True
   - False

The correct answer is False: Developing countries bear the greater burden of plastic pollution and marine litter, and the rights of certain vulnerable groups including children, women and economically disadvantaged communities are impacted more greatly.

8) States have obligations to consider the negative impacts of ocean plastic pollution on human rights, including making specific provisions for the protection of the human rights of children.
Select one:
   - True
   - False

The correct answer is True: States are to integrate child-specific scientific evidence in risk assessments and decision making on ocean plastics; and support the inclusion in primary and second education of age-appropriate materials concerning ocean plastics, paying particular attention to the specific needs of impacted communities.
1.8. References/Additional Resources

- UNEP (2021). From Pollution to Solution – A global assessment of marine litter and plastic pollution.
- One Ocean Hub (2021). AN OVERVIEW OF STATE OBLIGATIONS TOWARDS MARINE BIODIVERSITY UNDER THE RIGHT TO HEALTH.
- United Nations CESC CR (1999), General Comment No.12: The right to adequate food (Art.11), para 8.

Congratulations, you’ve finished this Lesson!
Learning Objectives

- Outline the main international legal and policy frameworks that directly or indirectly address marine plastic pollution.
- Understand the current process towards a globally binding treaty on plastic pollution and marine litter.
2.1. Introduction

Policy responses to plastic pollution and marine litter are growing and range from global instruments, through regional action plans such as the Regional Plan on Marine Litter Management in the Mediterranean, to specific product bans (e.g. single-use plastic bags) at municipal or national levels. The main global legal and policy approaches are explored in this lesson, including the recent resolution at the fifth UN Environment Assembly in Nairobi in February 2022 to end plastic pollution and forge an international legally binding agreement. Before we begin examining them in more depth you can have a look at the timeline below for a useful overview of the key international instruments and their evolution:


Illustrated by GRD-Andal

Timeline for selected international marine litter and plastic pollution initiatives, laws and policies
Between 1960 and 2009

1960: First reports of adverse impacts of marine plastic debris on marine species
1971: RAMSAR Convention
1972: Convention on the Conservation of Migratory Species of Wild Animals (CMS)
1974: London (Dumping) Convention
1976: MARPOL Convention
1979: MARPOL Protocol
1982: UNEP Regional Seas Programme launched
1984: Convention on Biological Diversity (CBD)
1989: Second International Conference on Marine Debris (Honolulu)
1992: First Honolulu Conference on Marine Debris
1994: Global Programme of Action (GPA)
1995: Basel Amendment
1998: Third International Conference on Marine Debris (Máncora)
1999: Fourth International Conference on Marine Debris (Honolulu)
2000: London Protocol
2001: Stockholm Convention on Persistent Organic Pollutants (POPs)
2003: First UN General Assembly Resolution referring to the issue of marine debris


Illustrated by GRD-Andal

Timeline for selected international marine litter and plastic pollution initiatives, laws and policies
From 2010
2010: Rio+20 commitment - The Future We Want
2011: Global Partnership on Marine Litter (GPMIL)
2012: UNO - Manila Declaration
2013: CBD - impacts of marine debris and anthropogenic underwater noise on marine and coastal biodiversity
2014: UNO - UNPOLOS on "Marine Debris, Plastics and Microplastics"
2015: G7 Action Plan to Combat Marine Litter
2016: Sixth International Marine Debris Conference
2017: CBD - impacts of marine debris and anthropogenic underwater noise on marine and coastal biodiversity
2018: Sixth International Marine Debris Conference
2019: CBD - impacts of marine debris and anthropogenic underwater noise on marine and coastal biodiversity
2020: CBD - impacts of marine debris and anthropogenic underwater noise on marine and coastal biodiversity
2021: Sixth International Marine Debris Conference
2022: Sixth International Marine Debris Conference
2023: Sixth International Marine Debris Conference
2024: Sixth International Marine Debris Conference
2025: Sixth International Marine Debris Conference
2026: Sixth International Marine Debris Conference


Illustrated by GRD-Andal

In 2019, the UN Secretary-General expressed concerns over the significant anthropogenic pressures on the marine environment, including from plastics, and stressed the importance of the UNCLOS in this respect, while underlining the need for increased cooperation and coordination at all levels to address those challenges.

UNCLOS provides a definition of marine pollution that is broad enough to include marine plastics, as well as general obligations that are relevant to prevent and address marine plastics pollution.

*Definition of Marine Pollution*

Marine Pollution is defined in UNCLOS (Art 1(4)) as: “…Introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries which results or is likely to result in such deleterious effects as harm to living resources and marine life hazard to human health, hindrance to marine activities, including fishing, and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.”
Main Provisions of UNCLOS

The key UNCLOS provisions relevant to marine plastic pollution are

1. Article 194 which provides that states are to take all measures necessary to prevent, reduce and control pollution of the marine environment using the best practicable means at their disposal and in accordance with their capabilities;
2. Article 195 which imposes a duty not to transfer pollution from one type to another, or from one area to another;
3. Article 198 requiring states to immediately notify others deemed likely to be affected by any form of threatening pollution, whether it emanates from activities or areas under the jurisdiction of the notifying state or not;
4. Article 202 requiring states to cooperate in scientific research and information exchange, and to jointly conduct the research necessary to establish appropriate scientific criteria for the formulation of rules to protect the environment;
5. Article 203 obligates states to provide scientific and technical assistance to developing states to enhance their capacity to protect the marine environment, specifically including the preparation of environmental assessments and assistance in minimizing the effects of major pollution incidents
6. Article 204 mandates that states keep under particular surveillance the effects of any activities that they engage in directly or permit in order to determine whether those activities are likely to pollute the marine environment. The latter assessment is also, in effect, an obligation to conduct Environmental Impact Assessments (“EIA”);
7. Article 213-233 provides for enforcement through investigation of violations, criminal; proceedings against offenders, imposition of monetary penalties against offenders and several other sanctions and remedies, as well as limitations on enforcement;
8. Article 235 provides that State parties shall be responsible and liable for pollution damage under international law, should they fail to carry out their duties and responsibilities.
2.3. London Convention and Protocol

Under UNCLOS, waste dumping at sea is subject to a permit system (Article 210(3)), which must be enforced by a coastal state for dumping in its territorial sea, exclusive economic zone, or continental shelf, by flag states for vessels flying their flag or vessels or aircraft of their registry, and by waste loading states for acts of loading wastes or other matter occurring within its territory or at its off-shore terminals (Article 216).

The International Maritime Organization (IMO) administers the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ("London Convention") and its Protocol. They are generally concerned with the disposal of land-generated waste dumped at sea, such as dredged materials, and prevent Parties from dumping waste streams that contain plastic or similar synthetic materials into the marine environment.

1. Article 7 requires parties to implement national regulations to serve as a foundation for their permitting system and to prohibit garbage and other substances from being dumped into the sea in violation of the Convention.
2. Article 10 requires parties to adopt national rules and processes for determining culpability for damage caused by the disposal of prohibited wastes in the maritime environment.
3. The Convention also establishes legally binding guidelines for liability and compensation for damage caused by hazardous waste dumping in the sea.

Hazardous waste and substance dumping is prohibited in all marine ecosystems, including high seas and territorial waters (Article 4). The forbidden items specified in Annex I include:

1. Organochlorine chemicals;
2. Mercury and mercury compounds;
3. Persistent polymers;
4. High-level radioactive wastes, and;
5. Chemical warfare agents.

In 1996 the Protocol to the London Convention was adopted to reduce the practice of waste dumping by introducing waste management and avoidance practices. The Protocol came into force in 2006 and is intended to eventually replace the Convention. This Protocol includes a new reverse listing that, instead of listing wastes prohibited for dumping, prohibits dumping of all wastes except those specifically listed.

The old Annex I “black list” is accordingly replaced by a new Annex 1 “reverse list” of wastes which can be dumped subject to permit. The Protocol adopts a precautionary approach so that appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.
2.4. MARPOL

Annex V

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. MARPOL Annex V generally prohibits the discharge of all garbage (including all plastics) into the sea.

Plastic is defined as “all garbage that consists of or includes plastic in any form, including synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products.” Annex V:

- Bans the disposal of plastics into the sea (1/5th of global ocean plastics);
- Mandates States to provide official records of disposals and incinerations for ships with capacities of 400 gross tonnages and over as well as every ship;
- Requires States to ensure provision of facilities at ports for the reception of garbage.

However, the UN Special Rapporteur on Toxics recently underscored that there is lack of adequate reception facilities and that the financial burden of operating the Convention’ reception facilities is mainly on developing countries.
The International Maritime Organisation issued guidelines for the implementation of the MARPOL Annex V. As far as plastics are concerned, the latest guideline adopted in 2017 reiterates the prohibition of discharge of all plastics into the sea (Regulation 3.2 of MARPOL Annex V).

In addition, the guidelines:

1. Explain that when plastic is mixed with other garbage, the mixture must be treated as if it were all plastic.
2. Direct that the most stringent procedures for handling and discharge should be followed, taking into account the applicable provisions of the garbage management plan.

**Action Plan**

The IMO’s Marine Environmental Protection Committee (MEPC) in 2018 adopted an Action Plan to address marine litter from ships, including measures to strengthen port reception facilities and other plastic issues by 2025. The Action Plan provides IMO with a mechanism to identify specific outcomes, and actions to achieve these outcomes, in a way that is meaningful and measurable. It builds on existing policy and regulatory frameworks, and identifies opportunities to enhance these frameworks and introduce new supporting measures to address the issue of marine plastic litter from ships.

**Strategy**

In 2021 the MEPC adopted a Strategy to address marine plastic litter from ships which sets out the ambitions to reduce marine plastic litter generated from, and retrieved by, fishing vessels; reduce shipping’s contribution to marine plastic litter; and improve the effectiveness of port reception and facilities and treatment in reducing marine plastic litter. The Strategy also aims to achieve further outcomes, including: enhanced public awareness, education and seafarer training; improved understanding of the contribution of ships to marine plastic litter; improved understanding of the regulatory framework associated with marine plastic litter from ships; strengthened international cooperation; and targeted technical cooperation and capacity-building. See [here](#) for further information.

### 2.5. International Water Law

A vast amount of marine plastic litter enters the sea via rivers. When a river is shared by two or more countries (as is often the case), marine litter from rivers can only be effectively prevented or minimised if the countries sharing the transboundary river manage the river jointly.

The international community has developed rules for the management of transboundary rivers, which are relevant to preventing litter from entering the marine environment.
International water law contains the general obligations not to cause significant harm, and to use the waters in an equitable and reasonable manner, which could be interpreted as requiring States to prevent the introduction of plastics into rivers that lead to negative effects on downstream States and to the sea.

The Convention on the Law of Non-Navigational Uses of International Watercourses (the UN Watercourses Convention) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the UNECE Water Convention), as well as international customary law applicable to transboundary waters includes several procedural obligations (to notify, to exchange information, to undertake an environmental impact assessment) that may also have practical implications on plastics ending up in the river and flowing downstream.

In addition, the UN Watercourses Convention has two key provisions that speak directly to preventing or minimizing marine litter:

1) Article 21 - Prevention, Reduction and Control of Pollution;
2) Article 23 - Protection and Preservation of the Marine Environment, which links to UNCLOS Article 207 requiring states to ‘adopt laws and regulations to prevent, control and reduce pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures, taking into account internally agreed rules, standards and recommended practices and procedures.

### 2.6. Basel and Stockholm Conventions

By reducing waste generation at source, improving chemical and waste management thereafter, and regulating the transboundary movement of chemicals and wastes (including plastic waste), the Basel and Stockholm Conventions play an important role in tackling marine plastics pollution.
The 1989 Basel Convention addresses the generation, management, transboundary movement, and disposal of hazardous waste. States are obliged to:

- Reduce hazardous waste generation and promote environmentally sound management of waste as far as possible, with general provisions on how to action this outlined under Article 4;
- Reduce the transboundary movement of this waste, except if this movement is done in an environmentally sound manner; and
- Adhere to a regulatory system in cases where transboundary movement of such waste is allowed.

States work through a system of written notifications and responses between importers and exporters, allowing for the trade in hazardous substances usually for environmentally sound disposal within countries that have signalled their capacity to carry out this process. This is the Prior Informed Consent (PIC) procedure, central to the system regulating transboundary movement of hazardous wastes under the Convention.

In 2019 the Conference of the Parties decided to enhance control of plastic waste by amending its Annexes through the so-called Plastic Waste Amendments, making it the only global legally binding instrument to specifically address plastic waste. From 1 January 2021, 186 States and one regional economic integration organization around the world are bound by the amendments. Specifically, parties agreed to include certain plastic waste under the annexes dealing with:

- Waste requiring special consideration (Annex II);
- Hazardous substances (Annex VIII);
- Non-hazardous waste (Annex IX).

The amendment to Annex VIII describes the plastic waste that is deemed to be hazardous, and thus subject to the Convention’s prior informed consent (PIC) procedure. As a result, potential importing countries must prove that they can deal with plastic waste in an environmentally sound manner, thus ensuring it stays out of the ocean. Significantly, countries now also have the right to turn down shipments of plastic if they do not have the means to deal with it.

Addressing ocean plastics through international chemicals and wastes conventions can also support the implementation of SDG 12.4, according to which, by 2020 States should have achieved the environmentally sound management of chemicals and all wastes throughout their life cycle.
In amending Annex IX of the Basel Convention, States set out the type of plastic waste which is considered non-hazardous, and thus not subject to the PIC procedure. It includes:

- Plastic waste destined for recycling in an environmentally sound manner (including polyethylene (PE);
- Polypropylene (PP), polystyrene (PS), and;
- Polyethylene terephthalate (PET).
States also agreed to amend Annex II (which addresses those wastes for which special consideration should be paid) to include plastic waste and plastic waste mixtures, excluding those defined as non-hazardous and/or destined for recycling under Annex IX.

The Basel Convention Plastic Waste Amendments therefore imply that all plastic waste and mixtures of plastic waste generated by Parties to the Convention, and which are to be moved to another Party are subject to the Prior Informed Consent procedure, unless they are non-hazardous and destined for recycling in an environmentally sound manner and almost free from contamination and other types of waste.

The Conference of the Parties also adopted a decision on further actions to address plastic waste under the Basel Convention (BC-14/13). It presents actions for preventing and minimizing the generation of plastic waste, improving the environmentally sound management of this waste as well as controlling trans-boundary movement.

The specified categories of plastic wastes are also subject to the Convention’s provisions pertaining to waste minimization and environmentally sound management. The Plastic
Waste Amendments are therefore expected to have a range of positive impacts across the three pillars of the Basel Convention [UNEP, 2021], namely:

- Increased control of transboundary movements (TBM): By establishing a legally binding framework for the trade in plastic waste, the Plastic Waste Amendments create the conditions for the global trade in plastic waste to become more transparent and better regulated;
- Increased environmentally sound management (ESM): By ensuring that the Convention’s provisions on ESM now apply to specified categories of plastic waste, the Amendments provide a powerful incentive to strengthen national infrastructures for the collection, recycling and final disposal of plastic waste;
- Increased waste prevention and minimization: By bringing the listed types of plastic waste under the Convention’s provisions pertaining to waste prevention and minimization, the Amendments will help create jobs and economic opportunities, not least by incentivizing innovation, such as in the design of alternatives to plastic and in the phasing out of hazardous additives.

The conference of parties also set out actions relating to reducing risk from hazardous components (or additives) in plastic waste; and mechanisms for public awareness, education and information exchange. Further, parties also established the Basel Convention partnership on plastic waste to improve and promote the environmentally sound management of plastic wastes at the global, regional and national levels and prevent and minimize their generation so as to, among other things, reduce significantly and in the long-term eliminate the discharge of plastic waste and micro-plastics into the environment, in particular the marine environment.
In addition, the Basel Convention’s Ban Amendment entered into force the same year. For those Parties bound by it, the Ban Amendment prohibits transboundary movements of hazardous wastes covered by the Convention that are intended for disposal operations from members of the Organisation for Economic Co-operation and Development (OECD), the EU and Liechtenstein to all other countries.

**Stockholm Convention**

Sharing the common objective of protecting human health and the environment from hazardous chemicals and wastes, the Basel Convention and the Stockholm Convention on Persistent Organic Pollutants (POPs) also have synergies with regard to plastic waste. Although the Stockholm Convention does not overtly address marine plastics yet, its work on the control of POPs is essential in this area. The Convention requires Parties to prohibit, eliminate or restrict the production, use, import and export of listed intentionally produced POPs. It also requires Parties to reduce or eliminate releases of unintentionally...
produced POPs and has provisions on the management of stockpiles and wastes consisting of, containing or contaminated with POPs.

As we saw in Lesson 1, plastic waste may contain various POPs, such as some brominated flame retardants and short-chain chlorinated paraffins. A study prepared by the working group of the Basel and Stockholm Conventions Regional Centres categorized the chemicals found in marine plastic litter as those:

- Intentionally added during the production process (additives such as flame retardants, plasticizers, antioxidants, ultraviolet (UV) stabilizers, and pigments);
- Unintentional chemicals coming from production processes, including monomers (e.g. vinyl chloride BPA, etc.) plus those originating from UV radiation and catalysts, normally present in traces (parts per million);
- Chemicals coming from the recycling of plastic waste, and;
- Hydrophobic chemicals adsorbed from environmental pollution onto the surface of plastics.

These chemicals may be released into the digestive tracts of marine species or leach into the marine environment during the slow disintegration of discarded plastic. Other than impairing reproduction, endocrine disrupting additives also negatively impact biodiversity, thyroid function and metabolism, and increase the incidence and progression of hormone-sensitive cancers [see here]. Many chemicals with endocrine disrupting properties are already listed under the Stockholm Convention, but with exemptions.
The Centers’ report mentioned above, however, also points to the fact that the very chemicals coming from recycling plastic waste are a danger in themselves. The Special Rapporteur on Toxics noted that: “existing plastic recycling practices pose health threats from volatile organic compounds and they concentrate toxic additives in plastics, generative new hazardous products.” He thus recommended phasing out hazardous additives in plastics under the Stockholm Convention.

In early 2021 the POPs Review Committee (POPRC), which is a subsidiary body responsible for reviewing POPs for listing in the Stockholm Convention, found that UV-328, which is a high-volume additive in plastic products such as personal care products and coatings, satisfies all the criteria set out in Annex D (namely persistence, bioaccumulation, potential for long-range environmental transport and adverse effects to humans and/or the environment).

UV-328 was found in the environment and biota, including in remote areas such as the Arctic and the Pacific Ocean, far from its production and use. UV-328 has been found to be transported with, and may subsequently be released from plastic debris, which is taken up for example by seabirds with subsequent accumulation in their tissue. Taking into account the recommendations of the Committee, a future Conference of the Parties could trigger its reduction or elimination. Such a listing would strengthen the Stockholm Convention’s role as a key global instrument to tackle the plastic waste crisis [UNEP, 2021].

For instance, pentabromodiphenyl ether (pentaBDE), which is added as a flame retardant in plastics, is listed under Annex I of the Stockholm Convention as a POP to be eliminated, but with exemptions for the recycling of materials containing this pollutant.
2.7. World Trade Organization

As well as the amendments to the Basel Convention, trade policies are important in helping to reduce plastic pollution, for example by halting the export of plastic waste to countries without adequate waste infrastructure or putting in place import restrictions and bans on plastic waste. There are a number of concrete options, on which members of the World Trade Organization (WTO) can take action, which would support international efforts to reduce and phase out plastic pollution and align trade policies with these objectives [UNEP,2021].

They include:

1. Increasing the transparency, data on and monitoring of plastic trade flows, supply chains and trade-related measures relevant to reducing plastic pollution and transforming the plastics economy;
2. Developing a shared understanding of the role of trade and trade policy in the global plastics economy, both upstream and downstream, and the development dimensions;
3. Promoting information-sharing and dialogue on trade-related policies, measures, innovations and best practices relevant to reducing plastic pollution and transforming the plastics economy;
4. Encouraging coherence between domestic and trade policies;
5. Reducing trade barriers and promoting technology transfer for goods and services that reduce plastic pollution and promoting transformation of the plastics economy;
6. Encouraging voluntary trade-related targets and pledges to reduce the production, trade and use of unnecessary problematic plastics, including through the reduction of environmentally harmful subsidies, and;
7. Using capacity building to support trade related efforts by developing countries that help reduce plastic pollution, including through production/export of non-plastic substitutes/alternatives.
In 2020, numerous WTO Members established an Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade (IDP). The IDP initiative currently has 18 co-sponsors, though any Member is welcome to join. The IDP is very much an informal and non-legislative initiative. Nevertheless, its focus this year on topics such as, ‘improving transparency; monitoring trade trends; promoting best practices; strengthening policy coherence; identifying the scope for collective approaches; assessing capacity and technical assistance needs; and cooperating with other international processes and efforts’ shows its potential to enhance synergies between trade and environmental law in terms of tackling plastics pollution.

The IDP has prepared a draft Ministerial statement on transitioning to an environmentally sustainable plastics trade for potential adoption at the upcoming 12th WTO Ministerial Conference, due to be held in June 2022 in Geneva [see here]. The focus of the IDP after the Ministerial Conference will be to identify concrete steps to achieve this transition.
Accompanying the work of the IDP is another WTO Member-led initiative, the Trade and Environmental Sustainability Structured Discussions (TESSD), launched in 2020. With 53 co-sponsoring Members it aims, among other things, to, ‘collaborate, prioritize and advance discussions on trade and environmental sustainability,’ with the circular economy given explicit mention in this regard.

Both the IDP and the TESSD complement the ongoing work of the WTO’s Committee on Trade and Environment that has also played host to discussions on how to tackle plastics pollution. While discussions in all three fora have not resulted in any legislative change, their open quality, as well as the speed with which such discussions are moving, bodes well for future developments in this area.

2.8. Convention on Biological Diversity

In the context of the obligation under the UN Convention on Biological Diversity (CBD) to assess and minimize adverse impacts on biodiversity (Article 14), in 2016 CBD Parties adopted Decision XIII/10 on marine debris, which includes voluntary practical guidance on preventing and mitigating the impacts of marine debris on marine and coastal biodiversity and habitats.

According to this decision, marine debris, including plastics and microplastics, is understood as “any persistent, manufactured or processed solid material discarded, disposed of, lost or abandoned in the marine and coastal environment. This includes materials transported into the marine environment from land by rivers, drainage or sewage systems or winds.” Governments are invited to consider, where appropriate, extended producer responsibility for providing response measures where there is damage or sufficient likelihood of damage to marine and coastal biodiversity and habitats from marine debris. The general approaches suggested for preventing and mitigating the impacts of marine debris on marine biodiversity, are:

3) Preventing the discard, disposal, loss or abandonment of any persistent, manufactured or processed solid material in the upstream and marine and coastal environment;

4) Adopting measures to prevent and mitigate the significant adverse impacts of marine debris, using existing platforms and tools for cooperation (such as the Global Programme of Action for the Protection of the Marine Environment from Land-based activities, the Global Partnership on Marine Litter and the regional seas conventions and action plans);

5) Adopting economic incentives, market-based instruments and public-private partnerships to support action aimed at preventing and mitigating the impacts of marine debris.
In addition, the guidance identified the following priority actions for land-based marine pollution:

- Promotion of structural economic changes that would reduce the production and consumption of plastics, increase production of environmentally friendlier materials, and support the development of alternative materials, increase recycling and reuse and support an enabling environment for these changes through capacity-building, regulations and standards and cooperation among industry, governments and consumers;
- Research aimed at developing, and encouraging the transfer of, technology (see SDG 14.8 lesson in the SDG 14 course available on this platform) to better understand and reduce the environmental impacts of plastics on the marine environment, to design new or improved biodegradable products and to assess cost-effective production on a commercial scale;
- Promotion of best practices along the whole plastics manufacturing and value chain from production to transport, such as aiming for zero loss;
- Assessment of whether different sources of microplastics and different products and processes that include both primary and secondary microplastics are covered by legislation, and strengthening of the existing legal framework so that the necessary measures are applied, including through regulatory and/or incentive measures to eliminate the production of microplastics that have adverse impacts on marine biodiversity;
- Improvement of the waste management systems of countries through the sharing of best practices as well as identifying and addressing loopholes that contribute to the generation of marine debris, such as the introduction of marine debris into coastal areas from upstream sources.

In a more recent decision, the COP urged Parties to increase their efforts, recognized the need for further research on the impacts of marine and coastal biodiversity and habitats, and emphasized the need for the clean-up and removal of marine debris, where appropriate and practical (Decision XIV/10, 2018).

In 2010 Parties to the CBD adopted Aichi Biodiversity Target 8, which aimed to reduce pollution (the inclusion of plastic is implied) to levels that are not detrimental to ecosystem function and biodiversity by 2020 (CBD 2011). As this target has not been met, the CBD has undertaken the development of a post 2020 global framework to be adopted in 2022.
2.9. UN Environmental Assembly and the Process towards a Legally Binding Agreement on Plastic Pollution

The United Nations Environment Assembly (UNEA) was created in 2012 as the world’s highest level decision-making body on the environment. Resolutions on marine litter and microplastics were adopted at each meeting in 2014, 2016, 2017, 2019 and 2022, as set out in the timeline below. These resolutions are voluntary, and rarely set binding targets or timelines. However, at the fifth session of UNEA in 2022, 175 nations endorsed a historic resolution to forge an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design and disposal.

2014 - UNEA 1

Resolution 1/6 on Marine plastic debris and microplastics
Requested UNEP, “in consultation with other relevant institutions and stakeholders, to undertake a study on marine plastic debris and marine microplastics, building on existing work and taking into account the most up-to-date studies and data” [see here].

2016 - UNEA 2

Resolution 2/11 on Marine plastic litter and microplastics
Requested UNEP to produce an assessment of the effectiveness of global and regional governance strategies for marine plastics, and to support developing countries in combatting marine litter. The resolution also noted the importance of product life-cycle approaches, the polluter pays principle, and reduction, reuse and recycling (the “three Rs”) [see here].
2017 - UNEA 3
Resolution 3/7 on Marine litter and microplastics
Established an expert group to provide recommendations for global solutions, following an assessment of the effectiveness of global and regional governance, which showed that there is no existing global framework effectively dealing with marine litter and microplastic. The resolution also contained a long-term zero vision, meaning that no plastic litter or microplastic should enter the ocean [see here].

2019 - UNEA 4
Resolution 4/6 on Marine plastic litter and microplastics and Resolution 4/9 on Addressing single-use plastic products pollution.
Recognizing that more coordination and cooperation is needed, mandated the expert group that had been established at UNEA 3 to continue its work. The resolution also requested UNEP to strengthen scientific and technological knowledge about the marine plastic problem, as well as gather more information on policies and action [see here]. The resolution further encouraged Member States to take comprehensive action with regard to single-use plastic products in addressing related waste including through legislation [see here].

2022 - UNEA 5
Global Plastic Pollution Agreement: A historic moment
A resolution, titled “End Plastic Pollution: Towards an internationally legally binding instrument” was adopted [see resolution here]. The resolution establishes an Intergovernmental Negotiating Committee (INC), which will begin its work in 2022, with the ambition of completing a draft global legally binding agreement by the end of 2024. It is expected to present a legally binding instrument, which would reflect diverse alternatives to address the full lifecycle of plastics, the design of reusable and recyclable products and materials, and the need for enhanced international collaboration to facilitate access to technology, capacity building and scientific and technical cooperation. UNEP will convene a forum by the end of 2022 that is open to all stakeholders in conjunction with the first session of the INC, to share knowledge and best practices in different parts of the world. It will facilitate open discussions and ensure they are informed by science, reporting on progress throughout the next two years. Finally, upon completion of the INC’s work, UNEP will convene a diplomatic conference to adopt its outcome and open it for signatures.

The INC is also tasked in its deliberations to consider the, ‘possibility of a mechanism to provide policy relevant scientific and socio-economic information and assessment related to plastic pollution.’ Given the inherent complexities and the numerous knowledge gaps detailed above, such research will be vital to assist countries to make the major systemic shift required from the linear ‘make, take, waste’ model to a fully circular economy.

In addition, as discussed in Lesson 1 above, it will be essential for this science-policy mechanism to include different knowledge systems, including indigenous and local knowledge, which could also contribute to support the meaningful participation of indigenous peoples and local communities in decisions on plastics down the line. In this regard UNEP has previously called for the recognition of communities affected by plastic
waste and their participation in local decision making around responses to marine plastic pollution [UNEP, 2021].

In terms of the design of the treaty, the resolution appears most closely to adopt the approach of the Paris Agreement in that it ‘sets out basic objectives and allows states to set their own plans for preventing, reducing and eliminating plastic pollution.’

Commentators have suggested that it could involve a global cap on virgin plastic production, while allowing each country to, ‘take on its own set of unique solutions to reach its (individualized) target.’ This could include, for example, a ban on single-use plastics as well as greater use of plastics deposits schemes, accompanied by a reporting mechanism whereby each Treaty party reports its plastics ‘emissions’, much like the current process under the UNFCCC.

The resolution also notes the need, ‘to promote national and international cooperative measures to reduce plastic pollution in the marine environment, including existing plastic pollution.’ This would likely require a funding mechanism to ensure the provision of funding from both states and the private sector. As with many aspects of the new treaty, exactly how this plays out in practice remains to be seen.
2.10. Soft Law Instruments

In addition to the legally binding instruments outlined above, various important global strategies and soft law instruments support the reduction of marine litter and plastic pollution as detailed below.

Honolulu Strategy

The 2012 Honolulu Strategy, developed by UNEP and the National Oceanic and Atmospheric Administration Marine Debris Programme is an international voluntary framework for the management, control and prevention of marine debris. While there are no legally binding commitments or targets in the Honolulu Strategy, there are goals and strategies to reduce the amount and impact of marine litter from land-based and sea-based sources. The Honolulu Strategy acts as a framework to guide national action. It also comprises the Honolulu Commitment – a multi-stakeholder pledge to reduce the human health, environmental, and economic impacts of marine litter globally.

The Honolulu Strategy is:
→ A planning tool for marine litter programs and projects;
→ A common frame of reference for collaboration and sharing of best practices and lessons learned, and;
→ A monitoring tool to measure progress across multiple programs and projects.

Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and Global Partnership on Marine Litter (GPML)

The GPA is the only global intergovernmental mechanism directly addressing marine degradation from land-based activities on the basis of the connectivity between terrestrial, freshwater, coastal and marine ecosystems. Countries and regions formulate national and regional programmes of action to implement the GPA [see here for further information].
Signatories to the GPA set out to deal with “all land-based impacts upon the marine environment, specifically those resulting from sewage, persistent organic pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment mobilization, litter, and physical alteration and destruction of habitat.”

Since 2012, marine litter, nutrient management, and wastewater have been highlighted as priority source categories to be addressed, specifically, through multi-stakeholder partnerships, as enshrined in the Manila Declaration on Furthering the Implementation of GPA. These include the Global Partnership on Marine Litter (GPML).

The GPML, which was called for by the outcome document of the Rio+20 Conference (“The Future We Want”), was established in 2012. It is run by the GPA Secretariat and composed of governments, international organizations, private sector, academia, civil society actors, and individuals. The GPML aims to protect human health and the global environment by reducing and managing marine litter as its main goal, including to:

1) Reduce the impacts of marine litter worldwide on economies, ecosystem, animal welfare and human health;
2) Enhance international cooperation and coordination through the promotion and implementation of the Honolulu Strategy, and;
3) Promote knowledge management, information sharing and monitoring of progress on the implementation of the Honolulu Strategy.
The expected outcomes of the GPML include:

1. Increased awareness of the impacts of marine litter at various levels – e.g. policy-makers, industry, and the general public;
2. Increased body of knowledge of communities of best practices to address marine litter by various stakeholders around the world at various levels, and how their activities contribute to the implementation of the Honolulu Strategy;
3. Identification and filling of knowledge gaps and establishing organizational knowledge processes;
4. Strengthened and coordinated global and regional networks/nodes on/for marine litter;
5. Enhanced resource efficiency by avoiding duplication of efforts, streamlining of resource utilization and information sharing across multiple activities;
6. Increased economic development and job creation opportunities in marine litter prevention and management;
7. Improved synergy among stakeholders including academia, NGOs, the private sector, governments and international organizations;
8. Enabled complementarities between the partnership and relevant Conventions and other international instruments, action plans, initiatives, and activities;
9. Systematic publication of scoping papers and global assessments on emerging issues associated with marine litter and increased mobilization of resources to address marine litter mitigation (Link).

A number of regional action plans have been developed through the GPML. In 2013, for example, a legally binding Marine Litter Regional Plan was adopted by the 22 participating countries to the Barcelona Convention. Long-lasting monitoring programmes within the Northwest Pacific Action Plan region have also improved understanding of marine litter and its effects. These are both discussed in more detail in Lesson 3 on Regional Approaches.

In the recent UNEA Resolution to develop a global legally binding instrument detailed above, the Executive Director of UNEP is tasked to, ‘continue to support and advance the work of the Global Partnership on Marine Litter, while strengthening scientific, technical and technological knowledge with regard to plastic pollution, including in the marine environment, inter alia, on methodologies for monitoring, and sharing available scientific and other relevant data and information.’

**GloLitter Partnerships Project to tackle marine plastic litter from shipping and fisheries**

Another initiative is the GloLitter Partnership Project launched by IMO and the Food and Agriculture Organization of the UN (FAO) in 2019. The Project aims to help the shipping and fisheries industries move to a low-plastics future.

The GloLitter project:
1) Assists developing countries to identify opportunities to prevent and reduce marine litter, including plastic litter, from within the maritime transport and fisheries sectors, and to decrease the use of plastics in these industries, including identifying opportunities to re-use and recycle plastics.

2) Considers the availability and adequacy of port reception facilities; look at enhancing awareness of the marine plastics issue within the shipping and fisheries sectors, including seafarers and fishers; and encourage fishing gear to be marked so it can be traced back to its owner if discarded.

3) Develops guidance documents, training material and toolkits to help enforce existing regulations, including IMO’s International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V.

4) Promotes compliance with relevant FAO instruments (including the Voluntary Guidelines on the Marking of Fishing Gear).
5) Seeks to support implementation and enforcement of the London Convention and London Protocol regime detailed above.

**10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)**

The 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) offers a collective approach through multi-stakeholder programmes and partnerships, which develop, replicate and scale up Sustainable Consumption and Production (SCP) policies and initiatives at all levels.

The framework’s origin was the Rio+20 UN Conference on Sustainable Development in 2012 where States agreed that fundamental changes in production and consumption patterns are indispensable to achieving long-term sustainable development, with the commitment of diverse actors across the globe.

The framework comprises six programmes:

1. Sustainable Public Procurement;
2. Consumer Information for SCP;
3. Sustainable Tourism;
4. Sustainable Lifestyles and Education;
5. Sustainable Buildings and Construction, and;

The relevance of the framework for management of marine plastics has been clarified by the UN Environmental Assembly which stressed “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 international cooperation for effectively preventing pollution from marine litter, including plastic litter and microplastics”.
2.11. Recap

The main Provisions of UNCLOS Relevant to Ocean Plastics Pollution

- Article 194 which provides that states are to take all measures necessary to prevent, reduce and control pollution of the marine environment.
- Article 195 which imposes a duty not to transfer pollution from one type to another, or from one area to another.
- Article 198 requiring states to immediately notify others deemed likely to be affected by any form of threatening pollution.
- Article 202 requiring states to cooperate in scientific research and information exchange.
- Article 203 obligating states to provide scientific and technical assistance to developing states to enhance their capacity to protect the marine environment.
- Article 204 mandating that states keep under particular surveillance the effects of any activities that they engage in directly or permit.
- Article 213-233 providing for enforcement through investigation of violations, criminal proceedings against offenders.
- Article 235 which provides that parties shall be responsible and liable for pollution damage under international law should they fail to carry out their duties and responsibilities.

The International Convention for the Prevention of Pollution from Ships (MARPOL) and the Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter (London Convention)

- The London Convention and Protocol prevent Parties from dumping waste streams that contain plastic or similar synthetic materials into the marine environment.
- The International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V generally prohibits the discharge of all garbage (including all plastics) into the sea.
- The IMO's Marine Environmental Protection Committee (MEPC) has adopted an Action Plan and a Strategy to further address marine litter from ships, including measures to strengthen port reception facilities.

Water Law and Transboundary Rivers

- A vast amount of marine plastic litter enters the sea via rivers.
- The UN Watercourses Convention and the UNECE Water Convention, as well as international customary law applicable to transboundary waters, include several general and procedural obligations that may have practical implications in preventing plastics from ending up in the river and flowing downstream.
- The UN Watercourses Convention also has two key provisions that speak directly to preventing or minimizing marine litter.
Chemical Conventions
- Following the 'Plastic Amendments' in 2019 which came into force in 2021, The Basel Convention is the only global legally binding instrument to specifically address plastic waste.
- All plastic waste and mixtures of plastic waste generated by Parties to the Convention which are to be moved to another Party are subject to the prior informed consent (PIC) procedure, unless they are non-hazardous and destined for recycling in an environmentally sound manner and almost free from contamination and other types of waste.
- The Conference of the Parties also adopted a decision on further actions to address plastic waste which presents actions for preventing and minimizing the generation of plastic waste and improving the environmentally sound management of this waste.
- The chemicals contained in plastics or used in its production may be released into the digestive tracts of marine species or leach into the marine environment during the slow disintegration of discarded plastic.
- Although the Stockholm Convention does not overtly address marine plastics yet, its work on the control of POPs is essential in this area.

World Trade Organization
- Trade policies can be important in helping to reduce plastic pollution, for example by halting the export of plastic waste to countries without adequate waste infrastructure or putting in place import restrictions and bans on plastic waste.
- In 2020, numerous Members of the World Trade Organisation (WTO) established an Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade (IDP).
- The IDP has prepared a draft Ministerial statement on transitioning to an environmentally sustainable plastics trade for potential adoption at the upcoming 12th WTO Ministerial Conference, due to be held in June 2022 in Geneva.

Convention on Biological Diversity
- Decision XIII/10 on marine debris includes voluntary practical guidance on preventing and mitigating the impacts of marine debris on marine and coastal biodiversity and habitats.
- In addition, the guidance identifies a number of priority actions for land-based marine pollution, including marine debris and microplastics.
- More recently, the CBD urged Parties to increase their efforts, recognized the need for further research on the impacts of marine and coastal biodiversity and habitats, and emphasized the need for the clean-up and removal of marine debris, where appropriate and practical (Decision XIV/10).

United Nations Environment Assembly and the Process towards an International Legally Binding Agreement on Plastic Pollution
- From 2014 to date UNEA has adopted a number of key resolutions on marine litter and microplastics.
- It also adopted in 2019 a related resolution on addressing single-use plastic products pollution.
At the most recent session of UNEA in 2022, 175 nations endorsed a historic resolution to forge an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design and disposal.

**Soft Law Instruments**

- The **Honolulu Strategy**, developed by UNEP and the National Oceanic and Atmospheric Administration Marine Debris Programme is an international voluntary framework for the management, control and prevention of marine debris.
- The **Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)** is the only global intergovernmental mechanism directly addressing marine degradation from land-based activities on the basis of the connectivity between terrestrial, freshwater, coastal and marine ecosystems. Countries and regions formulate national and regional programmes of action to implement the GPA.
- The **Global Partnership on Marine Litter (GPML)** is run by the GPA Secretariat and composed of governments, international organizations, private sector, academia, civil society actors, and individuals. The GPML aims to protect human health and the global environment by reducing and managing marine litter as its main goal.
- The **GloLitter Partnership Project**, launched by IMO and FAO aims to help the shipping and fisheries industries move to a low-plastics future.
- The **10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)** offers a collective approach through multi-stakeholder programmes and partnerships, which develop, replicate and scale up Sustainable Consumption and Production (SCP) policies and initiatives at all levels.
2.12. Knowledge Refresher
This section is intended to consolidate the knowledge you have gained throughout the lesson. You will find the answer key below the final question.

1. Does UNCLOS specifically deal with marine plastic litter? Yes/No

2. Which of the following are some of the provisions of the UNCLOS relevant to ocean plastics pollution?
   - Article 194 which provides that states are to take all measures necessary to prevent, reduce and control pollution of the marine environment using the best practicable means at their disposal and in accordance with their capabilities.
   - Article 195 which imposes a duty not to transfer pollution from one type to another, or from one area to another.
   - Article 123 concerning the cooperation of States bordering enclosed or semi-enclosed seas.

3) Match the Convention to its correct plastic pollution/marine litter related objective.
4) Which organisation established an Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade?
   - The World Trade Organisation
   - The Basel Convention
   - The Food and Agriculture Organisation

5) Match the UNEA Resolution to the year it was adopted:
7) Which of the following non-binding instruments are directly relevant to plastic pollution and marine litter?

- The Honolulu Strategy
- Agenda 21
- UN Guiding Principles on Human Rights
- Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)
- Global Partnership on Marine Litter (GPML)
• International Law Commission Draft Articles on the Allocation of Loss in the Case of Transboundary Harm
• GloLitter Partnerships Project
• The Nuuk Declaration on Environment and Development in the Arctic
• 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)
1) Does UNCLOS specifically deal with marine plastic litter? Yes/No

**No.** UNCLOS does not directly refer to marine plastic litter, but it does provide a definition of marine pollution that is broad enough to include marine plastics, as well as general obligations that are relevant to prevent and address marine plastics pollution.

2) Which of the following are some of the provisions of the UNCLOS relevant to ocean plastics pollution?

- Article 194 which provides that states are to take all measures necessary to prevent, reduce and control pollution of the marine environment using the best practicable means at their disposal and in accordance with their capabilities.
- Article 195 which imposes a duty not to transfer pollution from one type to another, or from one area to another.
- Article 123 concerning the cooperation of States bordering enclosed or semi-enclosed seas.
3) Match the Convention to its correct plastic pollution/marine litter related objective.

**[correct matches are below]**

- **The London Convention and Protocol**
  - Dumping at sea of (primarily) land-derived waste including plastics.

- **The International Convention for the Prevention of Pollution from Ships (MARPOL)**
  - Pollution by ships including garbage containing plastics.

- **International Watercourses Convention**
  - The management of transboundary rivers including to prevent marine plastic pollution.

- **Basel Convention**
  - Control of the transboundary movement of hazardous chemicals and wastes including plastics.

- **Stockholm Convention**
  - The control and management of Persistent Organic Pollutants from plastics.

- **Convention on Biological Diversity**
  - Assess and minimize adverse impacts on biodiversity including impacts of marine debris.

4) Which organisation established an Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade?

- **The World Trade Organisation**
- The Basel Convention
- The Food and Agriculture Organisation

WTO members participating in the Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade have prepared a draft Ministerial statement.
on transitioning to an environmentally sustainable plastics trade for potential adoption at the 12th WTO Ministerial Conference in June 2022.

5) Match the UNEA Resolution to the year it was adopted:

[correct matches are below]

- Resolution 1/6 on Marine plastic debris and microplastics 2014
- Resolution 2/11 on Marine plastic litter and microplastics 2016
- Resolution 3/7 on Marine litter and microplastics 2017
- Resolution 4/6 on Marine plastic litter and microplastics 2019
- Resolution 4/9 on Addressing single-use plastic products pollution 2019
- Resolution on developing an international legally binding instrument on plastic pollution 2022
7) Which of the following non-binding instruments are directly relevant to plastic pollution and marine litter?

- The Honolulu Strategy
- Agenda 21
- UN Guiding Principles on Human Rights
- Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)
- Global Partnership on Marine Litter (GPML)
- International Law Commission Draft Articles on the Allocation of Loss in the Case of Transboundary Harm
- GloLitter Partnerships Project
- The Nuuk Declaration on Environment and Development in the Arctic
- 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)

2.13. References/Additional Resources

- UNEP (2021). From Pollution to Solution – A global assessment of marine litter and plastic pollution.
- IMO Action Plan and Strategy to address marine plastic litter from ships available here.
- CBD Decision XIII/10 (2016) on Marine Debris.
- World Trade Organisation Committee on Trade and Environment (2020) COMMUNICATION ON TRADE AND ENVIRONMENTAL SUSTAINABILITY.
- One Ocean Hub (2022). Reflections on the new UN process to develop a treaty on plastics.

Congratulations, you've finished this Lesson!
Lesson 3 – Regional Legal and Policy Frameworks

Learning Objectives

- Identify the Regional Seas Conventions and Action plans that have been developed to reduce marine litter and plastic pollution.
- Identify additional key regional governance arrangements in this area, including those developed under other Regional Conventions and Frameworks.
Regional arrangements play a vital role in accelerating the uptake of policies and initiatives [UNEP, 2021]. Some of the most important regional instruments for marine litter and plastics are the Regional Seas Conventions and Action Plans. These include various measures to reduce marine litter and plastic pollution from both land-based and marine-based sources, as well as monitoring and public awareness campaigns. There are also a number of other actions and initiatives taking place at the regional level outside of these frameworks, as we will explore below.

3.2. Regional Seas Conventions and Action Plans

As well as a number of specific action plans for marine litter (see below) Regional Seas instruments play an important role in tackling plastic pollution and marine litter by filling gaps where countries are not signatories to the international agreements governing these areas which we explored in Lesson 2 above. For example, most Regional Seas instruments address industry pollution and emissions into water bodies through the duty to prevent pollution from point sources, and three Regional Seas Conventions have adopted protocols specific to the dumping of plastics from vessels.
We will now take a closer look at a few of these instruments by way of example as follows:

- Regional Plan on Marine Litter Management in the Mediterranean;
- Marine Litter Management for the Wider Caribbean Region (RAPMaLi);
- Marine Litter in the East Asian Seas Region (COBSEA).

**Regional Plan on Marine Litter Management in the Mediterranean**

With the Regional Plan on Marine Litter Management in the Mediterranean (the Plan), the UNEP Mediterranean Action Plan was the first Regional Seas Programme and Convention to develop legally binding measures to prevent and reduce the adverse effects of marine litter on marine and coastal environments.

The Mediterranean Sea is acknowledged to be one of the seas most affected by marine litter and plastic pollution. The continuous increase in marine litter in the Mediterranean over past decades has been as a result of:

1) The densely populated coastline and enclosed nature;
2) Fisheries;
3) Extensive tourism and maritime traffic; and
4) Riverine inputs.

Adopted in 2013, the entry into force of the Plan coincided with the update of national action plans of the Mediterranean countries to combat pollution from land-based sources and activities. The Plan....
Some good progress has been made in the use of recycled plastic and particularly in reducing the use of single-use plastic bags. For example:

1) France and Morocco have a total ban on plastic bags;
2) Croatia, Malta and Israel and some municipalities and districts of Spain and Greece have introduced a tax on single-use plastic bags;
3) Tunisia has banned non-biodegradable plastic bags in large chain supermarkets.

On the other hand, the fishing sector has lagged in implementing litter reduction strategies. Although guidelines for the litter scheme have been developed, and the majority of Mediterranean fishermen have indicated a willingness to participate, country surveys indicate that vessels do not have bins or bags on board to store litter items.
Fishermen continue to discard unwanted fishing gear into the sea. In this regard, a wide range of technologies for marking ownership of fishing gear are available. In fact, Moroccan and EU fisheries laws provide for the marking of both the vessel and the fishing gear carried on board and the Food and Agriculture Organization of the United Nations adopted Guidelines on Marking Fishing Gear in 2018.

The Regional Action Plan for Marine Litter for the Wider Caribbean Region

The Regional Action Plan for Marine Litter for the Wider Caribbean Region (RAPMaLi) was originally developed in 2007 to promote problem solving at the national and local levels, recognizing that unique regional characteristics should inform innovative solutions to the problem of marine litter.

The RAPMaLi action plan has since been implemented through selected pilot projects in Guyana, Barbados and Saint Lucia.

The implementation of RAPMaLi is also supported by the adoption of several international agreements with implications for the Wider Caribbean Region, including the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) of the Cartagena Convention. The LBS Protocol helps UN Member States in the Wider Caribbean Region to meet the obligations and requirements of UNCLOS and GPA, both of which have been discussed above.

The Protocol includes regional effluent limitations for domestic wastewater (sewage) and requires the development of plans to address agricultural non-point sources of pollution.
Specific schedules for implementation are also included in the Protocol. The LBS Protocol allows countries to develop and adopt future annexes to address other priority sources of land-based pollution such as marine plastic.

The operative Annexes describe the work that each Party must accomplish, and provides guidance for the development of regional actions. In particular:

*Read inside the boxes below to learn more*

<table>
<thead>
<tr>
<th>Annex I</th>
<th>Establishes a list of land-based sources and activities and their associated contaminants of greatest concern to the marine environment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex II</td>
<td>Outlines and establishes the process for developing regional standards and practices for the prevention, reduction, and control of the sources and activities identified in Annex I.</td>
</tr>
<tr>
<td>Annex III</td>
<td>Establishes specific regional effluent limitations for domestic sewage.</td>
</tr>
<tr>
<td>Annex IV</td>
<td>Requires each Contracting Party to develop plans, programmes and other measures for the prevention, reduction and control of agricultural non-point sources of pollution.</td>
</tr>
</tbody>
</table>

The implementation of the Protocol and the development of future source-specific annexes will be determined by the States with assistance from a Scientific, Technical and Advisory Committee.

In a related forum, one of the outcomes of the XXII Meeting of the Forum of Ministers of Environment for Latin America and the Caribbean in February 2021 included a pollution and waste agenda. Ministers highlighted the need to urgently address the issue of marine litter and microplastics and adopted a new Action Plan on regional cooperation for the management of chemicals and waste 2021–2024.
Coordinating Body on the Seas of East Asia

Administered by UNEP with the Secretariat hosted in Thailand, the Coordinating Body on the Seas of East Asia (COBSEA) is a regional intergovernmental mechanism bringing together several countries in development and protection of the marine environment and coastal areas of East Asian Seas. The countries include:

1) Cambodia
2) People’s Republic of China
3) Indonesia
4) Republic of Korea
5) Malaysia
6) The Philippines
7) Thailand
8) Singapore
9) Vietnam


A Working Group on Marine Litter has been created to:

• Promote implementation of the Action Plan;
• Provide strategic as well as technical support and advice to the COBSEA Intergovernmental Meeting and COBSEA Secretariat;
• Exchange information that supports implementation of the Action Plan; and;
• Promote regional cooperation in the context of the Action Plan.
3.3. Other Regional Frameworks and Initiatives

We will now take a look at some other significant frameworks and initiatives at the regional level which have developed in response to the need for regional collaboration.

**East Asia, ASEAN and APEC**

Recent figures indicate that Indonesia, the Philippines, Thailand and Viet Nam, together with China, are responsible for more than half the plastics entering the oceans [UNEP, 2021].

Governments in East Asia, recognizing that the seas around their coastlines are among the world’s most polluted, have put in place various mitigation initiatives to decrease plastic pollution, including government policies and waste management; education, media, monitoring and outreach campaigns by NGOs; and the development of alternative products and methods of production and recycling by inventors and businesses [UNEP, 2021].

Within the Association of Southeast Asian Nations (ASEAN) there is a patchwork of governance arrangements, including:

1) General legislative framework for municipal solid waste (MSW);  
2) Marine litter and anti-litter legislation;  
3) Source reduction through material restriction;  
4) Landfill regulations;  
5) Waste to energy laws;  
6) Some extended producer responsibility legislation;  
7) Trade policies, green procurement and recycled content policies.

In addition, the Asia-Pacific Economic Cooperation (APEC) Virtual Working Group on marine debris, part of the APEC Chemical Dialogue and Oceans and Fisheries Working Group, is promoting innovative solutions to marine debris, especially through sustainable waste management. However, there is no integrating governance process to bring all these together.

**South Pacific**

In the South Pacific region the Waigani Convention, adopted in 2001, is the regional implementation of the international hazardous waste control regime and annexes of waste categories (the Basel, Rotterdam and Stockholm Conventions). The objective of this convention is to reduce and eliminate transboundary movements of hazardous and radioactive wastes, minimize the production of hazardous and toxic wastes in the Pacific
region, and ensure that disposal of wastes in the Convention area is completed in an environmentally sound manner. The Waigani Convention:

*Read the text in the boxes next to the cards below to learn more:*

- Includes each Party’s Exclusive Economic Zone (200 nautical miles) rather than extending only to the outer boundary of each Party’s territorial sea (12 nautical miles) as under the Basel Convention;


There has also been investment in improving waste management under the Waigani Convention through Global Environment Facility (GEF) funded work on reducing the unintentional release of persistent organic pollutants (UPOPs) and the European Union funded PacWaste projects [UNEP, 2021]
Africa, the second largest continent in the world, is experiencing a higher urban population growth (estimated at 3.5% per year) than any other continent, with a steep rise in the middle class and the associated increase of municipal solid waste from 0.78kg per capita per day to 0.99kg by 2025. When coupled with various waste management challenges, there is an expected increase in mismanaged waste and pollution for the continent [UNEP, 2018]. Considering Africa’s extensive coastline, and shared river systems, which flow through large urban settlements, much of Africa’s waste is transferred, in critical quantities, to the ocean [WRI, 2020].

Africa's shipping and fishing activities may also be one of the most significant sources of marine pollution because these industries are difficult to monitor. Researchers anticipate that a total of 640,000 tons of Abandoned, Lost, or otherwise Discarded Fishing Gear (ALDFG) will contribute to worldwide marine litter [FAO, 2009]. A number of bodies are attempting to tackle these pressing issues through regional-level action as follows:

The Bamako Convention
30 African countries have agreed under the Bamako Convention, the regional instrument related to the Basel, Rotterdam and Stockholm Conventions, to strengthen management of hazardous waste including plastics and electronic waste (e-waste). However, in general there is considerable variation in the promulgation and enforcement of legislation across Africa, ranging from very little to comprehensive.
The East African Community (EAC) Development Strategy recognized a lack of effective legislation, inadequate funds and services for municipal waste management, and the low priority given to solid waste management as major challenges facing member countries. Although this strategy does not have a recommended strategic intervention on waste management in general, it does include harmonization of policy interventions on the management of plastics and plastic waste and the establishment of an electronic waste management framework. Specific waste targets outlined under the EAC Development Strategy include a regional policy on the management of plastic and plastic waste and an EAC e-waste management framework. While this regional policy has yet to be fully developed, many countries have introduced total and partial bans on plastic products such as bags [UNEP, 2021].

Draft Regional Guidelines
To build on the existing efforts made by African countries on marine litter, UNEP recognized the need for a regional framework to guide both regional and national efforts. Having undertaken a gap analysis of the existing legislative and policy framework of English-speaking, as well as French and Portuguese-speaking African countries, UNEP produced a set of draft guidelines for African countries for the development of policy and legislation on plastic pollution and marine litter. See here for further information.

European Union
A number of the key environmental principles outlined in Lesson 1 can clearly be seen in the approach of the European Union to the issue of plastic pollution and marine litter. These include the polluter pays principle (through the introduction of extended producer responsibility), the principle of circularity and the ecosystem approach. The specific instruments, initiatives and policy frameworks are set out below (and we will examine them in more detail in Lesson 4).
The European Union’s Strategy for Plastics in the Circular Economy has set in motion a comprehensive set of initiatives, with business and governments responding to a challenge of serious public concern. These initiatives include increasing the uptake of recycled plastics and contributing to more sustainable use of plastics by implementing mandatory requirements for recycled content and waste reduction measures [UNEP, 2021].

Waste Governance
Similarly, within the European Union there is a waste governance landscape comprising policy structures, regulations and standards at multiple administrative levels aimed at reducing and recovering materials over the resource life cycle. The specific directives are discussed below.

Member State Commitments
European Union Member States have also established targets to achieve a 90 per cent collection target for plastic bottles by 2029; plastic bottles must have at least 25 per cent recycled content by 2025 and 30 per cent by 2030.

The relevant European Union Directives in this area are:
- 2000 Water Framework Directive (WFD);
- 2008 Marine Strategy Framework Directive (MSFD);

WFD and MSFD
Overlapping spatially (the WFD extends to 1nm from the coastline, the MSFD covers all of the Exclusive Economic Zone from the territorial baseline) and conceptually, the WFD and MSFD reflect a movement towards an integrated approach to the interface of freshwater, coastal and marine waters.
1) The MSFD requires the development of marine strategies or measures to achieve “good environmental status” by the year 2020. Taking into account ecosystem structure and functioning, the MSFD is the first European directive to be based on an ecosystem approach to management [UNEP, 2021].

2) The assessment of “good environmental status” is based on qualitative descriptors contained in Annex I of the Directive, including ensuring that “properties and quantities of marine litter do not cause harm to the coastal and marine environment”.

Waste Framework Directive
The EU’s Waste Framework Directive (2008/98/EC) of 19 November 2008 establishes the legislative framework for the handling of waste within the EU. It applies a number of obligations on EU member states that are relevant to the control plastic pollution and marine plastics, including the following waste hierarchy:

1) Prevention;
2) Preparing for re-use;
3) Recycling;
4) Other recovery, e.g. energy recovery;
5) Disposal.

Single-use Plastics Directive
EU rules on single-use plastic products aim to prevent and reduce the impact of certain plastic products on the environment, in particular the marine environment, and on human health. They also aim to promote the transition to a circular economy with innovative and sustainable business models, products and materials. The Directive targets the 10 most commonly found single-use plastic items on European beaches, alongside fishing gear, which represent 70% of all marine litter in the EU. These are:

- Cotton bud sticks
- Cutlery, plates, straws and stirrers
- Balloons and sticks for balloons
- Food containers
- Cups for beverages
- Beverage containers
- Cigarette buts
- Plastic bags
- Packets and wrappers
- Wet wipes and sanitary items

Cotton bud sticks, cutlery, plates, straws, stirrers, and sticks for balloons, cups, food and beverage containers made of expanded polystyrene, and all products made of oxo-degradable plastic:

벱 Cannot be placed on the markets of EU Member States where sustainable alternatives are easily available and affordable.
All other single-use plastic products.

- The EU is focusing on limiting their use through:
  - Awareness-raising measures;
  - Introducing design requirements, such as a requirements to connect caps to bottles;
  - Labelling requirements;
  - Waste management and clean-up obligations for producers, including Extended Producer Responsibility (EPR) schemes.

Specific targets under the Directive include:
- A 77% separate collection target for plastic bottles by 2025 – increasing to 90% by 2029
- Incorporating 25% of recycled plastic in PET beverage bottles from 2025, and 30% in all plastic beverage bottles from 2030.
3.4. Recap

Action Plans to Reduce Pollution in Regional Seas Programmes

- There are more than twenty Regional Action Plans on Marine Litter in existence and under development.
- The Regional Plan on Marine Litter Management in the Mediterranean was the first Regional Seas Programme and Convention to develop legally binding measures to prevent and reduce the adverse effects of marine litter on marine and coastal environments. Some good progress has been made in the use of recycled plastic and particularly in reducing the use of single-use plastic bags.
- The Regional Action Plan for Marine Litter (RAPMaLi) for the Wider Caribbean Region was developed in 2007 to promote problem solving at the national and local levels. Its implementation is supported by the Protocol Concerning Pollution from Land-Based Sources and Activities of the Cartagena Convention. There is also a new Action Plan on regional cooperation for the management of chemicals and waste 2021–2024.
- Marine Litter in the East Asian Seas Region (COBSEA) is a regional intergovernmental mechanism bringing together several countries in development and protection of the marine environment and coastal areas of East Asian Seas. The Regional Action Plan on Marine Litter identifies common priorities and provides a regional framework for cooperation in tackling marine litter.

Other Regional Frameworks and Initiatives

- Governments in East Asia, recognizing that the seas around their coastlines are among the world’s most polluted, have put in place various mitigation initiatives. There is also a patchwork of governance arrangements within the Association of Southeast Asian Nations (ASEAN). The Asia-Pacific Economic Cooperation (APEC) Virtual Working Group on marine debris is also promoting innovative solutions to marine debris.
- In the South Pacific region there have been projects on waste management under the Waigani Convention which is the regional implementation of the international hazardous waste control regime.
- Relevant instruments in the Africa region include the Bamako Convention (the regional instrument related to the BRS Conventions), the East African Community (EAC) Development Strategy and recent draft guidelines for the development of policy and legislation on plastic pollution and marine litter.
3.5. Knowledge Refresher

This section is intended to consolidate the knowledge you have gained throughout the lesson. You will find the answer key below the final question.

1) How many regional action plans on marine litter are there?
   - 5
   - 12
   - More than 20

2) Which of the following was the first regional seas action plan to reduce marine pollution?
   **Select one**
   - Marine Litter Management in the Mediterranean
   - Marine Litter Management (RAPMaLi) for the Wider Caribbean Region
   - Marine Litter in the Baltic Sea (HELCOM)
   - Northwest Pacific Action Plan (NOWPAP) on Marine Litter

3) In which year was the Regional Action Plan for Marine Litter (RAPMaLi) developed?
   ____________________________

4) Which of the following countries fall under the Coordinating Body on the Seas of East Asia (COBSEA)?
   **Select all that apply**
   - Cambodia
   - Japan
   - People’s Republic of China
   - Indonesia
   - Mongolia
   - The Philippines

5) Which of the following regional instruments/organisations are also seeking to tackle marine litter and plastic pollution?
   **Select all that apply**
   - The Asia-Pacific Economic Cooperation (APEC)
   - Asian-African Legal Consultative Organization (AALCO)
   - Commonwealth of Nations
   - The European Union
6) Which are the EU Strategies and Directives most relevant to plastic pollution and marine litter? 
Select all that apply

- Habitats Directive
- Water Framework Directive
- Extractive Waste Directive
- Waste Framework Directive
- Environmental Crime Directive
- Marine Strategy Directive
- Groundwater Directive
- Strategy for Plastics in the Circular Economy
- Strategy for Sustainable Development
- Single-use Plastics Directive
Answer Key
Correct answers are highlighted

1) How many regional action plans on marine litter are there?
   - 5
   - 12
   - More than 20

2) Which of the following was the first regional seas action plan to reduce marine pollution?
   - Marine Litter Management in the Mediterranean
   - Marine Litter Management (RAPMaLi) for the Wider Caribbean Region
   - Marine Litter in the Baltic Sea (HELCOM)
   - Northwest Pacific Action Plan (NOWPAP) on Marine Litter

3) In which year was the Regional Action Plan for Marine Litter (RAPMaLi) developed?
   ___2007___
   2007 was the year which the Regional Action Plan for Marine Litter (RAPMaLi) was developed.

4) Which of the following countries fall under the Coordinating Body on the Seas of East Asia (COBSEA)?
   - Cambodia
   - Japan
   - People’s Republic of China
   - Indonesia
   - Mongolia
   - The Philippines
   The correct answer is: Cambodia, People’s Republic of China, Indonesia and the Philippines

5) Which of the following regional instruments/organisations are also seeking to tackle marine litter and plastic pollution?
   - The Asia-Pacific Economic Cooperation (APEC)
   - Asian-African Legal Consultative Organization (AALCO)
   - Commonwealth of Nations
   - The European Union
   - Shanghai Cooperation Organisation
   - Waigani Convention
   The correct answers are the Asia-Pacific Economic Cooperation and the European Union and the Waigani Convention.
6) Which are the EU Strategies and Directives most relevant to plastic pollution and marine litter?

- Habitats Directive
- **Water Framework Directive**
- Extractive Waste Directive
- **Waste Framework Directive**
- Environmental Crime Directive
- **Marine Strategy Directive**
- Groundwater Directive
- **Strategy for Plastics in the Circular Economy**
- Strategy for Sustainable Development
- **Single-use Plastics Directive**

3.6. References/Additional Resources

- UNEP (2021). From Pollution to Solution – A global assessment of marine litter and plastic pollution.
- Asia-Pacific Economic Cooperation (APEC) Virtual Working Group on marine debris
- European Commission (2018). A EUROPEAN STRATEGY FOR PLASTICS IN A CIRCULAR ECONOMY INFORMATION BROCHURE.
- UNEP - LEAP. Online interactive 'Plastic Toolkit'.

Congratulations, you've finished this Lesson!
Learning Objectives

- Identify the five key categories of regulatory approaches taken by countries to tackle plastic pollution and marine litter.
- Identify the key elements and pros and cons of each approach.
- Describe some examples of legislation and case-studies from different countries for each approach.
4.1. Overview

National regulatory processes are expanding, driven by the growing evidence of the risks posed by plastics and through public pressure [UNEP, 2021]. In addition, as we learned above, both international environmental obligations relevant to plastic pollution and marine litter, and international human rights standards, require states to take legislative action. These actions vary considerably, including specifically tackling marine litter through framework legislation which can also call for inter-agency coordination mechanisms, and (far more common) piecemeal approaches which address marine litter as part of more general legislation on the life cycle of plastics or waste management.

As we saw in Lesson 2, UNEA Resolution 4/9 on addressing single-use plastic products pollution called upon Member States to take comprehensive action including through legislation to address plastic pollution. More recently, UNEA Resolution 5/14 in which Member States agreed to develop an international legally binding agreement to end plastic pollution (see the discussion of both of these in Lesson 2 above) specifically calls upon States to ‘continue and step up activities ... to combat plastic pollution’ including through ‘development and implementation of national action plans’ and ‘fostering international action and initiatives under national regulatory frameworks’ [see here].

In this lesson, we look more closely at the various regulatory approaches which countries have taken to date to address plastic pollution and marine litter, primarily in relation to single-use plastics (as this represents the vast majority of regulatory interventions in this area). These are summarized in the diagram below.

For policymakers and others involved in designing a country-specific regulatory approach, UNEP has developed an online step by step tool which provides an interactive and advanced version of the various regulatory options complete with links to example legislation and case-studies. The wider ‘Plastic Toolkit’ on which this resource can be accessed also contains numerous national case-studies which provide a detailed insight into the legal and regulatory approaches taken by those countries to tackle marine litter and plastic pollution.
To some degree these national legislative approaches do implement a number of the multiple upstream and downstream synergistic interventions which have been identified as being necessary to reduce the amount of plastic entering the oceans including:

- Circularity policies;
- Phasing out of unnecessary, avoidable and problematic products and polymers;
- Fiscal instruments such as taxes, fees and charges;
- Deposit-refund schemes;
- Extended producer responsibility schemes;
- Tradeable permits;
- Removal of harmful subsidies;
- Green chemistry innovations for safer alternative polymers and additives;
- Initiatives to change consumer attitudes, and;
- “Closing the tap” in regard to virgin plastic production through new service models and ecodesign for product *reuse*. 
In general, however, there is little policy coordination among states, and national and subnational policies are uneven, with loopholes, erratic implementation and inconsistent standards [UNEP, 2021].

It is also important to assess national legislative proposals in the light of relevant international environmental provisions and guidance that apply to plastic pollution and marine litter, as well as the relevant international human rights obligations and standards outlined in Lessons 1 and 2 above. For example, the concept of 'just transition' refers to the move to a sustainable economy which integrates the “goals of decent work for all, social inclusion and the eradication of poverty” [International Labour Organisation].

This principle can help legislators consider the impacts of regulatory responses on people that may lose their jobs as a result of legislative change and may not have a voice in relevant policy debates. Engaging with these groups may lead to:

1) Developing creative approaches that promote economic and employment opportunities relating to alternatives to plastic products;
2) Supporting those whose livelihood is highly dependent on plastic products; and
3) Involving representatives of diverse sectors and backgrounds into the policy making process [UNEP, 2021].

We will now look at the main regulatory approaches as shown in the diagram above, beginning with Bans and Restrictions.

**4.2. Bans and Restrictions**

As worldwide attention to the plastic problem grew, bans and restrictions on single-use plastic products became one of the most prevalent regulatory remedies taken by countries. More than 60 countries now support bans on different types of plastic items including plastics bags and packaging and microbeads. They can be a step towards more comprehensive policies to reduce plastic production and replace plastic products with more sustainable alternatives. Costa Rica, for example, intends to become the first country in the world to ban all single-use plastic products by 2021 [UNEP, 2021].

**Products and Activities Targeted**

Bans and restrictions directly prohibit one of more of the production, importation or exportation, distribution, sale or use of plastic products. In general, they cover the following categories of products [UNEP/WRI, 2020]:

**Plastic Carrier Bags**

Based on their thickness, plastic bags based on material composition, plastic bags based on thickness and material composition (this is the most common type of banned product). See for example:
• Paragraph 3 of Antigua and Barbuda’s External Trade (Shopping Plastic Bags Prohibition) Order 2017;
• Regulation 5 of Samoa’s Plastic Bag Prohibition on Importation Regulations 2006;
• Regulation 5 of Tanzania’s Environmental Management (Prohibition of Plastic Carrier Bags) Regulations, 2019;
• Article 3 of Rwanda’s Law No. 57/2008 of 10/09/2008 relating to the prohibition of manufacturing, importation, use and sale of polythene bags in Rwanda, 2008;
• Regulation 2 of South Africa’s Regulation on Plastic Bags (No. R. 543 of 2002).

Image Source: Plastic Oceans

Disposable products used for food packaging or food services
Including straws, cutlery, plates, cups, beverage stirrers and fast-food containers; personal items such as cotton buds with plastic stems and wet wipes; and products such as foam packing peanuts and plastic sticks attached to balloons. For example:
• Marshall Islands Styrofoam and Plastic Products Prohibition Act, 2016;
• Seychelles Environment Protection (Restriction on importation, distribution and sale of Plastic Utensils and Polystyrene Boxes) Regulations 2017.
• Haiti Ministerial Order - Prohibition of Food Packaging and Disposable Polystyrene Dishes ban on plastic and polystyrene containers, 2012.
A class of products

Such as single-use food ware or oxo-degradable plastics. For example:

- Pakistan’s Prohibition of Non-degradable Plastic Products (manufacturing, sale and usage) Regulations 2013;
- European Union Directive 2019/904 on the reduction of the impact of certain plastic products on the environment. Provides an overarching definition of single-use plastics and identifies specific products and classes of products that are to be banned or subject to consumption targets by member States. The overarching definition provides regulators with the flexibility to include additional single-use plastics that become problematic in the class of products banned, while minimizing confusion in the market among manufacturers, retailers and consumers.
- Vanuatu’s ban on certain single use plastics including bags, plastic straws and polystyrene takeaway boxes. Waste Management Regulations Order No. 15 of 2018 and the Waste Management (Penalty Notice) Regulation Order No. 17 of 2018.

7 of the most common* marine litter items found in coastal areas are plastic packaging

*By quantity of pieces found

Source: Ocean Conservancy (2019). Results from the 2018 International Coastal Cleanup. Item 1 was cigarette butts, item 2 was straws and wrappers, and item 4 was plastic cutlery. (2020). Drowning in plastics – Marine Litter and Plastic Waste Vital Graphics.
In terms of the activities targeted, European Union member States, for example, tend to restrict retail distribution, while countries in Africa and the Asia-Pacific region ban both market entry and retail distribution (particularly in relation to plastic bags). There are of course exceptions to this. France banned the production, distribution, sale, provision and use of packaging or bags made wholly or partly from oxo-fragmentable plastic (biodegradable but not compostable – see here). California prohibited the manufacture of nurdles, or pre-production plastic, and the Netherlands, Canada, New Zealand, the United Kingdom and the United States prohibited the manufacture of micro-beads for use in personal care products.

See for example Regulations 6 and 7 of New Zealand’s Waste Minimization (Microbeads) Regulations 2017 and Regulation 3 of Canada’s Microbeads in Toiletries Regulations (SOR/2017-111).

In a few countries, bans target the activities of certain users, particularly Government procurement practices. Since Governments are large consumers of services that use plastics, they can provide leadership and send strong signals to other actors, including producers, retailers, private sector users and consumers. See the examples from Costa Rica, Germany and Canada below.

See below for some illustrative country examples of these various regulatory instruments at the national and subnational levels.
<table>
<thead>
<tr>
<th>Country</th>
<th>Legislation Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Was the first country to outlaw single-use plastic items (plastic carrier bags) in 2002, and since then, at least 90 countries have enacted similar legislation.</td>
</tr>
<tr>
<td>Canada</td>
<td>The Federal Government of Canada made a commitment to diverting at least 75 percent of the plastic waste from its operations by 2030, which will be accomplished partly through the procurement of sustainable plastic products.</td>
</tr>
<tr>
<td>California</td>
<td>In the city of San Jose, California, a plastic bag ban reduced the amount of plastic bags ending up in storm drains by 89 percent and raised the percentage of customers using their own reusable bags from 4 to 62 percent in just one year.</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Banned single-use plastic products in the food service areas of all Government institutions, to be replaced by reusable or recyclable products.</td>
</tr>
<tr>
<td>China</td>
<td>In 2008, China banned the “production, use and sale of ultrathin shopping bags”, defined as bags less than 25 microns in thickness, and mandated that retailers impose fees on thicker bags. A comparison of plastic bag usage in China before and after the ban revealed a 66 percent drop in plastic bag use, equivalent to 40 billion bags.</td>
</tr>
<tr>
<td>Germany</td>
<td>The city of Hamburg banned municipal use of coffee capsules and single-use bottles and utensils.</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>The Marshall Islands stands out for having an expansive ban on single-use plastic products (see above) that does not explicitly provide for exemptions based on product usage (see information regarding ‘Exemptions’ below). It does, however, promote recycled paper bags and reusable bags.</td>
</tr>
<tr>
<td>Mauritania</td>
<td>Mauritania passed a manufacturing ban that imposes fines and up to a year in prison for anyone using, manufacturing, or importing plastic bags.</td>
</tr>
<tr>
<td>Rwanda</td>
<td>With Law N57/2008 of 10/09/2008 Relating to the prohibition of Manufacturing, Importation, Use and Sale of Polythene Bags, legislators not only banned the manufacture and sale of all polythene bags within its borders, but also banned the import of all such bags. Violators face stiff penalties and fines. Anyone wishing to “manufacture, import, use and sell” polythene bags to send a written request to the Rwanda Environment Management Authority, along with the “reasons for the request and the ways through which he or she will manage the polythene waste.”</td>
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</tbody>
</table>

**Exemptions**

Typically, exemptions apply to specific uses or specific products, which are often interrelated. In determining what exemptions to allow, important considerations include health, hygiene, accessibility, safety and security and the availability and affordability of alternatives. What is appropriate may differ between jurisdictions, given cultural, social and economic differences relating to the use of single-use plastic products [UNEP/WRI 2020]. Currently, legislation on plastic bags worldwide typically provides exemptions for a range of product uses, including the following:

- Primary packaging for fresh, perishable or other loose food and pharmaceutical products;
• Transport of small retail goods (e.g., hardware items);
• Use for scientific or clinical research or other medical uses;
• Use for sanitation or waste storage and disposal;
• Some commercial uses (e.g., protection of bank notes and laundry/dry-cleaning bags);
• Plastic bags for export;
• Agricultural uses;
• Use of a product by people with disabilities;
• National security uses; airport carry-on and duty-free bags and for the transport of personal effects;
• Alternative bags (e.g., woven bags);
• Use for small volumes, for non-commercial purposes.

In terms of specific products, some countries exempt plastic bags of a certain thickness, which can vary considerably. Often the exemption of the product is paired with its use.

According to European Union directive 2015/720, Member States may choose to exempt very lightweight plastic bags (below 15 microns) for use as “primary packaging for loose food when required for hygiene purposes or when their use helps prevent food wastage”. Lightweight or thin plastic bags tend to be exempted for the purposes of food handling and safety (for example in Andorra, Benin, Panama, the Republic of Korea and South Africa), whereas thicker bags tend to be exempted for uses that require sturdier bags (such as
agriculture or bank notes) and because they can be used more than once (for example, in China, the United Kingdom and Viet Nam).

**Alternatives**

**Plastic-alternatives:** Bans may also pair restrictions on single-use plastics with mandates for alternative products including biodegradable, compostable and bio-based plastics. This is premised on their ability to degrade or decompose in the environment more rapidly than conventional plastics. Although these materials present alternatives to conventional polymers, policymakers considering legislation on single-use plastic products should be aware of potential problems with their use (see tabs below). The straightforward banning of conventional, fossil-fuel-based plastics and their replacement with alternative plastics alone will not solve plastic pollution. Complementary policies relating to the production and waste management of alternative plastics are also required [UNEP/WRI 2020]. It is crucial to have clear standards for producers and guidance for consumers regarding the terms “biodegradable,” “compostable”, “bio-based” plastics and “bioplastics”. Such standards and guidance must accord with internationally recognized standards. It is also essential to have in place the proper collection and recovery systems and post-use and disposal infrastructure.

*See the table below to learn about the common plastic alternatives and potential problems with their use [see UNEP/WRI 2020]:*

| Oxodegradable       | • Evidence shows that oxo-degradable plastics rapidly fragment into smaller and smaller pieces, but do not break down at the polymer or molecular level. While large pieces of plastic seem to disappear faster than conventional plastics, the resulting microplastic fragments remain in the environment for a long time, contributing to microplastic pollution. It is possible that the plastic fragments are ingested by earthworms, insects, birds or animals. They may find their way into the marine environment and be ingested by marine organisms.  
• There is concern from plastics recyclers that the presence of oxo-degradable plastics in the recycling stream will have an adverse effect on the quality and usability of the products made from the recycled material. The presence of oxo-degradable additives will render the product more susceptible to degradation.  
• Labelling oxo-degradable plastics as biodegradable may lead to confusion on the part of consumers and cause problems such as incorrect disposal, including contamination of the waste stream. |
| Biodegradable        | • Evidence suggests that the residence time of biodegradable plastics in the natural environment is less than that of conventional plastics, but degradation is highly dependent upon environmental conditions. Biodegradable plastics also appear to undergo processes that generate microplastics. Often biodegradable plastic items break down completely only if exposed to prolonged high temperatures above 50°C |
(122°F). Such conditions are met in industrial composting plants and municipal composters, but not in domestic compost heaps or if left as litter in the environment.

- Biodegradable plastics are challenging to recycle. Currently, they are difficult to isolate from mixed plastic waste streams and are considered an undesired contaminant in the recycling streams of conventional plastics. Technologies exist to isolate biodegradable plastics, but the volume of biodegradable plastic needs to be sufficiently high to make this economically viable.

- When plastic materials are promoted as biodegradable it may suggest to consumers that they biodegrade in the same way in many different post-use and disposal scenarios. Without qualification, the term “biodegradable” may lead people to think that they can discard the material in the natural environment, whereas it will not degrade properly and generate microplastics. When biodegradable plastics end up in landfills, they will produce methane as they decompose under anaerobic conditions. When they end up in the ocean, biodegradable plastics are as problematic as conventional plastics.

<table>
<thead>
<tr>
<th>Compostable</th>
<th>Biodegradable plastics</th>
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<tbody>
<tr>
<td>A claim that a product or package is compostable should be substantiated by reliable scientific evidence in accordance with internationally accepted criteria, which require that all the materials in the product or package be capable of breaking down into, or otherwise become part of, usable compost, in a safe and timely manner in an appropriate composting programme or facility or in a home compost pile or device. Most plastics labelled as compostable can be broken down only in industrial composters, which are yet to be available in many countries.</td>
<td>The production of bio-based plastics may require land use to move away from the growing of food crops, at a time of growing food insecurity. Farmers may abandon food production in favour of growing bio-feedstocks, likely resulting in rising food costs in many developing countries. Furthermore, intensified farming and extensive use of fertilizers can increase greenhouse gas emissions.</td>
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<tr>
<td>The capacity of composting facilities tends to be limited. In the European Union, for example, many composting facilities treat only garden waste. They are not adapted to processing compostable packaging and would have to undergo numerous technical modifications, particularly at the level of pre-processing, to ensure an efficient process for composting packaging.</td>
<td>The conversion of grassland or forest for feedstock production, as well as monoculture production, may destroy sensitive habitat, at a time of diminishing biodiversity.</td>
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<tr>
<td>Compostable plastic waste needs to be separated at source from normal household or industrial waste. Unless collection systems and composting facilities are available to consumers, however, the plastic waste is most likely to end up in conventional waste streams (e.g., incineration and landfill).</td>
<td>Not all types of bioplastics are biodegradable. The property of biodegradation does not depend on the source of the plastic, but is rather linked to its chemical structure. Wholly bio-based plastics may be non-biodegradable, while some wholly fossil-fuel-based plastics can biodegrade.</td>
</tr>
</tbody>
</table>
Biomass-based polymers is that they tend to be more expensive to produce at present than those based on fossil fuels. Nevertheless, bio-based plastics that are “drop-ins”, with the same chemical and physical properties, can be introduced seamlessly into existing value chains from production to recycling.

**Non-plastic alternatives:** In many countries bans are accompanied by the promotion of alternative materials to replace the single-use plastic products, such as bags made of paper or cotton or glass bottles for soft drinks and other beverages as in the Marshall Islands, Turkey and Vanuatu. In relation to plastic bags, policy approaches that have been adopted by countries include: the mandate that reusable bags be provided to consumers, either free of charge or for a fee, as in Andorra, Greece and Italy; exempting reusable bags from bans, as in the Marshall Islands, Turkey and Paraguay; or requiring or encouraging retailers to give minimal discounts to consumers who bring their own shopping bags as in Bangkok, Thailand [UNEP/WRI 2020].

In promoting alternative materials, policymakers should, through a life-cycle assessment or an alternatives assessment, for example, determine whether the alternatives are environmentally acceptable, readily available and affordable, and whether they may cause negative impacts on human rights, including those of persons with disabilities or in poverty. Such due diligence can be especially important in developing countries, where the banning of a product without cheap and readily available replacements may end up causing undue hardship to the poorer segments of the population, as occurred in Rwanda [UNEP/WRI 2020].

Policymakers may also want to make sure that the promoted alternatives are fit for purpose. For instance, the materials used for food packaging are often chosen to keep the food fresh. If the available replacement does not provide the same benefits, a policy to reduce overpackaging of fresh food could unintentionally increase food loss and waste.
Phase-out periods, effective dates and enforcement

<table>
<thead>
<tr>
<th>France</th>
<th>California</th>
<th>China</th>
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<tr>
<td>In France, the 2015 Energy Transition for Green Growth Act No. 2015-992 allowed a grace period until January 2020 for the phase-out of single-use food ware and cotton swabs with plastic stems.</td>
<td>The city of Berkeley, California, United States, made available mini-grants to vendors.</td>
<td>In China, the Notice of the General Office of the State Council on Restricting the Production and Sale of Plastic Shopping Bags by State Council Office (2007) No. 72 confers overall responsibility for enforcement of the ban on the Government department responsible for industry and commerce, while the quality inspection department is tasked with ensuring the quality of allowable bags, and local governments are responsible for ensuring compliance at the regional and local levels.</td>
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</tbody>
</table>

A ban on single-use plastic product may be preceded by a grace period before compliance is required and enforcement begins. For example, legislation can provide for technical assistance to businesses and information and awareness campaigns for consumers during the transition period. Enforcement is essential for the success of single-use plastic bans. Legislators should consider which authorities will be responsible, the mechanisms to be used for enforcement and the penalties for violation. The naming of the authority responsible for enforcement and the clear definition of its mandate are core components of the regulation or ordinance imposing the ban. The authority responsible may consist of more than one department or agency.

See below for country examples:

Implementation challenges and unintended impacts

The experience of some countries outlined above show that bans can be an effective policy instrument for curbing plastics deemed environmentally harmful. Nevertheless, challenges and unintended impacts have emerged along the way [UNEP/WRI 2020]. These include:
**Leakage**

A ban may lead directly to an unintended increase in consumption of other, unregulated products. Following a ban on thin plastic bags in the Northern Territory of Australia in 2011, sales of thicker bags increased, as did the littering of those thicker plastic bags. Some retailers simply switched their carrier bags from the banned thin plastic bags to thicker plastics bags. Some jurisdictions, such as South Africa and the US State of California, have adopted a ban/fee hybrid model, in which thin plastic bags are banned while all other carrier bags are subject to a fee, and they are seeing better results in terms of behavioural change.

**Higher Carbon Footprint**

Studies have shown that alternative materials can be more carbon-intensive than plastics in terms of manufacture and transport. Paper bags are biodegradable, but they require more energy and water to produce. Cotton bags generate higher greenhouse-gas emissions than plastic bags because growing and processing cotton is highly resource-intensive. The shift towards a circular economy for plastic, in which unnecessary or problematic plastics are eliminated or redesigned and plastic packaging and other products are made reusable, recyclable and compostable in practice, is a more sustainable approach [Ellen MacArthur Foundation, 2015].
Black market

Another potential problem is the spawning of black markets for plastic bags. In Rwanda, which has one of the most comprehensive and vigorously enforced bans, street vendors and market stall owners continue to smuggle in plastic bags from neighbouring countries such as Uganda, the Democratic Republic of the Congo and Burundi, because no affordable alternatives are available. This issue highlights the importance of identifying the main uses of plastic bags and the segments of the population that will be most affected and then ensuring that alternative sustainable products are readily available and affordable before institution of a ban. This is especially pertinent in developing countries where the banned product may be essential for the livelihoods of the poor.

Industry Pushback

In many jurisdictions, bans have met with resistance from plastic manufacturers and associations, who cite economic losses. The Kenya Association of Manufacturers, for example, which unsuccessfully opposed the plastic ban in court, claimed that as many as 100,000 jobs would be lost in the plastics manufacturing industry. This argument underscores the need for Governments to consider promoting research and innovation in technology and design.
Enforcement Challenges

Some single-use plastics bans have had very little impact. In Bangladesh, for example, the ban was ineffective owing to a lack of enforcement. Enforcement personnel from the implementing agency (the Department of Environment of the Ministry of Environment, Forest and Climate Change) were too few and too willing to accept bribes. Enforcement has similarly been challenging in rural China, where more than 80 per cent of stores continue to provide free plastic bags.

4.3. Economic Instruments

In the absence of any pricing policies for waste, industries and consumers behave as if the disposal of waste is free, although the collection and disposal of discarded goods consumes valuable resources such as labour, fuel and land. Some of these costs may be priced, but environmental costs such as those related to carbon and methane emissions are usually not priced at all while charges for improper disposal are often not enforced. Cheap and obscure prices for waste disposal have encouraged waste-intensive production and consumption patterns rather than recycling. There are a range of fiscal instruments, requiring legislation, to enhance waste management and support circularity [UNEP, 2021].

In the following section we will look at

1) **Taxes** (i.e. charges imposed by Governments), which can serve as penalties for certain kinds of behaviour such as the manufacturing, sale or purchase of single-use plastics. By increasing the cost, the tax creates an economic disincentive to engage in that behaviour.

2) **Incentives** such as tax credits and subsidies, which can be granted to people or entities engaged in behaviour that reduces the production or use of single-use plastic.
Taxes

The following elements must be determined by policymakers in designing a tax on single-use plastic products:

Point of charge

Box 13: Examples of legal provisions specifying the point of charge for retail levies

In Fiji, the Environment and Climate Adaptation Levy (Plastic Bags) Regulations 2017 provide that:

"The Environment and Climate Adaptation Levy charged on plastic bags must be collected by a cashier at the point at which a plastic bag is provided by the business to a consumer."

In Hong Kong (Special Administrative Region of China), the 2009 Product Eco-Responsibility Ordinance, amended 2015, states that:

"The seller must charge the customer an amount not less than that prescribed in Schedule 3 for each plastic shopping bag, or each pre-packaged pack of 10 or more plastic shopping bags, provided by the seller directly or indirectly to the customer—

(a) at the time of the sale;
(b) for promoting the goods; or
(c) otherwise in connection with the sale."

In England, United Kingdom, under the Single Use Carrier Bags Charges (England) Order 2015, a seller must charge for each single-use carrier bag supplied “at the place in England where the goods are sold, for the purposes of enabling the goods to be taken away.”

*50 cents

Source: UNEP/WRI 2020

Taxes can be imposed on the manufacturer, the importer, the distributor, the retailer or the customer. The responsibility for paying the tax may be placed on the different parties, but the impact of the tax will likely be felt more broadly. For example, a tax at the manufacturing stage may result in a more expensive product for the consumer, while a tax on the retail product may reduce consumer demand, impacting manufacturers and distributors. See examples below:

Taxed and exempted products

As with bans, the scope of taxes on single-use plastic products must be determined precisely in terms of which products will be taxed and which will be exempted from the tax. A greater diversity of plastic products appears to be subject to producer taxes than bans. Examples include: the product fee on packaging materials and single-use articles such as cups in Bulgaria; the environmental tax on plastic bags and on plastic stoppers, caps, lids, and other closures in Lesotho; the environmental tax on PET bottles in Norway; and the tax on single-use plastic bags and disposable cutlery in Belgium [UNEP/WRI 2020].

Unit to be taxed

The unit of single-use plastic on which the tax is imposed, such as a single plastic bag or plastic amounting to a certain weight. Producers are typically taxed on the weight or volume of the material that they provide to the market. The packaging tax in many European Union countries, including Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, Latvia, Malta, the Netherlands, Romania and Slovenia, uses the volume or weight of the material as the basis for calculating the tax. Another option would be to use the value or price of the product.
Tax rate
Once the unit to be taxed has been determined, the level of the tax can be set in either absolute or percentage terms. Retail taxes are typically set as an absolute amount per plastic item. Tax laws can use a number of approaches to determine the level of the tax. See examples below:

Box 14: Illustrative provisions: setting the level of a fee
Some countries allow retailers to determine the precise price of plastic bags, merely prohibiting free distribution of such bags, and some give retailers discretion within a certain range. For example:
- **China** allows the retailer to set the price as long as it is not free or cheaper than the manufacturing cost and as long as the price is clearly marked. **Turkey**, the **Netherlands** and **Slovenia** take a similar approach (UNEP, 2018c).
- The 2004 Packaging Act in **Estonia** provides that lightweight and very lightweight plastic carrier bags shall not be supplied to consumers free of charge, with some exceptions. No further provisions mandate what charge should be imposed.

Some countries set a minimum price. For example:
- In the **United Kingdom**, in Scotland, the Single Use Carrier Charge (Scotland) Regulations 2014 state that "the amount that a supplier must charge for a single-use carrier bag is the amount that will ensure that the consideration paid by the person supplied with the bag is, for each such bag, not less than 5 pence". The law also specifies that the consideration includes any variable value added tax.

Some countries link the price to that paid to procure the bag. For example:
- In **Czechia**, according to the translation of the 2016 draft amendments to the Act No. 477/2001 on Packaging submitted to the European Union, the price is linked to that paid to procure the bag, such that lightweight plastic carrier bags may be supplied to consumers at the point of sale of products in exchange for at least the compensation for the expenses corresponding to the procurement cost of the bags.

Other examples:
- In **Spain**, Royal Decree 293/2018 of 2018 on the Reduction of Consumption of Plastic Bags and for the Creation of a Producer Register, which allows retailers to choose the price, but provides that they can reference an annex of suggested prices.
- In **Senegal**, Law No. 2015-09 of 2015, on the Prohibition of the Production, Importation, Possession, Distribution and Use of Lightweight Plastic Bags and on the Rational Management of Plastic, which provides that bags of 30 microns or thicker cannot be distributed for free, leaving the price to be set by a joint ministerial order.

**Enforcement, Compliance and Revenues**
A clear articulation of who is responsible for reporting and collecting the tax and overseeing the process is important, while good records are necessary for monitoring effectiveness and helping to ensure that the tax serves the purpose for which it is intended. In addition, clarity as to the destination of tax funds can be important for addressing public controversy or scrutiny, particularly for unpopular taxes. In some cases, directing revenues towards environmental projects or other public interest outcomes can reinforce the idea of a “green tax”. For example, in Israel, the 2016 Law for the Reduction of the Use of Disposable Carrying Bags provides that plastic bag taxes are transferred to a fund, the purpose of which is to encourage a reduction in the use of disposable bags [UNEP/WRI 2020].

**Incentives**
Fiscal incentives can take a wide variety of forms and there is room for significant creativity in how they are structured. Common incentives include tax breaks, which reduce normal tax burdens, and subsidies, which are direct financial payments from the Government to support behaviour that might not otherwise be economically attractive. See the examples below:
1) As part of its plastic bag ban, the Government of Antigua and Barbuda legislated that certain materials used to manufacture alternatives shall be tax-free, including sugar cane, bamboo, and paper and potato starch.

2) In the state of Colorado, United States, there is a plastic investment tax credit, giving a credit equal to 20 per cent of the first US$10,000 of net expenditure to third parties (e.g., rent, wages, supplies, consumable tools, equipment and utilities) for new plastic recycling technology.

3) The environment tax on manufacturers and importers of recyclable PET plastic bottles in Norway decreases in line with the return rate or number of bottles collected. The tax reduction starts at a 25 per cent return rate and the tax is eliminated completely when a 95 per cent return rate is achieved.

4) The Finnish beverage packaging tax incentivizes participation in a deposit-refund scheme by offering a tax exemption on products registered in the scheme.

5) The plastic bag tax on suppliers in Portugal exempts reusable bags from the tax, which led to a 74 per cent reduction in the use of lightweight plastic bags and a 61 per cent increase in the use of reusable bags four months after implementation.

6) In Saint Vincent and the Grenadines, the ban on the importation of Styrofoam products used for the sale or storage of food was paired with the elimination of value added tax from biodegradable alternatives to lower their cost.

A tax incentive alone may not cause the necessary economic shifts. Many of these examples show how Governments have combined tax incentives for alternatives to single-use plastic products with penalties for the use of problematic single-use plastic products. This can be an effective way of addressing the lack of affordable alternatives to single-use plastic products and/or of balancing the potential negative economic impacts of a ban or tax on them [UNEP/WRI 2020].

4.4. Standards, Certification and Labelling

Standards relevant to single-use plastics are generally associated with safety risks and environmental impacts; they relate for example to harmful substances, recycled content, biodegradability, compostability, recyclability and bio-based plastics. Product standardization reduces the likelihood of off-specification single use plastics and allows for better management of a product once it becomes waste. Product standards also help ensure fair competition, promote commercial growth by overcoming barriers that result from unclear or inconsistent specifications and communication and help prevent fraudulent market behaviour. They are an essential component of any robust single-use plastics regulatory framework [UNEP/WRI 2020].
In this section we will consider standards relating to consumer safety and environmental protection. Standards for product design or eco-design are discussed in the next section on post-consumer use/product end of life.

**Criteria and Specifications**

Criteria and specifications refer to requirements relating to the characteristics or technical performance of a product. Legislation on single-use plastic products can incorporate or reference standards with *environmental protection goals*. Such standards may set requirements related to:

- Material composition;
- Reusability;
- Recoverability (to ensure the product can be recycled);
- Compostability/Biodegradability.

Existing international standards governing the characteristics and composition of packaging materials (including plastic packaging) include:

**CEN Standards**

In the European Union, European Parliament and Council Directive 94/62/EC of 1994 on packaging and packaging waste sets forth certain criteria, called the *Essential Requirements*, that must be met in order for packaging to be allowed entry into the European market. The European Committee for Standardization (CEN) has developed a set of standards for implementation of the Essential Requirements. The CEN standards apply to all European Union member States and have also been adopted by Iceland, Norway and Switzerland and companies in Australia, the United States, Asia and the Middle East. The CEN standards are thus close to de facto world standards. The Essential Requirements, along with their associated CEN standards, are as follows:

- Reusable nature of packaging: EN 13429:2004 (Packaging – Requirements for relevant materials and types of reusable packaging).
- Recoverable nature of packaging: EN 13430:2000 (Requirements for packaging recoverable by material recycling), EN 13431: 2004 (Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value), and EN 13432:2000 (Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging).

**ASTM and ISO Standards**

In addition to EN 13432:2000, other relevant international standards governing compostability and biodegradability for alternative plastics include the ASTM International standards and the standards of the International Organization for Standardization (ISO), a worldwide federation of national standards bodies, including:
• ASTM D6400 standard to assess composability and degradability and ASTM D6400-19 standard for the labelling of plastics designed to be aerobically composted in municipal and industrial facilities (which has been adopted by several US cities and states);
• ISO 14855 (determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions); ISO 17088 (specifications for compostable plastics); ISO 15279 (recovery and recycling of plastic waste); ISO 22526 (carbon and environmental footprint); ISO/CD 22722 (disintegration of plastic materials in marine habitats); and ISO 18830 (biodegradation test).

Domestic Composting Standards

As yet, there are no international standards for domestic composting, but some countries have developed national standards for biodegradable plastics suitable for home composting. Examples include the Australian standard AS 5810-2010 (Biodegradable plastics – Biodegradable plastics suitable for home composting), the French standard NF T51-800:2015 (Plastics – Specifications for plastics suitable for home composting), the German standard DIN V 54900-1 (Testing of the compostability of plastics) and the Green Plan in Japan.

In a review of the biodegradability of plastic bags, current international standards and regional test methods were shown to be insufficient in their ability to realistically predict the biodegradability of carrier bags in wastewater, inland waters and marine environments due to shortcomings in existing test procedures, the absence of relevant standards for the majority of unmanaged aquatic habitats, and lack of wider research on the biodegradation of plastic materials under real-world conditions [UNEP, 2021].

Legislation may also incorporate consumer safety standards that regulate plastic products more generally, such as standards on the amounts of noxious substances and heavy metals permissible in plastic packaging, especially packaging that comes into contact with food. These might include treaty obligations discussed in Lesson 2 above, for instance under the Stockholm Convention.

Verification of Compliance

Certification is the process of assessing and validating industry claims based on product standards [OECD, 2018]. Policymakers introducing standards should consider what form of certification or other verification should accompany those standards. One option is mandatory self-certification or a declaration of compliance. This approach is common in standards relating to noxious substances or heavy metals and substances in contact with food. For example:
Under state-level legislation on toxics in packaging in the United States, manufacturers and suppliers of packaging must give their purchasers a certificate of compliance, signed by an authorized company official, stating that their packaging or component is in compliance with the law regarding permissible concentrations of regulated heavy metals. A copy of the certificate must be kept on file and provided to the competent authority and members of the public upon request.

In the United Kingdom to show compliance with the Essential Requirements of Directive 94/62/EC of 1994 detailed above, companies must keep on file technical documentation or other information.

Another way of ensuring proper compliance with standards is through third-party certification. Independent third-party certification can increase the credibility and acceptance of claims that the criteria set forth in standards have been met. Several independent third-party certification organizations can verify compliance with standards.

For example, the Biodegradable Products Institute in the United States, a nonprofit organization with members from industry, Government, and academia, certifies compliance with ASTM standards (D6400 or D6868) on compostability of products in industrial or large-scale composting facilities.

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Labelling or Marking

Labelling or marking comprises written communication or graphic symbols on plastics products and packaging. It is another way of demonstrating compliance with standards. Consumers can quickly identify those plastic products that conform with environmental standards. Labelling can provide information on the product components (polymer types, additives, recycled content, etc.); the practices used in the production, transport and treatment of the product; recyclability; or claims of compostability or biodegradability of a product [UNEP/WRI 2020].

See the cards below for examples

Material Coding

The Plastics Industry Association in the United States has developed a numerical coding system that uses a symbol of three arrows cycling clockwise to form a triangle. Inside the triangle is a number between 1 and 7 corresponding to the type of plastic resin in the product. The symbol must be moulded into or imprinted on the base of the container or product. The European Commission has established a material coding system that is a slight variation on the US system. Both systems are widely used.

Environmental Standards

Where single-use plastics legislation incorporates environmental standards, it may be appropriate to require labels or markings relating to those standards. For example, Article 7 of European Union Directive 2019/904 of 2019 requires member States to ensure that beverage cups, other specified single-use plastics, such as wet wipes, and the packaging used for those products bear conspicuous, clearly legible and indelible marking. The label or marking informs consumers about waste management options, the presence of plastics in the product and the resulting negative environmental impact of littering or other inappropriate waste disposal.

Environmental Claims

Legislation can also regulate the use of labels to make environmental claims. The guidelines issued by the US Federal Trade Commission provide a model. The Guides for the Use of Environmental Marketing Claims require that any claim or label as to composability, recyclability or biodegradability be based on competent and reliable scientific evidence and
be clearly qualified to avoid deception.

See example of plastic products labelling provisions from California below [UNEP/WRI 2020].

4.5. Post-Consumer Use/Product End of Life

Waste Management Legislation

Good practice requires that waste management legislation cover the entire hierarchy of waste management, starting with waste prevention, then moving to reuse, recycling and safe disposal. EPR schemes (discussed below) are also a critical part of ensuring the recycling and proper disposal of waste. Legislation can be amended to support opportunities for single-use plastic waste to be treated as a resource to be recovered, recycled or reused. There are many possible regulatory approaches for improving the management of single-use plastic waste. See some of the options below:
**Prevention and minimization**
Regulatory interventions that seek to prevent or minimize plastic waste pollution can be put in place. These can include incentives and other elements that aim to improve manufacturing methods, to reduce the amount of waste generated before the recycling stage or to influence consumers to demand greener products or less packaging, thereby limiting consumption.

*For example, in France Law No. 2020-105 of 2020 on Combating Waste and on a Circular Economy includes regulatory measures that aim for all plastic to be recyclable by 2025 and for a 50 per cent reduction in the use of single-use plastic bottles in the next decade. Fast-food restaurants and takeaways have to stop using plastic containers by 2023.*

**Collection, separation and recovery**
Interventions to support the recycling and reuse of single-use plastic waste start with source separation. Separate collection of plastic packaging is known to increase recycling because it allows valuable streams to be extracted and hazardous materials to be removed while diminishing cross-contamination. Alternatively, legislation may support single-stream collection that is then separated manually or with technological sorters or a combination of the two.

**Payments and fees**
Legislators and policymakers can impose disposal levies and fees that encourage
source separation and incentivize the recovery of certain materials. Fee programmes may include landfill fees or pay-as-you-go programmes which can be set up with variable rate pricing (different fees for different sizes of container), unit pricing (a fee per bag of waste) or user fees (a set price that is charged to residents or businesses based on the amount of waste they produce to incentivize the minimization of waste) [UNEP/WRI 2020].

<table>
<thead>
<tr>
<th>Regulation of the informal sector</th>
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<tbody>
<tr>
<td>Waste pickers play a critical role in the recovery of single-use plastic items, especially where there is no source separation at the household or commercial level. Improvements in the operation of waste pickers has been linked to better waste collection, a higher rate of product collection and less of a need for investment in landfill facilities owing to waste diversion. Some countries have granted legal recognition to the informal sector’s role in waste management in legislation (for example Brazil).</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Export and import of plastic waste</th>
</tr>
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<tr>
<td>The 187 parties to the Basel Convention must ensure that their legal framework for the management of plastic wastes is in line with their treaty obligations. As we learned in Lesson 2 following the 2019 plastic waste amendments hazardous plastic wastes and plastic wastes requiring special consideration are now subject to the prior informed consent procedure.</td>
</tr>
</tbody>
</table>
Extended Producer Responsibility (EPR) Schemes

EPR schemes make use of a combination of regulatory approaches to extend manufacturers’ responsibility for single-use plastic products throughout their life cycle, including to the end-of-life stage. EPR has two principal environmental goals, which we will consider in more detail below:

1) To provide incentives for manufacturers to design resource efficient and low-impact products (EPR upstream);

2) To ensure effective end-of-life collection, the environmentally sound treatment of collected products and improved rates of reuse and recycling (EPR downstream).

See each image below to learn more:

EPR can be realized through broad legislation or multiple regulations, rules and decrees under different statutes relating to taxes, subsidies, solid waste, environmental quality and pollution.

Countries differ significantly in their preferred approaches, as do states, regions and cities. Comprehensive EPR systems are most prevalent in Europe. Policymakers have to choose which policy instruments they want to include as part of their EPR system.
**EPR upstream – eco-design and material Content**

Eco-design plays an important role in determining the environmental impacts of single-use plastic products. Design decisions directly influence the end-of-life management of products, including their durability and level of recyclability, reusability, and reparability. Thoughtful design can also avoid or limit the use of virgin materials, toxic substances, and materials that are hard to recycle [UNEP/WRI 2020]. In legislating for eco-design the following must be considered:

**Producers and Products**
Legislation should:

- Define who or what constitutes a producer and which products are to be included;
- Distinguish between domestic producers and importers.

Legislation can also address the question of who is legally responsible for the different single-use plastic waste streams and the obligations of domestic producers in relation to plastic that they export.

*For example, in the province of British Columbia, Canada, the 2004 Recycling Regulation, under the 2003 Environmental Management Act, defines a producer as “a person who manufactures the product and uses in a commercial enterprise, sells, offers for sale or distributes the product in British Columbia under the manufacturer’s own brand”. The law also outlines its application to producers of specific categories of beverage container product in the Schedule of the Act, exempting small producers.*
Exemptions

Laws may need to provide exemptions for certain products to ensure industry acceptance of EPR and define producers and/or products that will be exempted from eco-design requirements.

For example, in the US state of California, the Rigid Plastic Packaging Container Program of 1991, amended in 2013, includes exemptions for rigid plastic packaging containers that contain drugs, medical devices, cosmetics, food, or infant formula as defined in the US Federal Food, Drug and Cosmetic Act. In this case, these products are exempted because a separate law defines the specific requirements for this type of packaging.

Eco-Design Standards

EPR legislation can include eco-design standards that place greater responsibility on producers in reducing single-use plastics or increasing the choice and availability of more sustainable alternatives. For example:

- **Reduced plastic packaging or “lightweighting”**: Mandatory requirements can be set for the weight of plastic packaging. A consideration with lightweighting is that lighter (as opposed to fewer) packages might result in products that are less valuable, on a unitary basis, for recycling.

- **Percentage of recycled content**: Mandatory requirements can be set for the minimum amount of post-consumer recycled plastic content in a product. This requirement has been applied to plastic trash bags at the design stage. See examples from the European Union below and Japan below.

- **Composition of products**: Mandatory restrictions on chemical compounds or additives in plastics used for specific purposes can be set to reduce the toxicity of the product.

- **Use of bio-based material**: Mandatory requirements can be set for the use of bio-based materials as part of product content.

Economic Instruments

Taxes or fees on materials that are difficult to recycle can also encourage producers to use alternative materials. Modulating EPR fees according to criteria like the ones mentioned in the previous tab, and charging less for the collection and management of waste from products that have been eco-designed are another way to influence eco-design.
See the example laws below:

The 1991 Rigid Plastic Packaging Container Program of the US state of California requires product manufacturers to use 25 per cent post-consumer recycled content in rigid plastic containers, unless the containers are reused or refilled at least five times, or they are “lightweighted” by 10 percent. It also requires that all trash bags that are 0.75 mm or thicker are required to contain 10 percent post-consumer recycled plastic, and that at least 30 per cent of the weight of all materials used in all plastic products placed on the California market by the manufacturer must be recycled material.

European Union Directive 2019/904 of 2019 on the reduction of the impact of certain plastic products on the environment introduces new design requirements for beverage containers with a capacity of up to 3 litres, such as tethered caps and lids to reduce loss and increase their likelihood of being recycled.

In Japan, the EPR scheme for packaging waste has encouraged the replacement of coloured PET bottles with transparent PET bottles to improve their recyclability. This design innovation eliminated the need for a separate collection scheme to avoid colour degradation of the standard transparent PET, reducing collection costs and improving the quality of secondary resources.

See also the case-study below which details the framework for EPR in the European Union, introduced in Lesson 3 above.
Box 21: EPR in the European Union

Almost all European Union member States have adopted EPR schemes for packaging waste under the 1994 Packaging and Packaging Waste Directive 94/62/EC. Its success is evident in, among other achievements, a single-use plastics recycling rate of 30 to 95 per cent, depending on the product type (Leal Filho and others, 2019). The European Union experience has shown that EPR laws must explicitly require oversight or monitoring of recycling requirements. The European Union has both Directive 94/62/EC, amended by directives 2004/12/EC of 2004 and 2005/24/EC of 2005, and the new 2019 Directive 2019/904 on the reduction of the impact of certain plastic products on the environment that regulates single-use plastics and adopts an EPR approach. The European Union also has the Directive 2008/98/EC of 2008 on Waste, a waste framework directive, which includes the requirements for adoption of EPR in the waste hierarchy: prevention; reuse; recycling; other recovery, including energy recovery; and final disposal (Williams, 2012). According to one source, the European Union uses EPR to underpin all "the most commonly used economic policy instruments affecting waste plastic management for specific waste streams such as packaging, deposit-refund systems for homogeneous products such as beverage bottles, charges and fees for waste disposal and treatment as well as landfill and incineration taxes and gate fees" (Hennlock and others, 2014).

Research has also found that the effectiveness of EPR schemes in meeting reuse and recycling targets also tends to increase when EPR is coupled with economic instruments such as landfill and incineration taxes, disposal bans for certain products or materials, packaging taxes and pay-as-you-throw schemes (Zero Waste Europe, 2015; European Commission, 2014). European Union rules on EPR were reformed in 2018 and should be transposed into national legislation in all member States by mid-2020. The rules were revised to strengthen the provisions on what costs should be covered and the proportion that should be covered by producers.

Source: UNEP/WRI 2020

EPR Downstream - recycling and end-of-life management

Downstream EPR holds producers, distributors and retailers responsible for the waste that they create. The following are the key elements that laws implementing this approach need to cover:

Definitions
Legislation should include a clear definition of who is considered a “producer” and will thus be subject to the scheme. Legislative definitions may vary depending on the type of product.

In the EPR scheme in Ireland the person whose activities produce waste rather than the person who manufacturers the packaging is considered to be the producer. In the EPR scheme in Chile the producer is defined as whoever introduces a packaged product onto the Chilean market for the first time, not necessarily the producer of the packaging itself.
Scope
In terms of the products covered, countries may adopt many EPR systems to cover a single product or product line. Alternatively, a scheme might include all types of single-use plastic or packaging, or only commercial or industrial packaging. Many factors are relevant in determining which materials are to be included for example: operating practices; assessment of the quantity of the materials collected for reuse, recycling or energy recovery; whether there is a curbside recycling collection system or another material recovery system; the status of technologies for reuse, recycling or energy recovery; and any competition issues that may arise from including or excluding particular materials.

Roles and Responsibilities
EPR systems can impose different forms of responsibility as follows:

- **Economic/financial responsibility**: producers, manufacturers and/or retailers can be required to cover all or part of the costs of collection, recycling or final disposal of products. For example, the German EPR system requires plastic packaging manufacturers to pay a fee to a national waste management company. The size of the fee depends on the number of packaging units and the weight of the materials.

- **Physical responsibility and liability**: producers and/or manufacturers can be required to manage collection of their products and may be held responsible for environmental damage caused by those products. For example, in Finland, under the EPR scheme in the 2014 Government Decree on Packaging and Packaging Waste (518/2014), all packagers of products or importers of packaged products regarded as producers are legally responsible for organizing a collection and recycling system for the plastic packaging waste entering the markets.

- **Informative responsibility**: producers can be required to supply information on the environmental properties of the products that they are manufacturing and their progress in recycling the product. In France, under the Law No. 2020-105 Regarding a Circular Economy and the Fight Against Waste there is an EPR scheme for packaging waste that requires recycling. Each year, producers are charged fees, which vary according to environmental performance, for example, rewarding good sorting practices.

Fee Structures
EPR schemes rely on producers paying fees to cover the cost of the collection, processing and disposal of single-use plastic products and packaging. Legislators designing EPR schemes should ensure clear specification of the financial structure of schemes to manage the products’ end of life. In the European Union, member States vary the fees for different types of plastics depending on their characteristics (toxicity, durability, reusability, repairability, recyclability/compostability), with lower fees imposed on less harmful plastics. Schemes may also include differing fees for composite materials – plastics mixed with other types of materials.
Monitoring
EPR legislation should incorporate provisions for authorities to monitor the effectiveness of an EPR scheme, including whether it achieves its recycling targets. Regular monitoring of collection rates, appropriate return of products and recycling rates is critical because EPR schemes can be influenced by changing economic and social factors. The monitoring of responsibilities can be built into legislation in the form of performance plans.

Enforcement and Compliance
Enforcement and compliance considerations in EPR systems can include penalties for non-compliance, on the part of producers, distributors and institutions responsible for the scheme’s operation, with mandated targets such as recycling or collection rates.

For example under the 2003 Environmental Management Act and 2004 Recycling Regulation in British Columbia, Canada, producers must recover 75 per cent of the packaging they produce or face fines, unless they join a producer responsibility organization, in which case that organization must collect 75 per cent of the aggregate amount of packaging placed on the market by its member producers.

Other enforcement mechanisms include the removal of the accreditation of a producer responsibility organization; the requirement that a contingency fund be established from which money is deducted if targets are not met; and civil costs or the naming and shaming of non-compliant members.

Downstream EPR has been recognized as one of the most successful tools for implementing the transition to a circular economy. It reduces the burden on public budgets by shifting to the private sector the costs of solid waste management; enhanced separation and collection of waste; increasing recycling rates; and development of new markets for solid waste [UNEP/WRI 2020]. The following challenges have been highlighted however.

Transparency and accountability of institutions and standard setting:
EPR systems rely on the setting targets and the monitoring of companies’ progress in meeting those targets. Agencies have to be able to verify company data. Robust reporting requirements and accountability mechanisms for the institutions involved in the scheme are therefore crucial.

Ensuring that the incentives for use of recycled products and the recycling industry are sufficiently strong:
Such incentives need to be established alongside EPR schemes. For single-use plastics, it is important that there is a market for the recycled plastic, for example by offering subsidies for businesses that use recycled plastic in their supply chain. Without a strong market, producers and manufacturers may seek environmentally unfriendly means of waste disposal, including incineration. The putting in place of criteria for ultimate disposal may also be warranted.
The Informal Sector
Research has shown that EPR schemes that exclude the informal waste-disposal sector may perform less well. This is because workers in the informal sector can prevent producers from achieving their targets, by recovering materials that are then no longer available to be captured by the scheme, and prevent the traceability of plastic collection.

Packaging that may be difficult to recycle:
Legislation on an EPR system requires clarity regarding the handling of single use plastic packaging that may be difficult to recycle with current infrastructure. Regulations must clearly establish who is the producer of certain plastic items and thus who is responsible, such as the retailer or brand owner, for items that may be difficult to recycle and fall outside the current capacity of the EPR system. Legislation should specify the appropriate final treatment of such products, for example landfilling.

Free Riders
Free riders are companies that either deliberately avoid an EPR scheme or otherwise fail to comply with its requirements and thus pay no fees or taxes for recovery or disposal of the packaging of their products. Freeriding is a problem within many EPR schemes and has been attributed to a number of causes. EPR schemes have to ensure that there are controls to ensure that some producers do not shirk their responsibilities. This might entail the requirement to register with an EPR scheme, clear, harmonized rules for specific types of packaging, enforcement programming and appropriate administrative controls.

Resistance by businesses:
Businesses in a number of jurisdictions have resisted EPR schemes because they increase producers’ responsibility for the packaging of their own products. The environmental case for their effectiveness has been established, however, and should be considered in policy justification and design.

Reuse and Recycling
Countries have a number of options for promoting reuse and recycling using environmentally sound management practices, and in many countries these are considered to be part of their EPR approach. Some of the options are described below.
### Supporting recycling industry operations:

New forms of legislation that support the recycling industry can be found in a number of countries. In the United States, a new bill for a Save Our Seas 2.0 act was proposed in Congress in 2019. The act would create a state fund to strengthen domestic recycling infrastructure, develop guidance on harmonizing recycling protocols for municipal recycling programmes and improve the quality and sorting post-consumer recyclable materials through opportunities such as education and awareness programmes, improved recycling infrastructure, enhanced markets for recycled material and standardized measurements.

### Mandatory recycling targets:

Mandatory and enforceable recycling targets in legislation are one way to ensure a market for recycled products. Targets are important, because supporting the market for recycled plastics means ensuring that recycled material can compete with virgin plastic which is often cheaper to source. Targets can therefore level the playing field.
Incentives:
Laws can include incentives to support the achievement of recycling targets. Economic instruments are one option, such as taxes on the use of virgin plastics, differentiated value added taxes for recycled plastics or plastic products and landfill or incineration taxes.

Country Example:

European Union: Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment requires that member States achieve a target for the collection of plastic bottles of 90 per cent by 2029 and take the necessary measures to ensure the separate collection for recycling of 77% of listed single use plastic products placed on the market by 2025 and 90% by 2029 (Article 9).

However, it is important to remember that as we learned in Lesson 1 above, it is estimated that less than 10 per cent of the plastics ever produced have been recycled. The production of hundreds of different plastic polymers and products complicates the recycling potential of plastics, and the chemical composition of some recycled plastics makes them unsuitable for their intended uses, which represents a barrier to recycling. Ultimately this causes millions of tons of plastic waste to be lost to the environment or shipped thousands of kilometres to destinations where the waste is generally burned or dumped in waterways [UNEP, 2021]. These issues have pushed some Governments to consider which chemical substances should be allowed in the recycled content and to seek standardization and monitoring to ensure that there is not a higher threshold for the presence of certain harmful chemicals in recycled plastics than in virgin plastics [UNEP/WRI 2020].
In addition, where a country does not have a big enough local market to support domestic recycling, it will need to consider the inclusion of import and export controls to monitor and regulate trade. These rules should include guidance on traceability and transparency as to what happens to waste exported or imported for recycling, where it goes and whether the plastic waste is actually recycled, in line with international obligations (including under the Basel Convention).

**Take-back and deposit**

Deposit-refund systems provide for a small deposit to be refunded to consumers or collectors who return prescribed beverage containers for recycling. They are a form of downstream EPR. Deposit-refund schemes are one of the most popular and well-established methods of creating a recovery/take-back system. Such systems are successful in reducing littering and achieving high collection and recycling rates for single-use plastic beverage packaging.

*See example laws below*

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**Box 28: Examples of legislation of deposit-refund schemes**

**Barbados**

Section 3 of the Returnable Containers Act 1986

*(1) Subject to subsection (2), no distributor or dealer shall sell or offer for sale, at wholesale or retail in Barbados, any beverage that is contained in a beverage container unless he is permitted to do so by the Minister under subsection (2).*

*(2) The Minister may, by order published in the *Official Gazette*, exempt a distributor or dealer from the provisions of this Act if he is satisfied

(a) that any such distributor or dealer has in place an adequate system for the recycling of beverage containers; or 

(b) that a person who is not a distributor or dealer has in place an adequate system for the recycling of beverage containers which may be utilized by a distributor or dealer.*

**Marshall Islands**

**Styrofoam Cups and Plates and Plastic Products Prohibition and Container Deposit (Amendment) Act 2018**

*A beverage distributor shall pay to the Authority, through the Ministry of Finance and Banking and Postal Services, a deposit beverage container fee on each deposit beverage container manufactured in or imported into the Republic, which shall be imposed only once on the same beverage container.*

... 

*The deposit fee levied under Section 10 of this Division shall be assigned at the point of import.*
These laws may be more likely to succeed in conjunction with other legislative and non-legislative measures to reduce and manage waste, such as the expansion of infrastructure for solid waste management, consumer education, local business development, environmental levies, sustainable management of materials and product design. See the case-study from Finland below which highlights how multiple laws can work together to support the success of a deposit-refund system.

See the hotspots below to learn more
1. **Deposit-refund scheme**
   Finland has adopted a Government Decree on a Return System for Beverage Containers (526/2013) of 2013 that lays out a deposit-refund system for PET bottles and provide incentives for compliance, collection and reuse. The system relies on consumers returning the containers to retailers and collecting a refund. The deposit-refund system works in support of a mandated target of 90 per cent for the recycling and reuse of packaging materials.

2. **Tax**
   Finland also has a beverage packaging tax (€0.51/litre). The deposit system is voluntary, but by joining a deposit system beverage manufacturers and importers are exempted from the beverage packaging tax and from some of the obligations of EPR on packaging. This provides the necessary incentive for producers to participate.

3. **Recycling targets**
   There are different recycling targets for the deposit systems and the EPR systems. Thus, in principle, producers of beverage packaging have to join either a deposit system or a producer responsible organization to fulfil their obligations. The deposit system covers a wide spectrum of different beverage containers, such as bottles and cans for water, lemonades, beer, wine and liquor. The return rates of beverage packaging are high: 96 per cent for aluminium containers, 92 per cent for plastic bottles, 88 per cent for reusable glass bottles and 97 per cent for other glass bottles.

4. **The return system**
   The return system for beverage containers has been in use in Finland since 1950. In the first phase, only glass bottles were recycled through the system. The bottles were washed and refilled. In the 1980s, refillable plastic bottles were added to the return system. Beverage cans were added in the 1990s and recycled plastic bottles in 2008.
   Source: UNEP/WRI 2020

### 4.6. Combined Approaches and Other Important Measures

As we have seen, there is the potential for governments to be creative in combining the various regulatory approaches outlined above, to achieve more effective results. A selection of other innovative solutions and regulatory approaches that Governments have taken to reducing and managing single-use plastics are outlined below.

**Consumer education programmes**

The programmes can be particularly helpful to the success of policy and legislation targeting consumer use of single-use plastics.
The success of a plastic bag tax in Portugal, for example, in reducing plastic bag consumption has been linked to the efforts of consumer associations in mass orientation about plastic bag alternatives and to the widespread sale of reusable bags by supermarkets.

**Alternative products/materials**

In this case alternatives are provided as the availability or lack of alternatives to single-use plastic products can be key to the success of an intervention seeking to limit such products (UNEP, 2018b).

Governments may therefore wish to consider introducing programmes that encourage the private sector, research institutions, industry groups or social enterprises to invest in research and development in relation to such alternatives.
Public Procurement
The Federal Government of Canada has committed itself to diverting at least 75 per cent of the plastic waste from its operations by 2030 (Canada, 2019; OECD, 2018). Costa Rica, for example, has banned single-use plastic products in the food service areas of all Government institutions, single-use plastic products can be restricted, and alternatives encouraged, through reform of public procurement guidelines).

Image source: UNEP
4.7. Recap

Bans and Restrictions

- Bans and restrictions on single-use plastic products are one of the most prevalent regulatory remedies taken by countries, with plastic bags the most common product banned.
- Most countries address the use of consumer goods at the retail level, but several national and subnational laws also prohibit manufacture.
- Exemptions are often applied based for health, hygiene, accessibility, safety and security reasons, as well as to take into account the availability and affordability of alternatives.
- Bans may also pair restrictions on single-use plastics with mandates for alternative products including plastic alternatives and non-plastic alternatives.
- Plastic alternatives include oxo-degradable, biodegradable, compostable and bio-based plastics. However, for each of these there remain a number of potential problems with their use.
- In promoting non-plastic alternatives it is essential to determine whether the alternatives are environmentally acceptable and readily available and affordable, especially in developing countries. It is also important to ensure that the promoted alternatives are fit for purpose (eg keeping food fresh to prevent food waste).
- Bans can be effective for curbing environmentally harmful plastics but there are a number of key implementation challenges and unintended impacts including leakage, higher carbon footprint of alternatives, establishment of black markets and issues of enforcement.

Economic Instruments

- Fiscal instruments can enhance waste management and support circularity. The two key economic instruments used in this regard are taxes and incentives.
- By increasing the cost of the manufacturing, sale or purchase of single-use plastics taxes create an economic disincentive to engage in that behaviour.
- Incentives include tax breaks and subsidies. Many Governments combine tax incentives for alternatives to single-use plastic products with penalties for the use of problematic single-use plastic products.

Standards, Certification and Labelling

- Standards relevant to single-use plastics are generally associated with safety risks and environmental impacts. The criteria they relate to include: harmful substances, recycled content, biodegradability, compostability, recyclability and bio-based plastics.
- There are a number of existing international standards including the CEN standards and the ASTM and ISO standards. In addition some countries have developed national standards for biodegradable plastics suitable for home composting.
- Legislation may also incorporate consumer safety standards that regulate plastic products more generally, especially in relation to packaging that comes into contact
with food, reflecting international treaty obligations for example under the Stockholm Convention on persistent organic pollutants.

- Certification is the process of assessing and validating industry claims based on product standards in order to verify compliance. The two key options are mandatory self-certification or a declaration of compliance, and independent third-party certification.
- Labelling or marking is another way of demonstrating compliance with standards. Consumers can quickly identify those plastic products that conform with environmental standards including information as to polymer types, additives, recycled content, recyclability, compostability or biodegradability.

**Post Consumer Use/Product End of Life**

- There are many possible regulatory approaches for improving the management of single-use plastic waste to cover the entire hierarchy of waste management, starting with waste prevention, then moving to reuse, recycling and safe disposal.
- EPR schemes are a critical part of ensuring the recycling and proper disposal of waste. They make use of a combination of regulatory approaches to extend manufacturers’ responsibility for single-use plastic products throughout their life cycle, including to the end-of-life stage.
- The two principal goals of EPR are to provide incentives for manufacturers to design resource efficient and low-impact products (EPR upstream), and to ensure effective end-of-life collection, the environmentally sound treatment of collected products and improved rates of reuse and recycling (EPR downstream).
- Countries also have a number of options for promoting reuse and recycling using environmentally sound management practices (eg supporting recycling industry operations and setting mandatory recycling targets). In many countries these are considered to be part of their EPR approach.
- Deposit-refund schemes are a form of downstream EPR and are one of the most popular and well-established methods of creating a recovery/take-back system. Such systems are successful in reducing littering and achieving high collection and recycling rates for single-use plastic beverage packaging.

**Combined Approaches and Other Important Measures**

- Governments can be creative in combining the various regulatory approaches outlined above, tailored to the specific country context, to target plastic pollution more effectively.
- Other innovative solutions and regulatory approaches that Governments have taken are consumer education programmes, promotion of alternative products and materials and public procurement guidelines which restrict plastic products and encourage alternatives.
4.8. Knowledge Refresher

This section is intended to consolidate the knowledge you have gained throughout the lesson. You will find the answer key below the final question.

1) Which of the following is one of the most prevalent national regulatory approaches for managing marine litter and plastic pollution?

Select one option only

- Bans and restrictions
- Economic instruments
- Extended producer responsibility schemes
- Certification and labelling

2) Bans which also mandate plastic alternatives solve the problem of single-use plastic pollution.

Select one
- True
- False

3) Which was the first country to outlaw plastic carrier bags?

Select one

- Costa Rica
- Bangladesh
- Samoa
- Rwanda

4) Match each statement below with the regulatory approach it represents:
5) Which country legislated that certain materials used to manufacture alternatives to single-use plastics shall be tax-free (including sugar cane, bamboo, and paper and potato starch)?

*Select one*

- Antigua
- Tanzania
- Chile

6) Fill in the blank below:

In the state of ______________ in the United States, there is a plastic investment tax credit, giving a credit equal to 20 per cent of the first US$10,000 of net expenditure to third parties (e.g., rent, wages, supplies, consumable tools, equipment and utilities) for new plastic recycling technology.

7) Match the following definitions and examples relating to Standards, Certification and Labelling:
8) Which of the following regulatory actions represent an Extended Producer Responsibility (EPR) approach? 

**Select all that apply**

- Promoting reuse and recycling using environmentally sound management practices (e.g., supporting recycling industry operations and setting mandatory recycling targets)
- Bans and restrictions
- Provision of incentives for manufacturers to design resource efficient and low-impact products.
- Deposit-refund schemes
- Mandating of plastic alternatives

9) In regulating plastic pollution, governments must select only one of the various approaches (i.e., bans, taxes and incentives, standards and labelling, extended producer responsibility).

**Select one**

- True
- False
1) Which of the following is one of the most prevalent national regulatory approaches for managing marine litter and plastic pollution?

- Bans and restrictions
- Economic instruments
- Extended producer responsibility schemes
- Certification and labelling

2) Bans which also mandate plastic alternatives solve the problem of single-use plastic pollution.

Select one

- True
- False

The correct answer is FALSE. Plastic alternatives include oxo-degradable, biodegradable, compostable and bio-based plastics. However for each of these there remain a number of potential problems with their use, including unintended contamination of existing recycling and waste streams and higher carbon footprints.

3) Which was the first country to outlaw plastic carrier bags?

Select one

- Costa Rica
- Bangladesh
- Samoa
- Rwanda

The correct answer is Bangladesh. Bangladesh was the first country to outlaw single-use plastic (plastic bags) in 2002, and since then, at least 90 countries have enacted similar legislation.

4) Match each statement below with the regulatory approach it represents:

[correct matches are below]
5) Which country legislated that certain materials used to manufacture alternatives to single-use plastics shall be tax-free (including sugar cane, bamboo, and paper and potato starch)?

*Select one*

- Antigua and Barbuda
- Tanzania
- Chile

6) Fill in the blank below:

In the state of **Colorado** in the United States, there is a plastic investment tax credit, giving a credit equal to 20 per cent of the first US$10,000 of net expenditure to third parties (e.g., rent, wages, supplies, consumable tools, equipment and utilities) for new plastic recycling technology.

7) Match the following definitions and examples relating to Standards, Certification and Labelling:

[correct matches are below]
8) Which of the following regulatory actions represent an Extended Producer Responsibility (EPR) approach?

Select all that apply

- Promoting reuse and recycling using environmentally sound management practices (eg supporting recycling industry operations and setting mandatory recycling targets)
- Bans and restrictions
- Provision of incentives for manufacturers to design resource efficient and low-impact products.
- Deposit-refund schemes
- Mandating of plastic alternatives

9) In regulating plastic pollution, governments must select only one of the various approaches (i.e bans, taxes and incentives, standards and labelling, extended producer responsibility).
- True
- False
The correct answer is False. Governments can be creative in combining the various regulatory approaches outlined above, tailored to the specific country context, to target plastic pollution more effectively.

4.9. References/Additional Resources

- UNEP - LEAP. Online interactive 'Plastic Toolkit'.

Congratulations, you've finished this Lesson!