

The scientific issues relating to the international treaty to end plastic pollution



In December 2020, the Parliamentary Office for Scientific and Technological Assessment (OPESCT) approved a report on plastic pollution with recommendations aimed at promoting a global treaty to reduce plastic pollution. In March 2022, the United Nations Environment Programme (UNEP) adopted the Resolution 5/14 aimed at setting up an internationally legally binding instrument to end plastic pollution. The UNEP scheduled five meetings of the international negotiating committee by the end of 2024 and France will be hosting the second meeting from 29 May to 2 June 2023.

For the occasion, the Office organised a public hearing on the scientific issues linked to the international treaty to end plastic pollution on 11 May 2023 at the Senate.

The purpose of the hearing was twofold:

- reiterate the scientific arguments behind the drafting of this treaty;
- ascertain the scientific relevance of the proposals under discussion.

Philippe BOLO, Member of
the National Assembly

Angèle PRÉVILLE, Senator

An uncontrollable global pollution particularly harmful to the environment and human health

- **Production of plastics still seeing high growth driven largely by use as disposable packaging**

- **Production of plastics expected to triple by 2060**

Since the 1950s, plastic production has grown continuously: it now stands at 450 million tonnes and is expected to reach 1.2 billion tonnes in 2060¹. This quantity of plastic produced since the 1950s

corresponds to a plastic film of a thickness of 0.5 mm covering the entire planet.

- **The use of plastics is strongly correlated with their disposable nature**

Plastic has become omnipresent, in particular in packaging, which accounts for 40% of uses. And yet the consumer does not choose to buy plastic. It has been imposed by a system of production, distribution and consumption based on abundance and mobility in which plastic is a "discreet companion" thanks to its qualities of health protection, light weight and convenience. The disposability of single-use plastic packaging is an advantage insofar as neither the producer, the distributor nor the consumer needs to deal with it after it has been used. In this way, plastic has contributed to the normalisation of waste. For instance, the bottled water market is only justified

¹ OECD (2022), *Global Plastics Outlook : Policy Scenarios to 2060*

because it is considered normal to throw away the bottles after drinking their contents.

➤ **Uncontrollable pollution**

- **Plastics break down into micro and nanoplastics and build up in all the environmental compartments**

Since 1950, 8.3 billion tonnes of plastics have been produced, of which only 30% is considered to be still in use. The rest – some 5.8 billion tonnes – has become waste. Almost 60% is thought to have gone into landfill and almost 30% to have been discharged directly into the environment. In total, 4.9 billion tonnes of plastic waste are therefore likely to be present in the environment, inherited from waste management methods on a global scale.

- **The dispersion process is only just beginning**

Plastic waste is dispersed into the marine environment, the natural terrestrial environment² and into the atmosphere via several flows: that of plastic waste from the anthropised terrestrial environment, which is dispersed into the marine environment via the hydrographic network and in particular rivers flowing into the sea, and that of plastic waste dispersed into the atmosphere and then into the marine environment and the terrestrial natural environment. Within the marine environment itself, plastics initially drift on the surface of the ocean before penetrating the deep ocean and ending up in coastal sediment and on beaches.

Modelling of plastic stocks and flows shows that the dispersion process is only just beginning. 8.1 billion tonnes are thought to be in the anthropised terrestrial environment (i.e. 97% of plastics) as against only 3% dispersed in marine environments, the atmosphere and the natural terrestrial environment. Consequently, based on a fragmentation kinetics hypothesis of 3% per year for plastics and a scenario in which production stops in 2040, peak plastic pollution in natural soils should not be reached before 2400, and peak plastic in deep sea floor sediments is likely to occur after that. Thus the effect of the build-up of microplastics in the soil, oceans and marine sediments can be expected to last for centuries.

➤ **Pollution with serious impacts on the environment and human health**

- **Plastic pollution is responsible for exceeding the safe planetary boundary for contamination by chemicals**

There are nine planetary boundaries that humankind must not exceed to continue living in a viable

² Distinguished from the anthropised terrestrial environment made up of landfill sites, urban and industrial environments and agricultural land.

ecosystem.³ One of the six planetary boundaries exceeded since 2022 is pollution by novel substances (including chemicals), in particular due to the explosion in plastics production. A recent report⁴ shows that over 13,000 chemicals are used in the production of plastics. There is only data for just over half of these chemicals (approximately 7,000), of which almost 3,200 are identified as chemicals of concern by scientists. And yet, only 130 chemicals of concern are regulated by international conventions⁵.

- **Plastic pollution contributes to climate change**

Plastic is mainly produced from fossil fuels (98.5% of plastics are of fossil origin). 12% of crude oil is converted into polymers every year, the majority for single-use packaging. A recent CIEL⁶ report shows that by 2050, the greenhouse gas emissions from the manufacturing of plastic could reach over 56 gigatonnes, i.e. between 10 and 13% of the entire carbon budget available to the international community to comply with the Paris Agreement. Consequently, it would be necessary to reduce demand for plastics by 3% per year to halve humanity's carbon budget, which the plastics industry is currently pre-empting by 2050.

- **Plastic pollution does not spare any of the links in the food chain in the marine environment**

The general public is now well aware of the impact of "large plastic objects" on marine fauna⁷. The microplastics⁸ that they break down into also have harmful repercussions on the entire food chain.

The ingestion of microplastics concerns all living organisms. Even if these microplastics do not build up in the digestive tract and do not seem to pass into the tissues,⁹ exposure to microplastics is permanent insofar as living beings are ingesting them continually.

Numerous scientific studies show the harmful effects of chronic exposure to microplastics, whatever the species, including disruptions to growth and reproduction, among other things. Toxicity, however,

³ These are atmospheric aerosol loading, freshwater change, stratospheric ozone depletion, ocean acidification, climate change, land system change, biogeochemical flows, loss of biodiversity integrity, chemical pollution and release of novel entities.

⁴ UN Environment Programme, May 2023. "Chemicals in plastics. A technical report."

⁵ The Minamata Convention which aims at protecting human health and the environment against the harmful effects of mercury, the Montreal Protocol on Substances that Deplete the Ozone Layer and the Stockholm Convention on Persistent Organic Pollutants.

⁶ Center for International Environmental Law.

⁷ These are mainly physical risks: ingestion of plastics can cause obstructions or perforations of the stomach or intestines; marine animals become entangled in waste and this can lead to their death by asphyxia or haemorrhaging.

⁸ Microplastics are particles between 1 µm and 5 mm inclusive. Macroplastics are larger than 5 mm.

⁹ Which could be the case for nanoplastics, however. This is referred to as translocation.

depends on the length of exposure and the nature, size¹⁰ and age¹¹ of the plastics. Little is known still about the mechanisms of action of microplastics on living organisms.

- **Plastic pollution has an impact on human health, even though the assessment of the corresponding risk still remains complicated**

Risk is defined as the combination of a danger (toxicological effect) and an exposure. Measurement of the latter is therefore crucial to assess the risk, but assessing exposure has turned out to be very difficult. In 2019, the information spread that a human being consumed 5 grammes of plastic per week, the equivalent of a credit card. This had a very strong media impact. In actual fact, the study¹² used to put forward this figure evaluated the amount of plastic ingested at between 0.1 and 5 grammes per week; and even so, its results are a matter of debate. Subsequent scientific studies concluded that between 4.1 µg and 140-310 µg¹³ of plastic is ingested per week. These differing results are evidence of the uncertainties in terms of exposure: depending on the data sources or methods of estimation, the variation in the daily levels of exposure can be quite substantial.

All the same, plastic pollution has an impact on human health through the chemicals plastics contain. A recent study¹⁴ carried out on a Swedish cohort of 2,000 pregnant women showed that the children born of the 10% of the women most exposed to a cocktail of pollutants derived from plastic¹⁵ had a risk of delayed language development multiplied by three compared to those born of the least exposed 10% of the women.

Likewise, bisphenol A was included in Annex XIV to the European REACH Regulation as a substance of very high concern due to its classification as toxic to reproduction and its endocrine disrupting properties.

In April 2023, the EFSA¹⁶ significantly lowered the tolerable daily intake (TDI), from 4 µg/kg body to 0.2 ng. The average daily intake was 100 times higher than this new TDI, which led the EFSA to conclude that human exposure to bisphenol A was of concern.

¹⁰ Smaller particles are thought to be more toxic than larger particles.

¹¹ New materials are probably more toxic than materials that have aged due to the presence of larger quantities of additives.

¹² Senathirajah et al (2021). Estimation of the mass of microplastics ingested – A pivotal first step towards human health risk assessment. *Journal of Hazardous Materials*, volume 404, 15 February 2021, 124004.

¹³ Pham et al (2023). Analysis of microplastics in various foods and assessment of aggregate human exposure via food consumption in Korea. *Environmental Pollution*, Volume 322, 1 April 2023, 121153.

¹⁴ Caporale et al (2022). From cohorts to molecules: Adverse impacts of endocrine disrupting mixtures. *Science* 375, 735, 18 February 2022.

¹⁵ Such as bisphenol A and phthalates.

¹⁶ European Food Safety Authority.

Recent studies on the exposure of the human gut microbiome to microplastics highlight certain points requiring vigilance which, if they were to be confirmed, would be evidence of the negative impact of microplastics on this ecosystem.¹⁷

And yet, the risk to health of daily exposure to microplastics and nanoplastics cannot be assessed on the basis of current scientific knowledge.

Numerous cognitive and methodological barriers remain to be removed, to be able to measure the dangers linked to exposure and in particular the toxicological effects, but also to overcome the difficulty of detecting micro and nanoplastics in biological fluids or the problem of contamination of preparations by the plastics present in the laboratory environment.

The international treaty to end plastic pollution: a tremendous opportunity, in spite of certain pitfalls to be avoided and obstacles to be cleared

➤ **The genesis of the treaty**

- **The decisive role played by Peru, Rwanda and the European Union**

Since 2014, there has been a political will within the United Nations Environment Assembly to take global action to combat plastic pollution, in particular in the oceans. A first draft of a resolution was proposed in 2019, but did not succeed due, in particular, to the opposition of China and the United States. In 2022, on the occasion of the 5th United Nations Environment Assembly (UNEA-5), a resolution on plastic pollution and marine litter was adopted at the initiative of Peru and Rwanda with the active support of the European Union.¹⁸

- **A treaty that addresses plastic pollution in its entirety**

This resolution, which led to the adoption of a negotiating mandate and set up an Intergovernmental Negotiating Committee with a view to adopting an internationally legally binding instrument to end plastic pollution, succeeded in imposing the following three principles:

¹⁷ Thus, an increase in pathobionts (bacteria that are potentially pathogenic in certain conditions) was observed in both adults and children. For the adult population, an increase in scatol was observed, a volatile organic compound already found in patients suffering from hepatic encephalopathy. In children, a reduction in butyrate was found, a short chain fatty acid that has beneficial health effects.

¹⁸ For the European Commission, it was important that the resolution was presented by two countries from the Global South. The European Union and its Member States had already signed the Geneva Ministerial Statement which called for the establishment of an intergovernmental negotiating committee on a binding global agreement on the entire life cycle of plastics.

- act on pollution by plastics in all environments, not just marine environments ;
- take account of the entire life cycle of plastics, from their production to the management of plastic waste;
- adopt an approach of dealing with problems at source and not only downstream, without focusing only on waste management.

• **Different positions on the global action to be taken against plastic pollution**

A first round of negotiations in Uruguay in November 2022 revealed different positions on the action to be taken to combat plastic pollution. The negotiations were structured around three groups:

- a set of countries grouped in a "High Ambition Coalition". These are the European States and a large part of the African and Latin American States. They are attached to an approach considering the entire life cycle of plastics and defend the defining of targets and obligations for all the stakeholders targeting the design, production, distribution and use of plastics and the management of waste, as well as the incorporation of recycled materials;
- a set of countries that wish to concentrate their efforts on waste management, whilst adopting targets and commitments to eliminate existing pollution;
- the fossil fuel producing countries, which have significantly increased their production in the last few years. These are mainly the Gulf States. They are opposed to an agreement whose aim would be to limit the production and consumption of plastic as such.

The outcome of the negotiations will also depend on the position taken by the United States and China. The adoption of the future treaty by the United States, from a constitutional point of view, will require its approval by the American Senate, which has traditionally been reluctant to adopt legally binding obligations. For this reason, the US is more favourable to an agreement based on voluntary national commitments in line with the principles of the Paris Agreement. As for China, its position has evolved in favour of the protection of the environment and human health. It has also raised the possibility of promoting sustainable plastic production and consumption. However, it is defending voluntary measures to impose certain restrictions on plastics, additives and certain plastic applications.

➤ **The pitfalls to be avoided**

To really put an end to plastic pollution, the forthcoming negotiations must arrive at a document that is legally binding on all the stakeholders, with clear reduction targets for the production of plastics and the elimination of existing plastic pollution. The public hearing revealed that such ambitious targets can only be reached if certain pitfalls are avoided.

• **Placing the burden of behavioural change on consumers alone**

Ending plastic pollution will require a drastic reduction in the consumption of plastic. Consumers face three types of constraints to change their habits.

Firstly, they do not necessarily know that they are consuming plastic and are not aware of the consequences on the environment and human health that this consumption involves. It is up to brands and the public authorities to do this job of providing objective information, which must guide people towards practices that are more acceptable from an environmental and social point of view.

Then, consumers do not necessarily want to use less plastic, as this requires both cognitive and physical efforts, in particular in terms of logistics: remembering to take your own containers or carry heavier loads for example. Consumers will only change their habits if the process is easy and encouraged by companies: better information on the alternatives to plastic packaging, rewards for using their own containers, etc.

Finally, the question of material and economic possibility of consumers giving up plastic must be addressed. In certain cases, it is difficult to find alternatives (pens for example) or they are more expensive (such as bulk buying or ethical and sustainable clothing). The public authorities may be required to intervene to facilitate access to the alternatives to plastic by making them affordable and accessible to different categories of the population.

The drastic reduction of the consumption of plastic will therefore involve both companies and the public authorities providing support to consumers.

• **Staking everything on recycling as the only solution to combat plastic pollution**

Recycling is supposed to eliminate plastic pollution by infinite reuse of the material. However, several of the speakers emphasised the limits of recycling as a way of reducing the plastic footprint.¹⁹

Closed-loop recycling,²⁰ which can reduce the consumption of virgin plastics and the production of waste, only applies to PET bottles, which represent just

¹⁹ Plastic footprint can be defined as the harmful consequences of dispersion (by fragmentation) and the accumulation of plastics throughout their chain of life in all the environmental compartments. Their very long lifespan, their ability to absorb pollutants and the possible translocation of the smallest particles into the bodies of living beings are all elements that aggravate the plastic footprint.

²⁰ Chemical recycling was only mentioned by one speaker at the public hearing who explained that certain plastics were more suited than others to forms of chemical recycling. He considered that the use of chemical recycling requires making certain compromises. Firstly, this type of recycling has a greater environmental impact than mechanical recycling, in particular in terms of its carbon footprint. Secondly, it is particularly costly, especially compared to the production of virgin plastics using conventional petrochemical technologies.

1 to 2% of plastics. In addition, this process is valid for a very limited number of cycles because it alters the properties of the material. In all other cases, recycling is actually "decycling": the material produced by the recycling process is of lower quality and is used to make different objects to the original product, and there is no guarantee that they will be recycled in turn.

Therefore, recycling does not contribute to reducing our consumption of plastics. This is proven by countries like Germany and Austria, which, in spite of recycling rates of over 50%, consume more virgin polymers, whereas if the logic of recycling really played out, they should have seen their consumption halved.

On the contrary, recycling creates a dependency on plastic waste since, to keep the recycling plants operating, it is necessary to set up supply channels that are continually fed with plastic. In addition, recycled plastics often replace materials that did not pose any environmental problems: plastic will therefore be substituted for wool to make clothes, wood to make clothes hangers, ceramic for flower pots.

The very small proportion of plastics recycled refutes the notion that recycling contributes to a circular economy. In Europe, only 32% of plastic packaging is recycled, and only 5% of that in closed loop. Globally, only 8% of plastic is recycled.

The difficulties of recycling can be explained by the physical properties of plastic: the same qualities that make its use attractive work against it when it comes to managing it as waste. The collection of waste is not very profitable due to its low value, its light weight and bulk; its durability makes it difficult to process; its malleability leads to it being mixed with other materials from which it can be difficult to separate it when it is sorted.

Recycling not only helps to normalise waste, but it avoids raising the question of alternatives to the consumption of plastics, creating the illusion that it is possible to control waste and even turn it into a resource.

For example fashion uses textiles made from recycled materials to promote a business model based on high consumption of clothes.²¹

- **Defining a mechanism to fund the measures that will be agreed in the treaty that is unfair to developing countries**

The question of the funding of the measures whose implementation the treaty would require is an important subject, especially for developing countries. The countries of the Global South are among the producers of plastics. Accordingly, if the polluter pays principle were applied, they would have to contribute to funding the implementation of the agreement. Now, it is an acknowledged fact that these countries do not

have the infrastructure necessary to deal with their plastic waste and that they have long served, and are still serving today, as dumping grounds for the plastic waste of developed countries. Their contribution to the funding of the treaty must therefore be examined with care.

The funding of the treaty will be the subject of discussions at the meeting of the Intergovernmental Committee to be held in Paris from 29 May to 2 June 2023. It will look at different options, prepared at the Committee's first meeting, which the States will be required to choose between.

➤ **The obstacles to be cleared**

- **Difficulty of enriching life cycle assessments by taking the overall plastic footprint into account**

A life cycle assessment (LCA) allows the measurement of the quantifiable effects of a product on the environment throughout its lifespan²² using different environmental indicators: depletion of materials, energy resources and water, climate change, etc. Certain factors are very difficult to quantify, however, among them the toxicological impact on human health, the impact on biodiversity or the "plastic footprint" due to the persistence of this material in the environment and its ability to break down and disperse in the form of very small particles. Consequently, the impacts of plastic on human health and the environment are insufficiently taken into account in the life cycle assessments of plastics, which tend to focus on the carbon footprint.

- **Difficulty of establishing effective regulations on chemicals and polymers of concern**

The European legislation on chemicals is considered very protective of consumers. Nevertheless, the fact that substances that are well known to be dangerous are not banned (bisphenol A, for example), reveals the points requiring vigilance that need to be taken into account when drawing up effective regulations to control the chemicals contained in plastics and polymers of concern.

The public hearing was an opportunity to draw up a list of obstacles to be cleared.

Bisphenol A escapes control under the REACH Regulation because it is mainly used to produce polymers. The latter are exempt from the registration and evaluation provided for by the REACH Regulation insofar as they are not considered as being able to enter the body. And yet, in the case of polymers made with bisphenol A, polymerisation can be incomplete and

²¹ The textile industry represents 14.2% of total plastic production. Synthetic fibres account for almost 2/3 of the textile fibres market. 2.8 billion textile products were placed on the French market in 2021, representing 715,290 tonnes.

²² All the stages in the life cycle are taken into account, "from cradle to grave", namely the extraction of the raw materials necessary to make the product, its distribution, its use as well as its collection at the end of its life and the management of its disposal.

lead to gradual release of the bisphenol A into food and drinks.

More generally, there are potential contradictions between the regulations on the presence of additives in food packaging.²³

The replacement by manufacturers of substances recognised as dangerous with substances that are even more toxic (such as bisphenol S which has replaced bisphenol A) is also a difficulty to overcome.

Furthermore, the regulations evaluate substances individually, which not only considerably slows the process of evaluating and controlling the chemicals used in plastics, but also makes it possible not to take account of the cocktail effects linked to the presence of several chemical compounds.

The Office's recommendations on the measures that should be included in the international treaty to end plastic pollution

The next round of negotiations to draw up an international treaty to end plastic pollution begins in Paris on 29 May 2023. In this context, the public hearing organised by the Office was an opportunity to highlight the points requiring vigilance to be taken into account and to insist on the measures that must feature in the treaty if it is to genuinely achieve the objectives assigned to it.

• Reduce the production of virgin plastic to tackle the pollution at source

Plastic pollution must be stopped at source, which implies a substantial reduction in the production of virgin plastic. The forecasts are dizzying: plastic production is expected to triple by 2060 if no decisive action is taken. To reiterate the metaphor used during the public hearing, when the bath overflows, the first thing is to turn the tap off before going to get the floor cloths to mop up the water. The international community must set quantified targets for the reduction in plastic production. While there is no question of stopping production of all plastics, the aim is to rationalise their uses by reserving them for applications where their properties and their performances mean they are clearly superior to other materials.

²³ For example between Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals) and Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food. In the latter Regulation, bisphenol A is included in the list of substances authorised in the manufacturing of materials intended to come into contact with food with a specific migration limit set in 2015 at 0.05 mg/kg of food.

In its 2020 report, the Office suggested drawing up a list of plastics to be reduced, taking account of :

- their quality (conditioned in particular by the toxicity of their additives) ;
- their avoidability (certain uses of plastic, for example, are of no particular interest other than the marketing function associated with them);
- their lifespan (certain plastics are only used for a few minutes before becoming waste);
- the risk of their being released into the environment (the modes of consumption or use of certain plastics make it highly likely that they will end up in the environment);
- their substitutability (with the demonstration by a life cycle assessment of their ability to be replaced by other materials without a greater environmental impact).

• Reduce the bias in life cycle assessments used as tools for comparing the environmental impacts of plastics to other alternative materials

Life cycle assessments are often used to defend the environmental balance of plastics compared to that of other materials. Plastic is also presented as one of the solutions for reducing our carbon footprint.²⁴ However, the public hearing revealed the cognitive biases in life cycle assessments, which fail to take account of certain environmental indicators due to the difficulty of calculating their impact. Thus, no life cycle assessment takes account of the end of life of plastics which are dispersed into the environment and their breakdown into micro and nanoplastics. It therefore appears indispensable to improve the methods for calculating life cycle assessments in order to incorporate the overall environmental impacts of plastic more effectively.

• Reduce the toxicological risk by limiting the number of substances used in the polymer formulations

Plastic is a material made up of one or more polymers to which additives and fillers are added. For plastics of the same chemical type, there are hundreds, even thousands of different formulations. On average, additives represent 4% of the weight of plastics, but this percentage can exceed 50% for certain plastics such as PVC.

However, the information on the chemicals contained in plastics is rarely passed on throughout the life cycle of the plastics and is unavailable to regulatory authorities, consumers and waste managers. Even companies that produce and market their own products rarely know the chemical composition of the materials they are using. This lack of information hampers the evaluation of the risks and product safety. It also complicates recycling of plastic waste.

²⁴ See Polyvia. Plastics, the low-carbon asset. The plastics industry, a committed and responsible industry of the future, 10 March 2022.

To be able to limit the number of substances used in polymer formulations, it will therefore be necessary to:

- impose transparency on the chemicals used in order to guarantee their traceability, in particular for management of the end of life of plastics;
- ban certain polymers and chemicals to be listed in an annex drawn up based on criteria such as the degree of risk to human health and the environment, their non-recyclability or their ability to interfere with recycling;
- facilitate the banning of hazardous products by grouping the chemicals into broad families for evaluation and control;
- ban the use as additives of all the substances belonging to the same family of chemicals as a substance that is already banned.

• **Reduce the environmental risk by eliminating existing terrestrial waste**

97% of plastics are still in landfill or "anthropised" zones. Consequently, it is urgent to undertake the elimination of existing terrestrial waste.

The Office's 2020 report on plastic pollution expressed reservations on the cleaning up of the oceans, in view of the enormous scale of the resources that would be required to capture the macro waste. In addition, contrary to the widely-held image of "continents of plastic", the concentration of plastics in the gyres resembles more of a "soup" of plastic²⁵ that is often invisible from the surface.

However, targeted actions would be worth undertaking in certain marine areas (such as beaches or the mouths of rivers), where there is a very high concentration of plastic waste, as long as the waste collected is genuinely eliminated and cannot be dispersed into the environment again.

The efforts must be concentrated on the disposal of terrestrial waste, whether it is in illegal dumps or public or private landfill sites, with particular prioritisation of the oldest sites and those situated close to the coast.

All the clean-up and then disposal operations for waste along rivers, in storage areas and the recovery of plastic waste contribute to reducing the stock that will break down and be dispersed.

• **Reduce the bad practices and abuses of waste exports**

For a long time, developing countries have served as dumping grounds for the waste that developed countries do not know how to deal with, even as the former are faced with significant difficulties in coping with their own waste. Between 2010 and 2016, China alone imported between 7 and 9 million tonnes of plastic waste annually.

The decision made by China in 2017 to stop imports of non-industrial plastics led to the flows being diverted to other destinations: South-East Asia, but also Turkey, where imports of plastic waste (mainly from the European Union) increased by 1200% between 2016 and 2020 to reach over 500,000 tonnes.

The Ban Amendment ratified in December 2019 to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is supposed to limit exports of plastic waste to countries with less stringent environmental standards than those of the country of origin.

In 2018, France exported 409,000 tonnes of plastic waste. The recyclers argue that most of the waste is exported to European Union countries, but there is no guarantee of whether this is its final destination or a transit stage en route to other countries. In 2020, the 27 European Union States and the United Kingdom exported 1.6 million tonnes of plastic waste²⁶ to third countries, in particular Malaysia, Indonesia, Vietnam and Turkey.

Furthermore, it should be noted that 95% of textiles collected in France for reuse are sent abroad, to Africa in particular, where very often they end up in the environment.

At European level, it is therefore necessary to reinforce the monitoring and traceability of transboundary plastic waste exports and to ban their export to countries outside the European Union.

At the global level, trading in plastic waste between developed companies should also be subjected to strict controls allowing traceability of the waste. On the other hand, all exports to countries with environmental standards and processing infrastructures that are not equivalent to those of the countries of origin should be banned.

• **Reduce the appetite for plastics by encouraging new consumption patterns**

The fight against plastic pollution concerns everyone. It is therefore indispensable to involve all human beings, regardless of age, in their different responsibilities, by inciting them to adopt consumption patterns that limit the use of plastics, especially the least useful ones. These awareness-raising and information measures must allow consumers to realise the consequences of their choices and guide them towards more virtuous options.

However, individuals cannot assume these necessary changes in behaviour alone, in particular due to the high level of inertia in consumption patterns and manufacturers' capacity to influence choices and impose practices. Under the impetus and, where appropriate, the control of the public authorities, industrial companies will have an essential role to play in orienting the public towards new consumption behaviours that are less dependent on plastic. It is a

²⁵ The concentrations of plastics vary from 678 particles per m² for those between 0.5 and 5 mm inclusive to 3.5 per km² for waste fragments larger than 50 cm.

²⁶ Statistics of Plastics Europe.

profoundly modified supply policy that will be required to reduce global plastic consumption.

Certain measures will need to target all countries:

- the reduction of single-use plastics by banning certain plastics (such as plastic bags) and quantified targets for reducing plastic packaging to be imposed on companies that produce and market their products;
- a tax on virgin plastic to encourage the use of recycled plastic.

Other measures may vary according to the living standards of populations.

In developed countries, it is necessary, in the short term to:

- encourage reuse by standardising packaging and developing returnable deposits on reusable glass packaging as an alternative to plastic packaging;
- allow consumers to bring their own containers and leave packaging at the cash desk as well as systematically put up notices in shops informing about these possibilities;
- provide drinking water fountains in all public spaces;
- inform consumers on the risks associated with the misuse of plastic containers (in particular the risk of endocrine disrupter migration);
- require a label on all products and goods containing plastic, indicating the percentage of incorporated recycled plastics, including if they do not contain any ("0% recycled plastic");

- ban disposable vapes and the construction of synthetic sports pitches.

In developing countries, it will be necessary to use support schemes to prioritise:

- the development of drinking water²⁷ and waste management infrastructure;
- the setting up of extended producer responsibility systems to fund the collection and end of life of waste, as well as the fight against illegal dumping;
- the sustainability of all local alternatives to plastic packaging and the encouragement of their development.

• **Reduce the scientific uncertainties by setting up a global scientific platform on plastic pollution, similar to the IPCC**

Like the UN's Intergovernmental Panel on Climate Change (IPCC), a global body should be created bringing together researchers working on the subject of plastic pollution, so that they can share and compare their work, facilitate the resolution of the current uncertainties regarding certain health and environment impacts of plastics, and more strongly ground on science the measures taken by the public authorities.

²⁷ Ensure availability and sustainable management of water and sanitation for all is the 6th sustainable development goal adopted by 193 countries at the UN in 2015, which is supposed to be reached by 2030.

To refer to the full report :

www.senat.fr/opecst

www.assemblee-nationale.fr/commissions/opecst-index.asp

*Assemblée nationale - 101 rue de l'Université - 75355 Paris 07 SP – Tél : 01 40 63 26 81 – Mél : secretariat-opecst@assemblee-nationale.fr
Sénat - 15 rue de Vaugirard - 75291 Paris Cedex 06 – Tél : 01 42 34 27 20 – Mél : opecst-secretariat@senat.fr*