World Environment Day 2023

Beat Plastic Pollution

PRACTICAL GUIDE

BEAT PLASTIC POLLUTION

WORLD ENVIRONMENT DAY

UN environment programme

Republic of Côte d'Ivoire

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Contents

Ocean Image Bank

What is the scale of the problem?

Plastic pollution is preventable. Taking action across all sectors of society can halt and reverse it. This guide provides some tips on how we can all be part of the global movement to #BeatPlasticPollution.

We are addicted to plastic. We produce around 430 million tonnes of plastic a year, two-thirds of which are short-lived products which soon become waste. Plastic pollution can have devastating impacts on our ecosystems and wildlife, our health and well-being and the global economy.

Yet, current commitments made by governments and industry will only reduce the annual volume of plastic flowing into the ocean by 8 per cent by 2040. The social and economic costs of plastic pollution reach up to US$600 billion per year.

On the contrary, we are producing more and more plastic – it is embedded into every aspect of modern life. It is in our cars, homes, medical devices, clothes, and shampoos. Although much of the media coverage of plastic pollution centres on heart-breaking images of wildlife choking on plastic bags, the reality is plastic pollution is far more insidious. Much plastic pollution is not visible to the naked eye. Microplastics – tiny fragments of plastic less than 5mm in length – are polluting our soil, water supplies and our bodies.

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Why is plastic so popular?

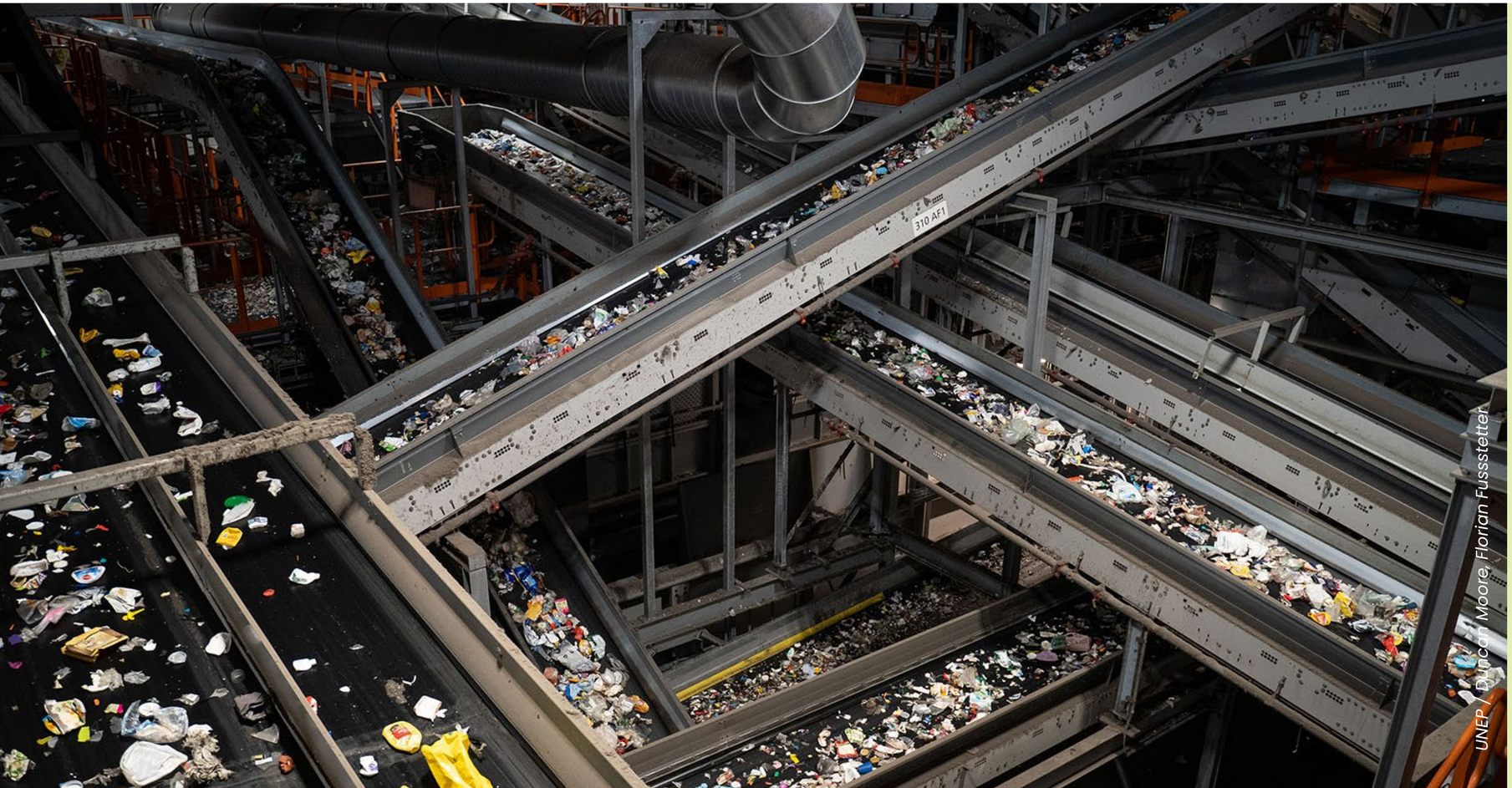
It is not surprising that plastic is so commonplace: it is relatively cheap to produce, durable, flexible and easy to transport. Made from fossil fuels, it began to be mass-produced during the Second World War. As fossil fuel extraction fed plastic production, everything from household appliances to medical devices were produced using plastic. Plastic production has surged over the past 50 years and is expected to double over the next 20 years. If no action is taken plastic pollution is set to triple by 2060. For this reason, it is important to transition to a healthier, more economically viable circular economy as soon as possible.

Greenhouse gas (GHG) emissions linked to the life cycle of plastics represented 3.4 per cent of the global total in 2019. Impacts on biodiversity (including through entanglement, exposure to hazardous chemicals, etc.) and on human health (e.g. from the emissions of hazardous chemicals along the plastics life cycle) are increasingly understood and of a colossal magnitude. In a 'business as usual' scenario, plastic could emit 19 per cent of global greenhouse gas emissions by 2040.

The economy

The global trade in plastics has expanded to more than US$1 trillion annually. But, the economic costs of plastic pollution are also astronomical. Widespread plastic waste results in damage to ecosystems and human health worth US$300 billion to US$600 billion a year.

A shift to a circular economy by 2040 could create savings of more than US$4.5 trillion. It would also reduce GHGs by 25 per cent and create 700,000 additional jobs, predominantly in developing countries and improve livelihoods for millions of workers in the informal sector, mainly in developing countries. **In short, moving away from the current unsustainable model is better for the planet, the climate, our health and the economy.**



UNEP / Duncan Moore, Florian Fussstetter

What is the life-cycle approach?

The plastic pollution crisis stems mainly from the fact that plastic is currently produced, used (often just once) and discarded. Tackling plastic pollution requires an approach that addresses all stages of plastic's life cycle, from production to consumption to waste management, reducing pollution and waste at each stage. A life-cycle approach also helps balance economic needs with concerns over the effects of plastic pollution.

How can we solve the plastic crisis?

As plastic pollution is a global problem, solving it requires a global approach. Each of the following stakeholders has a role to play.

Individuals

Individual actions underpin the systemic change required to transition to a less plastic-dependent economy. Each of us can use our voice and choices to drive change. Here are some of the things you can do.

- Make sure your voice is heard. If you see a company using unnecessary plastic (such as single-use covering fruit at a grocery store), call them out on social media or contact them directly. Let your money do the talking. If you have a retirement fund, you could be inadvertently investing in unsustainable industries. Ask your fund manager to move it to a more responsible fund.
- Let politicians know that you care about the issue and that they should too, if they want your vote.
- Talk to your local representatives about the issue. Ask them to sign your town or city up to the Plastic Smart Cities Initiative, which mobilizes cities and regions to prevent plastic leakage into the natural environment.
- Share solutions when you find them. If you come across an innovative solution or hear about a start-up tackling plastic pollution, tell your friends and promote the initiative on social media.
- Volunteer with local plastic clean-up groups.
- Donate to charities that are working to solve the plastic pollution crisis.
- Shift your behaviour to avoid single-use plastic whenever possible.
- Bring your own bags to the grocery store; avoid purchasing over-packaged products.
- Purchase items with extended warranties that can be repaired and ensure you find a reliable recycler for when the product reaches its end of life.
- **Do not give up hope! Progress is being made and momentum is building. Everyone's action on plastic pollution matters.**

Pexels

Non-Government Organizations, faith organizations and community groups

NGOs, faith organizations and community groups are a powerful source of change in the world. Here is how they can help to tackle plastic pollution.

- Encourage local representatives to push for laws that reduce plastic usage (particularly single-use) and strengthen local recycling infrastructure.
- Encourage companies and other organizations to eliminate single-use and/or short-lived plastic in the workplace, at home, and at meetings or events.
- Share ideas and research that can help reduce single-use plastic in local communities.
- Put pressure on retailers and manufacturers to reduce single-use plastic.
- Join the Global Partnership on Plastic Pollution and Marine Litter, and use the digital platform to connect with other actors, exchange information and showcase efforts made and lessons learned.
- Install free public water fountains at your office, public spaces and events to encourage people to avoid single-use plastic water bottles.

Science and education organizations

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The scientific community and academia can exercise their influence and knowledge to combat plastic pollution. Here are some things they can do.

- Share United Nations Environment Programme (UNEP) science and research on plastic pollution with students and colleagues.
- Give a platform to those tackling the crisis; invite them to speak at your university or share findings with your employees.
- Work with the plastics industry to develop new sustainable solutions to the plastic pollution crisis, such as more sustainable polymers.
- Ban single-use plastic from schools or university canteens and campuses.
- Form research and industry working groups across university departments to develop solutions from various research perspectives.
- Install free public water fountains on campus to encourage people to avoid single-use plastic water bottles.
- Ensure investments and pension funds align with environmental and socially responsible investments.
- Join the Global Partnership on Plastic Pollution and Marine Litter, and use the digital platform to connect with other actors, exchange information and showcase efforts made and lessons learned.

Governments

Legislation is vital to tackling the plastics crisis. While solutions must engage every sector, governments need to drive change. Here are some ways governments can catalyze change on a global, regional and local scale.

- Engage in the Intergovernmental Negotiating Committee (INC) process to forge a legally binding instrument that tackles plastic pollution, including in the marine environment.
- Commit to actions across the plastics life cycle through initiatives such as the New Plastics Economy Global Commitment, in which governments from all continents are already implementing actions towards reducing unnecessary plastic production and incorporating circularity in plastics use.
- Impose regulations to support the transition to a new plastics economy: eliminate the plastics we do not need; innovate to ensure the plastics we do need are reusable, recyclable or compostable; and circulate all the plastic we do use to keep it in the economy and out of the environment.
- Mandate the implementation of extended producer responsibility (EPR) schemes to ensure producers have the right incentives to design products that prevent single use plastic products and packaging, and that collection and recycling infrastructure receive the necessary funding. Beyond the many successful examples of EPR schemes in Europe, countries like Chile, Nigeria, South Africa and Kenya have set up EPR legislation.
- Invest in proper recycling and waste management infrastructure.
- Shift subsidies away from fossil fuels. A major barrier to realizing circularity is the extremely low direct cost of fossil fuel-based plastics caused by widespread subsidies and the significant investment in fossil fuel-based chemical production.
- Impose taxes to deter the production or use of single-use plastic, or offer tax breaks, subsidies and other fiscal incentives to encourage alternatives. For example the UK has started taxation on virgin plastic production. Revenues from this tax may be used to scale plastics collection, sorting and recycling infrastructure.
- Hold fashion manufacturers and retailers accountable for the waste they produce. One example is The Fashion Act, a new bill introduced by legislators in New York State. It addresses the social and environmental toll taken by the fashion industry.
- Join the Global Partnership on Plastic Pollution and Marine Litter, and use the digital platform to connect with other actors, exchange information and showcase efforts made and lessons learned.
- Increase cross-industry collaboration to establish and govern official standards for communicating data on the circular economy properties of products. The Circularity Dataset Standardization Initiative is one good example.
- Invest in wastewater treatment plant improvements, so microplastics can be removed from effluents.
- Use policies to eliminate unnecessary packaging, limit overpackaging and provide clear labels to support correct recycling. The European Union aims to make all food packing recyclable by 2030.
- Pass innovative legislation. For example, in 2020, France became the first country to introduce a policy requiring all new household washing machines to have filters to trap microplastic particles by 2025.
- To make the biggest impact, adopt a range of the approaches mentioned above and tailor them to your country. There is no one-size-fits-all model to tackling plastic pollution, although it is crucial to implement an integrated approach encompassing the whole life cycle.
- Engage in supplementary activities, such as setting up public-private partnerships, launching consumer education programs and updating public procurement requirements.

Cities, towns and local authorities

Cities, towns and local authorities can drive change by introducing local laws, supporting businesses and encouraging sustainable consumer behaviour through advocacy campaigns.

- Build more robust, effective recycling and waste management systems. Inadequate municipal solid waste management is one of the largest contributors to plastic pollution on land and water.
- Join the Plastic Smart Cities Initiative, which mobilizes cities and regions to prevent plastic leakage into the natural environment.
- Promote and incentivise product design that stops single use plastic products and packaging and encourages circular economy usage among city service providers.
- Pass legislation banning single-use plastic items, such as plastic bags, straws and cups, and promote reusable alternatives instead.
- Ban the open burning of waste and strengthen enforcement measures.
- Install free public water fountains to encourage people to avoid single-use plastic water bottles.
- Promote EPR at the local level so retailers and producers selling plastic products are held responsible for the pollution their products cause.
- Bolster city-wide behaviour and social change campaigns to better manage plastic.

Finance

Dreamstime

Investors can play a key role in mobilizing finance and setting standards for businesses and industries to move toward circular economies on plastics.

- Sign up to the UN Principles for Responsible Banking and the Principles for Sustainable Insurance to accelerate a positive global transition for people and the environment.
- Set targets to finance resource-efficient and circular projects, activities and clients using the Guidance on Resource Efficiency and Circular Economy Target Setting.
- Join the Finance Leadership Group on Plastics to monitor the development of the INC instrument and implement it across the global finance sector.
- Constructively engage with companies in the plastic packaging value chain to determine how they manage risks and opportunities related to plastic packaging. Encourage them to:
  - eliminate the production and use of problematic or unnecessary plastic;
  - innovate to ensure that all plastic is reusable, recyclable, or compostable; and
  - circulate materials to keep plastic in the economy and out of the environment.

Business and industry

Given that 20 companies produce more than half of all single-use plastic in the world, a vital shift is needed in how businesses and industries produce, consume and dispose of plastic. There are several things businesses and industries can do to reduce plastic production and use.

- Design out waste by eliminating and substituting unnecessary and hazardous plastic production and packaging, especially single-use plastic.
- Reduce the amount of plastic waste produced throughout operations, particularly in manufacturing and packaging.
- Improve plastic design and production to ensure products are reusable, minimally resource-intensive and can be recycled effectively.
- Cut costs through more efficient use of plastic, develop new revenue streams through 'closed-loop' business models that recover plastic as a useful resource and win customers by demonstrating more sustainable products.
- Leverage emerging technologies to develop profitable solutions to plastic pollution that support environmental, social and governance goals.
- Disclose more information about how much plastic is used in products, including plastics produced annually, as well as the chemicals used in plastic.
- Ensure plastic-based textiles such as polyester used to make clothes are recycled and not thrown away.
- Switch from plastic to mulch films in farming and embrace nature-based solutions, such as cover crops, which protect soil from erosion, weeds and pests.
- Join hundreds of other businesses worldwide in committing to actions across the plastics life cycle through the New Plastics Economy Global Commitment to eliminate, innovate and circulate plastics.
- Join the Global Tourism Plastics Initiative, which aims to eliminate unnecessary single-use plastic and transition to reusable products.

How does plastic pollution affect us?

Biodiversity

An estimated 19 to 23 million tonnes of plastic leak into aquatic ecosystems annually. Plastic pollution has devastating effects on a wide array of organisms in our seas, rivers, and on land. Marine litter harms more than 800 species. More than 90 per cent of all birds and fish are believed to have plastic particles in their stomachs. The effects of microplastic ingestion are catastrophic; they cause starvation, endocrine disruption, stunted growth in some species and broken-down digestive systems. Plastic can prevent aquatic life from receiving oxygen and light, while microplastics can also accumulate in the soil due to their use in agricultural products.

Climate crisis

The production of plastic is one of the most energy-intensive manufacturing processes in the world, which is a problem when it comes to meeting the Paris Agreement goal of limiting the global temperature rise to 1.5°C. In 2019, plastic generated 1.8 billion metric tonnes of GHGs – 3.4 per cent of the global total – with 90 per cent of those emissions coming from plastic production and the conversion of fossil fuels. Most plastics originate from fossil fuels and the plastic industry accounts for 6 per cent of global oil consumption. The level of GHG emissions associated with the production, use and disposal of conventional fossil fuel-based plastics is forecast to grow to 19 per cent of global greenhouse gas emissions by 2040. This is particularly an issue with single-use plastics: 98 per cent of single-use plastic products are produced from fossil fuels or "virgin" feedstock.

Human health

Microplastics can enter the body through inhalation and absorption via the skin and accumulate in organs, including the placenta. Some of the chemicals in microplastics are associated with serious health impacts, especially in women. Scientists have established links between exposure from chemical additives that leech from plastics with obesity, diabetes, poor brain health and even cancer. Research is still being done on the effects microplastics have on human health, and we do not yet know the extent of how dangerous they are. Additionally, due to limited and inefficient waste management infrastructure, 40 per cent of the world's garbage is burnt, 12 per cent of which consists of plastic. The burning of plastic waste has multiple health impacts, including increasing the risk of heart diseases and aggravating respiratory problems, such as asthma and emphysema.

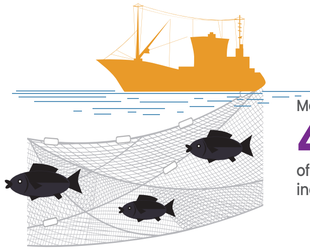
What are microplastics?

Microplastics are tiny shards of plastic that come from various sources, including tyres, artificial turf, synthetic fabrics, health and beauty products (which contain microbeads), leakage from industrial manufacturing and agricultural processes, and abandoned, lost, or discarded fishing gear.

Where is all this plastic waste coming from?

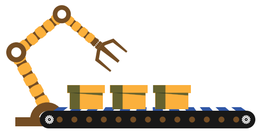
Approximately **36%** of all plastic produced is for packaging.

Approximately **100 billion** tonnes of waste from the building and construction industry is generated annually and about **35%** is sent to landfill.



More than **45 million** kg of plastic enters the ocean from industrial fishing gear alone.

Cars are made up of around **30%** of plastic components.



Plastic used in the consumer goods industry causes an estimated **US$75 billion** in environmental damage per year.

Single-use plastic is made almost exclusively from fossil fuels, and plastic production accounts for around **3.4%** of global greenhouse gas emissions.

Eight out of 10 tourists visit coastal areas, adding to the **8 million** tonnes of plastic that enter the ocean every year.

About **60%** of material made into clothing is plastic. Laundry alone causes around 500,000 tonnes to be released into the ocean every year.

Approximately **12.5 million** tonnes of plastic products are used in plant and animal production, and **37.3 million** tonnes in food packaging per year.

Packaging

The packaging sector is the world's largest generator of single-use plastic waste. Approximately 36 per cent of all plastic produced is for packaging. This includes single-use for food and beverage containers, 85 per cent of which ends up in landfill or as hazardous waste.

Manufacturing

Plastic is found in everything from cars and electronics to medical devices and children's toys. These products include chemical additives which can leach out and affect the health of animals and plants. Plastic used in the consumer goods industry causes an estimated US$75 billion in environmental damage per year.

Building and construction

Common construction materials, such as pipes, floors, and paints feature plastic. These make up around 35 per cent of total plastic use. Approximately 100 billion tonnes of waste from the industry is generated yearly and about 35 per cent is sent to landfill.

Agriculture

Plastic is used extensively in farming and agricultural systems. Approximately 12.5 million tonnes of plastic products are used in plant and animal production, and 37.3 million tonnes in food packaging per year.

Fisheries

An estimated 20 per cent of all plastic in the ocean comes from fishing, shipping and recreation. More than 45 million kg of plastic enters the ocean from industrial fishing gear alone. These materials, such as nets, can trap and suffocate marine organisms and pollute the ocean with microplastics.

Energy, oil and gas

Energy companies are some of the largest plastic polluters in the world. Single-use plastic is made almost exclusively from fossil fuels, and plastic production accounts for around 3.4 per cent of global greenhouse gas emissions. This is projected to increase as petrochemical companies transition their products from energy into plastics.

Textiles and fashion

The world is producing and consuming more textiles than ever before. About 60 per cent of material made into clothing is plastic. When clothing is washed, the pieces shed tiny microfibres – a form of microplastics. Laundry alone causes around 500,000 tonnes to be released into the ocean every year, the equivalent of almost 3 billion polyester shirts.

Travel and tourism

Tourism is a big contributor to the global plastic pollution crisis. Eight out of 10 tourists visit coastal areas, adding to the 8 million tonnes of plastic that enter the ocean every year. Many hotels are also filled with single-use plastic shampoos, toothbrushes, and combs. While cruise ships dump large amounts of microplastic-laden wastewater into the sea.

Transportation

Cars are made up of around 30 per cent of plastic components. But most of this goes to landfill as it is made from low-cost virgin polymers. Instead, cars are scrapped for valuable metal or electronic components.

What progress is being made?

What about recycling?

More plastic waste is mismanaged than recycled and global projections for recycling remain low. Worldwide, 46 per cent of plastic waste is landfilled, 22 per cent becomes litter, 17 per cent is incinerated and 15 per cent is collected for recycling, with less than 9 per cent actually recycled after losses.

Circularity in plastics requires the simultaneous acceleration of three market shifts: reuse, recycling and reorienting and diversifying of plastic to more sustainable alternatives. So, while recycling is one piece of the puzzle, there needs to be a systemic transformation to achieve a circular economy.

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Some progress has been made to tackle plastic pollution, yet current commitments by governments and industry will reduce the annual volume of plastic flowing into the ocean by only about 8 per cent by 2040. Most new regulations focus on specific items rather than systemic change and do not significantly curb the projected growth in plastic production. Current efforts are focused mainly on recycling or otherwise disposing of plastic but significant efforts are also needed to eliminate harmful plastics and innovation and incentives are needed to replace them with environmentally friendly options. Much of this will need to come from governments. And while there has been a rise in the legislation banning plastic bags, there needs to be systemic change in the way we produce, consume and keep plastic in the economy.

Several initiatives have gained momentum over the last few years, involving the plastic industry, businesses, governments, international organizations and civil society to develop solutions to end plastic pollution. These include the New Plastics Economy Global Commitment led by the Ellen MacArthur Foundation in collaboration with UNEP, which unites more than 500 businesses, governments and other organizations aiming to build a circular plastics economy, as well as the Global Partnership on Plastic Pollution and Marine Litter which unites more than 600 actors.

In 2022, UN Member States agreed on a resolution to forge by 2024 a legally binding agreement that would end plastic pollution. Critically, this includes measures considering the entire life cycle of plastics, from product design to production and waste management, enabling opportunities to design out waste before it is created as part of a thriving circular economy. The INC is now developing the agreement.

Are biodegradables the answer?

While much plastic is marketed as biodegradable, the reality is more complex.

Complete biodegradation of plastic occurs when none of the original polymer remains, a process that sees microbes break plastic down into carbon dioxide, methane and water molecules. The process is temperature dependent and some plastics labelled as 'biodegradable' require the conditions that typically occur in industrial composting units, with prolonged temperatures of above 50°C, to be completely broken down. Such conditions are rarely if ever met in the environment. 'Biodegradable' plastics have additional drawbacks: they need to be separated from non-biodegradable waste during recycling to maintain the quality of the final product. Evidence also suggests that if a product is labeled as "biodegradable," people are more likely to throw it away as litter.

What more needs to be done?

Much more progress is needed, including reducing plastic production and consumption; transforming the whole value chain; efficient, transparent, and agile legislation, and more effective monitoring systems to identify plastic sources, scale and fate while shifting to circular approaches. There is no one solution, but many that must happen simultaneously and immediately.

Consumer pressure is key, but real action needs to come from companies, investors, lawmakers and governments.

Transitioning to circular approaches and plastic alternatives is critical. This involves a life-cycle approach – one where the impact of all the activities and outcomes associated with the production and consumption of plastic is considered. This includes reassessing raw material extraction and processing, and innovating manufacturing processes, product design, packaging, distribution and end-of-life management, such as segregation, collection, sorting, recycling and disposal. **Addressing plastic pollution requires a systemic change, with actions across the life cycle that address its root causes rather than its symptoms.**

This is a big challenge, but one that we must take on.

UNEP / Duncan Moore, Florian Fussstetter

This Beat Plastic Pollution Practical Guide was made as part of the 2023 World Environment Day, with its focus on solutions to plastic pollution.

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