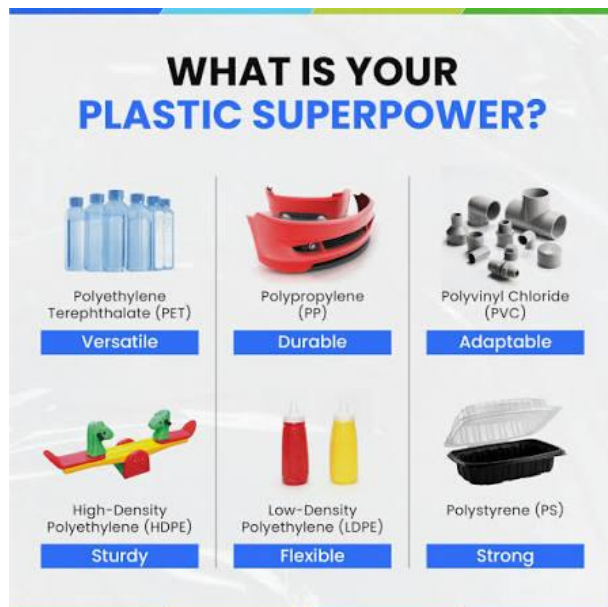


Plastic Pollution – The Environmental Cost of plastic’s sheer versatility

(Written by Allan Fong – HOPE researcher NSW)

Introduction



No one would doubt the incredible versatility of plastic. When used for structural pipes and car bumpers it is rigid and strong but is soft and flexible when used in cling wrap, plastic bags and water bottles. It can be transparent but unlike glass it remains shatterproof. It can be woven into textiles and used in clothing and carpet to enhance shape retention and water repellency. It is much lighter than most other materials making it cheap to transport. Lastly, it resists cracking and does not degrade easily when exposed to harsh environments.

In 1907, the invention of Bakelite, the world's first fully synthetic plastic ignited the so called "polymer" revolution which saw the beginning of a wide range of everyday items (light switches, radio shells, car steering wheels, telephones) made from plastic because of its sheer versatility.

The environmental cost of plastic’s versatility

Plastic is a polymer, a large molecule made up of many small repeating chemical units linked together in long chains. Natural polymers such as rubber and silk exist, but they have not been linked to environmental pollution because unlike synthetic plastics they do not persist in the environment. Synthetic plastics are nonbiodegradable and were developed specifically to resist natural degradation. It is truly sad to reflect that about half of all plastic produced today is lightweight single-use and is often improperly disposed of when it is of no further use to the consumer. ([Plastic pollution | Definition, Sources, Effects, Solutions, Ocean, & Facts | Britannica](#))

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The consequences of our modern-day plastic obsession

Since the ocean is downstream from nearly all human communities, it receives a lot of improperly discarded plastic waste. This is of enormous environmental concern because:

- Plastic pollution kills marine animals through entanglement in fishing nets but also through ingestion by being mistaken for food
- Sunlight and seawater cause plastic waste to breakdown into microplastics making it more difficult to remove and available to zooplankton and other small marine animals



An active area of research is how contaminated plastics are moving through food webs. Plastic related chemicals have been shown to bio-accumulate over time in the tissues of organisms and as predators consume contaminated prey these substances biomagnify.

Certain chemicals used in plastics have come under scrutiny, namely:

- Phthalates -used to make plastic less brittle
- Bisphenol A (BPA) – used to make clear, hard polycarbonate plastic
- Polybrominated diphenyl ether (PBDE) -used as a flame retardant

All three of these substances have been detected in humans and have shown to cause endocrine disruption, affecting both male and female hormones as well as thyroid function. People most at risk are children and child-bearing women.

Addressing plastic pollution in Australia



Plastic pollution is being addressed in Australia through a combination of national plans, state regulations and industry engagement, but there are challenges in achieving a cohesive and effective approach. The **2018 National Waste Policy**, the **2019 National Waste Policy Action Plan**, and the **Australian packaging Covenant** are examples of national level plans to boost recycling and end plastic pollution by 2040. These policies focus on plastic recovery but not on limiting the production of plastics in the first instance, and the continued and unabated growth in plastic waste suggest more needs to be done.

The **National Plastics Plan** is another national strategy released by the Australian Federal Government which sets targets for phasing out problematic single-use plastics, expand recycling infrastructure, keeping plastic out of waterways and oceans, and investing in research for new recycling technologies and alternatives to plastics. Although Australia failed to meet the original 2025 targets, 2026 is expected to be a turning point with the following developments in the pipeline:

- Mandatory National Packing regulations are being introduced with mandated business reporting of packaging and plans for recovery
- introduction of an eco-modulation fee

structure resulting in sustainable packaging becoming cheaper while poor ones get more expensive

- Environment Ministers confirmed in early 2026 a commitment to standardising packaging reform across the states and territories ([National Plastics Plan - DCCEE](#))([Australia Plastics Plan Business: What to Know in 2026](#))

At a state level, outright bans on foam food containers have been successful, and container deposit schemes such as New South Wales's "Return and Earn" are gaining popularity ([Return & Earn | Return and Earn](#)). Bans on single-use plastic bags have seen mixed results with some evidence showing retailers (both local and international) introducing thicker, low-cost plastic bags labelled as "reusable" although consumers often treat them as single-use leading to an increase in plastic by weight. ([Are plastic bag bans working? -](#)

[FoodPrint](#)) South Australia's **Single-use and Other Plastic Products Act** and NSW's **Plastic Reduction and Circular Economy Act** have seen the phase out of plastic cutlery, straws, plates and bowls.

Policy Effectiveness and Challenges

Despite the many existing National, State and Local Government initiatives, only about 15% of all plastic waste generated in the last two decades was recovered through recycling, composting or energy recovery. This suggests plastic consumption continues to outpace recovery efforts and more effective policies aimed at reducing production and consumption are needed. ([Plastic waste in Australia - The Australia Institute](#))

Extended Producer Responsibility (EPR) schemes where manufacturers are responsible for creating the infrastructure to take back and recycle the products they make, exists in some form in Australia but it is framed and regulated under the concept of product stewardship. ([Australia | EXPRA](#)). Sadly, in mid-2026 Australian Federal Environment Minister Murray Watt announced the Albanese Labor Government will not be implementing a national EPR packaging reform scheme during the current term, citing concerns over compliance costs which might be passed onto consumers.



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Intergovernmental Negotiating Committee on Plastic Pollution



The International Negotiating Committee (INC) on Plastic Pollution was established under the United Nations Environment Programme (UNEP) in 2022 with the objective to create an internationally legally binding treaty to address the global issue of plastics. INC proposes to develop a comprehensive approach to address the full life cycle of plastic including production, design, consumption and disposal. This includes hazardous chemicals of concern, sustainable product design and promoting circular economy pathways. They project that without global intervention, plastic production and waste will rise exponentially with devastating impacts on marine environments, ecosystems, wildlife and human health.

INC brings together United Nations member states, government organisations and industry groups through multiple sessions to debate and draft a global agreement.

Some of the challenges identified during discussion include production caps, financing mechanisms for developing nations and methods of enforcement.

([Intergovernmental Negotiating Committee on Plastic Pollution | UNEP - UN Environment Programme](#))