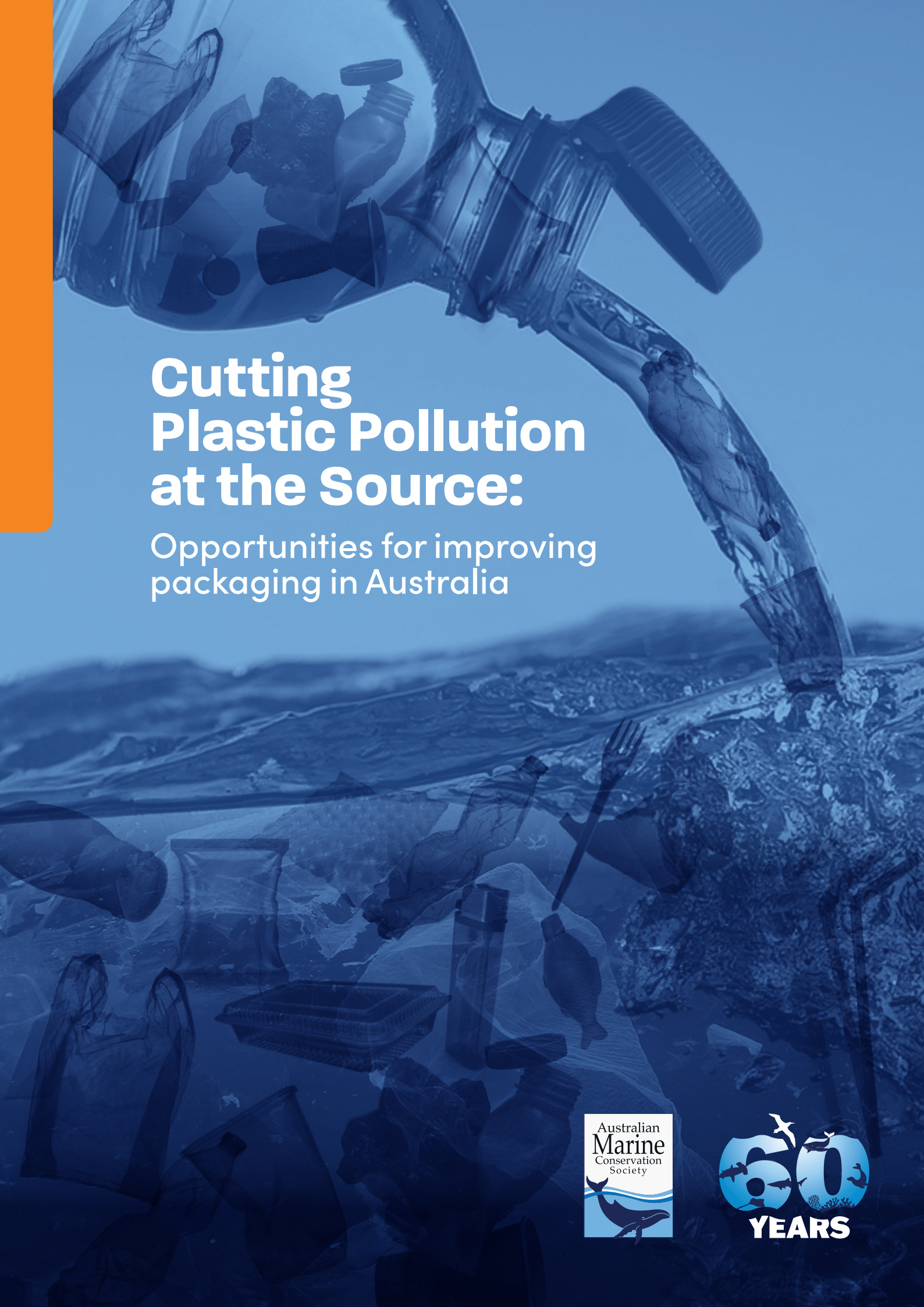

Cutting Plastic Pollution at the Source:

Opportunities for improving packaging in Australia

Australian Marine Conservation Society

60 YEARS

About

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We acknowledge that the land and sea this report was produced on, and seeks to conserve, was and always will be Aboriginal land and sea.

Academic research conducted by Dr Babet De Groot for the Australian Marine Conservation Society.

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The Australian Marine Conservation Society (AMCS) is Australia's leading ocean conservation organisation. We are an independent charity staffed by a committed group of scientists, educators and passionate advocates, who have defended Australia's oceans since 1965.

Summary

Plastic pollution is a devastating environmental crisis, with packaging now making up 58% of litter collected in Australia.[1] Despite ambitious national targets, only 19% of plastic packaging was recovered in 2022–23.[2] This report presents the urgent need for upstream regulatory reforms to reduce plastic packaging at its source and transition to a circular economy.

Drawing on lessons from the European Union, successful case studies in Australia and abroad, and strong public support, there is an opportunity for the Australian Government to introduce:

- National reuse targets of 40–70%, supported by investment in shared infrastructure and design standards.
- A mandatory, eco-modulated extended producer responsibility (EPR) scheme that penalises problematic and non-recyclable packaging.
- Mandatory packaging design requirements to eliminate excessive packaging and encourage reusable and refillable systems.

Australians overwhelmingly support action, with 76% backing mandatory packaging reductions and 70% willing to use reuse systems if they are accessible.[3] Strong, enforceable regulation, rather than voluntary industry commitments, is essential to protect our oceans, reduce emissions, and ensure a just and effective transition to environmentally sustainable packaging.

A green sea turtle hatchling runs down a beach after hatching on the Great Barrier Reef.

1. The Urgent Need to Rethink Plastic Packaging

Plastic pollution is an escalating environmental disaster that has severe and enduring impacts on Australia's coastlines and marine ecosystems. Our oceans are inundated with plastic fragments that are harming marine wildlife and ecosystems.

Globally, packaging represents the largest application of plastics, making up 40% of the 380 million tonnes produced in 2015.[4] Plastic production is directly linked with plastic pollution – the more plastic that gets produced, the more plastic ends up polluting the environment.[5] In Australia, over 1.2 million tonnes of plastic packaging was placed on the market in 2022–23.[6] Of this, just 19% of packaging was recovered, falling significantly short of the national target to recycle or compost 70% of packaging by 2025.[7]

Over 145,000 tonnes of plastic leak into Australia's environment annually, amounting to over 250 kg a minute.[8] Prominent sources of plastic pollution in Australia include packaging, textiles, cigarette butts, tyres, fishing gear and building materials. Once in our oceans, plastic is almost impossible to recover. Turtles, seals, birds, whales and fish are dying from entanglement, maiming and starvation caused by plastic pollution.[9]

In April 2025, the Senate Environment and Communications References Committee released its final report *No Time to Waste: Waste Reduction and Recycling Policies in Australia*. This national inquiry found significant gaps in Australia's policy and frameworks, highlighting that Australia's reliance on voluntary agreements and downstream measures has failed to reduce plastic waste, and reinforced the urgent need to prevent pollution at the source.[10] The report recommended mandatory packaging design standards, expanded extended producer responsibility schemes, harmonised container deposit systems, and a national framework to support circular economy outcomes.

The Australian Government must address previous failings, and capitilise on the agreement by state, territory and federal Environment Ministers to reform packaging in Australia and create new laws to regulate packaging.[11] Stronger government regulation focusing on reduction, reuse and upstream solutions is essential to reduce plastic pollution in Australia.

2. The Limitations of Recycling

While recycling has an important role in a circular economy, it addresses only a fraction of the problem. Alone, recycling will not provide the solutions Australia's oceans desperately need.[12] Over the past two decades, just 15% of plastic in Australia has been recovered through recycling, composting, or energy recovery.[13]

As plastic pollution occurs throughout the entire lifecycle of a product, including production, use, collection and disposal, recycling is insufficient as a standalone solution. A strategy focused solely on recycling – including design for recycling coupled with an ambitious scale-up of collection, sorting, mechanical recycling and plastic-to-plastic chemical conversion infrastructure – would still result in 18 million tonnes of plastic flowing into the world's oceans each year by 2040, 65% above 2016 levels.[14]

To effectively combat plastic pollution, upstream interventions such as reducing the production and consumption of disposable plastics are essential. Public support for such measures is strong, with 76% of Australians supporting mandatory reductions in plastic packaging by companies.[15]

3. Strong Public Support for Government Action

Polling undertaken for AMCS by YouGov in February 2025 found that Australians overwhelmingly support stronger government leadership to tackle problematic plastic packaging.[17] There is a clear public mandate for government action that is not only bold but also enforceable – ensuring that businesses are held accountable for the plastic waste they generate.

A near-unanimous 96% of Australians support reducing single-use plastics, reflecting deep concern about their environmental impacts. In wide recognition that plastic pollution is harming our marine life, 81% of Australians are concerned about the damage that single-use plastics are causing to our coastlines and oceans.

Australians are also clear about where responsibility should lie. Sixty five per cent of Australians believe that companies that produce single-use plastics should take responsibility for them, an increase from 53% in 2023.[18] Four in five (78%) support making producers financially responsible for the collection and processing of their plastic waste. This demonstrates growing public appetite for schemes that ensure the costs of managing plastic waste are not borne by the public or the environment, but by the producers of the packaging.

There is also strong public support for effective regulatory measures. Seventy six per cent of Australians support national laws requiring businesses to provide reusable and refillable packaging options, and 69% agree that companies should have to prove that any packaging used is genuinely necessary, such as for hygiene, safety, or protection during transport, rather than for marketing purposes.

Furthermore, there is broad backing for the use of eco-modulated fees - with 69% of Australians supporting a system where packaging that is harder to recycle or more harmful to the environment incurs higher costs.

Importantly, Australians are not only calling on governments and businesses to act – they are also prepared to play their part. Seventy per cent of Australians are willing to use reusable and refillable packaging if it is convenient and accessible, underscoring the importance of designing policies and systems that make sustainable choices easy and practical for individuals. Just 1 in 20 (5%) Australians prefer to use disposable packaging in favour of reusable options.

These results demonstrate strong support for decisive, national policies that reduce plastic packaging, shift responsibility onto producers, and make reuse the default, not the exception.

4. Effective Policy Tools: Lessons from Australia and internationally

The European Union (EU) is leading the global transition toward a circular economy by focusing on upstream interventions.[19] Upstream measures include bans on single-use plastics, eco-design requirements, and targets for phasing out unnecessary and problematic plastic packaging.[20] These measures prioritise waste prevention, product design, and reuse over end-of-life waste management like recycling. Australia can learn from the EU's comprehensive approach by incorporating circular economy principles into its packaging laws and addressing upstream factors like fossil fuel subsidies and product design.[21]

4.1 Prioritise reduction and standardise reuse

Packaging is a significant source of plastic waste and pollution, making source reduction – through avoidance and reuse (including refill) – essential to minimising environmental impacts.

Packaging should be avoided and reduced as a priority, and only used where absolutely necessary. Where packaging is required, reuse systems significantly reduce required resources by displacing the need for single-use items.

Drawing from reuse targets for the EU set by Deutsche Umwelthilfe (40%), We Choose Reuse (50%), Greenpeace (50%, global target), and Zero Waste Europe (70%), the World Economic Forum (WEF) examines the possibility of replacing 40-70% of plastic packaging with reusable alternatives by 2030.[22] Governments play a crucial role in this transition by setting national reuse targets, and incentivising businesses to invest in reuse infrastructure with penalties for non-compliance. When supported by progressive regulations and public-private collaborations, reuse systems can facilitate a broader cultural shift towards sustainability.[23]

Ambitious and mandatory reuse targets provide a pathway to a circular economy. A sector-based 40-70% reuse target is projected to divert 50-85% of annual landfill plastic waste and reduce ocean plastic waste by up to 320%.[24] Reusable packaging designed to replace single-use plastics could reduce associated greenhouse gas emissions by 90%.[25] Globally, replacing just 20% of single-use plastic packaging with reusable alternatives is estimated to provide at least US$10 billion in benefits.[26] By keeping packaging in circulation, reuse systems significantly reduce material waste and carbon emissions, and are an effective, sustainable alternative to single-use models.

Reusable packaging systems are most effective, viable and accessible when the scheme facilitates multiple businesses and brands. Businesses attempting to independently implement reusable packaging systems often face insurmountable challenges due to the lack of supportive infrastructure and standardised frameworks. In comparison, cohesive systems that enable reuse and refilling of packaging across multiple brands and retailers have been effective. In Australia, government regulation is lacking standards and long-term support for reuse systems, impeding mass uptake and business investment.

Zero Co, an Australian start-up founded in 2019, aimed to eliminate single-use plastics by offering refillable personal care and cleaning products. Customers received products in reusable "Forever Bottles" made from recycled plastic and returned used pouches for cleaning and refilling. Despite initial success, including a record-breaking crowdfunding campaign, Zero Co faced significant challenges with only 42% of pouches returned, undermining the closed-loop model.

In April 2025, Zero Co ceased operations. Operating independently without shared infrastructure or systems can make it challenging for businesses to scale in reuse. Additionally, managing the cleaning and returning of packaging can be complex, inconvenient and costly when resources aren't pooled across multiple businesses.

Adopting reusable packaging systems could be transformative for Australia, particularly in reducing plastic packaging waste from high-consumption products such as food, personal care, and household items. By providing the legislative framework to shift brands towards standardised reusable packaging and incentivising consumers to participate in these systems, Australia could reduce its reliance on single-use plastics, lower greenhouse gas emissions, and promote a circular economy.

Refillable coffee beans available at a market in Melbourne.

A single-use coffee cup and lid by the ocean in Sydney.

Reuse systems in practice

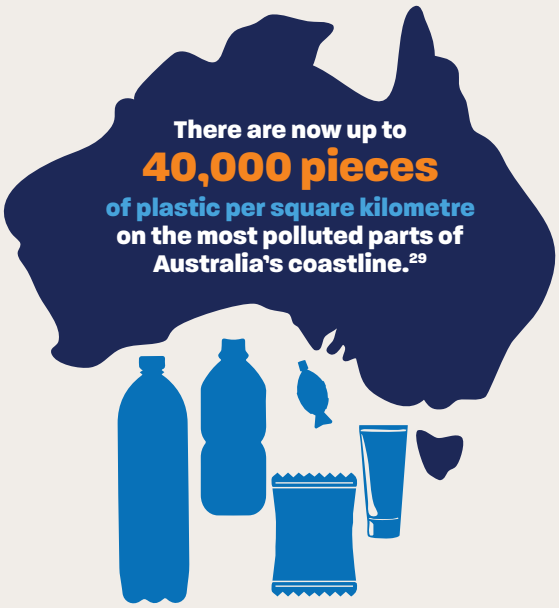
Food packaging for individuals

TOMRA is operating a three-year trial in Aarhus, Denmark, utilising shared infrastructure and automated collection points where customers can borrow reusable takeaway packaging from an array of businesses, and return packaging at convenient drop-off points. By establishing a system with standard and shareable packaging formats, the TOMRA scheme simplifies the collecting, cleaning, and redistributing of containers. The system is removing the need for single-use plastic packaging, prevents waste, reduces pressure on recycling infrastructure, and lowers carbon emissions by maintaining a closed-loop process.[27]

Reuse pilot in Aarhus. Image supplied by TOMRA.

The Loop global reuse platform partners with major brands in France and Japan to offer reusable packaging for consumer food and drink products, creating a reverse supply chain that reduces the need for single-use plastics.[28] Customers purchase products in durable, reusable containers, which can be returned, cleaned, and refilled, promoting circularity.

TOMRA and Loop schemes are effective by coordinating across brands and businesses, offering sustainable, convenient, accessible and scalable alternatives to traditional packaging models, highlighting the broader potential for reuse models to transform the packaging industry.



Marriott International's shift to refillable toiletry dispensers

Refillable packaging in hotels

In response to California's 2023 ban on single-use plastic toiletry bottles in hotels, Marriott International is removing small individual soap and shampoo bottles and replacing them with refillable pump dispensers across its global hotel network. The transition is expected to eliminate 500 million small plastic bottles annually – equivalent to 770,000 kg of plastic.[30]

The initiative has been well received by guests and brought operational benefits, including cost savings and simplified housekeeping. Marriott's large-scale adoption shows that refillable packaging is both practical and impactful, setting a strong precedent for the hospitality industry. It demonstrates how policy and business action can align to reduce single-use plastic packaging without impacting the customer experience.

Refillable cosmetics at AC Hotel Melbourne Southbank 2025. Image supplied by Marriott International.

4.2 Introduce eco-modulated extended producer responsibility scheme

Extended producer responsibility (EPR) is a policy approach grounded in the 'polluter pays' principle. In the context of packaging, EPR requires those who place packaging on the market to assume responsibility for the entire lifecycle of that packaging, including its collection, sorting, and recycling.[31] Countries with well-established EPR schemes typically achieve higher recycling rates and more efficient waste management systems.[32]

The strength of EPR lies in its capacity to internalise the environmental costs of packaging waste and drive improvements in downstream waste handling.[33, 34] By holding producers accountable, EPR can stimulate innovation in packaging design and support the development of secondary material markets. However, most EPR schemes focus primarily on end-of-life management, particularly recycling, rather than on preventing waste at its source. This limits their potential to reduce overall material consumption and address systemic issues such as overproduction and poor design.[35]

An econometric analysis of 25 EU countries from 1998 to 2015 examined the relationship between EPR compliance costs and packaging waste generation across four packaging materials.[36] It found that, when used in isolation, EPR can have drawbacks - such as producers using lightweighting, to achieve weight reduction, potentially compromising recyclability.[37] However, when combined with eco-modulated fees, EPR can be an effective tool to shift packaging use and design.

Eco-modulated fees is a pricing mechanism that adjusts producer fees based on the environmental impacts of their packaging. Fees are reduced for products that meet eco-design standards and increased for those that contribute to environmental harm. For eco-modulation to be truly effective, fee differentiation must be substantial enough to drive meaningful changes in product design and sustainability practices, shifting the focus from managing waste after it is created to preventing waste in the first place.[38]

Eco-modulation aligns fees with the ecological and social costs of products. When fees are set appropriately, eco-modulation incentivises and rewards producers who design and use packaging with lower environmental harm.[39] By reflecting the true costs of packaging on the environment, these fees can discourage the use of harmful materials, particularly virgin plastics, which remain inexpensive due to subsidies on resource extraction.[40]

An eco-modulated EPR approach should be supported by clear design standards that promote avoidance, reusable and refillable formats, increase the use of recyclable materials, and actively discourage the use of excessive or problematic plastics.[41] This shift would impose stricter requirements on producers, focusing on product longevity rather than simply managing waste after its creation.[42] In the EU, high collection costs, sortation complexity, inconsistent feedstock properties, and contamination concerns are critical barriers to the widespread adoption of EPR for plastic packaging waste.[43] These factors highlight the importance of not only harmonising policies across Australia, but also ensuring that EPR systems are designed to overcome the practical and economic challenges inherent in managing plastic packaging.

To enhance its effectiveness, EPR must evolve from a recycling-centric tool into a broader mechanism for the circular economy, incorporating eco-modulated fees, mandated design principles, resource recovery, and reduced material usage.[44] This shift would position EPR as a central driver of circularity in product design and resource efficiency rather than simply a tool for managing waste.

Given the low uptake of eco-modulation to date, Australia should view this as an opportunity, and be open to refinement of an EPR scheme through comprehensive data collection, improved policy design, and harmonised implementation.[45]

4.3 Mandatory design standards

Mandatory packaging requirements, including bans, targets, and standards, are essential for reducing waste and pollution by providing a clear, enforceable strategy to minimise environmental impacts. These measures work by gradually phasing out problematic and unnecessary packaging through design requirements.

As with other tools, benefits are only fully realised when requirements address the entire lifecycle of plastics. Existing standards in Australia primarily focus on recycling and recovery, neglecting earlier stages such as design and reuse.[47] Design requirements should include bans on non-functional and excessive packaging, standards to prevent commonly littered components such as tear tabs and bottle caps from ending up in the environment, and requirements for durable, reusable, refillable and recyclable packaging.

The importance of a comprehensive approach is evident in lessons learned from previous regulatory efforts, including state and territory plastic bag bans.

Similar to other jurisdictions, while the Australian Capital Territory's ban successfully reduced the sale and supply of lightweight plastic bags, it also led to an increase in the use of thicker 'reusable' plastic bags, offsetting many of the intended gains.[48] This policy exposed that a suite of complementary measures including clear definitions, design standards, mandatory reduction targets, and systems for refill or collection and redistribution, must be in place to prevent unintended consequences.[49]

Mandatory design requirements set a level playing field for businesses, providing certainty and standardisation, giving businesses confidence in investing in the future of packaging. Standardising packaging formats also enables packaging to be reused and refilled across multiple brands. Australia must adopt an approach that combines bans with a progressive and enforceable pathway for the uptake of alternatives. This is essential for reducing waste and supporting a transition to a circular economy.

Packaging and other pollution at Discovery Bay, Victoria, in 2023. Image by Colleen Hughson / BeachPatrol 3280-3284.

Fresh potatoes packed for distribution in reusable crates.

A row of food jars in Australia that allows customers to refill their containers or bags with bulk product.

Cross-brand reusable packaging models

SWAP'n'GO, operated by Elgas, is a nationwide program in Australia that allows customers to exchange empty LPG gas bottles for full ones. The network has over 6,000 locations for exchange, including service stations and hardware stores.[50]

Key features of this successful model include:

- **Standardisation:** uniform bottle sizes and fittings enable exchange across various retailers. Any brand of gas bottle is able to be returned, in exchange for a full one.
- **Convenience:** widespread availability makes participation easy for customers across Australia.
- **Safety:** returned bottles are tested for leaks and quality, ensuring the packaging is compliant with Australian Standards.
- **Cost incentive:** customers only purchase the bottle once and then pay a significantly reduced rate for subsequent refills through the exchange system – for example, $79.84 for a new bottle versus $31.50 for an exchange.[51]

The SWAP'n'GO bottle exchange system demonstrates how standardised, cross-brand systems can effectively facilitate reuse at scale.

Kegstar is a business-to-business model, providing a shared packaging solution for breweries by allowing multiple brands to use the same keg system.[52] **Advantages of this model include:**

- **Efficiency**: the shared system enables breweries to avoid the costs and logistics of owning and managing their own kegs.
- **Sustainability:** shared kegs reduce the need for single-use packaging, lowering environmental impact.
- **Scalability:** the system supports breweries of all sizes, from small startups to large enterprises.

Kegstar's standardised packaging for beverages demonstrates the benefits of shared infrastructure to promote reuse across an entire industry. In addition to operational benefits, Kegstar's customers collectively reduce their emissions - saving over 10 million kg of greenhouse gases each year.[53]

A row of reusable kegs lined up outside a pub in Sydney.

Excessive packaging is considered to be any packaging that is above the minimum needed to protect a product, transport a product, or make a product safe to handle.

Examples of this include excessive overheads, false bottoms, or unnecessary layering. Excessive packaging may be used to market a product by making it appear to be larger or in greater volume than it actually is, or to enhance shelf appeal. This can mislead customers about the quantity or value of a product.

Australian Consumer Law prohibits businesses from making false or misleading representations about goods or services, including packaging and labeling. This includes any conduct that is likely to mislead or deceive consumers about the quantity, quality, or value of a product.

A global study on packaging found that 89% of the reviewed products contained non-functional slack fill, and on average 70% of the packaging volume was unnecessary.[54] Non-functional slack fill is a form of excessive packaging, and includes false bottoms or unnecessary empty space. For snack food products, 90% of those sampled had over 75% surplus packaging, with an average of 86% non-functional space. These figures highlight significant opportunities to reduce waste by eliminating unnecessary packaging.

5. Plastic Packaging and Emissions

The continued production of virgin plastics intensifies environmental harm and impedes efforts to achieve net-zero emissions by 2050. In 2020, Australia's plastic usage resulted in over 16 million tonnes of greenhouse gas emissions, equivalent to the annual emissions of more than one-third of the cars registered in Australia.[55, 56] If current trends continue, Australia's plastic consumption and associated emissions are projected to more than double by 2050.[57]

Replacing single-use packaging with reusable alternatives can:

- Reduce packaging-related emissions by up to 90%.[58]
- Cut demand for fossil fuel-derived virgin plastic.
- Support net-zero targets by preventing avoidable plastic-related emissions.

Reusable food serviceware beats single-use alternatives across every environmental measure including emissions, land use, water, waste and pollution.[59] Breakeven points for reusable servingware range between 2 and 122 times, providing significant environmental benefits beyond this point.[60]

Economic benefits of reusable packaging

Reusable systems can save businesses, particularly small and medium enterprises, significant amounts of money, even with the required upfront investment. Research in the United States of America found reusable packaging saves food service businesses (including schools, food courts and events) money 100% of the time.[60]

Savings for a small business ranged between US$3,000 and $22,000. Up to 225,000 packaging items were saved and 1000 kg of waste was avoided on an annual basis.

6. What Australia Must Do: Recommendations for government

By learning from international best practices, domestic and international case studies, and responding to strong public support, Australia can become a global leader in cutting plastic pollution at its source. The Australian Government must incorporate a full lifecycle approach to managing plastic pollution, and mature beyond a recycling-centric economy. New packaging laws in Australia must be comprehensive, and be enforced through an effective independent regulator.

Set reuse targets and invest in infrastructure

- Introduce national, sector-based reduction and reuse targets - uncoupled from recycling and composting targets.
- Invest in shared infrastructure for collection, cleaning and redistribution of reusable packaging.
- Support cross-brand collaboration to enable shared packaging for reuse and refill systems.

Implement an eco-modulated EPR scheme

- Introduce producer fees based on the environmental impact of packaging - lower fees for reusable systems; higher fees for disposable packaging and problematic materials.
- Hold producers responsible for their packaging throughout its lifecycle.
- Use revenue to fund shared infrastructure for reuse, collection and recycling.

Introduce mandatory design requirements

- Enforce minimum packaging standards, including bans on non-functional features such as overheads, false bottoms, and unnecessary layers. Marketing is not a valid excuse for disposable packaging.
- Design for litter prevention - mandate tethered lids and minimise loose components.
- Design for longevity - establish standards for durable, reusable and refillable packaging.
- Require minimum recycled content and recyclability as part of design criteria.

An adult green sea turtle swims through schools of fish on Ningaloo Reef, Western Australia.

Table 1: Opportunities for Australia to improve packaging laws

	Australia - existing measures	Recommended for Australia	International examples
Reduction target	No national target.	**Mandatory sector-based targets with interim measures and mandatory business reporting.**	**EU** – 15% by 2040, with interim measures.[61] **France** – 20% single-use packaging reduction by 2025.[62]
Reuse target	Voluntary and combined with recycling and reuse.	**Mandatory, standalone sector-based targets, uncoupled from end-of-life management (recycling and composting), with mandatory business reporting.**	**EU** – sector-based reuse targets from 2030.[63] **Chile** – supermarkets must offer at least 30% beverages in reusable bottles.[64] **Balearic Islands (Spain)** – 15% reuse for hotel, retail, and catering by 2030.[65]
EPR scheme	Voluntary stewardship through the Australian Packaging Covenant Organisation (APCO).	**Mandatory eco-modulated EPR scheme that prioritises avoidance and reuse.**	**Chile** – mandatory and enforced from 2023.[66] **EU** – eco-modulated EPR.[67]
Design standards	Standards proposed for kerbside recyclability.	**Packaging standardised for reuse and designed for litter prevention, minimum packaging and recycling.**	**Japan** – PET bottles, cosmetic packaging.[68] **South Korea** – packaged products must not be repackaged.[69] **EU** – standardised designs and requirements for reuse systems.[70]

AMCS staff cleaning up pollution from mangroves along the Brisbane River in 2024

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Waves crashing on an Australian beach.

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