

rennie

Securing Australia's Plastic Recycling Future

December 2025

ACOR



Limitation of Our Work

This report has been prepared by Rennie Advisory Pty Ltd (ABN 26 629 902 085) (Rennie Advisory) for the Australian Council of Recycling (ACOR) under the terms of our engagement.

This report is intended for use by ACOR, government agencies, industry participants, and other stakeholders involved in policy discussions concerning plastic packaging recycling in Australia. The report may be cited and distributed for these purposes.

Publication and distribution of this report does not create an advisory relationship between Rennie Advisory and any reader other than ACOR. Readers other than ACOR should not treat this report as advice specific to their circumstances and should seek independent professional advice as appropriate.

Artificial intelligence tools have been used to assist in the research for and development of this report. All contents of this report have been reviewed and finalised by Rennie Advisory.

This report presents:

- Economic analysis based on publicly available data and industry consultation
- Illustrative modelling scenarios to demonstrate policy trade-offs
- International precedent analysis from comparable jurisdictions

This report does not present:

- Predictions of specific policy outcomes
- Legal advice on regulatory compliance or trade law matters
- Recommendations of specific policy settings (policy choices remain with government)
- Guaranteed economic or environmental outcomes

Rennie Advisory has sought to provide objective, evidence-based analysis while acknowledging inherent uncertainties in forward-looking economic modelling.

While this report is available for public use, readers are responsible for their own interpretation and application of the findings. Rennie Advisory accepts no liability for decisions made, or actions taken, by third parties based on this report, the findings of this report, or for any errors or omissions resulting from incomplete or inaccurate information provided by third parties in the development of this report.

© 2025 Rennie Advisory Pty Ltd. All rights reserved.

This report may be reproduced and distributed for policy, research, and educational purposes with appropriate attribution. Commercial use requires written permission.

The report must not be altered, edited, or misrepresented in any way.

Suggested citation: Rennie Advisory (2025), Securing Australia's Plastic Packaging Recycling Future, report prepared for Australian Council of Recycling, December 2025.

Rennie Advisory Pty Ltd (ABN 26 629 902 085) is a corporate authorised representative (CAR No. 1297656) of Sandford Capital Pty Limited (ABN 82 600 590 887) (AFSL 461981).

About the project partners



The Australian Council of Recycling (ACOR) is Australia's peak body for resource recovery, recycling and remanufacturing. Committed to leading the transition to a circular economy through the recycling supply chain.



Australian Packaging Covenant Organisation (APCO) is Australia's not-for-profit packaging co-regulator, driving industry collaboration and accountability to create a circular, sustainable packaging system.

rennie

Rennie Advisory is a professional services firm providing independent analysis which helps organisations across many different industries navigate and optimise their transition to a sustainable future.

Acknowledgements

We acknowledge the valuable support of the following organisations:



Contents

Key Findings.....	9
Executive Summary.....	10
1 Introduction.....	17
1.1 Focus of this report.....	17
1.2 Report structure.....	18
2 Plastic and Packaging in Australia.....	20
2.1 Plastic packaging use in Australia today.....	20
2.2 Australia’s position in the global plastic supply chain.....	21
2.3 The global market context.....	23
2.4 Plastic packaging use in Australia in the future.....	25
2.5 Environmental harm from current use of plastic.....	26
3 Plastic recycling in Australia.....	29
3.1 What is plastic recycling?.....	29
3.2 The current state of Australia’s plastic recycling industry.....	31
3.3 Packaging policy and co-regulatory arrangements.....	32
3.4 Supply-side investment: the Recycling Modernisation Fund.....	33
3.5 Waste export bans and the shift to domestic processing.....	33
3.6 The plastic recycling industry faces significant cost pressures.....	33
3.7 Cost disadvantage and utilisation challenges.....	36
4 Opportunities for reform in recycling and plastic packaging.....	39
4.1 Australia has ambitious goals for circularity and recycling.....	39
4.2 Australia has failed to meet key targets.....	40
4.3 The lack of national action has led to fragmented interventions.....	40
4.4 Industry is supportive of clear national reform.....	41
4.5 Producer voices are critical to inform the design of reforms.....	42
4.6 Lessons can be learnt from overseas.....	46
4.7 Reducing environmental harm through reform.....	48
5 Impacts of reform options.....	50
5.1 Modelling purpose and approach.....	50
5.2 Scenarios modelled.....	51
5.3 Modelling results.....	53
5.4 Policy implications.....	54
5.5 Benchmarking of consumer impacts.....	56
6 Policy Direction.....	58
6.1 The ask from industry.....	58
6.2 Mitigating industry risks through policy design.....	58
6.3 Key features of an effective approach.....	61
6.4 Government procurement.....	65

6.5	Roles and responsibilities.....	66
6.6	Alignment with existing government initiatives.....	68
Appendix A	Comparing plastics and their alternatives	69
Appendix B	Techno-economic modelling	70
	Historical and projected demand characterisation.....	70
	End-of-use modelling framework.....	73
	Policy module.....	74
	Elasticities and behavioural responses.....	74
	Lifecycle emissions and environmental costs	74
	Economic analysis.....	75
	Consumer cost impact assessment	76
Appendix C	Brand owner and retailer consultation feedback.....	77
Appendix D	Industry Involvement	88

List of Figures

Figure S-1: Australian plastic sources and fates.....	10
Figure S-2: Australia’s plastic supply mix if we fail to act.....	11
Figure S-3: The costs we ignore at the grocery store—the externality costs from plastic waste environmental impacts.....	11
Figure S-4: Structural domestic recyclate cost disadvantage for rigid plastics (food-grade HDPE and PET).....	12
Figure S-5: Australia faces a capacity utilisation challenge	13
Figure 1-1: Approach to evidence base development.....	18
Figure 2-1: Australia’s packaging consumption in 2022-23.....	20
Figure 2-2: Tracing the origins of Australia’s plastic supply.....	21
Figure 2-3: Australian plastic sources and fates	22
Figure 2-4: Australia’s plastic supply mix in the baseline scenario.....	25
Figure 2-5: The costs we ignore at the grocery store—the externality costs from plastic waste environmental impacts	27
Figure 3-1: Recycling is a remanufacturing supply chain comprising three key elements which must all be economically viable	29
Figure 3-2: Post consumer plastic destination over time.....	31
Figure 3-3: Australian recycling infrastructure utilisation rates by plastic type (2023-24)	32
Figure 3-4: Structural domestic recyclate cost disadvantage for rigid plastics (food-grade PET and HDPE).....	34
Figure 3-5: Projected plastic recycling capacity utilisation in Australia.....	36
Figure 4-1: Australia is below the global average for circularity (%).....	39
Figure 4-2: Australia’s plastic packaging recovery rate compared to European plastic recycling rates	40
Figure 5-1: Material and economic impacts model schematic.....	50
Figure 5-2: Additional domestic recyclate use under each scenario, 2030	54
Figure 6-1: Seven key risks across the plastic recycling supply chain are inhibiting market formation.....	59
Figure 6-2: Italy’s evolving approach to eco-modulated EPR pricing over time.....	63
Figure 6-3: Structure of a targeted book-and-claim scheme for packaging recycled content	64

List of Tables

Table 5-1: Scenarios modelled as a part of the APRA study.....	52
Table 5-2: Comparison of the effects of policy intervention.....	55
Table 5-1: Price effects of EPR eco-modulated fees are a small relative to the underlying product cost.....	56
Table 6-1: Tracing actions to mitigate risks to these underlying risks	60
Table 6-2: Roles and responsibilities for key players in plastic packaging.....	67

List of Case Studies

Case Study 2-1: Europe's recycling infrastructure collapses despite ambitious regulatory targets.....	24
Case Study 3-1: Why soft plastics chemical recycling requires policy certainty before investment	35
Case Study 3-2: How regulatory delays prompted an Australian manufacturer to move away from recycled content.....	37
Case Study 4-1: Timelines for changing packaging are longer than you would think.....	44
Case Study 4-2: Australian exporters face specific challenges	45
Case Study 4-3: Manufacturers and retailers have had a negative experience with the UK's Plastic Tax.....	47
Case Study 6-: How fee structures can preference Australian recycled content without creating uncompetitive markets	62

List of Explainers

Explainer 3-1: Types of plastic packaging and the implications for recycling.....	30
Explainer 4-1: What is a mandated EPR scheme?	41

Key Terms

Australasian Recycling Label (ARL): APCO's national on-pack labelling system that details how to correctly dispose of each part of the packaging for households.

Chemical (advanced) recycling: breaks plastic polymers down into their chemical building blocks or hydrocarbon feedstocks, which can then be used to manufacture virgin-equivalent plastics or fuels. These technologies are mainly suited to specific plastic types that are difficult to recycle mechanically (such as contaminated, multi-layer, or degraded plastics) and usually require sorted and pre-processed feedstock.

Circularity / Circular Economy: refers to an economic model that keeps products, materials, and resources in use for as long as possible through reuse, repair, refurbishment, and recycling, minimising waste and regenerating natural systems.

Cradle-to-grave: a full life-cycle emissions accounting framework which measures all greenhouse gas emissions from the extraction of raw materials through to the final use of that material.

Demand-side: the drivers, behaviours, policies, technologies, or interventions that affect how much plastic recycle is purchased.

Eco-modulation: a mechanism under an EPR whereby the fee paid by a producer is adjusted (up or down) based on the environmental performance of a product or packaging. This can extend to other characteristics such as ease of recycling or use of domestic content.

End Markets: the final destination where a recycled or recovered material is sold or used to make new products

Extended Producer Responsibility (EPR): a policy approach whereby a producer's responsibility for a product extends to the post-consumer stage of the life cycle (either physically or financially).

Externality: occurs when the actions of one party impose costs or benefits on others, and these impacts are not compensated for or paid for through the market.

Free rider: an entity which enjoys benefits from a shared good or service without paying or contributing to it.

Flexibles: plastic packaging that can be bent, rolled, folded, or easily changed in shape without fracturing or losing integrity. Commonly used in bags, outer wrapping for dry, fresh and frozen food and non-food packaging pouches and wrappers. Often produced from LDPE, HDPE, or PP and can have multi-layer structures, adding complexity to recycling and reprocessing.

Mechanical recycling: involves physically reprocessing plastic waste without altering its chemical structure. Materials are sorted, cleaned, shredded, melted and remoulded into new products. This pathway is most effective for clean, mono-material (single polymer) plastics.

Rigids: plastic packaging which are solid, inflexible shapes that retain their form under normal use, even when empty. Commonly used for beverage, food, laundry and personal care packaging and often produced from PET, HDPE or PP. Typically produced from a single a polymer, providing a level of simplicity to recycling and reprocessing.

Supply-side: the production, manufacturing, resource extraction, generation, or infrastructure that supplies plastic recycle to the market.

Acronyms

ACOR	Australian Council of Recycling
APCO	Australian Packaging Covenant Organisation
APRA	Advancing Plastic Recycling in Australia
ARL	Australasian Recycling Label
CDS	Container Deposit Scheme
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EPR	Extended Producer Responsibility (defined in key terms)
EoL	End of Life
FTE	Full-time Equivalent
HDPE	High-Density Polyethylene (also PE-HD)
IEA	International Energy Agency
KTPA	Kilotonnes per annum
LDPE	Low-Density Polyethylene (also PE-LD/LLD)
MRF	Material Recovery Facilities
MT	Million tonnes
NEPM	National Environment Protection (Used in Packaging Materials) Measure
PET	Polyethylene Terephthalate
PP	Polypropylene
PRO	Producer Responsibility Organisation
RAWR Act	Recycling and Waste Reduction Act (2020)
RMF	Recycling Modernisation Fund
SKU	Stock Keeping Unit
SUP	Single-Use Plastics
TBT	Technical Barriers to Trade

Key Findings

In 2023, Australia's State and Federal Environment Ministers committed to National Packaging Reform to ensure all consumer packaging meets strict design, recyclability and recycled-content standards. Despite this, domestic demand for recycled plastic remains weak, threatening the viability of local recyclers.

Market failure is inhibiting Australia's plastic recycling industry ...



Australia currently uses **1.3 million tonnes** of plastic packaging each year, with the majority ending up in landfill



Australian-made recycled plastic is, at times, **50% more expensive** than imported virgin plastic



Australia has failed to achieve our 2025 plastic packaging recycling targets set in 2018

Failing to act could see ...



Plastic waste ending up in landfill continue to grow, reaching **4.9 million tonnes in 2050**



Facility closures and cancellation of planned investment supported by Government and industry funds



Environmental costs amounting to a total of **\$32 billion by 2050** in present value terms

For plastics alone, by 2030 national packaging reform could ...



Reduce plastic packaging waste going to landfill by **370,000 tonnes** per annum



Eliminate **700,000 tonnes** CO₂e per annum and avoid total environmental costs of **\$2 billion**



Attract **\$220 million** in private investment alongside **19,000** direct and indirect jobs and **\$2.5 billion** in gross value-add



be delivered economically, at a cost of less than **0.1% of product cost**

Industry needs ...

An urgent commitment from the Australian Government to introducing National Packaging Reform in this term of government.

Executive Summary

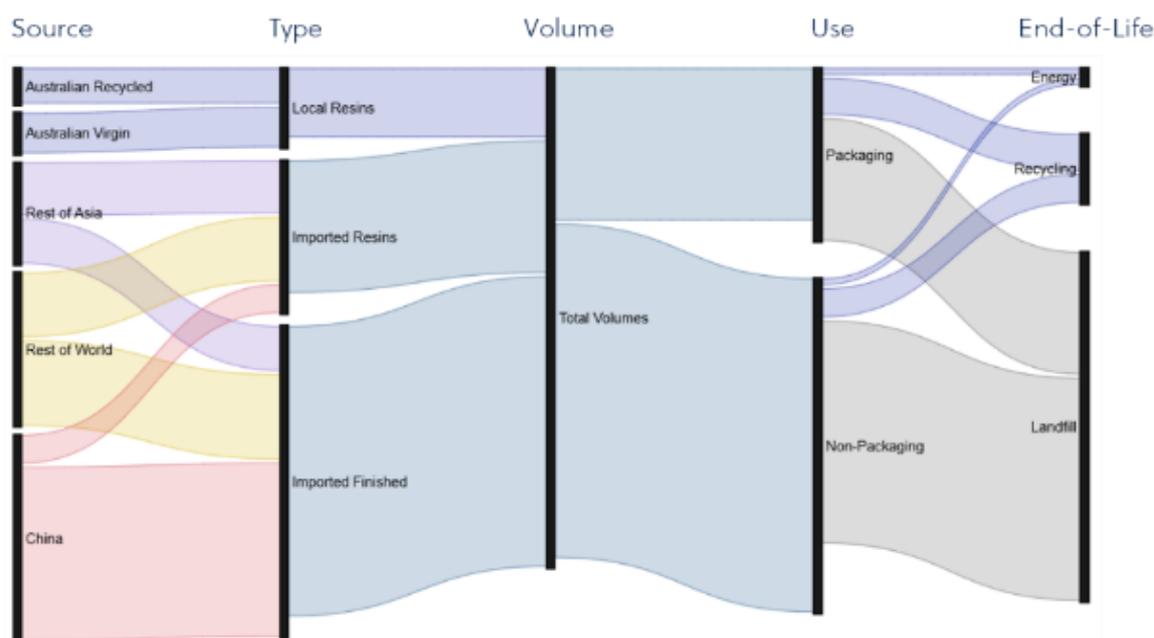
Plastic packaging is essential in Australia's modern economy, particularly for food security through extending the shelf-life of products and ensuring food safety. Most of this plastic, including plastic used in packaging, is imported from overseas in the form of resins and finished products. Specifically, Australia currently uses 4.2 million tonnes of plastic each year, of which approximately 93 per cent (or 3.9 million tonnes) is imported. Around 1.3 million tonnes of this plastic is used in packaging.

Most plastics entering Australia will end up in landfill rather than be recycled

Most of the plastic consumed in Australia ends up in domestic waste streams. The introduction of the Recycling and Waste Reduction (RAWR) Act (2020) and China's National Sword policy banning waste imports mean that unprocessed end-of-use plastic cannot be exported from Australia and must be dealt with here through recycling, landfill or energy-from-waste.

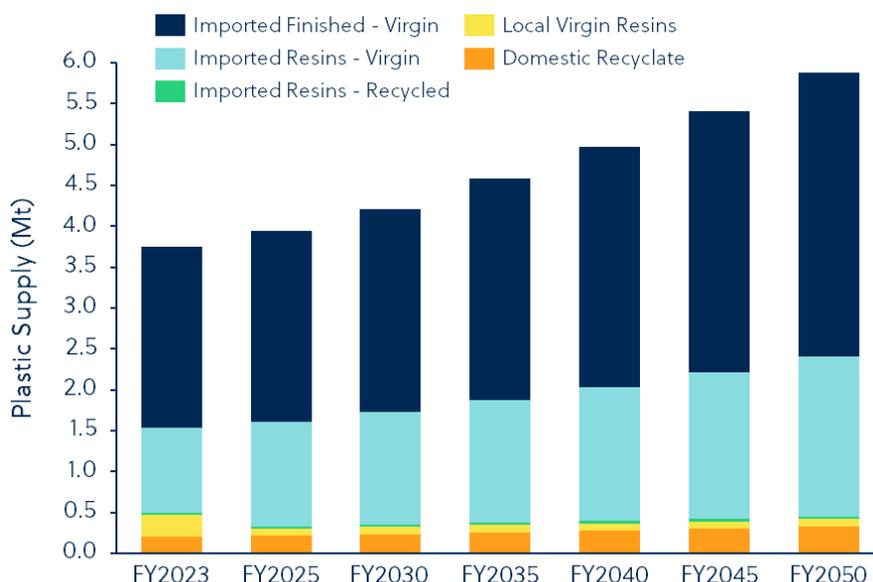
In the absence of a commercially viable and appropriately regulated industry, the reliance on imported plastics in Australia has created a cycle of "import, consume and dispose". After use, approximately 2.7 million tonnes of plastic ends up in landfill each year (Figure S-1); around 1.0 million tonnes of which is from plastic packaging.

Figure S-1: Australian plastic sources and fates



Without significant changes in policy and consumer behaviour, our current import, consume and dispose approach is expected to remain the dominant profile into the future. Overall, plastic imports into Australia are expected to grow to around 5.6 million tonnes by 2050. Almost the entirety of this growth is coming from imported virgin plastic (Figure S-2). Without action, by 2050 there will be 4.9 million tonnes of plastic per annum disposed of to landfill or incinerated in Australia.

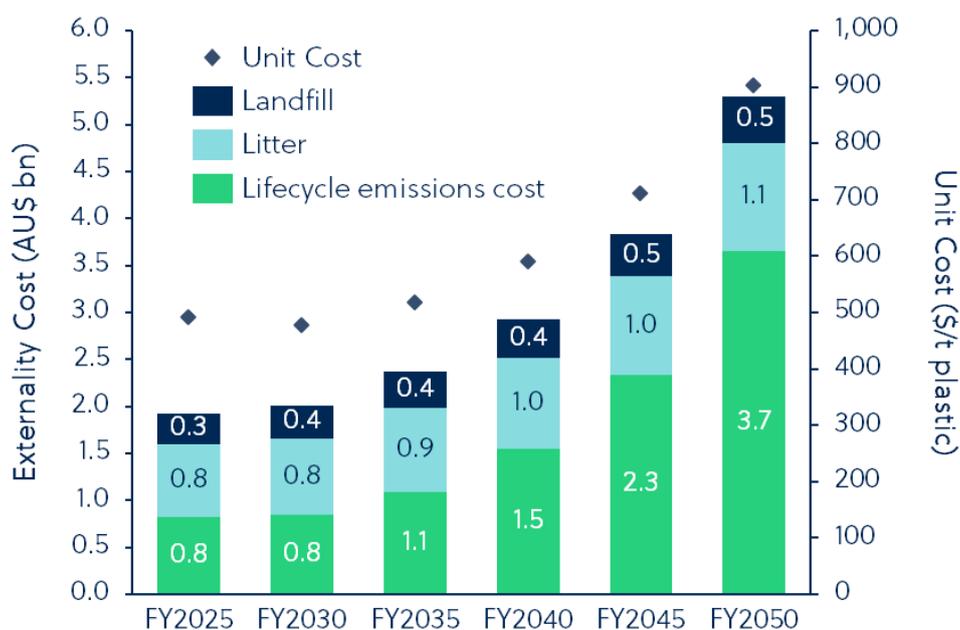
Figure S-2: Australia's plastic supply mix if we fail to act



The “import, consume and dispose” system of plastic consumption comes with significant environmental costs

This current approach has significant external costs in the form of litter, landfill and emissions—all forms of environmental harm. Environmental harm will grow over time unless demand for domestically recycled plastic is created. These costs are estimated at \$2 billion per annum today and grow to over \$5 billion a year by 2050 in real terms (Figure S-3). Cumulatively to 2050, this environmental harm cost could exceed \$32 billion in real terms.

Figure S-3: The costs we ignore at the grocery store—the externality costs from plastic waste environmental impacts¹



¹ Values exclude externalities from waste-to-energy facilities which require detailed modelling of the energy market.

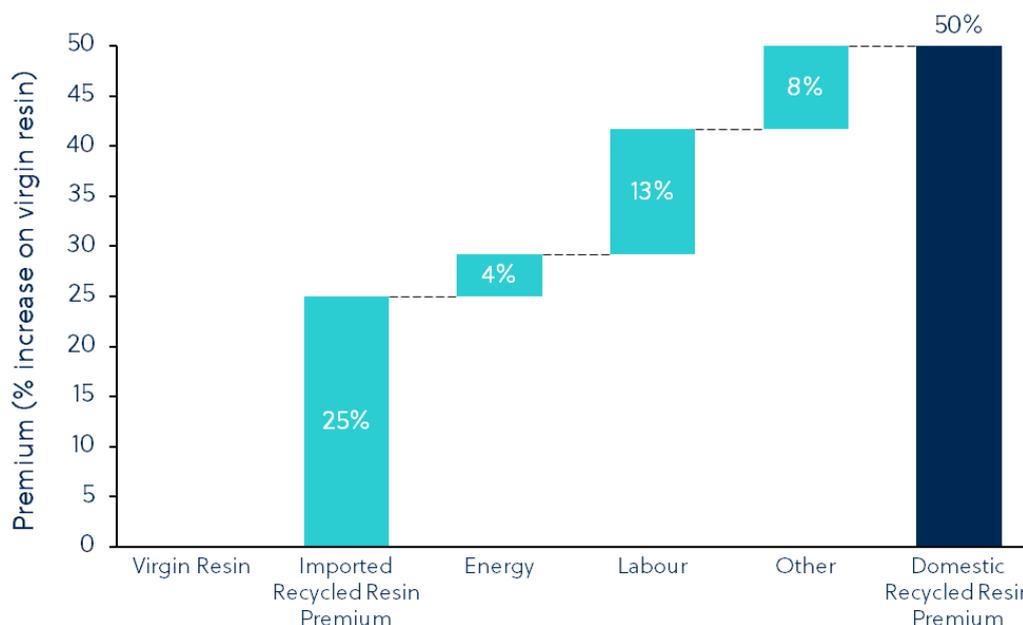
Domestic remanufacturing is maturing but the industry faces global market headwinds

The domestic plastic packaging recycling supply chain consists of collection, processing and remanufacture for sale into end markets. These three steps need to work together to transform waste into new products that are fit-for-purpose. If these three steps work together, then there is a significant domestic remanufacturing opportunity.

Currently, the end markets for recycled plastics in Australia compete against the global oversupply of low-cost virgin plastic, much of it produced in Asia. This oversupply means that Australian-made recycled plastic is at a structural cost disadvantage compared to overseas virgin and recycled plastic.

As a result, domestic recycled plastic is the highest cost option for businesses. A survey of plastic recycling industry participants revealed imported recycled resin has a premium of around 25% compared to virgin plastic, and that domestic recycled plastic has a premium of around 50% compared to virgin resin (Figure S-4). This premium is for rigid plastics, such as the plastics used in food and beverage containers, where there is currently a scaled domestic recycling industry. The price premium can be much greater for flexible plastics that require more complex recycling approaches and where remanufacturing is currently less commercially mature than mechanical recycling of rigid plastics in Australia.

Figure S-4: Structural domestic recyclate cost disadvantage for rigid plastics (food-grade HDPE and PET)²



There has been significant progress made on collection and processing in Australia. Most recently, this has taken the form of investment into plastic recycling infrastructure co-funded by the Australian Government and industry. This investment aims to address capacity constraints in recycling Australia's used plastic. However, investments in collection and processing cannot stand alone. They are dependent on strong markets for the domestically recycled plastic packaging product.

² This premium refers to food contact resin from mechanically recycled rigid plastic. Industrial (non-food grade) can be at parity or lower. Chemically recycled food contact resin from flexible plastics will be at a greater premium.

Closing the market gap in Australia is critical for redirecting plastics from landfill

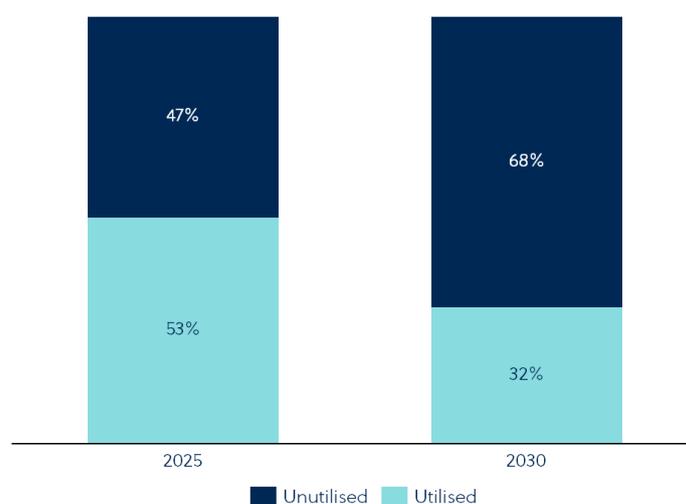
The core issue limiting Australia's domestic plastic remanufacturing opportunity is a market failure: domestic recycled plastic remains more expensive than imported virgin or recycled plastic due to high domestic costs and a lack of mechanisms to drive demand.

The current global market oversupply of virgin plastic resin and existing global packaging supply chain structure creates strong disincentives for local industry to purchase domestic recycled plastic products. Increasing supply of domestic recycled plastics in Australia alone is insufficient for markets to form for domestic recycle. Increasing demand for Australian recycled plastics must also be addressed, acknowledging that cheaper imported products will remain in the global market. Closing this market gap is the critical missing element in redirecting plastics from landfill in Australia.

In Australia, today, the lack of demand for local recycled plastic products is creating an underutilisation of plastic recycling capacity. A survey of industry participants indicates that utilisation of plastic recycling capacity in Australia is only 53%. Industry stakeholders consider this to be below commercially viable levels.

Despite government and industry commitments to increase investment in recycling infrastructure, utilisation is set to decline over time in Australia. In the absence of deliberate demand-side interventions, forecasts indicate utilisation could decrease to around 32% by 2030 (Figure S-5). Such low levels of utilisation worsen the already challenging operating conditions for many facilities. Industry stakeholders indicate that these projected levels of utilisation are already affecting the ability of businesses to raise finance for investment in plastic recycling capacity.

Figure S-5: Australia faces a capacity utilisation challenge



If utilisation trends continue as forecast, then there is significant risk of stranded assets in the Australian plastic recycling industry. **This puts the \$432 million in committed investment from the Recycling Modernisation Fund (RMF) at risk.** This investment combines funding from the private sector with Australian and State Government co-contributions and is expected to deliver 62 plastic recycling facilities. This RMF investment is just a fraction of the additional investment planned by the broader industry.

This situation is not unique to Australia, with the ongoing exit of recyclers in the EU and US currently underway. Australian plastic recyclers are at risk of following the path of these EU and US recyclers. Loss of these facilities would not only be loss of private and public investment but would mean significant reduction in sovereign capability in Australia and increased reliance on global markets. Once these types of remanufacturing facilities close, it will be very difficult to re-establish the necessary capital, skills and expertise in the future.

We are now at a decisive moment for advancing the plastic recycling market in Australia

Packaging makes up about a third of all plastic consumed in Australia and is highly visible to the public. Additionally, packaging is where the majority of plastic recovery and recycling capability and investment has been made, presenting an ideal starting point for closing existing market gaps where packaging is recycled into packaging and commercial and industrial products.

Recent consultation on reforming packaging regulation by the Australian Government indicates that a broad spectrum of industry, including the brands and retailers responsible for the procurement of plastic packaging and recyclers, are supportive of stronger national regulation around the packaging and plastic packaging recycling value chain.

Additional consultation by the Australian Packaging Covenant Organisation (APCO) confirms the high levels of industry support for packaging value chain regulation. But also shows that this support is conditional on certainty around the timing and scope of regulation, as well as ensuring that all businesses and industry sectors must participate (*i.e.*, managing free-rider issues and establishing system wide minimum quality standards). Government is perfectly placed to address these two issues, underscoring the imperative for promised packaging regulatory reform to address the ongoing structural challenges in the domestic market.³

Extended producer responsibility is identified as the priority approach to reform

Both the Australian Government and APCO's work identified that extended producer responsibility (EPR) is the industry's preferred approach. EPR makes brand owners and retailers financially and operationally responsible for managing their products after they are sold, including after consumer use.

EPR relies on an eco-modulated fee and incentive structure where producers and brand owners and retailers pay a fee based on the volume of packaging they place on the market. The more sustainable the packaging (*e.g.*, if it's recyclable and made with recycled content) the lower the fee and/or greater the incentive. The collected revenue from EPR eco-modulated fees can then be invested in waste collection, recovery and recycling infrastructure. Re-investment can help to address the cost gap between virgin and recycled materials, ideally reducing the gap over time.

EPR has a long history in markets like the EU and US, states where significant trial and error has occurred in implementation. In particular, the EU schemes are currently introducing adjustments to close the market gap for domestic recycling by introducing incentives for domestically produced recycle.⁴

An Australian mandated EPR can learn from these schemes to develop an approach that addresses the challenges imposed by global supply chains and markets in which plastic packaging is produced and procured.

National packaging reforms can redirect 370 kilotonnes of plastic packaging waste from landfill and reduce emissions by 0.7 million tonnes CO₂e each year while increasing economic activity by \$2.5b

Rennie has developed a techno-economic model of production, import, consumption and post-consumer uses of plastic in Australia, with a particular focus on packaging. This model allows for an investigation of the trade-offs that can come from different approaches to reforming packaging regulation. In particular, it allows testing of different levels of EPR eco-modulated fees and different minimum recycled content requirements focused on the use of domestic recycled plastic content in packaging.

³ DCCEEW, [Reforming Packaging Regulation](#) (2025)

⁴ OECD, [Plastics Recycled Content Requirements](#) (2024)

The model has been informed by significant industry consultation and data from a bespoke survey of recycling industry participants. Key findings of this survey indicate that EPR measures which close a weighted average cost gap of around \$1,000 per tonne between domestic recycled plastic and imported virgin plastic will level the playing field (noting this varies by polymer). Closing this gap would drive change in procurement practices and is comparable to eco-modulated fee levels seen internationally. **It should be noted the specific EPR eco-modulated fee magnitudes within the scenarios do not form a part of the policy proposal.**

The results indicate that, within the next 5 years, fully closing the \$1,000 gap via an EPR scheme and accompanying this with an overall 30% domestic recycled content requirement can:

- Reduce emissions by 0.7 million tonnes CO₂e per annum
- Increase economic activity in Australia by \$2.5 billion in gross value-add
- Create 19,000 direct and indirect jobs,
- Spur additional investment of \$220 million in private capital
- Reduce the total plastic packaging waste going to landfill by 370 kilotonnes per annum.

The cost to Australian households for EPR reform is minimal

On average, Australian households spend about \$246 per week on groceries, with the materials used in packaging (such as paper, plastic, aluminium and glass) accounting for around 2.5% of this total, or approximately \$6.14 per week. Introducing an effective EPR scheme with a 20-30% domestic recycled content requirement for plastic packaging is estimated to increase weekly plastic packaging material costs by only \$0.19-0.31, which is around 0.1% of the weekly grocery bill.

This cost is relatively small compared to the additional cost of plastic waste borne by households. Australians currently face an average environmental harm cost of \$215 per year due to plastic waste externalities and already pay over \$200 a year on total household bin collection alone. Of this \$200, it's likely that around \$70-\$95 can be attributed to packaging.⁵

While this modelling is intended to quantify trade-offs in different policy choices (rather than identifying a preferred policy), it does show that a well-balanced policy can complement existing packaging reform initiatives while boosting Australia's domestic recycling sector.

Two key asks from industry to the Australian Government have emerged based on extensive consultation with industry, surveying, data analysis and modelling:

- **Within the next 3 months, announce a timebound commitment to introducing National Packaging Reform through mandated EPR.**
- **Commit to measures to drive procurement of domestic recycled plastic in packaging and other applications, through government procurement and EPR incentives.**

These two key asks can be achieved quickly within existing legislation and do not require a wholesale review of the broader circular economy in Australia. Speed is necessary to avoid closures seen in the EU and US and support investment certainty in a highly uncertain financial climate.

While this analysis focuses on structural reform, there are also immediate actions government could take to support the sector during policy design, including enhanced public procurement of domestic recycled content.

⁵ Maddin and Florin (2024), "Characterisation of household single-use packaging flows through a municipal waste system: A material flow analysis for New South Wales, Australia"



SULO[®]

1 Introduction

1.1 Focus of this report

Project Background

Australia has failed to meet our 2025 National Packaging Target of recycling or composting 70% of plastic packaging.

The core issue is a market failure: domestic recycled plastic remains more expensive than imported virgin or recycled material due to high domestic costs and a lack of mechanisms to drive demand. This situation means that, currently, half of Australia's recycling capacity is unused and further capacity is unlikely to grow. Global oversupply of cheap virgin plastics further undermines local producers, creating financial, economic, environmental and sustainability risks for Australia's people, environment, industries and economy.

The Project

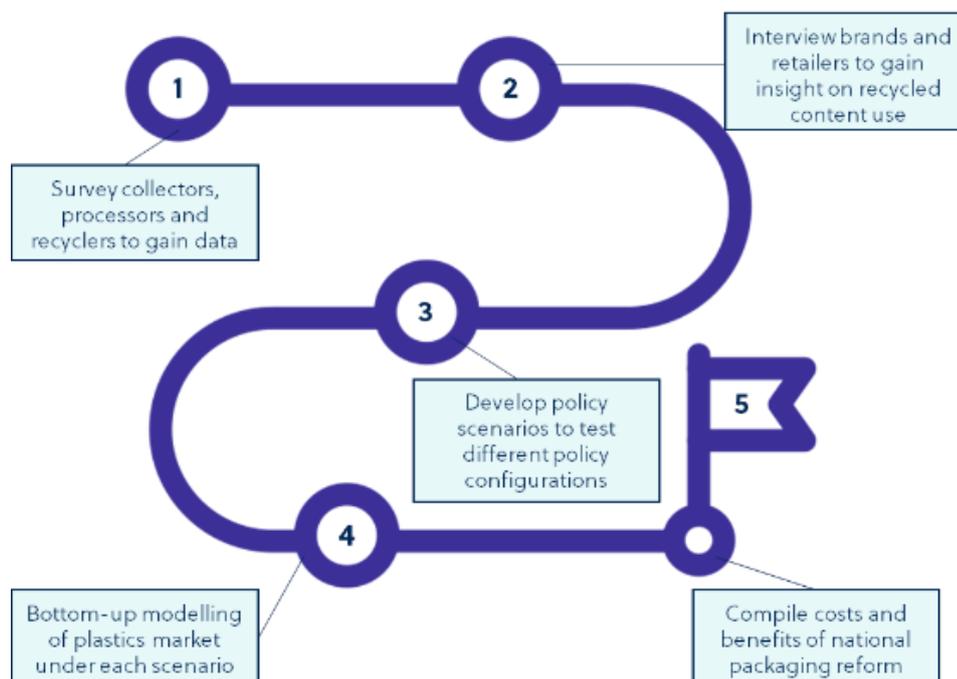
Within this context, Rennie Advisory, the Australian Council of Recycling (ACOR) and the Australian Packaging Covenant Organisation (APCO) have partnered for the Advancing Plastic Recycling in Australia (APRA) project. The goal of the project is to develop an evidence base to support National Packaging Reform which unlocks the use of domestic plastic recyclate. As such, the work is focused on plastic packaging but recognises that plastic packaging exists in the broader context of plastic markets, the recycling industry and other packaging types.

The objectives of the work are to:

- **Quantify the challenge:** Model supply-demand imbalances, cost structures, and environmental impact for domestic and imported plastics,
- **Illustrate the cost of failing to act:** develop scenarios articulating the environmental and economic effects of inaction,
- **Demonstrate benefits of reform:** Provide the robust economic, environmental, social, and sovereign capability case for the implementation of reform, identifying the optimal approach for plastic packaging waste,
- **Identify actionable policy options:** Develop practical EPR eco-modulated fee mechanisms, quick wins, and regulatory pathways for government intervention.

The approach followed for the project is outlined in Figure 1-1.

Figure 1-1: Approach to evidence base development



1.2 Report structure

The report outlines:

- **Plastics in Australia:** Providing an overview of the global market context, plastics flows in Australia today and into the future and environmental harm.
- **Plastic recycling in Australia:** Detailing the role of plastic recycling in Australia, current industry and planned investment, insights from the recycling industry survey, cost disadvantage and the utilisation challenge if Australia fails to support recycle markets.
- **Opportunities for reform in recycling and plastic packaging:** Outlining Australia's ambitions and lack of progress, key reform models, industry support for clear national reform, lessons learnt from overseas and the critical need to incorporate brand and retailer perspectives.
- **Impacts of reform options:** Presenting the modelling, scenarios analysed, results and their implications for policy design.
- **Policy Directions:** Sets out industry priorities for Government action, key features of an effective approach, how this approach mitigates industry's risks, roles and responsibilities and alignment with existing government initiatives.



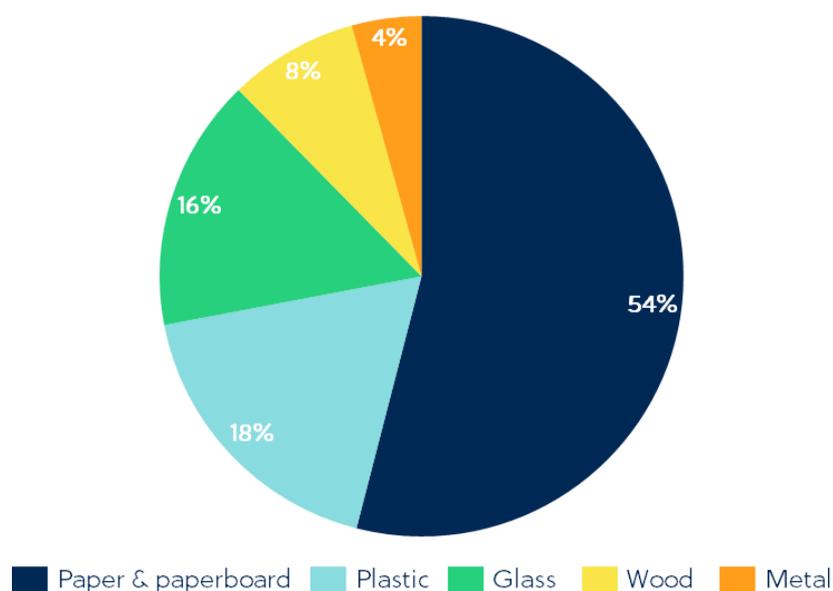
2 Plastic and Packaging in Australia

2.1 Plastic packaging use in Australia today

Packaging serves a critical role in the transport, protection and storage of products across the Australian economy. Packaging in Australia spans a range of materials (e.g. glass, paperboard, metals, wood, and plastics), each selected for specific properties such as strength, weight, barrier and thermal performance, sustainability and recyclability. In Australia, plastic packaging accounted for around 18% of all packaging placed on the market by weight in 2022-23 (Figure 2-1).⁶

Plastic packaging remains essential in food, beverage, and pharmaceutical supply chains due to its lightweight nature, durability, versatility, and cost-effectiveness. It is used in both rigid formats (e.g. bottles and containers) and flexible formats (e.g. wraps and films), across retail and industrial applications. Its role in maintaining product integrity, hygiene, and shelf life will continue to make it the preferred choice for manufacturers and retailers.^{7,8}

Figure 2-1: Australia's packaging consumption in 2022-23⁹



Materials such as paper, cardboard, glass and metals frequently struggle to meet the technical specifications required for plastic packaging applications. In applications demanding moisture and oxygen barriers, strength, and transparency, many alternatives must be multilayered or coated, often still incorporating plastic elements. This contaminates fibre or organics streams and impedes recyclability.^{10,11}

Furthermore, substitutes like glass, metal, and wood are significantly heavier than plastic, increasing transport-related emissions and costs. While these materials may offer benefits in perceived sustainability or recyclability, life-cycle assessments show that their higher embodied energy and weight can offset those gains.¹²

⁶ APCO, [Australian Packaging Consumption & Recovery Data 2022–23](#) (2024)

⁷ Farrell et al., [The function and properties of common food packaging materials and their suitability for reusable packaging: The transition from a linear to circular economy](#) (2024)

⁸ APCO, [Flexible Plastic Consumption and Recovery 2022-2023 Factsheet](#), (2024)

⁹ DCCEEW, [National Waste and Resource Recovery Report](#) (2024)

¹⁰ Tamizhdurai, P. et al., [A state-of-the-art review of multilayer packaging recycling: Challenges, alternatives, and outlook](#) (2024)

¹¹ APCO, [Quickstart Guide – Designing for Recyclability: Fibre-Based Packaging](#), (2025)

¹² ECD, [Global Plastics Outlook – Policy Scenarios to 2060](#), (2022)

2.2 Australia's position in the global plastic supply chain

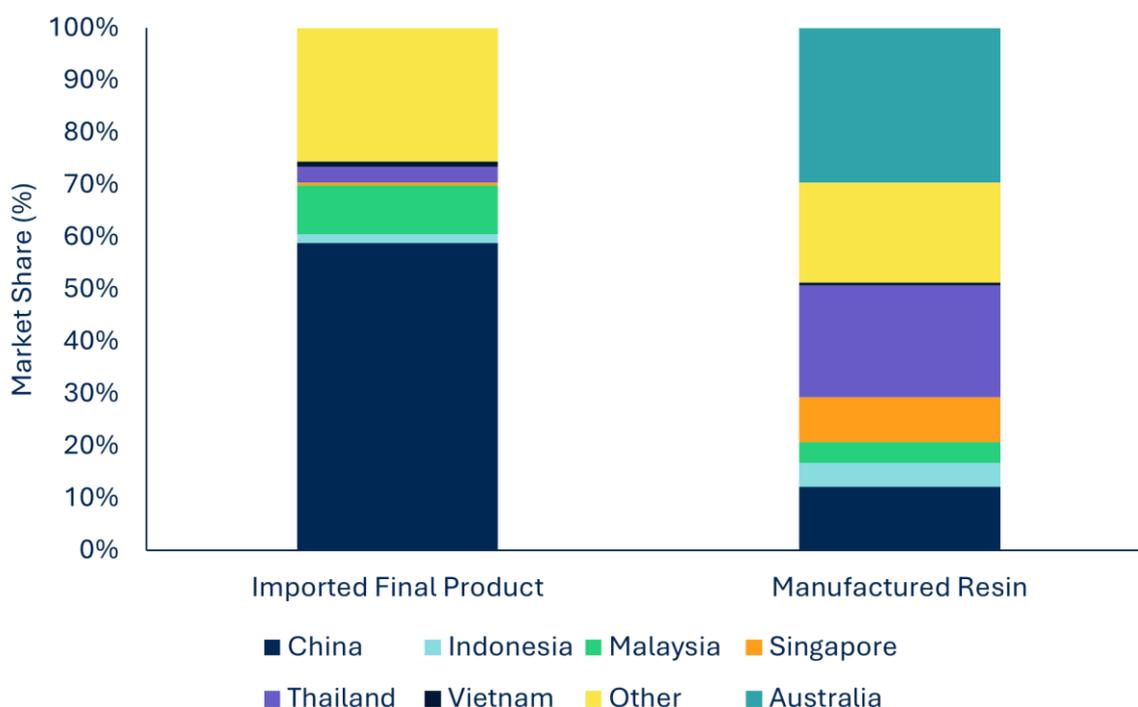
Around 90% of plastics sold in Australia are imported. This includes around 2.8 million tonnes of imported finished products and around 1.1 million tonnes of resins imported for domestic manufacturing, reflecting a strong reliance on offshore supply chains.¹³

Imported finished products are dominated by China, which supplies nearly 59% of Australia's plastic goods. Other major contributors include Malaysia, Thailand, Indonesia, Vietnam, and Singapore.

Virgin resins are primarily sourced from large petrochemical refineries across Asia. These refineries benefit from economies of scale, producing large volumes of virgin plastic resin cheaply. The lack of economies of scale in Australia mean virgin plastic production is more expensive than international alternatives. Additionally, local manufacturers face higher energy, labour, regulatory and land costs, which result in premium pricing and make it difficult to compete with imports.¹⁴

These Asian refineries form part of a regional trade network that reinforces Australia's dependence on upstream processing capacity located offshore.

Figure 2-2: Tracing the origins of Australia's plastic supply¹⁵



All but one domestic plastic manufacturing facility for virgin plastic resins has closed in Australia. Over the past 15 years, multiple local resin production sites have shut down or ceased basic materials manufacturing, including Genos, leaving only Viva Energy's polypropylene plant.¹⁶ As a result, Australia's plastic lifecycle remains overwhelmingly linear, with imported plastics dominating supply, and disposal as the default end-of-life pathway.¹⁷

The mix of these international and domestic sources is highlighted in Figure 2-2, above. The relatively restricted role of Australian suppliers can be further seen in Figure 2-3, below, where Australia accounts for a minority share of input into the total volume of manufactured

¹³ DCCEEW, [Australian Plastics Flows and Fates Reporting](#) (2025);

¹⁴ Australian Strategic Policy Institute [Helium, polyethylene and more: Australia loses basic-materials industries](#) (2024)

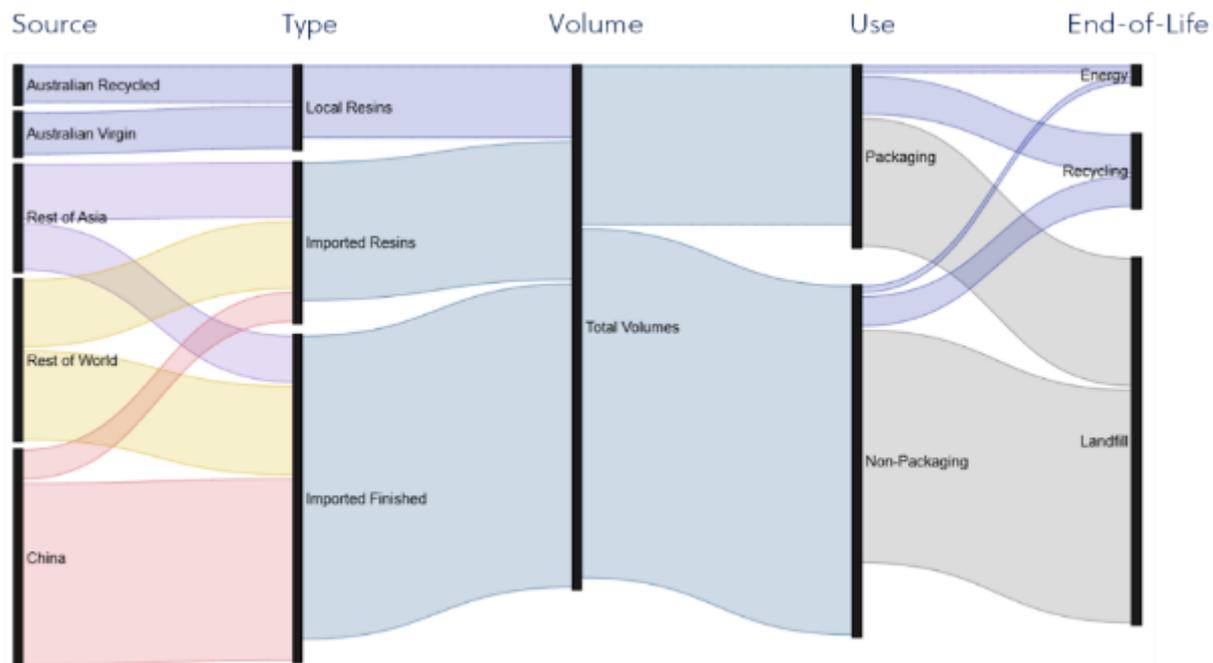
¹⁵ Developed from World Integrated Traded Solutions weighted-average import pricing across virgin resins.

¹⁶ AFR, [Gas costs could sink more manufacturers after Genos collapse](#), (2024)

¹⁷ DCCEEW, [Australian Plastics Flows and Fates Reporting](#) (2025)

resins. All Australian manufactured resins must then be further processed, domestically, into final products.

Figure 2-3: Australian plastic sources and fates¹⁸



¹⁸ Developed from World Integrated Trade Solution databases for primary plastics and finished goods. Market share determined based upon value of product sold into the Australian market.

2.3 The global market context

Understanding Australia's domestic recycling challenge requires an understanding of the global market forces that have fundamentally altered the economics of polymer production over the past five years. Virgin plastic production is increasingly becoming a core profit centre for some of the world's largest and most well-capitalised companies. The combination of Chinese coal-to-chemicals expansion and oil major investment is creating structural oversupply that is suppressing virgin plastic prices globally.

China's coal-to-chemicals sector has rapidly expanded, converting China's abundant coal resources into chemicals used to make plastics, rather than relying on imported oil or gas. Between 2019 and 2024, China reportedly added petrochemical capacity equivalent to the combined capacity of Europe, Japan, and Korea.¹⁹ Coal consumption in chemicals increased 46.5% year-on-year in February 2024, with 75 new coal-to-chemical initiatives across 15 provinces potentially consuming 1 billion tonnes of coal annually.²⁰

This expansion has repositioned China from the world's largest polymer importer to a significant exporter, placing sustained downward pressure on global virgin plastic prices. According to the International Energy Agency (IEA), shipments from the Middle East and Asia declined approximately 30% in the first nine months of 2023 compared to 2019 levels as Chinese production displaced imports and began competing in export markets.

Major oil companies are also fundamentally repositioning their businesses as petrochemicals become the primary driver of oil demand growth. The IEA projects petrochemicals will account for just under 50% of oil demand growth to 2050, making plastics production central to the long-term strategy of fossil fuel producers.²¹

This strategic pivot is already visible in corporate results. ExxonMobil's 2024 Chemical Products earnings reached US\$2.6 billion, an increase of US\$940 million compared to 2023. High-value chemical products, such as plastics, are projected to contribute significantly to 2030 earnings potential. Similar strategic repositioning is occurring across major producers globally.²²

For Australian recyclers, this means competing not just against cheaper labour and energy costs overseas, but against a global industry undergoing fundamental capacity expansion.

Critically, this price suppression comes with significant environmental costs that are not reflected in market prices. Coal-based polymer production generates approximately twice the CO₂ emissions of petrochemical production.²³ ²⁴ This creates a perverse outcome as the cheapest virgin plastic available to Australian manufacturers often carries the highest environmental footprint, while domestically recycled content cannot compete on price.

These global dynamics mean that supply-side investment in Australian recycling infrastructure alone cannot create viable markets for domestic recycle. Without demand-side intervention to close the cost gap for domestic recycled plastic, Australian recyclers will continue to be undercut by global oversupply of virgin plastic produced with externalised environmental costs.

¹⁹ International Energy Agency, "China's petrochemical surge is driving global oil demand growth," IEA Commentary (2023), <https://www.iea.org/commentaries/china-s-petrochemical-surge-is-driving-global-oil-demand-growth>

²⁰ Qiu, C. and Schäpe, B., "Analysis: China's coal-to-chemicals growth risks climate goals," Centre for Research on Energy and Clean Air / Dialogue Earth (December 2024), <https://dialogue.earth/en/business/analysis-chinas-coal-to-chemicals-growth-risks-climate-goals/>

²¹ International Energy Agency, "The Future of Petrochemicals: Towards more sustainable plastics and fertilisers," IEA Report (2018), <https://www.iea.org/reports/the-future-of-petrochemicals>

²² Exxon Mobil Corporation, "ExxonMobil announces 2024 results," Press Release (January 2025),

https://corporate.exxonmobil.com/news/news-releases/2025/0131_exxonmobil-announces-2024-results

²³ HSBC Global Research, cited in ICIS, "China monthly: Coal-to-olefins economics are a major challenge" (April 2013), <https://www.icis.com/explore/resources/news/2013/04/05/9656098/china-monthly-coal-to-olefins-economics-are-a-major-challenge/>

²⁴ Cabernard, L. et al., "Growing environmental footprint of plastics driven by coal combustion," Nature Sustainability (December 2021), <https://www.nature.com/articles/s41893-021-00807-2>

Case Study 2-1: Europe's recycling infrastructure collapses despite ambitious regulatory targets

In November 2025, twelve major companies spanning Europe's plastics value chain issued an urgent warning that the continent's recycled plastics industry was on the verge of collapse. The group included LyondellBasell, Eastman, and waste management giants Remondis and Suez. Despite being recognised as strategically vital for achieving EU sustainability goals, European recyclers face unprecedented plant closures driven by what the industry described as "unfair competition and a regulatory framework still under development."

According to Plastics Recyclers Europe, nearly one million tonnes of recycling capacity had been lost across just three years from 2023 to 2025. Facility closures in 2024 doubled compared to 2023, with preliminary 2025 data showing a further 50% increase. The Netherlands lost seven plastic recycling plants in 2024 alone. These losses were focussed on materials targeted for increased recycling under the forthcoming Packaging and Packaging Waste Regulation. The Netherlands and United Kingdom together represented half of all capacity lost.

The industry had invested €5 billion between 2020 and 2023 specifically to meet mandatory targets. Yet recyclers found themselves squeezed between high European energy costs, falling demand, and what they characterised as a flood of cheap, unregulated imports from outside the region. At the same time, EU plastic waste exports to countries outside the OECD surged in 2024 compared to 2022. This revealed a fundamental contradiction with Europe exporting more waste while its domestic recycling infrastructure contracted.

The regulatory framework compounded these market pressures. The EU introduced a Plastic Levy in 2021, requiring member states to contribute €0.80 per kilogram of non-recycled plastic packaging waste which generates approximately €7 billion annually for the EU budget. However, these funds went to general budget purposes rather than supporting the recycling industry. Meanwhile, the detailed secondary legislation needed to operationalise the Packaging and Packaging Waste Regulation remained under development, leaving investors unable to commit capital without clarity on future market rules.

The European industry has developed a three-pillar response proposal. First, they called for mandatory recycled content targets with explicit geographic restrictions, requiring recycled content to be sourced from Europe. They warned that, without this, targets would simply drive additional imports and finance foreign infrastructure development. France had already moved in this direction, introducing financial rewards from January 2026 of €450 to €1,000 per tonne for manufacturers incorporating locally produced recycled plastics. Second, the industry demanded protection against fraud in recycled content claims through strengthened verification mechanisms and potentially specific customs codes for circular products. Third, the industry proposed reallocating EU Plastic Levy revenues specifically to support European recycling infrastructure rather than general budget purposes.

One industry representative summarised: "Without urgent intervention, Europe's ambitious goal to double recycling capacity by 2030 will remain out of reach, future investments in Europe will dry up, vital jobs within the entire value chain will be lost and announced projects risk never materialising."

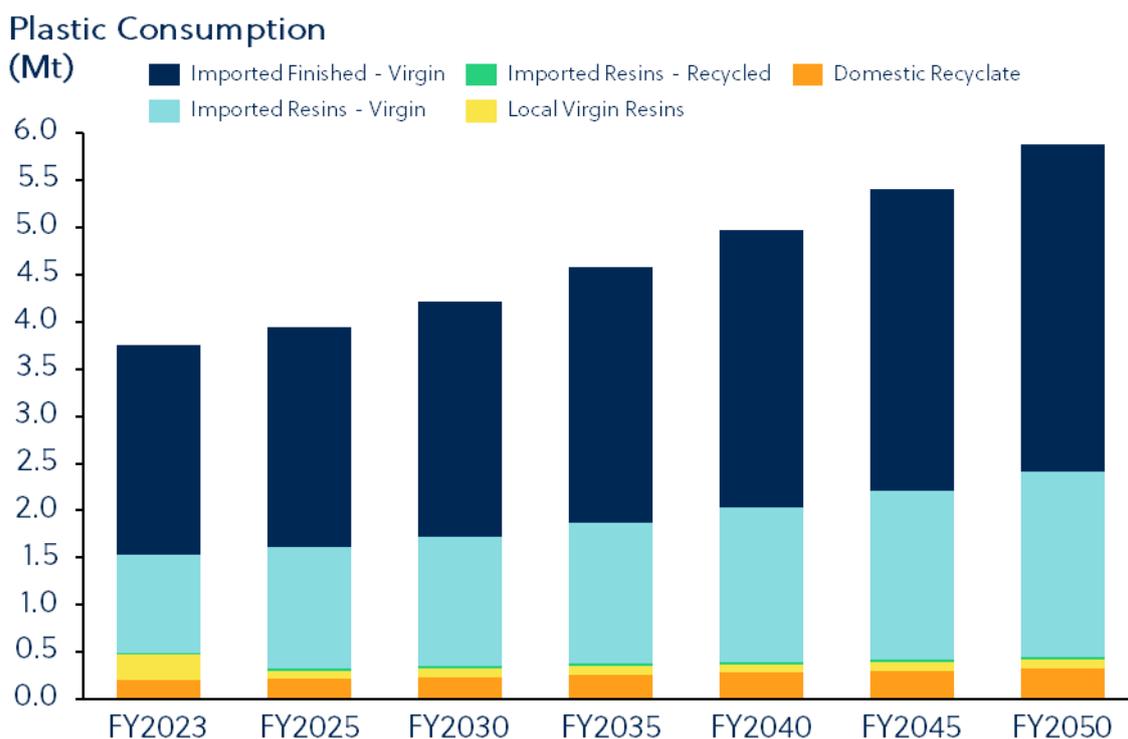
2.4 Plastic packaging use in Australia in the future

In this work, modelling of the Australian plastic system under a baseline scenario has been undertaken to assess what happens if Australia fails to act on national packaging reform. In the baseline scenario, Australia continues to be a prime market for cheap fossil fuel-based virgin resin (Figure 2-4). Without any driving force for recovery and recycling, Australia remains reliant upon China and other Asian nations for supply, reflecting their cost advantage in virgin resins.

Under the baseline projection:

- End-of-use plastic recycling remains low, with the majority of plastic remaining in a linear system, ending up in disposal.
- Recycling remains stagnant as a share of end-of-use plastic, reflecting the lack of viable markets for the product (Figure 2-4).
- Disposal increases, in line with expansion in waste-to-energy capacity within the Australian economy and growing plastic packaging flows to landfill. However, this continues the linear system of supporting fossil fuel-based plastic entering the Australian market and doesn't enable more sophisticated manufacturing capability.
- Processed recovered product sent for export is also assumed to continue to grow modestly but makes up a small portion of the market.

Figure 2-4: Australia's plastic supply mix in the baseline scenario



2.5 Environmental harm from current use of plastic

Virgin resin prices today ignore the significant externalities created in their use, with the harm borne by Australian ecosystems and communities. Plastic packaging waste in Australia causes three distinct categories of environmental harm, each with significant and growing impacts on Australian ecosystems and communities.^{25,26,27}

- **Ecosystem pollution**
Each year, 130,000 tonnes of plastic leaks into Australia's marine environment. This pollution has significant effects on marine life, with half of all seabirds and turtles now found to have plastic in their stomachs. This harm extends beyond wildlife as plastic pollution costs Australia's tourism and fishing industries through damage to marine environments, including the Great Barrier Reef.^{28 29 30}
- **Climate impact from plastic production**
Emissions from Australian plastics consumption amount to the equivalent of over 4 million cars each year. Manufacturing virgin fossil-fuel-based plastics produces more than double the emissions of producing new plastics through mechanical recycling. If current trends continue, the cost of emissions from Australia's plastic consumption will more than quadruple by 2050, the year Australia has legislated to reach net-zero emissions.³¹
- **Landfill capacity crisis**
Currently, the vast majority of Australia's annual plastic waste goes to landfill, where it persists almost indefinitely, permanently consuming finite space. Unlike organic waste, which decomposes, plastic occupies landfill capacity essentially forever.³² This creates an acute crisis as every Australian capital city now faces landfill strain or failure. As an example, Greater Sydney's current landfill capacity is projected to reach capacity by 2030. Running out of capacity could increase household waste management costs as waste must either be transported to regional areas at high expense or new facilities must be constructed.³³

These environmental harms translate to significant costs that grow exponentially over time. Following standard approaches to pricing these externalities (such as Treasury modelling for Australia's Net Zero Plan), the combined cost of this environmental harm grows from approximately \$2 billion in FY2025 to over \$5 billion by 2050, in real terms. Cumulatively, this represents an environmental harm cost of \$32 billion to 2050 in real terms. Figure 2-5 shows this trajectory. The externality cost remains around AU\$500 per tonne between 2025 and 2035 but grows to over AU\$900/t by 2050 as the cost of carbon emissions increases.

This significant cost burden aligns with public opinion on required action. An overwhelming 78% of Australians are concerned about plastic use in the country, with plastic pollution in oceans identified as the number one environmental concern in surveys of Australian households.³⁴ Additionally, 78% of Australians want all new plastic products to contain recycled plastic, and 80% are concerned about climate change, with 66% agreeing Australia should be doing more to address it.^{35 36}

²⁵ Minderoo Foundation, [The Price of Plastic Pollution – Annex 1](#), (2022)

²⁶ ACOR, [Reform of Packaging Regulation: Consultation Paper](#) (2024)

²⁷ The Australia Institute, [Plastic Waste in Australia: And the recycling greenwash](#) (2024)

²⁸ Clean Up, [Litter Report FY24](#) (2024)

²⁹ NSW EPA, [From litter to legacy: Turning the tide on plastic waste – This World Environment Day](#), (2025)

³⁰ Australian Marine Conservation Society, [Cutting Plastic Pollution at the Source](#), (2025)

³¹ Inside Waste, [Carbon emissions of Australian plastics to 2050](#), (2023)

³² DCCEEW, [Resource recovery and waste materials analysis](#), (2024)

³³ Australian Museum, [Australia's looming landfill crisis is fixable but ...](#), (2025)

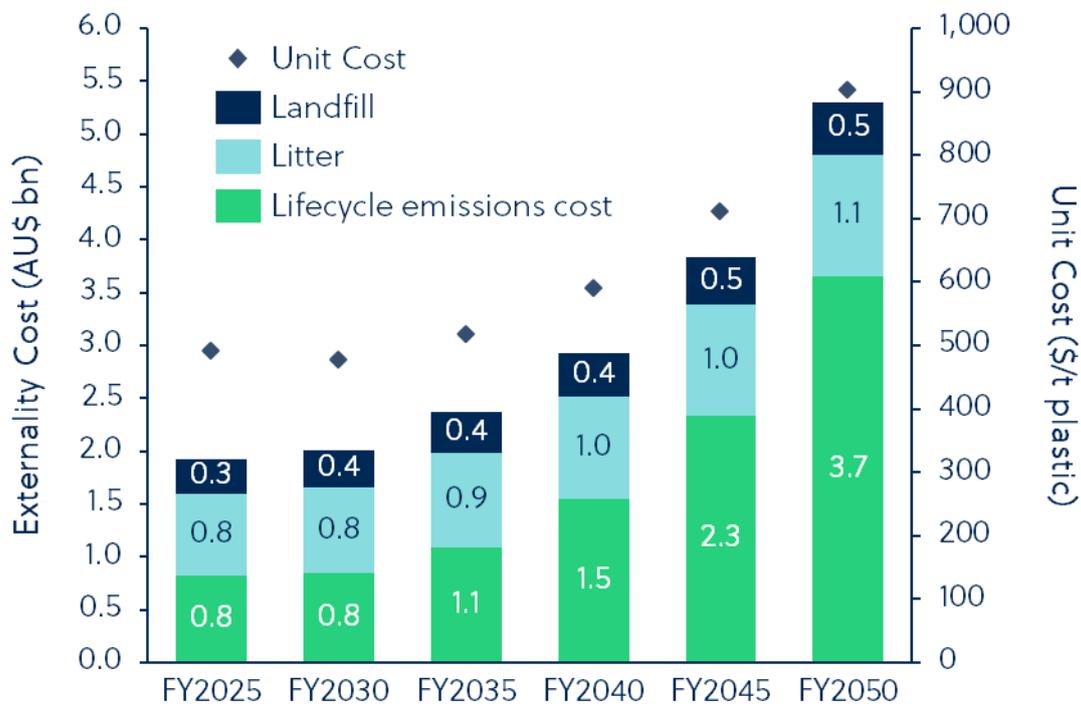
³⁴ YouGov, [78% of Australians are concerned about the use of plastic in the nation](#), (2024)

³⁵ WWF, [New Research: Eight In 10 Australians Want Manufacturers And Retailers To Be Responsible For Recycling Plastic Packaging](#), (2022)

³⁶ IPSOS, [8 in 10 Australians are concerned about climate change with a clear public expectation of Government action](#), (2022)

Ensuring these societal costs are reflected in the cost of plastic would help to reduce environmental harm. This would support domestic recycling capacity, reduce leakage into the environment, and help create jobs in Australia's circular economy.^{37,38}

Figure 2-5: The costs we ignore at the grocery store—the externality costs from plastic waste environmental impacts^{39,40}



³⁷ ACOR, [The Economic Contribution of the Australian Recycling Industry](#), (2023)

³⁸ CSIRO, [Local efforts have cut plastic waste on Australia's beaches by almost 30% in 6 years](#), (2022)

³⁹ Developed based upon cradle-to-grave lifecycle emissions, litter profile and landfill costs using the baseline scenario from the APRA work. Emissions: international emissions from [Lawrence Berkley National Laboratory](#), domestic emissions for polypropylene adapted according to Viva Energy emissions intensity, domestic emissions for recycled content from confidential data provided by recyclers during the APRA stakeholder survey, emissions from transport from [Global Logistical Emissions Council Framework](#), emissions for end-of-life from [Blue Environment](#) and emissions costs from [Treasury Modelling for the Net Zero Plan](#). Litter: volume estimated from [DCCEE](#) and cost from [Microplastics pollution: Economic loss and actions needed](#). Landfill: costs from [DCCEE](#). Full references and methodology to be available in Appendices.

⁴⁰ Note: the combustion of plastic within waste-to-energy facilities could further elevate the environmental costs of inaction. However, this has been excluded due to uncertainty over investment over coming years. Additionally, growing real increases in waste levies over time could see the EoL waste cost similarly rise.



3 Plastic recycling in Australia

3.1 What is plastic recycling?

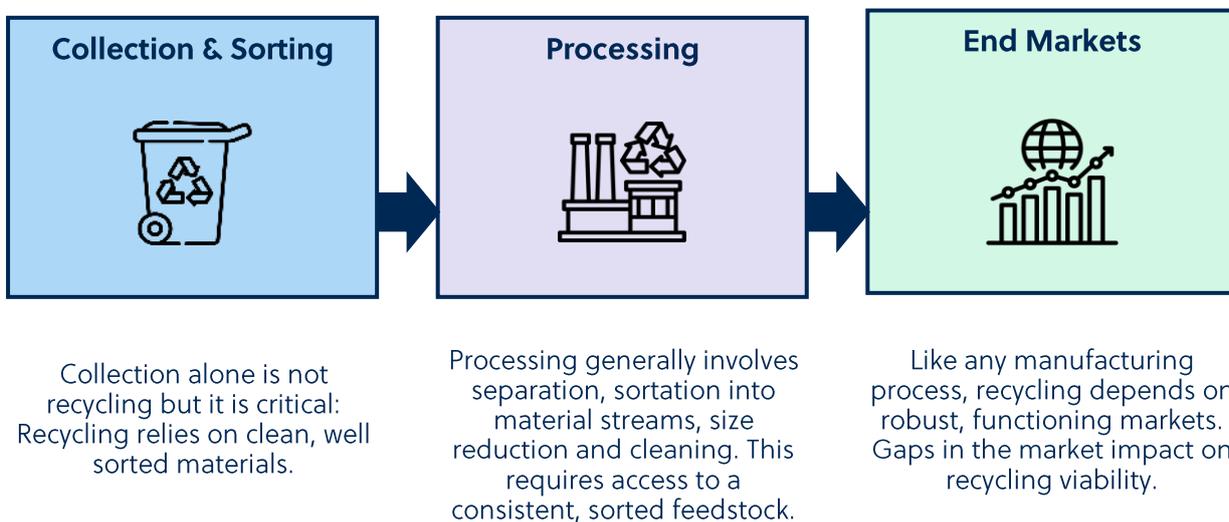
Plastic recycling is a remanufacturing supply chain which consists of three key elements: collection and sorting, processing and end markets (Figure 3-1). All three of these elements must be scaled and economically viable for recycling to occur.

Plastic packaging recycling relies on collection systems such as kerbside bins and container deposit scheme (CDS) drop-off points which gather plastics from households and businesses. Kerbside materials are sent to material recovery facilities (MRFs), where they are mechanically sorted using screens, air classifiers and optical sorters to separate plastics by type and form before they are reprocessed. Collection and sorting alone is not recycling but it is critical: recycling relies on clean, well-sorted materials to operate.

Once plastics are sorted, they are sent to specialised processing facilities where they are shredded or ground into flakes, cleaned, melted, and re-pelletised through mechanical recycling, or alternatively broken down into chemical feedstocks through chemical or thermal processes (Explainer 3-1). These recycled outputs (e.g. plastic pellets, monomers, or oils) are then supplied to manufacturers to produce new plastic products or packaging. Processing infrastructure requires a consistent, sorted feedstock.

Like any manufacturing process, recycling depends on viable, functioning markets. End markets are essential for plastic recycling because they ensure that collected and processed plastics have a viable economic use. Without viable end markets, the remanufacturing value chain comes to a standstill, leading to lower investment, reduced recycling capacity, and ultimately more plastic ending up in landfill or waste-to-energy.

Figure 3-1: Recycling is a remanufacturing supply chain comprising three key elements which must all be economically viable



Explainer 3-1: Types of plastic packaging and the implications for recycling

Plastic packaging is commonly classified into two categories: **flexible** and **rigid** plastics.

- **Flexibles:** plastic packaging which can be bent, rolled, folded or easily changed in shape without fracturing or losing integrity. Commonly used in bags, outer wrapping for dry, fresh and frozen food and non-food packaging pouches and wrappers. Often produced from LDPE, HDPE, or PP and can have multi-layer structures adding complexity to recycling and reprocessing
- **Rigids:** plastic packaging in the form of solid, inflexible shapes that retain their form under normal use, even when empty. Commonly used for beverage, food, laundry and personal care packaging and often produced from PET, HDPE or PP. Typically produced from a single a polymer providing a level of simplicity to recycling and reprocessing.

This distinction has important implications for the recycling technologies that can be applied. Two main pathways exist: **mechanical recycling** and **chemical (advanced) recycling**.

- **Mechanical recycling:** involves physically reprocessing plastic waste without altering its chemical structure. Materials are sorted, cleaned, shredded, melted and remoulded into new products. This pathway is most effective for clean, mono-material (single polymer) plastics.
- **Chemical (advanced) recycling:** breaks plastic polymers down into their chemical building blocks or hydrocarbon feedstocks, which can then be used to manufacture virgin-equivalent plastics or fuels. These technologies are mainly suited to specific plastic types that are difficult to recycle mechanically (such as contaminated, multi-layer, or degraded plastics) and usually require sorted and pre-processed feedstock rather than mixed plastics.

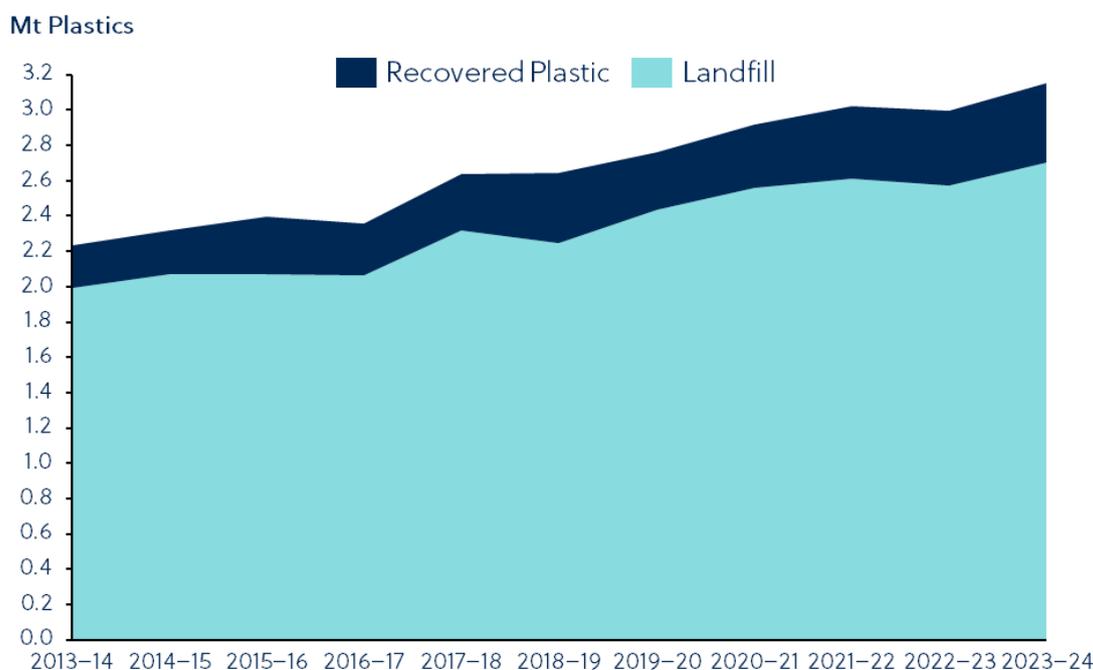
The inherent characteristics of rigid plastics make them more conducive to mechanical recycling: they are typically mono-material, easier to sort, less prone to contamination, and retain polymer quality through processing. In contrast, flexible plastics are more challenging to process mechanically. They tend to tangle in sorting equipment, are difficult to accurately identify with optical sensors, and often carry higher contamination due to their thin form and complex structures. As a result, many flexible formats are more suited to chemical recycling.

Both mechanical and chemical recycling remain more expensive than producing virgin resin. Chemical recycling is still at an early stage of commercial maturity and carries structurally higher costs relative to mechanical processes. Without developing robust end markets for outputs from both mechanical and chemical recycling, Australia's plastic recovery rates are likely to remain low.

3.2 The current state of Australia’s plastic recycling industry

The higher cost of local recycled resin compared to imported virgin resin has seen limited market demand for domestically recycled polymers which, in turn, has constrained the growth of domestic reprocessing.⁴¹ This has seen facilities operate under capacity, with a large portion of plastic packaging waste disposed of to landfill (Figure 3-2).

Figure 3-2: Post consumer plastic destination over time⁴²



Today Australia recovers just 19% of plastic packaging waste, with 28% of rigids and 9% of flexibles recovered.^{43,44,45} The use of recycled content is worse, with post-consumer recycled content going into new packaging of just 16% for rigids and 1% for flexibles, including imported material.^{46,47}

Australia’s limited recycling performance reflects ongoing challenges across the supply chain. These include inadequate sorting infrastructure, contamination, limited reprocessing capacity, especially for flexible plastics, and weak market demand for domestically recycled resins. Despite investment in infrastructure, the lack of viable markets continues to constrain the development of domestic recycling.⁴⁸

⁴¹ Equilibrium, [Australian Recycling Infrastructure, Capacity and Readiness \(Plastic and Paper\)](#), (2022)

⁴² DCCEEW, [Australian Plastics Flows and Fates Reporting](#) (2025)

⁴³ APCO, [Australian Packaging Consumption & Recovery Data 2022-23](#) (2024)

⁴⁴ APCO, [Rigid Plastic Consumption and Recovery](#) (2025)

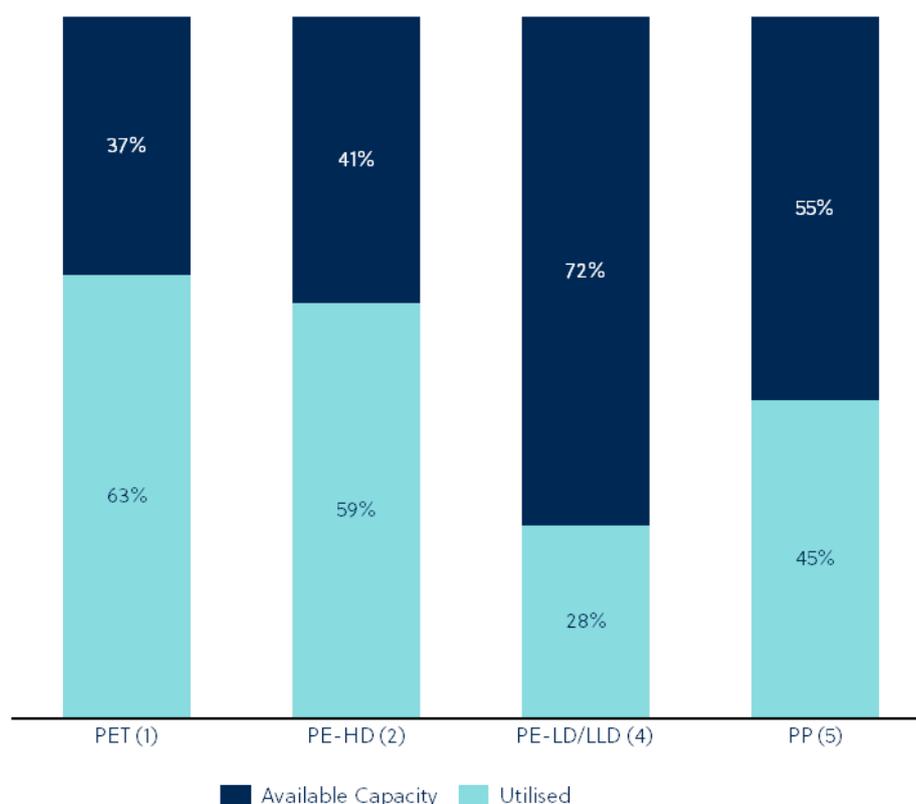
⁴⁵ APCO, [Flexible Plastic Consumption and Recovery](#) (2025)

⁴⁶ APCO, [Rigid Plastic Consumption and Recovery](#) (2025)

⁴⁷ APCO, [Flexible Plastic Consumption and Recovery](#) (2025)

⁴⁸ Equilibrium, [Australian Recycling Infrastructure, Capacity and Readiness \(Plastic and Paper\)](#).

Figure 3-3: Australian recycling infrastructure utilisation rates by plastic type (2023-24)⁴⁹



3.3 Packaging policy and co-regulatory arrangements

The National Environment Protection Council Act 1994 and the National Environment Protection (Used Packaging Materials) Measure 2011 (NEPM) establish a co-regulatory product stewardship framework for managing the environmental impacts of packaging in Australia. The framework applies to all packaging, not just plastic packaging.

Under this framework, Brand Owners with an annual turnover of greater than \$5 million have statutory obligations for their packaging. These obligations can be met by either:

- Becoming a signatory to the Australian Packaging Covenant (The Covenant), and meeting design, reporting and performance requirements.
- Being part of an industry arrangement that participating jurisdictions agree produces equivalent outcomes to the Covenant, or
- Complying with the laws, policies or other arrangements that implement the NEPM in each state and territory where brand owner products are distributed and sold.

In 2021, there was an independent review of the co-regulatory arrangement under the NEPM. The review found that key elements of the NEPM have not been implemented or operationalised effectively. They found this created a lack of clarity for brand owners, enabled free-riders and reduced confidence in the scheme.⁵⁰

⁴⁹ DCCEEW, [Australian Plastics Flows and Fates Reporting](#) (2025)

⁵⁰ DCCEEW, [Review of the co-regulatory arrangement under the National Environment Protection \(Used Packaging Materials\) Measure 2011](#) (2021)

3.4 Supply-side investment: the Recycling Modernisation Fund

To increase Australia's recycling capacity, the government has provided supply-side support for sorting, processing and remanufacturing. The Recycling Modernisation Fund (RMF) is contributing over AU\$250 million in funding across the supply chain to expand capacity for plastic, glass, tyres, paper and cardboard.⁵¹ In doing so, the RMF is seeking to support waste export bans, build and modernise Australian recycling capacity and drive a circular economy.

Supply-side support has been effective in bringing new capacity online and developing a pipeline of projects across the plastic recycling supply chain. To date, the RMF has committed around AU\$137 million to 62 completed and announced projects, which could expand Australia's plastic recycling capacity by 350 kilotonnes per annum by FY26-27.⁵²

Recycling processing capacity is only one side of the equation: recyclers also need functioning end markets for their product. The RMF has enabled project developers to invest in infrastructure to improve recovery outcomes for end-of-use plastic within Australia. However, as plastic recycling requires viable markets for the recyclate, and this material cannot compete with imported virgin and recycled resins, facilities won't process more plastic than they can sell. Without such markets, infrastructure remains underutilised, limiting growth in recycling capacity.

3.5 Waste export bans and the shift to domestic processing

Most plastic entering or made in Australia must now be processed domestically

The introduction of the Recycling and Waste Reduction (RAWR) Act (2020) and China's National Sword policy banning waste imports mean that unprocessed end-of-use plastic cannot be exported out of Australia and must be dealt with here through recycling, landfill or energy-from-waste.

China's "National Sword" policy, introduced in 2018, restricted the import of post-consumer waste and reshaped global recycling markets.⁵³ This, along with similar restrictions from other Asian countries such as Thailand, Malaysia, and Indonesia, significantly reduced Australia's ability to export unprocessed plastic packaging waste. Today, many of Australia's trading partners will no longer accept our exported plastic packaging waste, forcing a shift toward domestic remanufacture of plastic waste.

This is intensified by Australia's waste export ban through the RAWR Act. Together, the restricted markets for exported plastic waste and the Australian ban on exporting, combined with the RMF funding, spurred investment in domestic plastic packaging recycling without creating demand for the recycled product. Since the RAWR Act, the export of unprocessed plastic packaging waste has been prohibited, except where a ministerial exemption applies. Only reprocessed materials, such as flakes and pellets, can be exported. This policy has delivered investment in domestic plastic packaging supply chains, however, does not create a market for domestic recycled plastic resins.

3.6 The plastic recycling industry faces significant cost pressures

Australia's recycled plastics market has lacked consistent data on cost structures, pricing, and policy impacts, creating barriers to effective reform. To address these gaps, a targeted survey was developed to gather insights from key stakeholders across the recycling supply chain.

The survey engaged participants from across collection, processing and remanufacturing to build a comprehensive picture of industry challenges. Responses were collected on:

⁵¹ DCCEEW, [Investing in Australia's waste and recycling infrastructure](#) (2025)

⁵² DCCEEW, [Investing in Australia's waste and recycling infrastructure](#) (2025)

⁵³ The Australia Institute, [Plastic Waste in Australia: And the recycling greenwash](#) (2024)

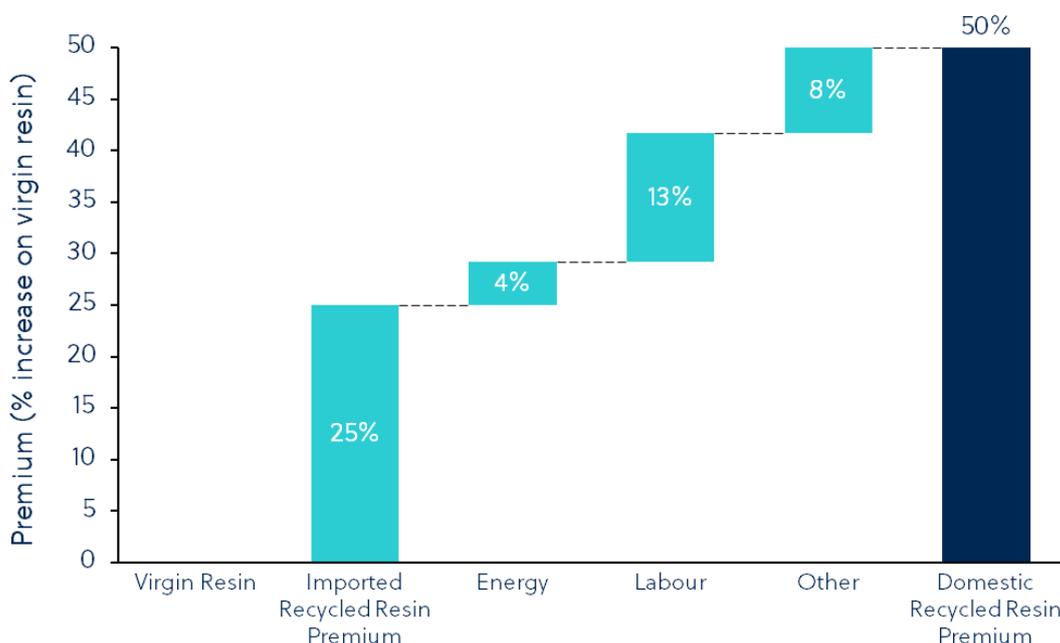
- Production volumes,
- Planned capacity and investment,
- Cost structures and economics (including premiums relative to imported product),
- Market dynamics and competitive position (including imported virgin resin and imported recycle prices),
- Barriers to recycled content adoption, and
- Perspectives on policy (focused on a mandated EPR scheme and recycled content thresholds).

Insights from the survey have informed the design of policy mechanisms assessed within this work that support the use of domestic recycled content. By capturing real-world data on cost premiums, supply constraints, and technical limitations, the survey has helped to ensure that proposed reforms are grounded in industry realities and tailored to Australia’s unique market conditions.

Domestic rigid plastic recyclers face a structural cost disadvantage relative to recycled imports and virgin resins

The survey highlighted that food contact resins produced by Australian rigid plastic recyclers incur a cost premium of up to 50% on the virgin resin price (Figure 3-4).⁵⁴ This fluctuates with variances in the underlying oil price and input costs for recyclers. But the industry insight captures the challenging operating environment arising from steep energy, labour, logistics and regulatory costs. Notably, the Australian cost premium is approximately double the premium for imported recycled resin, reflecting differences in labour standards, energy costs and other burdens between markets.

Figure 3-4: Structural domestic recycle cost disadvantage for rigid plastics (food-grade PET and HDPE)⁵⁵



Recycled flexible plastics face even higher premiums due to greater collection, sorting and recycling challenges

Flexibles incur a premium almost double the import gap premium for rigid. Furthermore, closing the cost gap to achieve food-grade quality requires chemical recycling technologies

⁵⁴ This premium refers to food contact resin from mechanically recycled rigid plastic. Industrial (non-food grade) can be at parity or lower. Chemically recycled food contact resin from flexible plastics will be at a greater premium.

⁵⁵ Developed from stakeholder engagement

which are commercially immature and incur a significant cost premium beyond mechanical recycling methods.

Participants identified that National Packaging Reform must be tailored toward closing this cost gap to influence brand, retailer and packaging manufacturer decision making. Failure to do this will see imported virgin and recycled products preferenced over domestic material.

Case Study 3-1: Why soft plastics chemical recycling requires policy certainty before investment

Stakeholder consultations consistently identified soft plastics as the major gap in Australia's recycling system. Unlike rigid PET and HDPE bottles, flexible packaging such as bread bags, snack wrappers and cling film cannot be mechanically recycled to food-grade standards due to their multi-layer, multi-material composition. Following the collapse of the REDcycle collection scheme in 2022, Australia has had no national pathway for soft plastics recovery.

Chemical recycling through pyrolysis offers a potential solution. The process heats plastic to approximately 600°C in the absence of oxygen, breaking it down into oil that, with appropriate quality controls, can be processed through existing refinery infrastructure to produce new food-grade polymers. In May 2025, Viva Energy's Geelong Refinery successfully processed 9.5 tonnes of plastic pyrolysis oil to produce recycled food-grade polypropylene, demonstrating the technical viability of the approach.

However, moving from technical demonstration to commercial scale requires substantial investment over extended timeframes. A joint feasibility study by Viva Energy and Cleanaway has identified 50,000 tonnes of plastic feedstock as the optimal scale that would support a first plant. The project assessed 160 pyrolysis technologies globally before shortlisting two suppliers for detailed evaluation. Even with this work underway, construction of a pyrolysis plant would not commence until 2027 at the earliest with commissioning extending into 2029-2030.

Critically, the project partners have explicitly linked their investment timeline to regulatory reform milestones. Their feasibility work assumes that mandatory EPR legislation with known enforcement dates will be finalised by 2026-2027, including minimum recycled content requirements, minimum design standards, and a national traceability framework recognising mass balance accounting with free attribution. Without these policy settings confirmed, the partners note that financing and final investment decisions cannot proceed.

This illustrates a broader point raised across consultations that policy uncertainty is itself preventing the infrastructure investment needed to meet future recycled content requirements. Multiple stakeholders described being in a "waiting game" where neither manufacturers nor recyclers will commit capital while EPR details remain unclear. The Viva Energy-Cleanaway Cycleback Plastic project demonstrates that even with community appetite for a recycling option, committed partners, proven technology and active feasibility work, policy reform and five or more years are required to deliver new capacity.

3.7 Cost disadvantage and utilisation challenges

Over the next 5 years, significant recycling capacity is planned to become operational, however, this may not eventuate without investment certainty. With no driving force for recycled content adoption and a persistent cost gap, utilisation of plastic packaging recycling capacity falls from around 60% today to around 30% by 2030 (Figure 3-5).

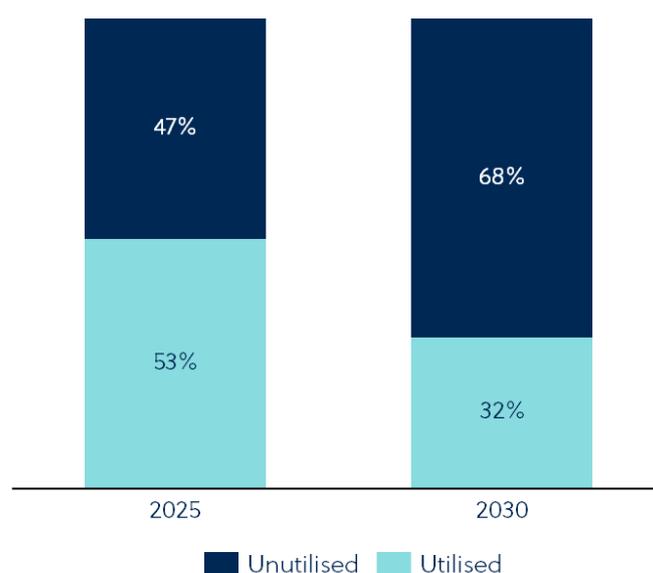
Underutilised capacity at this scale will see Australian plastic recycling facilities close and planned capacity fail to eventuate. Without policies to fix the market failure, some operators have stated they will be left with no option but to shut down operations or not open in the first place.

Facility underutilisation is a direct threat to public and private capital in Australia's plastic recycling sector. Projected underutilisation will jeopardise \$432 million in committed RMF funding (\$137 million from government) for 62 plastic recycling facilities, which would support 1,498 direct jobs.⁵⁶ Further private sector investment, beyond the investment supported by the RMF, would also be at risk, putting an even greater number of jobs at risk. Stakeholders have identified investment reticence is already being reflected in sentiment from the finance sector.

European facility closures serve as a clear warning for Australia if domestic capability is not prioritised within any policy response. Multiple European nations have ratified EPR schemes (Explainer 4-11), however, these policies have failed to support markets for domestic recycled content. This has been catastrophic for the domestic industry, with low-cost imported virgin and recycled plastic driving out EU-produced recycle. An estimated 1 million tonnes of recycling capacity has closed in the EU since 2023.⁵⁷ If Australia fails to heed the lesson on the need to stimulate a domestic recycle market, our local industry will face similar closures.

It is paramount Australia prevents deindustrialisation from occurring as once it takes place it is very challenging to recover a lost industry. This has been evident within other key sectors which have undergone deindustrialisation, such as vehicle manufacture, with insurmountable challenges for multiple players looking to restart an Australian industry.^{58,59}

Figure 3-5: Projected plastic recycling capacity utilisation in Australia



⁵⁶ [DCCEEW Investing in Australia's Waste and Recycling Infrastructure \(2025\)](#)

⁵⁷ [Plastic Recyclers Europe \(2025\)](#)

⁵⁸ Australian Associated Press, [Bid by Belgian entrepreneur to take over Holden plant collapses](#) (2016)

⁵⁹ Manufacturers Monthly, [Holden, GM reject British billionaire's automotive assets bid](#) (2018)

Case Study 3-2: How regulatory delays prompted an Australian manufacturer to move away from recycled content

Stakeholder consultations revealed that policy uncertainty is not merely delaying new investments in recycled content adoption but, in some cases, it is actively reversing progress already made. The collapse of existing recycled content arrangements demonstrates how regulatory ambiguity creates commercial risk that drives manufacturers back to virgin materials.

For several years, a prominent Australian food manufacturer used domestically produced food-grade recycled PET to make bottles for their range of products. This represented approximately 600 tonnes per year of Australian recycled content. The arrangement demonstrated technical and commercial viability when both parties committed to the partnership.

However, in early 2025, the manufacturer reversed this decision and transitioned back to virgin PET. The company cited three factors: the cost premium of recycled PET compared to virgin alternatives, concerns about reliable supply availability, and the lack of regulatory clarity around future packaging requirements. Without certainty that recycled content would become mandatory, the commercial case for paying a premium over virgin resin had weakened over time.

This decision was commercially rational. Environment Ministers had discussed packaging reform throughout 2024, with communiques in June noting that design guidance would be released by year end, and December communiques acknowledging states and territories emphasising the need for urgent regulatory reform as soon as possible. Yet by year end, no meaningful progress had been made on the regulatory scheme. With mandatory recycled content requirements no longer appearing imminent, reverting to lower cost virgin PET offered immediate cost savings for the business with no regulatory or consumer downside.

The Australian recycler affected by this decision noted that other manufacturers were expected to follow suit or, at minimum, place their own recycled content plans on hold pending regulatory clarity.

This example illustrates the fragility of voluntary recycled content adoption in the absence of regulatory certainty. Australia has approximately 81,000 tonnes per year of commercial food-grade recycled PET production capacity, built with substantial government investment through both direct grants and infrastructure funding for Container Deposit Schemes and Materials Recovery Facilities. Yet this capacity sits underutilised while customers find it difficult to resist the cost savings from virgin materials.



4 Opportunities for reform in recycling and plastic packaging

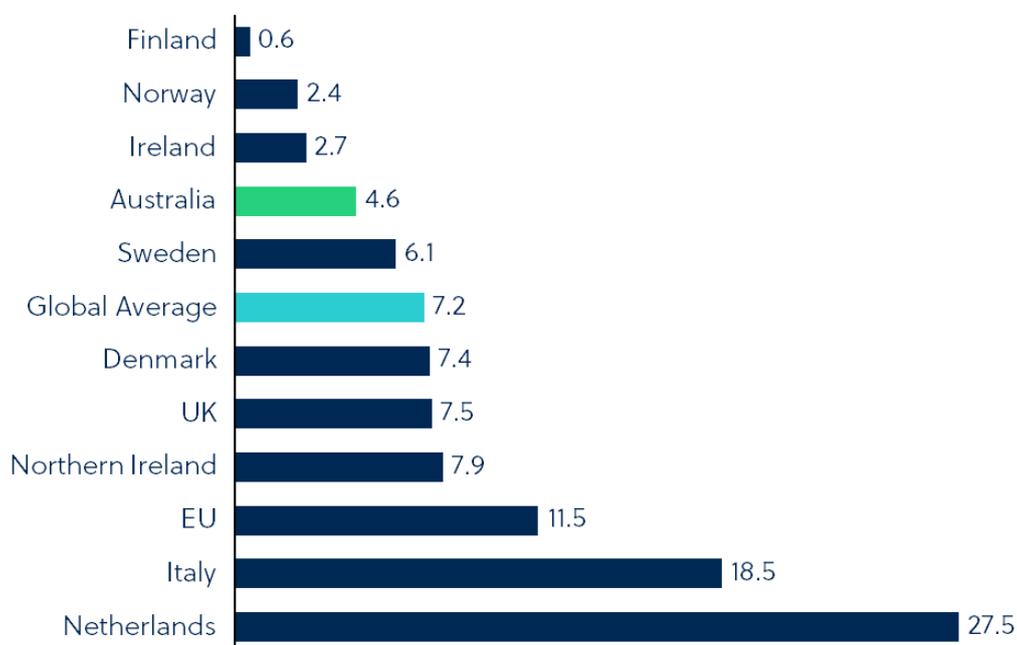
4.1 Australia has ambitious goals for circularity and recycling

The Australian Government has identified circular packaging as a core priority, noting that "Australia is reforming the domestic regulation of packaging to ensure products placed on the market are designed to be recovered, reused, recycled and reprocessed safely".⁶⁰

Improving plastic packaging recovery and recycling is an important pathway to meeting Australia's circularity goal. Whilst approximately half of all packaging put on market was recovered in 2022-23, this recovery rate fell to 19% for plastic packaging.⁶¹ This is despite APCO identifying 42% of plastic packaging has good recyclability.⁶²

To achieve this priority, the Australian Government has set the ambitious goal of doubling the circularity rate from 4.6% to 9.2% by 2035.⁶³ This would see Australia move beyond the global circularity average of 7.2%, as captured by Figure 4-1.

Figure 4-1: Australia is below the global average for circularity (%)⁶⁴



⁶⁰ DCCEEW, [Australia's Circular Economy Framework](#) (2024)

⁶¹ APCO, [Australian Packaging Consumption & Recovery Data 2022-23](#) (2024)

⁶² DCCEEW, [Australia's Circular Economy Framework](#) (2024)

⁶³ DCCEEW, [Australia's Circular Economy Framework](#) (2024)

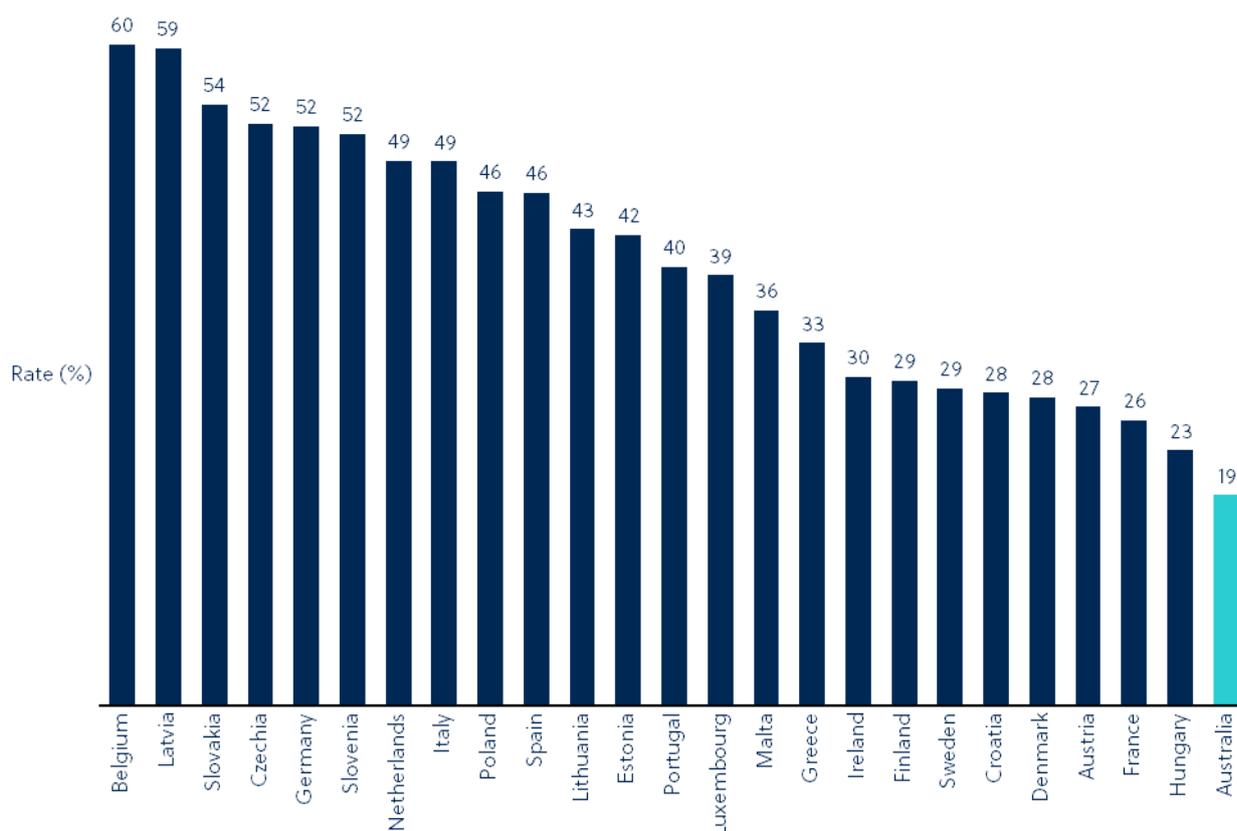
⁶⁴ DCCEEW, [Australia's Circular Economy Framework](#) (2024)

4.2 Australia has failed to meet key targets

Australia's National Packaging Targets set clear goals for driving recyclability of plastic packaging. Most prominently, these targets, set in 2018, include 70% of plastic packaging being recycled or composted.⁶⁵ Material-specific targets were subsequently set in 2019, targeting the most common plastic types.

While Australia has made incremental improvements in packaging recyclability, the results show Australia has not met its 2025 packaging target. In 2022–23, 86% of packaging placed on the market was recyclable. However, only 19% of plastic packaging was recovered, well short of the 70% target.⁶⁶ This failure has been consistent over time (Figure 4-2).

Figure 4-2: Australia's plastic packaging recovery rate compared to European plastic recycling rates⁶⁷



4.3 The lack of national action has led to fragmented interventions

In the absence of decisive national leadership, states have already stepped in with piecemeal measures such as container deposit schemes and bans on single-use plastics. Most recently, the NSW Government released its Plastics Plan 2.0, which goes further by phasing out 'problematic' products, mandating design standards, and proposing a product stewardship scheme for takeaway cups and food containers.⁶⁸ These actions underscore the growing appetite for stronger regulation across the country.

When states act independently, industry faces overlapping and inconsistent rules, making compliance more difficult and costly. This patchwork approach adds confusion at the business and consumer level, undermining confidence in recycling outcomes. Additionally,

⁶⁵ APCO, [Australia's National Packaging Targets](#) (n.d.)

⁶⁶ APCO, [Australia's National Packaging Targets](#) (n.d.)

⁶⁷ Eurostat, [Plastic packaging waste in the EU: 35.3 kg per person](#) (2025). Note: comparing Australia's recovery rate (which includes waste-to-energy) to European recycling rates.

⁶⁸ NSW EPA, [Plastic Plan 2.0](#) (2025)

this approach removes economies of scale, discourages investment, and risks creating perverse market outcomes.

4.4 Industry is supportive of clear national reform

Industry has been clear: a harmonised, federally led framework is essential to deliver certainty, consistency, clarity, efficiency, and fairness. Without it, Australia risks locking in a fractured system that fails to address market failure and leaves market gaps in a circular supply chain. National Packaging Reform is the only pathway that can align policy, unlock investment, and accelerate progress toward circularity.

In September 2024, the Department of Climate Change, Energy, the Environment and Water consulted on three packaging reform options:⁶⁹

- Option 1: Strengthening administration of the co-regulatory arrangement,
- Option 2: National mandatory requirements for packaging, which would establish minimum recycled content requirements,
- Option 3: A mandated EPR scheme for packaging (Explainer 4-1).

Consultation feedback showed broad support for regulation of packaging at the Commonwealth level, with 65% supporting an EPR scheme with mandatory requirements.⁷⁰ In March 2025, APCO similarly undertook a national consultation with its members and stakeholders on a proposed industry-led EPR approach.⁷¹ Members and stakeholders provided extensive feedback. Overall, there was strong support for the intent behind an EPR approach to packaging and a recognition that additional investment in collection, sorting, and reprocessing is required. However, many members and stakeholders expressed the need for greater regulatory certainty and free rider management.⁷²

Explainer 4-1: What is a mandated EPR scheme?

- **Extended Producer Responsibility (EPR):** a policy approach whereby a producer's responsibility for a product extends to the post-consumer stage of the life cycle (either physically or financially). Examples include Container Deposit Schemes and the Product Stewardship Scheme for Oil.
- **Eco-modulation:** a mechanism under an EPR whereby the fee paid by a producer is adjusted (up or down) based on the environmental performance of a product or packaging. This can extend to other characteristics such as ease of recycling or use of domestic content.

⁶⁹ DCCEEW, [Reform of packaging regulation](#) (2024)

⁷⁰ DCCEEW, [Reform of packaging regulation: Consultation summary](#) (2025)

⁷¹ APCO, [Consultation on a strengthened industry-led EPR approach for packaging](#) (2025)

⁷² APCO, [Consultation feedback helps shape next steps for EPR activation](#) (2025)

4.5 Producer voices are critical to inform the design of reforms

Brand owners and retailers that procure packaging for their products want to see domestic recycled content use increase but require the nuanced challenges they face to be addressed to effectively implement any demand-side policy.

It is critical that brand owner and retailer views are captured in national packaging reform. Interviews with key national and multi-national brand owners and retailers have been conducted as a part of this work to inform the analysis process and policy ask. Thirteen key themes surrounding a mandated EPR scheme and minimum recycled content requirements with a domestic content preference have emerged from this process:

1. Packaging supply chains are highly complex and diverse, with different business models requiring different policy approaches.
2. Current recycled content adoption rates show a wide range across polymers, products and businesses. There are significant free-rider concerns.
3. Food safety and technical performance requirements create a critical dividing line between what is achievable today and what remains challenging.
4. Chemical recycling is strongly preferred for food contact applications but faces cost and supply constraints, while mechanical recycling currently has limitations.
5. Domestic versus international sourcing involves trade-offs between cost, quality, availability and traceability.
6. Market structure concerns centre on limited market competition and supply security, with mandates potentially enabling uncompetitive pricing in the absence of sufficient competitive pressure.
7. Cost pressures and international competitiveness concerns are particularly acute for local manufacturers competing against imports.
8. Export market requirements impose significant limitations on packaging choices for Australian manufacturers.
9. National policy harmonisation is strongly preferred over state-based approaches, with integration of existing CDS schemes essential.
10. The design of a minimum domestic recycled content requirement needs careful attention to practical implementation challenges including scope, flexibility and phasing.
11. EPR scheme design should cover all materials with a focus on problematic materials, incentivising recycled content, ensuring mandatory participation and maintaining reporting simplicity.
12. Consumer understanding and behaviour change is under-developed but critical to supporting the packaging transition.
13. Need for aligned supply chain minimum quality standards to drive efficiencies, lower cost to the economy and reducing the risk of greenwash.

Based upon the thirteen themes identified above, several implications for the design of a mandatory EPR scheme with minimum recycled content requirements preferencing domestic recycle emerge:

- **Policy Frame & National Harmonisation:**
 - Sensible combination of minimum recycled content requirements by packaging format with EPR scheme is needed in order to achieve desired outcomes.
 - Prioritise national consistency through an Australian Government-led approach rather than state-by-state variation in packaging regulations.
- **Certainty & Clarity:**
 - Announce policy settings with sufficient lead time, recognising validation processes, supply chain development and capital investment require substantial timeframes.
- **Reporting, Verification and Standards:**
 - Create a national framework for traceability of recycled content.

Support certification marks such as Australasian Recycling Label (ARL) and Re-made in Australia to communicate value and justify price premiums.

A mandatory EPR scheme:

- **EPR Scheme Design:**
 - Focus eco-modulated fees on closing the cost gap between recycled and virgin materials.
 - Preference for tiered incentive structure: penalties and rebates
 - Hypothecate and secure funds.
- **Carve-outs and Special Provisions:**
 - Provide specific carve-outs for therapeutic goods, consider special treatment for GST-exempt essential items and a flexibility mechanism for eco-modulated fees if minimum recycled content requirements are unachievable.
- **Integration with Existing CDS Schemes:**
 - Carefully integrate national EPR scheme with eight existing Container Deposit Schemes which already function as EPR for beverage containers.
- **Consumer Education and Behaviour Change**
 - Consider using EPR eco-modulated fee revenue to fund comprehensive consumer education campaigns.
 - Improve recycling behaviour and build understanding of packaging changes and cost implications.

Minimum recycled content requirements:

- **Mandate Structure & Scope:**
 - Establish a moderate starting point for minimum recycled content requirements with lower thresholds for food contact applications.
 - Minimum recycled content requirements should be phased to align with supply development or accompanied by substantial infrastructure investment.
- **Market Competitiveness Safeguards**
 - Include mechanisms to ensure competitive pricing and prevent monopolistic behaviour in domestic recycled plastics market.
- **Phasing and Implementation of minimum recycled content thresholds:**
 - Phase implementation over several years beginning with domestically recycled materials where recycling pathways are established and scaled (i.e. rigid plastics).

These findings have directly informed thinking around the modelled options and policy approaches put forward. Additional detail is provided in Appendix C.

Case Study 4-1: Timelines for changing packaging are longer than you would think

Stakeholder consultations revealed a consistent message from food and grocery manufacturers that meaningful packaging changes require 2-3 years from project initiation to complete market transition. This timeline reflects operational reality, not commercial resistance.

A packaging format change typically requires 12-24 months of development work before production begins. This includes design brief development, consumer research, concept iteration, prototype creation and testing, stability and shelf-life validation, and financial feasibility assessment. These workstreams cannot simply be compressed, for example, shelf-life testing requires actual elapsed time to validate product integrity. Once design is approved, artwork processes add 1-3 months depending on complexity. New artwork delivery from suppliers requires up to 16 weeks. Products manufactured overseas face 2-3 months shipping time to Australia. Critically, manufacturers must then run through existing packaging inventory which can take 6-18 months depending on minimum order quantities and sales volumes.

This timeline is paired with significant financial costs. Capital investment for machine modifications can exceed \$2 million per line and even artwork changes carry significant costs. Stock on hand of existing packaging can represent significant value per product at any time.

Packaging must also satisfy multiple regulatory requirements simultaneously including ACCC consumer law, FSANZ food standards, APCO's Australasian Recycling Label requirements, and trademark protections. This requires sequential sign-offs across product development, legal, regulatory affairs, marketing, design agencies, procurement, and print quality management teams.

For multinational companies, this process escalates further as legal text creation may require global sign-off, and changes must align with budget cycles that operate on annual planning horizons.

As a specific example, an Australian manufacturer noted recent experience where they changed from a white to clear polymer in one of their products. This process took about 18 months to execute and required multiple rounds of validation on their packaging line. Each round of validation required involvement from machinery experts from overseas. Overall, this relatively simple change amounted to a multi-million-dollar project.

Case Study 4-2: Australian exporters face specific challenges

An Australian food manufacturer faced a strategic dilemma when pursuing recycled content targets. With approximately half of their production exported to Asian markets, they discovered that domestic sustainability ambitions were challenged by key export market regulations.

The regulatory landscape across Asia presents a patchwork of restrictions. China currently has no approved pathway for recycled plastics in food contact applications. The National Center for Food Safety Risk Assessment is only now conducting industry surveys and initiating risk assessment methods. South Korea's 2020 revision to its Standards and Specifications explicitly clarifies that recycled synthetic resins are permitted only in materials that do not come into direct contact with food, such as outer layers in multi-layer packaging. Most other Asian jurisdictions lack explicit regulations either permitting or prohibiting recycled plastics in food contact which creates regulatory uncertainty that risk-averse manufacturers interpret as implicit prohibition. Japan represents the closest the region has to a food-grade regulatory framework through industry trade association guidelines, but compliance remains voluntary.

The practical result of this is that manufacturers serving both domestic Australian markets (where recycled content is encouraged) and Asian export markets (where it may be prohibited or unregulated) face difficult choices. They must either maintain separate packaging lines at significant cost, abandon export markets to pursue sustainability goals, or forgo recycled content entirely to maintain market access. For products where packaging accounts for only a small fraction of total cost, the economics strongly favour the lowest-risk option.

As a specific example, an Australian food manufacturer noted that a significant portion of their production is exported to Asian markets where recycled plastic is prohibited in food contact packaging. If Australian policy mandated recycled content in every product, they would need to either establish separate production runs at significant cost, seek regulatory exemptions, or exit export markets entirely. The manufacturer emphasised that packaging choices are driven by the most restrictive market requirements, meaning export constraints effectively dictate domestic packaging decisions for dual-market products.

4.6 Lessons can be learnt from overseas

Policymakers globally are increasingly implementing EPR schemes and minimum recycled content requirements to drive recycled plastic adoption. Internationally, EPR schemes are applied to packaging across markets such as Europe, key provinces and states in Canada and the United States, Japan, South Korea and India. Some of these regions, such as Europe, also incorporate minimum recycled content requirements.⁷³

Australia's current voluntary approach to packaging stewardship has delivered limited systemic change and has failed to develop robust domestic recycled content markets. Voluntary measures are vulnerable to free-riding and do not create a level playing field for producers. In contrast, international experience shows mandatory EPR schemes with eco-modulated fees produce stronger incentives for design-for-recycling and recycled content uptake. Early evaluations of eco-modulation in European schemes (notably France, Italy and other EU programmes) find that fee modulation can change product design behaviour when the modulation is substantial and paired with strong monitoring; they also emphasise that robust rules and oversight are required to prevent loopholes.^{74,75} Additionally, international experience has found that fees must be sufficient to close the cost gap between domestic recycle and virgin plastics to drive recycled content adoption.

Minimum recycled content requirements without a domestic preference do not create markets for domestic recycle. Without mechanisms that prioritise or incentivise local reprocessing, brands and retailers may meet recycled-content targets using cheaper imported material, which can undermine the viability of domestic recycling. Several jurisdictions, including the EU, have experienced this challenge, leading to an estimated one million tonnes of recycling capacity having closed since 2023 in the EU.⁷⁶ As a result, recycled-content rules in many markets are now being paired with traceability requirements or EPR fee-modulation measures designed to support domestic reprocessing capacity.⁷⁷

⁷³ Net Zero Compare, [Extended Producer Responsibility \(EPR\) for Packaging: Country-by-Country Comparison](#) (2025)

⁷⁴ OECD, [Extended Producer Responsibility: Basic facts and key principles](#) (2024)

⁷⁵ CONAI, [Screening the efficiency of packaging waste in Europe](#) (n.d.)

⁷⁶ [Plastic Recyclers Europe](#) (2025)

⁷⁷ OECD, [Plastics Recycled Content Requirements](#) (2024)

Case Study 4-3: Manufacturers and retailers have had a negative experience with the UK's Plastic Tax

In April 2022, the United Kingdom introduced the Plastic Packaging Tax. This is a £200 per tonne levy on plastic packaging containing less than 30% recycled content (since increased to £217.85). The policy had clear environmental intentions to create an economic incentive for recycled material uptake. Early results appeared promising, with the share of packaging meeting the 30% threshold rising from 37% to 46% within a year.

However, the transition exposed a fundamental market reality as demand for food-grade recycled PET (rPET) far outstripped available supply. Industry data indicates demand for recycled plastic increased significantly, while costs rose by more than 50%. In 2022, rPET prices hit record highs across Europe, with food-grade material commanding significant premiums.

Industry sources indicated that large multinationals responded by securing long-term supply contracts with recyclers, effectively locking in available material at the start of each year. This left small and medium enterprises scrambling to source compliant packaging or face the tax penalty. Some smaller operators found themselves unable to meet compliance requirements regardless of willingness to pay. One Australian business noted that this experience demonstrates the risk of introducing mandates before adequate supply exists, as it creates market distortions that favour the largest companies who can secure supply contracts while smaller businesses are left unable to comply.

Perhaps most concerning is that the policy intended to stimulate domestic recycling has coincided with significant capacity losses. In November 2024, waste management company Viridor announced closure of its £317 million Avonmouth polymers recycling plant, just two and a half years after opening. The company had already closed its Skelmersdale facility in January 2023. According to the British Plastics Federation, approximately 260,000 tonnes per year of UK recycling capacity has been lost to site closures in the past 18 months. Viridor cited 'persistently and increasingly challenging market conditions' alongside delays to supporting legislation.

HMRC initially predicted 20,000 manufacturers and importers would register for the tax. As of mid-2024, only around 4,000 businesses had done so. Plastic tax revenue fell 3% to £259 million in 2024-25 despite rate increases, not necessarily because of successful behaviour change but because of market dysfunction. In particular, multiple stakeholders cited experience from the UK, where the 30% recycled content threshold has led some producers to actually reduce their recycled content because paying the tax is cheaper than compliance. This illustrates the importance of calibrating fee levels to genuinely incentivise desired behaviour rather than creating a cheap buy-out option that undermines policy objectives.

4.7 Reducing environmental harm through reform

Minimum recycled content requirements and EPR schemes are often viewed through the lens of economic cost. However, there is a strong environmental harm rationale for prioritising domestic recycled content, particularly where current market conditions favour lower cost imported recycled polymers that may have weaker traceability, higher contamination risks, or greater transport emissions.⁷⁸

Under the WTO Agreement on Technical Barriers to Trade (TBT Agreement), governments are permitted to introduce measures that may otherwise affect trade, "*where urgent problems of safety, health, environmental protection or national security arise or threaten to arise*".⁷⁹ This includes pollution impacts. The environmental harms detailed in this report may meet this threshold. Marine pollution of 130,000 tonnes annually, climate emissions equivalent to over 4 million cars, and a landfill capacity crisis across Australia's capital cities support the need for intervention.

Prioritising domestic recycled content specifically reduces environmental harm. Domestically recycled plastic avoids both the production emissions of virgin material and the transport emissions from long-distance shipping. It ensures Australian environmental standards apply throughout the material lifecycle, preventing uncertain environmental outcomes from offshore reprocessing. Keeping plastic waste in domestic recycling loops prevents leakage into Australian marine environments and ensures recovery infrastructure investment delivers local environmental benefits.

The presence of environmental harm means that minimum recycled content requirements and procurement preferences favouring domestic recycled content can be designed in a way that is consistent with Australia's free trade obligations, provided they are non-discriminatory, transparent, and evidence-based.⁸⁰ That is, given the environmental harm of current market outcomes, including reliance on offshore reprocessing, loss of domestic material value, and higher lifecycle emissions from transport, prioritising domestic recycled content can be justified.⁸¹

Government leadership through sustainable procurement is therefore both a critical pathway to stimulate local demand and may be a legitimate exercise of environmental protection authority under international trade law.⁸² By prioritising domestic recycled content, Australia can address urgent environmental harm while supporting reprocessing investment and ensuring circular economic value remains onshore.

⁷⁸ European Commission, [Circular Economy](#) (n.d.)

⁷⁹ World Trade Organization, [Agreement on Technical Barriers to Trade](#) (n.d.)

⁸⁰ World Trade Organization, [Agreement on Technical Barriers to Trade](#) (n.d.)

⁸¹ Plastics Recyclers Europe, [Study confirms rising imports of recycled plastic threaten EU industry](#) (2024)

⁸² DCCEEW, [Sustainable Procurement Guide](#), (2024)



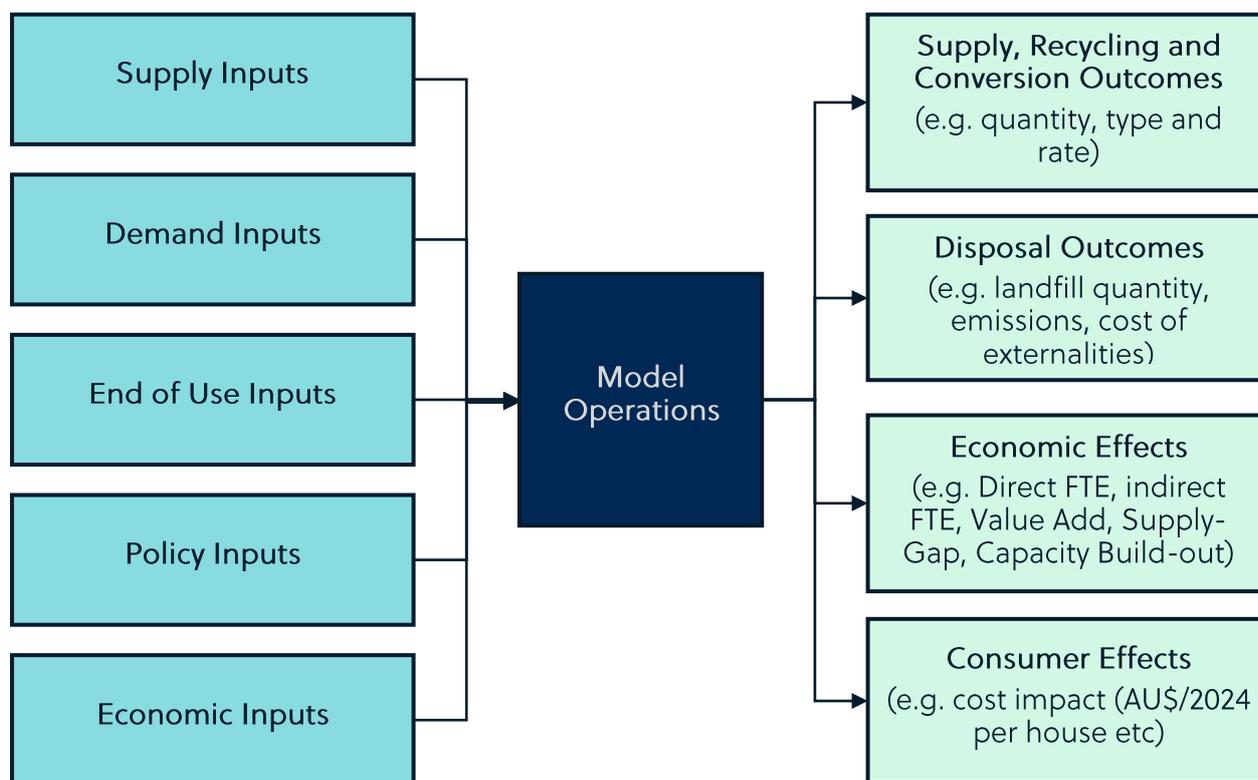
5 Impacts of reform options

5.1 Modelling purpose and approach

This work assesses a range of policy mechanisms designed to drive the increased use of domestic recycled material. This work builds upon the consultation process undertaken by the Australian Government and international precedents for packaging reform. In doing so, the purpose is to illustrate the effects of different packaging reform approaches in developing markets for Australian plastic recyclate. Key policies explored include a mandated EPR scheme with eco-modulated pricing and minimum recycled content requirements, with a preference for domestic recycled content use.

A custom model of the Australian plastics industry has been developed, capturing domestic production, international trade and post-consumer fates (Figure 5-1). This work builds upon the Australian Plastics Flows and Fates Reporting and APCO Packaging Consumption and Recovery Data, applying Recon economic inputs and policy effects to indicatively illustrate the impacts of different policy responses on the Australian packaging ecosystem.⁸³

Figure 5-1: Material and economic impacts model schematic



⁸³ Recon is Rennie Advisory's proprietary economic modelling tool.

5.2 Scenarios modelled

In the modelling, five key scenarios have been developed, all measured against the baseline scenario. These scenarios (Table 5-1) are designed to explore three different pathways:

1. What happens if Australia prices a mandated EPR with eco-modulated fees below the cost gap for domestic recycled content (Low Price-led scenario)?
2. What happens if Australia prices a mandated EPR with eco-modulated fees to close the cost gap at moderate and high price levels (Moderate price-led and High Price-led scenarios)?
3. What happens if Australia prices a mandated EPR with eco-modulated fees to close the cost gap at moderate and high price levels while enforcing minimum recycled content requirements with a domestic preference (Moderate Price & Regulatory led and Strong Price & Regulatory led scenarios)?

It should be noted the specific EPR eco-modulated fee magnitudes within the scenarios do not form a part of this policy proposal. EPR eco-modulated fees in these scenarios are benchmarked against Australia's domestic recycle cost gap, international benchmarks, and the environmental damage from inaction. The scenarios presented are designed to show different trade-offs for policy-makers.

Table 5-1: Scenarios modelled as a part of the APRA study

Factor	Baseline	Low Price-led	Moderate Price-led	Strong Price-led	Moderate Price & Regulatory Led	Strong Price & Regulatory Led
Packaging Design Standards	None	Design standards aligned with international approaches to ensure compatibility and recyclability at scale.				
What it Tests?	Status Quo	Can a low price EPR work?	How effective is a moderate price EPR?	How effective is a high price EPR?	How effective is a moderate EPR and domestic content requirement?	How effective is a high EPR and domestic content requirements?
EPR Eco-modulated price average	\$0/t	\$300/t	\$600/t	\$1,000/t	\$600/t	\$1,000/t
Minimum Domestic Recycled Content Requirement	None	None	None	None	20% by 2030	30% by 2030

5.3 Modelling results

What happens if Australia prices a mandated EPR with eco-modulated fees below the cost gap for domestic recycled content?

If the EPR eco-modulated fee does not fully account for environmental harm, it will have little impact on encouraging the use of domestic recycled content. When the fee is set too low, brands and retailers are likely to simply pay the fee instead of changing their packaging practices. Although fee revenue could help reduce production costs, under-pricing ultimately fails to strengthen local markets for recycled materials.

If the fee only reduces the cost gap compared to international recyclate, but not domestic recyclate, Australian recycled content will remain at a cost disadvantage. This encourages companies to use imported recycled materials instead of locally produced ones.

Implementing EPR without considering the global market disadvantages facing Australian recyclate risks reinforcing current problems. Australia may continue to miss recycling targets, depend on imports, and face negative environmental impacts.

Without stronger incentives for local production, Australia gains few economic benefits. Planned recycling facilities could be cancelled due to low demand, while packaging production may shift overseas, further undermining domestic recycling efforts.

What happens if Australia prices a mandated EPR with eco-modulated fees to close the cost gap at moderate and high price levels?

Setting EPR eco-modulated fees to reflect the full environmental cost can encourage greater use of recyclate. This alignment is an important first step but, on its own, it won't be enough to drive use of domestic recycled materials.

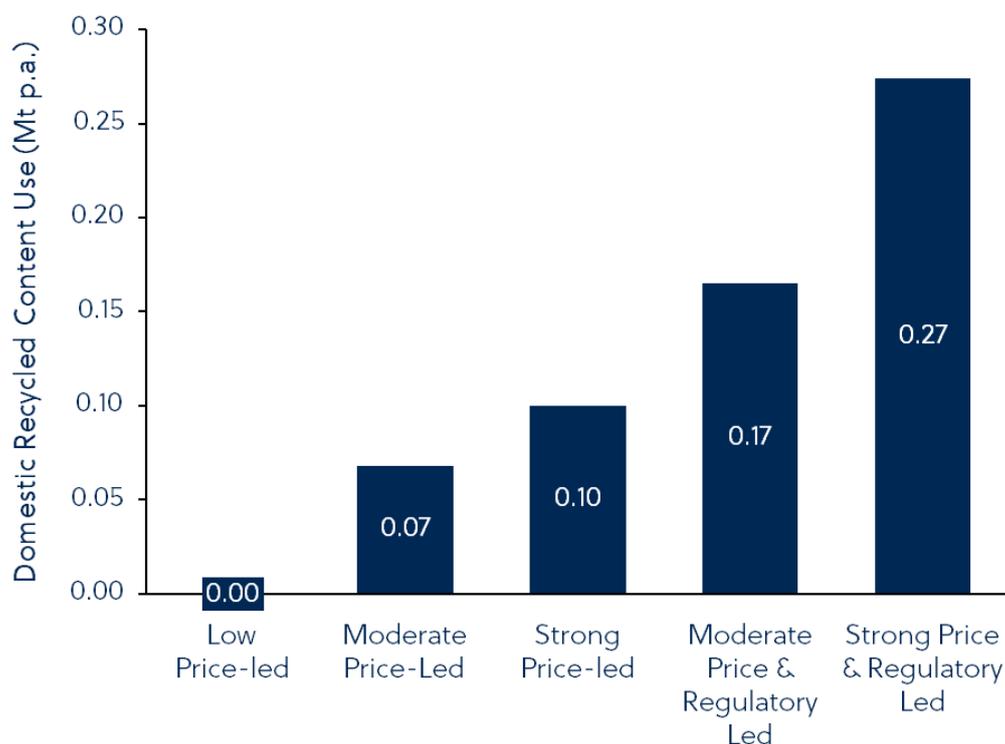
To boost local recyclate adoption, policy must distinguish between domestic and imported recycled content. Without this, manufacturers will continue to choose cheaper imported recyclate, which often has a price advantage of over 25%. Offering bigger fee discounts for domestic recycled content, matching its price premium, can help close the cost gap and make local materials more competitive.

EPR eco-modulated fees must also adjust over time to reflect changes in prices for virgin resin, imported recyclate, and domestic recyclate. If fees are not reviewed regularly, incentives can weaken, reducing demand for recycled materials overall. Ongoing market review and fee adjustment are essential to keep incentives effective.

What happens if Australia prices a mandated EPR with eco-modulated fees to close the cost gap at moderate and high price levels while enforcing minimum recycled content requirements with a domestic preference?

Setting EPR eco-modulated fees at the right level and introducing minimum recycled content requirements that prioritise domestic recyclate can directly boost local recyclate use. In both the moderate and strong policy scenarios, this approach leads to a major increase in recycled content use, driven by strong domestic content targets.

Figure 5-2: Additional domestic recyclate use under each scenario, 2030



5.4 Policy implications

Assuming that the full cost of the scheme is passed through to consumers, in the most aggressive scenario it is expected to increase the cost of plastic packaging in an average shopping basket by \$0.31 a week or 0.1% of the total cost of the basket. In all modelled cases, the impact on end consumers is modest because the input material is only a share of overall packaging costs and packaging represents a small share of the total cost of a product (Table 5-2). For example, for an average weekly shop of \$246, all common packaging materials (i.e., paperboard, plastic, glass and aluminium) are estimated to represent around 2.5% of the cost or \$6.14 per week, with plastic accounting for \$1.31 of this.

A balanced approach is necessary to develop a viable plastic recycling system, while keeping consumer costs low. By stratifying the implementation of a mandated EPR and allowing the market to adapt efficiently, the cost to end consumers can be minimised.

Eco-modulation is critical to provide incentives and disincentives to the market. By adapting pricing over time to reflect the improved economics of collection, sorting and recycling as the supply chain matures, an EPR scheme can minimise costs to the end consumer.

As outlined in Section 4.7, minimum recycled content requirements can be structured to remain compliant with WTO obligations while still supporting domestic recycled content. Where domestic preferencing is used, it must be justified on legitimate environmental grounds, applied transparently, and be non-discriminatory. Government procurement favourability provides one practical, WTO-consistent pathway to strengthen domestic demand for recycled content.

Variability in the cost gap between domestic recyclate, imported recyclate and imported virgin resins needs to be considered in the development of EPR eco-modulated fees. Failure to adapt EPR eco-modulated fees to structural changes could see the use of recycled content miss expected volumes, particularly if the cost gap remains perpetually open.

Securing Australia's Plastic Packaging Recycling Future

Table 5-2: Comparison of the effects of policy intervention

Scenario	Domestic Recycling Increase	Import Reduction	Landfill Reduction	Economic Impacts			Emissions Outcome	Consumer Impacts		
	t	t	t	FTE (jobs)	GVA (\$ billion)	Investment (\$ million)	tCO ₂ e / annum	\$/average weekly shop per household	Share of average weekly shop per household	Share of red and yellow bin collection costs
\$300/t EPR		19,000	16,000				66,000	0.09	<0.1%	2%
\$600/t EPR	68,000	102,000	117,000	4,700	0.6	2	270,000	0.18	<0.1%	3%
\$600/t EPR, 20% domestic content	165,000	178,000	233,000	11,400	1.5	11	426,000	0.19	<0.1%	5%
\$1,000/t EPR	100,000	156,000	234,000	6,900	0.9	7	537,000	0.29	0.1%	4%
\$1,000 EPR, 30% domestic content	274,000	269,000	367,000	19,000	2.5	224	690,000	0.31	0.1%	6%

5.5 Benchmarking of consumer impacts

The modelling in this report demonstrates the limited impact of EPR eco-modulated fees on end consumers and allows for direct comparison with international eco-modulated fees.

As a point of comparison, application of EPR eco-modulated fees at the magnitudes investigated by APCO in previous work or as introduced in other markets (such as Italy), is estimated to have a negligible impact on product prices (<1% of product cost in all cases). That is, the estimated increase in the average weekly shopping basket of, \$0.19-0.31 is spread across a range of products, each one increasing by well less than 5 cents. This reflects the small share of the product price that packaging represents. Consequently, EPR eco-modulated fees are not anticipated to drive inflationary impacts for consumers or costs to government.

Table 5-1: Price effects of EPR eco-modulated fees are a small relative to the underlying product cost⁸⁴

Product	Weight	Price	EPR Fee priced at APCO proposed rate	EPR Fee priced at Italian EPR Fee Rate
 Milk Bottle 2L	45 g	\$3.20	<\$0.01 (0.1%)	\$0.02 (0.5%)
 Bread Bag	5 g	\$4.60	<\$0.01 (0.1%)	<\$0.01 (0.1%)
 Soft Drink 1.25L	19 g	\$4.00	<\$0.01 (<0.1%)	<\$0.01 (0.2%)
 Meat Tray	38 g	\$11.00	<\$0.01 (<0.1%)	\$0.04 (0.4%)

This cost is relatively small compared to the additional cost of plastic waste borne by households. Australians currently face an average environmental harm cost of \$215 per year due to plastic waste externalities and already pay over \$200 a year for household bin collection. Of this \$200, it’s likely that around \$70-\$95 can be attributed to packaging.⁸⁵

⁸⁴ Prices developed based upon an average Coles catalogue for the week ending 16/11/2025. APCO proposed EPR rate in 2030 of \$60/tonne rigid plastic and \$415-551/tonne soft plastic from APCO, APCO Member Consultation Paper (2025). Italian eco-modulated fees from CONAI, [Plastic modulated fee](#) (2025). Assumed bands: 2L milk bottle band B1.1, bread bag band B2.2, 1.25L soft drink bottle B1.1 and meat tray B2.1.

⁸⁵ Maddin and Florin (2024), “Characterisation of household single-use packaging flows through a municipal waste system: A material flow analysis for New South Wales, Australia”



6 Policy Direction

6.1 The ask from industry

An urgent commitment from the Australian Government to introducing National Packaging Reform in this term of government.

Based on the industry survey, international review and discussions with stakeholders, two key asks have emerged as a summary position. Priority should be given to commencing the EPR scheme in 2027.

1. **Within the next 3 months, announce a timebound commitment to introducing National Packaging Reform in the current term of government through mandated EPR.**

Key elements include:

- industry-led governance
- design standards and labelling (ARL)
- traceability systems and standards
- mandatory recycled content thresholds, with priority for domestic content
- A well-considered eco-modulated fee model with funds reinvested back into the system

2. **Commit to measures to drive procurement of domestic recycled plastic in packaging and other applications, including through government procurement.**

Key elements include:

- Commit to government procurement of domestic recycled content as a key enabler of a viable market for domestic recycled plastics,
- Phase in mandatory thresholds for recycled content in packaging, prioritising domestic content. These need to recognise packaging's technical and global supply chain constraints and the importance of diverse and sustainable end markets in a global circular economy.

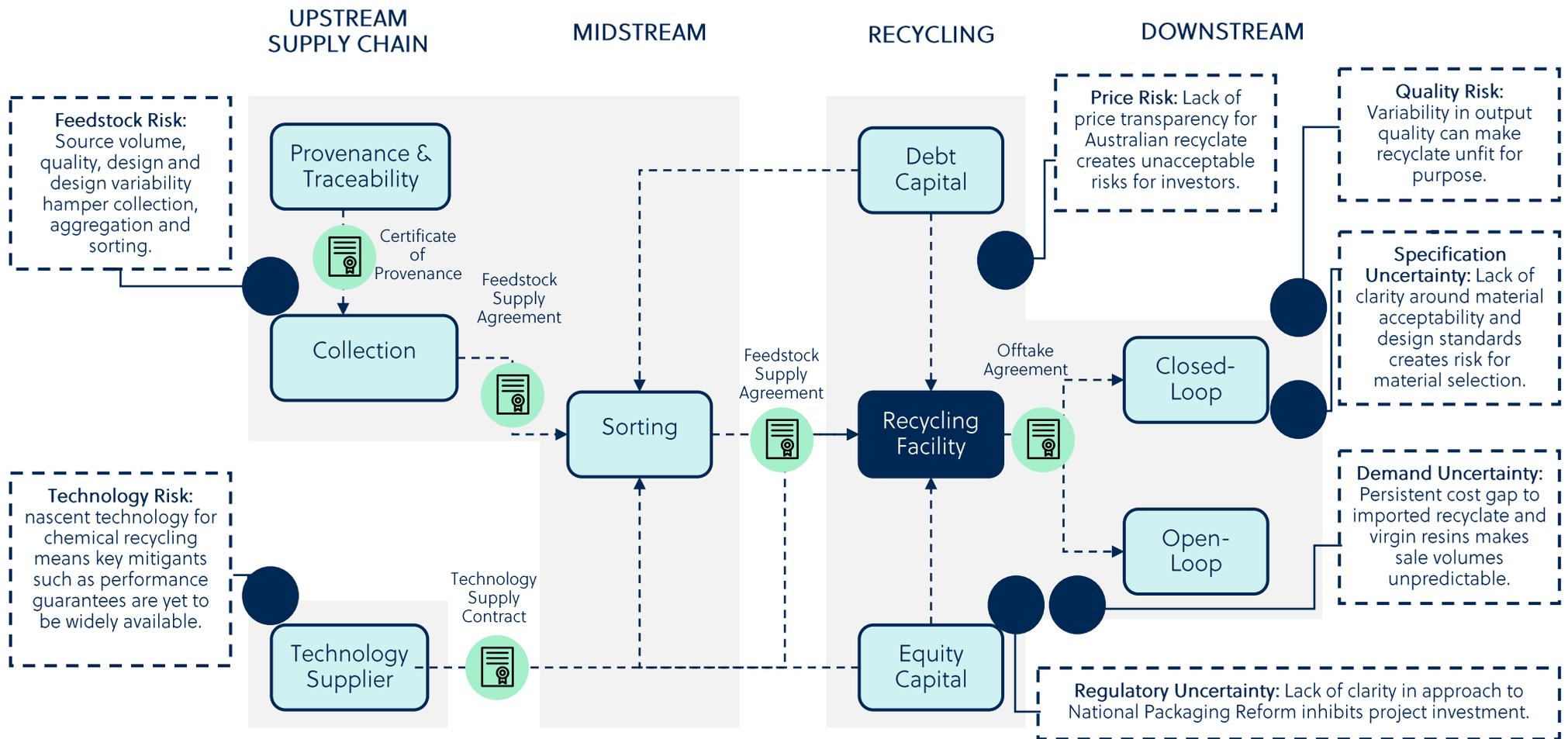
6.2 Mitigating industry risks through policy design

Recyclers in Australia are contending with seven interrelated risks that are inhibiting infrastructure utilisation and investment, contributing to asset underutilisation and a lack of investment. These risks require mitigation for the recycling sector to grow (Figure 6-1).

Government has already started this process through the RMF Fund. However, supply-side support alone is insufficient to mitigate the full spectrum of risks. Demand-side intervention and institutional infrastructure are necessary to unlock the market (Table 6-1).

Securing Australia's Plastic Packaging Recycling Future

Figure 6-1: Seven key risks across the plastic recycling supply chain are inhibiting market formation



Securing Australia's Plastic Packaging Recycling Future

Table 6-1: Tracing actions to mitigate risks to these underlying risks

Key Risk	Description	What can be done to reduce this risk?
Feedstock Risk	Source volume, quality. Design and consistency variability hamper collection, aggregation and sorting.	<ol style="list-style-type: none"> 1. Work with state governments for the harmonisation of kerbside collection nationally, coupled with a household education scheme. 2. Implement national (sustainable) packaging design standards and a clear and consistent labelling recyclability scheme. 3. Require imported and domestic feedstocks to meet consistent provenance and traceability standards under an Australian EPR. 4. Utilise fees from a potential Australian EPR to provide investment support for collection and sorting infrastructure.
Technology Risk	Nascent technology for chemical recycling means key mitigants, such as performance guarantees, are yet to be widely available.	<ol style="list-style-type: none"> 1. RMF funding is supporting the commercialisation of chemical recycling pathways. 2. Utilise EPR fees to provide revenue certainty for chemical recycling commercialisation projects.
Price Risk	Lack of price transparency for Australian recyclate creates unacceptable risks for investors.	<ol style="list-style-type: none"> 1. Ensure potential Australian EPR fees are adaptable to market conditions.
Quality Risk	Variability in output quality can make recyclate unfit for purpose.	<ol style="list-style-type: none"> 1. A restricted book-and-claim scheme where recycled content 'credits' can be purchased to meet minimum recycled content requirements can support broader adoption, allowing packaging manufacturers with technical barriers to adopt recycled content.
Specification Uncertainty	Lack of clarity around material acceptability and design standards creates risk for material selection.	
Demand Uncertainty	Persistent cost gap between domestic recyclate and imported resins makes sale volumes unpredictable.	<ol style="list-style-type: none"> 1. EPR scheme with minimum domestic local content requirements phased with clear timeframes for implementation and enforcement. 2. Public procurement of domestic content to support local recyclers. 3. Design standards for undesirable product role-out, phased with clear timeframes for implementation and enforcement.
Regulatory Uncertainty	Lack of clarity in approach to National Packaging Reform inhibits project investment.	

6.3 Key features of an effective approach

Overcoming demand and regulatory uncertainty: A mandated EPR with eco-modulated fees and minimum recycled content requirements preferencing domestic recycled content

A mandatory EPR scheme with a minimum recycled content requirement prioritising domestic content is essential to address the structural cost disadvantage faced by domestic recyclers.

- Eco-modulated EPR pricing can shift packaging producer behaviour toward more sustainable packaging choices. Key in establishing eco-modulated price levels will be an explicit fee differential prioritising domestic recycled content.
- A minimum recycled content requirement, prioritising domestic recycle, is critical to ensure local producers are not undermined by cheaper imports. As shown in Chapter 5, a mandated EPR scheme alone is insufficient to drive users to adopt domestic content, given the persistent and fluctuating premium relative to imported recycled content.

Overcoming price risk: ensuring flexibility in EPR eco-modulation price levels will be critical to account for virgin resin and recycle cost movements

A mandated EPR scheme in the Australian context will be successful in driving circularity if it can be combined with other measures to close the cost gap. Procurement drivers for virgin resin are dictated by price and quality. To be effective in driving demand for recycled content use, the cost gap must be closed for each plastic packaging type. Consequently, eco-modulated pricing under an EPR scheme offers a clear pathway to support this.

EPR schemes should support competitive pricing of domestic recycle. However, a prerequisite of competition is having sufficient market players and a large enough market size to drive this competition. Hence packaging reform which stimulates demand is critical to ensuring the most efficient operators are constantly pushing scale and input costs down.

Critically, eco-modulated pricing should drive good design standards that align with recycling supply chain standards to prevent greenwashing. Different measures will be necessary across the recycling mix to reflect the ease of recyclability and the different environmental harm caused by different plastic types. Similar support mechanisms for use of domestic content versus imported could offer an avenue that does not contradict Australia's free trade obligations.

Australia can learn from the adaptative approaches taken overseas. For example, Italy has consistently re-evaluated eco-modulated fee pricing in response to market insights (Figure 6-2). This further supports the need for early price discovery and trial and error across the market. In France, the negative effects of failing to support domestic manufacturing are being recognised, with the addition of incentives to support local recycled content use.

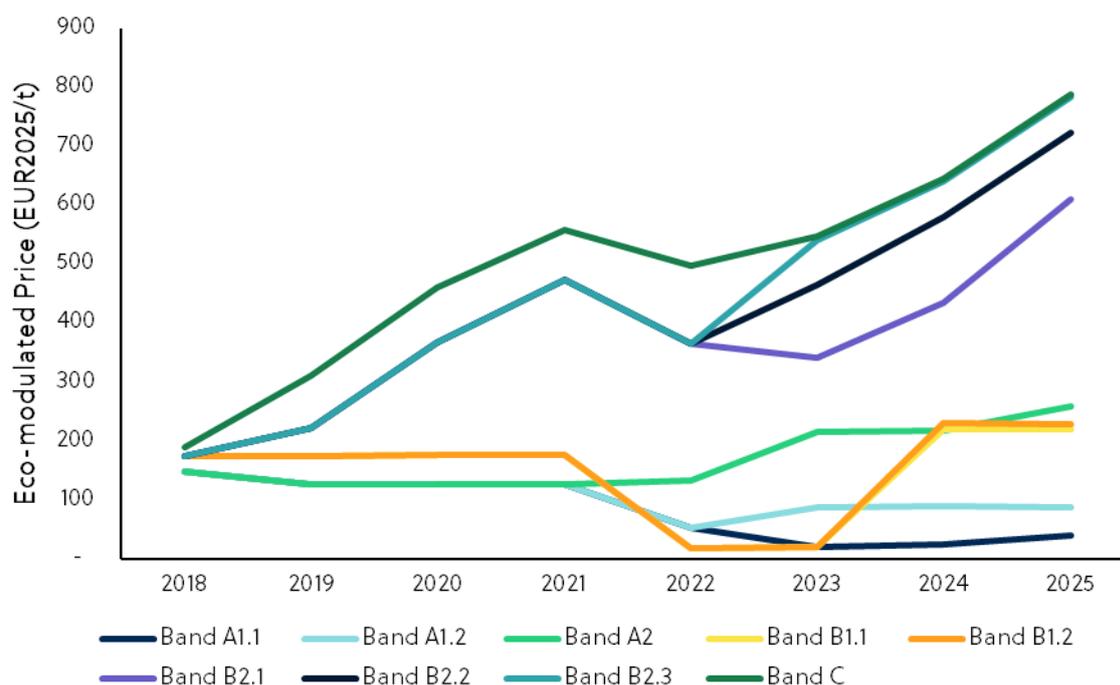
Case Study 6-1: How fee structures can preference Australian recycled content without creating uncompetitive markets

A central tension in stakeholder consultations was concern that mandatory domestic recycled content requirements could create monopoly pricing power for Australian recyclers. Multiple manufacturers expressed anxiety that with only two or three major domestic recyclers, mandates without competitive supply mechanisms could lead to higher prices. Yet without some form of preference, Australian recyclers face an uneven playing field against lower-cost imports.

One Australian recycler proposed a tiered fee structure that threads this needle. Under their model, a levy would apply to all packaging placed on market at a base rate. Rebates would then be available based on verified recycled content and origin. Packaging using verified Australian recycled content meeting minimum thresholds could access significant rebates, while packaging using verified imported recycled content would receive a smaller rebate. Crucially, unverified recycled content claims would receive no rebate at all, treating the packaging as equivalent to virgin material. This structure creates meaningful preference for domestic recycled content without an outright mandate. A manufacturer using verified Australian recycled PET at 50% content would pay less than a competitor using verified imported recycled content and one using unverified or virgin material would pay the full amount. The differential creates commercial incentive to source domestically where feasible, while still permitting imports where domestic supply is genuinely unavailable.

The recycler noted that their facility currently operates well below its annual capacity, with insufficient demand identified as the primary constraint. They have designed their plants to enable capacity growth but will not contemplate expansion until packaging regulations and EPR have been implemented and enforced. This echoes a broader theme from consultations that policy uncertainty is itself preventing the infrastructure investment needed to meet future recycled content requirements. The recycler also highlighted competitive pressures from foreign recycled materials where prices were reported as reflecting little more than cash cost recovery. This has led to surplus material flooding Australia at prices which domestic recyclers cannot match. The manufacturer identified that a well-designed EPR scheme with verification requirements would help level this playing field by ensuring all recycled content claims are substantiated through third-party audit.

Figure 6-2: Italy's evolving approach to eco-modulated EPR pricing over time⁸⁶



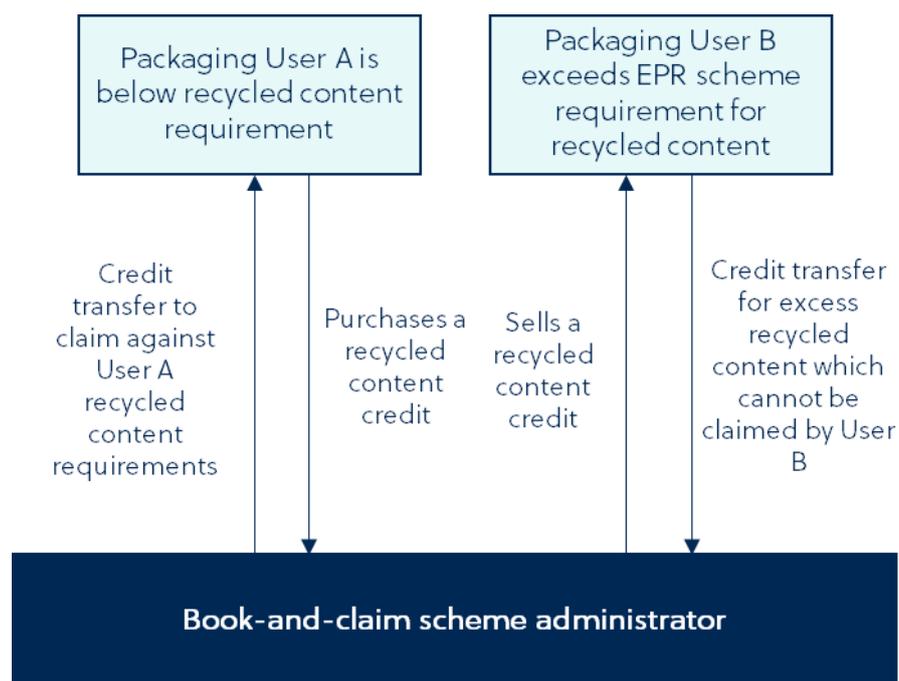
Overcoming quality and specification uncertainty: A timebound book-and-claim scheme for supporting broader adoption of recycled content

Brand and retailer concerns regarding technical and regulatory barriers to adopting recycled content must be acknowledged and addressed through National Packaging Reform. In some key packaging applications, brands and retailers are currently unable to incorporate mechanically recycled resins. As such, these limits must be considered as a part of the establishment of any minimum recycled content requirement.

A timebound book-and-claim mechanism could serve as a transitional tool to support recycled content adoption in technically constrained applications. This system (Figure 6-3) would allow brands and retailers to purchase credits from overperforming peers and apply them toward compliance, while maintaining integrity through strict eligibility and traceability rules. This transitional mechanism must be carefully designed to avoid undermining long-term market development for chemically recycled content and should sunset once infrastructure and supply chains mature for chemical recycling methods. It should also require like-for-like purchases of recycled content (i.e. the recycled content available for a purchaser through a book-and-claim mechanism must match the plastic type they already procure). The key principle of such a scheme is to bridge the gap until collection, sorting and recycling infrastructure matures at scale.

⁸⁶ CONAI, [Plastic modulated fee](#) (2025)

Figure 6-3: Structure of a targeted book-and-claim scheme for packaging recycled content



Overcoming feedstock risk: Provenance and traceability systems, labelling and harmonisation of disposal and collection

A robust and transferable provenance and traceability certification framework is critical to verify recycled content claims and ensure compliance with minimum content requirements. Certification needs to consider origin (country and waste type/stream) and feedstock quality. A uniform approach is needed, which is consistent and clear in the process for verification.

Full consideration of social and environmental costs should be captured through a mandated EPR scheme provenance and traceability certification system. Requiring both imported and domestic recycled plastics to meet traceability standards for lifecycle emissions and minimum labour conditions levels the playing field and drives demand for sustainable materials. By ensuring thorough provenance and traceability conditions are attached to recycled content and enforced, the Australian Government can support domestic recycle use while ensuring social and environmental outcomes.

The lack of aligned minimum standards in the recycling value chain ultimately leads to an unnecessary lack of consistency in recycling services across Australia. This ultimately causes confusion for the community. Australia needs a labelling system (e.g. the Australasian Recycling Label (ARL)) which allows the user to quickly and clearly identify what packaging goes into what bin to help overcome feedstock heterogeneity challenges.

A harmonised national approach to kerbside collection is essential in the long run to support a circular plastics economy. The present approach, varying between councils, leads to confusion, variability in material separation and inconsistent approaches to collection. It is recognised that this is a challenging change, however, it is important all Australian governments work together to drive harmonisation.

Overcoming feedstock and price risk: Using eco-modulated fee revenue for reinvestment in the supply chain

EPR eco-modulated fee revenue should fund the development of consistent methodologies for provenance and traceability, as well as ongoing enforcement of minimum recycled content requirements. It can also support stakeholder education. This approach ensures the scheme funds its own operations without burdening taxpayers.

EPR revenue can unlock collection and sorting infrastructure to accelerate domestic industry growth. As the scheme matures, this funding remains critical for such investments, mirroring the dominant use of EPR fees in markets like Spain.⁸⁷

Once supply chains mature, EPR revenue can support chemical recycling long-term, especially for packaging applications limited by mechanical recyclate. Currently, chemical recyclate costs more than mechanical recyclate or virgin resin, so revenue mechanisms, like contracts for difference, can bridge this gap in the near term. This supports R&D, unlocks domestic use, and captures market premiums for strategically significant facilities.

Independent management of the EPR scheme is critical, with revenue reinvested directly into supply chain improvements for better recycling outcomes. Diverting funds to general government revenue would undermine targeted system enhancements.

Overcoming quality and specification uncertainty: The need for clear and consistent design standards and bans for chemicals of concern

Design standards must incorporate provisions for designing for recyclability. This should prioritise recycling system design standards and be incentivised through eco-modulated pricing under a mandated EPR scheme. These standards should also eliminate problematic materials that harm the environment and hinder recycling. Chemicals of concern like carbon black and PFAS are widespread in packaging, posing risks to environmental and human safety that demand their phase-out. Additionally, these system design standards should aim to work in conjunction with packaging standards, doing so can raise Australia's overall recycling capability which can increase efficiency and lower cost of living impacts by more than the sum of their parts.

Incorporating these chemicals into banned lists requires careful timing, as they often provide unique material properties hard to replace quickly. The Australian Government should adopt a phased approach to allow packaging users time to develop and adopt viable alternatives.

6.4 Government procurement

Federal and state governments can lead by prioritising Australian recycled plastic content in procurement for construction, infrastructure, office supplies, and packaging. Key applications include recycled plastic in road base, pipes, signage, furniture, and government packaging needs.

From July 2024, the Australian Government's Environmentally Sustainable Procurement Policy requires federal construction projects over \$7.5 million to achieve sustainability outcomes.⁸⁸ However, because it does not specify the use of domestic recyclate, the policy does little to support local material recovery or advance circular economy outcomes.

All states have similar sustainable procurement policies, often requiring recycled content in public works above certain thresholds to stimulate demand. These criteria should be expanded to explicitly include the use of domestically recycled materials.

By contrast, Victoria's Recycled First policy specifically targets locally recycled materials. However, further action is needed to drive the procurement of domestically recycled plastics.

Preferencing domestic recyclate overcomes key challenges like demand uncertainty for local producers, high energy costs making imports cheaper, and underutilisation of facilities. This builds supply chain resilience and drives market formation without undermining local industry. Moreover, because these measures are designed to prevent environmental harm, they are consistent with WTO rules.

⁸⁷ Ecoembes, [The recycling of household packaging made of plastic, metal, beverage cartons, paper, cardboard, managed by Ecoembes, grew by 3.5% in 2023 \(2024\)](#)

⁸⁸ Circular Australia, [Australian Government releases Environmentally Sustainable Procurement Policy](#) (n.d.)

6.5 Roles and responsibilities

Achieving a coherent and effective national framework for a nationally mandated EPR scheme with minimum recycled content requirements preferencing domestic recycled content requires coordinated action across the entire plastic packaging value chain. No single actor can deliver the system-wide change required to increase recovery, stimulate investment in domestic reprocessing, and shift markets toward circularity. Instead, success depends on clearly defined roles, aligned objectives, and complementary interventions by all stakeholders across government and industry.

The Australian Government is responsible for establishing the overarching regulatory architecture, ensuring that policy settings create the right incentives for producers while supporting domestic recycling outcomes and remaining compliant with international trade obligations. State and territory governments play a critical role in aligning collection systems and infrastructure planning, helping to ensure that material flows are consistent, efficient, and capable of supplying high-quality end-of-use plastic packaging to processors.

Intermediary bodies (particularly Producer Responsibility Organisations (PROs) and APCO) provide the operational and strategic backbone of the system. They administer the EPR scheme obligations, drive design and labelling improvements, and support industry participants through data, guidance, and market insights. It should be noted that the PRO and APCO could be the same organisation but are separated here to illustrate the difference from the current APCO role. Recyclers and remanufacturers form the downstream engine of the circular economy; their ability to scale, innovate, and deliver certified, high-quality recycled materials underpins the feasibility of meeting minimum recycled content requirements and supporting a resilient domestic industry. Brand owners and retailers sit at the centre of the system, as their procurement choices, packaging designs, and communication with consumers ultimately determine both the demand for recycled materials and the recyclability of products placed on the market.

Together, these actors create an integrated system in which responsibilities are distributed but mutually reinforcing. Table 6-2 outlines the key functions each group must undertake to ensure that EPR and minimum recycled content requirements translate into real environmental and economic outcomes for Australia.

Table 6-2: Roles and responsibilities for key players in plastic packaging

<p style="text-align: center;">Australian Government</p> <ul style="list-style-type: none"> • Design and implement EPR scheme with appropriate eco-modulation • Establish an Administrator (currently APCO) independent of government for scheme administration • Maximise domestic preference while ensuring trade law compliance • Enforce compliance with EPR scheme and minimum recycled content standards • Coordinate with states on a harmonised approach to waste collection 	<p style="text-align: center;">State/Territory Governments</p> <ul style="list-style-type: none"> • Align collection systems and infrastructure planning • Support regional capacity development • Support the PRO in enforcement of EPR and design and labelling standards 	<p style="text-align: center;">Brand Owners & Retailers</p> <ul style="list-style-type: none"> • Transition procurement toward domestic recycled content • Invest in supply chain traceability systems • Improve design of packaging for recyclability where needed • Communicate sustainability to consumers
<p style="text-align: center;">Producer Responsibility Organisation⁸⁹</p> <ul style="list-style-type: none"> • Develop insights and set rates optimising consumer and recycling outcomes to cover the costs of multiple materials • Provide insights and work with brand owners and recyclers • Allot revenue to most efficient pathways to boosting recycling • Engage recycling supply chain via contractual arrangements 	<p style="text-align: center;">Administrator (currently APCO)</p> <ul style="list-style-type: none"> • Drive the implementation of clear and consistent labelling recyclability scheme (e.g. ARL) • Administrator has oversight of EPR fee method that recognises system costs • Provide members and PROs/stewardship schemes with integrated invoicing and reporting function • Enforce design and labelling standards • Work with brands and retailers to develop timelines and pathways for ending the use of problematic chemicals • Accountability to conduct compliance audits and report to Government • Uphold and administer the EPR Assurance Accreditation framework for service providers including PROs and stewardship schemes/initiatives 	<p style="text-align: center;">Recyclers & Remanufacturers</p> <ul style="list-style-type: none"> • Scale production to meet demand growth • Invest in quality improvement and certification • Collaborate on supply chain transparency • Build capability for food-grade and technical applications

⁸⁹ Note: There is the opportunity to adjust APCO’s existing role to incorporate the PRO activities.

6.6 Alignment with existing government initiatives

The key recommendations in this report integrate seamlessly with the Australian Government's existing framework for packaging reform. They build directly upon the reform pathways outlined in Section 4.4, specifically Option 2 (national mandatory requirements for packaging, including minimum recycled content) and Option 3 (a mandated EPR scheme with eco-modulated fees). The approach recommended in this report provides additional granularity to these options, offering a clearer implementation pathway and addressing the nuanced challenges identified by industry.

The proposed approach strengthens packaging obligations by reinforcing the National Packaging Targets and complementing investments made through the RMF. It ensures that the negative externalities associated with virgin plastics are priced into the system through EPR eco-modulated fees. By combining demand-side and supply-side interventions, this integrated approach supports the development of a competitive domestic recycling market and accelerates progress toward Australia's circular economy objectives.

Appendix A Comparing plastics and their alternatives

	Plastic	Paper & Paperboard	Metal	Glass
Barrier performance (gas, oil, etc)	Certain plastics (or polymers) can deliver excellent barrier resistance to water vapour and oxygen, and plastics are widely used industrially in packaging application. ^{1,2}	Paper & paperboard substrates naturally exhibit very low barrier performance to gases and moisture; barrier coatings and laminates can significantly improve this. ^{2,3}	Metal forms a completely impermeable barrier to gases, moisture, and oils. This non-porous surface prevents any diffusion. ^{2,8}	Glass is inert and completely non-porous, providing a 100% barrier to gases, moisture, oils, and aromas, which preserves product purity and prevents any migration. ²
Mechanical & structural integrity	Plastics offer high mechanical performance (strong tensile behaviour, ductility and design flexibility) which contributes to robust packaging. ¹	Provide reasonable strength for packaging, but they can lose structural integrity when absorbing moisture, limiting strength for certain applications. ³	Provides strong structural performance, e.g. Aluminium can be manufactured to withstand significant mechanical stress, helping protect products. ^{2,8}	Glass offers strong structural consistency and maintains integrity well, but its brittleness can introduce transport and handling risks. ^{2,5}
Weight & transport effectiveness	Plastics are lightweight and enable efficient freight loads, reducing fuel consumption and transport emissions. Plastic's light weight allows more units per load and lower logistics cost. ⁶	Paper-based packaging offers favourable strength-to-weight ratios and lighter freight requirements compared to heavier bulk alternatives, aiding transport efficiency. ⁹	Metal is much heavier than plastic, increasing transport fuel use, and larger metal containers may need specialised handling, adding supply-chain complexity. ⁸	Because of glass's fragility and heaviness compared to other packaging alternatives introduces transport and handling risks such as product loss and waste. ^{2,5}
Recyclability & end-of-life options	Some plastics (PET, HDPE) are recyclable, and recovery is improving, but mechanical recycling reduces quality, chemical recycling can be energy-intensive, and contamination may introduce chemicals of concern that can migrate into food. ^{2,5}	Fibre-based packaging is broadly collected for recycling, has well-established mill reprocessing systems, and can also fit into composting where uncoated. ¹⁰	Metals are widely accepted for recycling and retain quality through repeated processing, giving them strong end-of-life recovery potential despite some format-specific limitations. ^{2,8}	Glass is highly recyclability, maintaining its structural integrity, which allows it to be recycled endlessly without compromising on quality. ⁵
Renewability & carbon footprint	Virgin plastics rely on non-renewable fossil fuels and generate high emissions and pollution, but their low weight and efficient production can reduce carbon impacts in some LCAs, though these often exclude wider issues like litter and microplastics. ²	Made from renewable wood fibres, however pulp-making and manufacturing are energy-intensive, giving it a noticeable carbon footprint. So, while the material is renewable, its processing drives moderate emissions. ¹⁰	Mining and refining aluminium and steel are fossil-fuel-intensive, cause significant emissions, and create high-impact wastes, giving metals a low renewability profile. ²	Glass manufacturing is energy-intensive and uses large amounts of raw materials, and its heavy weight increases transport emissions due to higher fuel use. ⁵
Cost & production scalability	Plastic packaging is widely recognised as cost-effective, with low production costs that support wide production scalability. This affordability also benefits the broader supply chain. ⁵	The global paper / paperboard packaging market is large and growing with moderate cost structure allowing broad scalability. ⁹	Metals are costly to produce due to energy-intensive mining and refining, but they support large-scale production due to their wide use and have mature, global manufacturing and recycling systems. ^{7,8}	Glass production is widely established but less flexible and efficient for high-speed packaging and also requires higher processing costs to be recycled compared to plastics. ⁵

Source: 1) Sangroniz A et al., Packaging materials with desired mechanical and barrier properties and full chemical recyclability, (2019); 2) SPC, Materials decision matrix – key considerations when choosing single-use packaging materials; 3) Flint Group, Barrier coatings for paper and board food packaging: Keeping products fresh and safe sustainably, (2025); 4) Palletco SA, Timber Cases vs. Plastic Cases: A Comparative Analysis for Packaging Solutions, (2024); 5) Waste Managed Limited, Glass vs Plastic Packaging – What's Better?, (2024); 6) Plastics Industry Association, Plastic Packaging: Environmental Benefits in Supply Chains, (2025); 7) Technavio, Metal Packaging Market: Industry Analysis 2024-2028, (2024); 8) Container & Packaging, The Pros and Cons of Packaging with Metal Containers, (2025)

Appendix B Techno-economic modelling

This appendix provides a detailed description of the Excel-based modelling framework developed to analyse the impact of different policy configurations on domestic recyclate demand in Australia, quantifying the associated environmental, economic, and social outcomes. Inputs and assumptions have been agreed between ACOR, APCO and Rennie Advisory. The model is designed to simulate the full lifecycle of plastics from initial demand through to end-of-use management while incorporating behavioural responses, investment requirements, and consumer cost implications. It supports scenario analysis across a range of policy configurations, including EPR eco-modulated pricing mechanisms and minimum domestic recycled-content requirements. The framework is intended to provide a transparent, adaptable, and evidence-based tool for evaluating the impacts of packaging reform.

Historical and projected demand characterisation

The model uses historical demand for plastics disaggregated by:

- **Polymer type** (e.g., PET, HDPE, LDPE, PP and other polymers),
- **Packaging format** (rigids and flexibles),
- **Country of origin** (domestic production vs. imports),
- **Recycled versus virgin content.**

Historical datasets are drawn from a combination of APCO and DCCEEW datasets, with country tracing based upon trade volumes.

Securing Australia's Plastic Packaging Recycling Future

Figure B-1: Major demand inputs by source, type, plastic type and packaging/non-packaging⁹⁰

Description	PET (1)	HDPE (2)	PE-LD/LLD (4)	PP (5)
Imported Finished-Virgin-Packaging	29,599	174,283	159,113	89,459
Imported Finished-Virgin-Non-Packaging	217,334	81,416	46,012	223,122
Imported Resins-Virgin-Packaging	98,303	132,886	-	61,304
Imported Resins-Virgin-Non-Packaging	3,178	221,915	-	13,831
Imported Resins-Recycled-Packaging	4,444	-	-	-
Imported Resins-Recycled-Non-Packaging	-	1	-	327
Local Resins-Virgin-Packaging	-	-	99,292	65,273
Local Resins-Virgin-Non-Packaging	-	-	81,071	14,727
Local Resins-Recycled-Packaging	50,257	14,954	13,487	12,575
Local Resins-Recycled-Non-Packaging	6,087	56,290	14,060	36,637

⁹⁰ Developed from DCCEEW, [Australian plastics flows and fates reporting](#) (2025) and from World Integrated Traded Solutions weighted-average import pricing across virgin resins.

Securing Australia's Plastic Packaging Recycling Future

Figure B-2: Country supply split by plastic packaging type and source material⁹¹

Description	China	Other Asia	Rest of World	Australia
Imported Finished-Virgin-Packaging	59%	16%	26%	
Imported Finished-Virgin-Non-Packaging	59%	16%	26%	
Imported Finished-Recycled-Packaging	59%	16%	26%	
Imported Finished-Recycled-Non-Packaging	59%	16%	26%	
Imported Resins-Virgin-Packaging	17%	56%	27%	
Imported Resins-Virgin-Non-Packaging	17%	56%	27%	
Imported Resins-Recycled-Packaging	17%	56%	27%	
Imported Resins-Recycled-Non-Packaging	17%	56%	27%	
Local Resins-Virgin-Packaging				100%
Local Resins-Virgin-Non-Packaging				100%
Local Resins-Recycled-Packaging				100%
Local Resins-Recycled-Non-Packaging				100%

⁹¹ Developed from World Integrated Traded Solutions weighted-average import pricing across virgin resins.

Demand projections are constructed using:

- **Historical growth rates**, benchmarked against economic indicators,
- **Elasticity-adjusted forecasts**, which account for price changes arising from policy and supply conditions,

The model produces annual forecasts over the selected time horizon.

End-of-use modelling framework

The model employs a mass-balance approach to track plastic flows from initial use through to end-of-use. Key pathways include:

- **Recovery for recycling**,
- **Export of processed content**
- **Landfill disposal**,
- **Energy recovery**.

Flow coefficients are derived from APCO data.

Figure B-3: Share of each plastic which reaches end-of-use each year⁹²

Description	End of Use Share
PET (1)	91%
PE-HD (2)	76%
PE-LD/LLD (4)	91%
PP (5)	90%

⁹² Developed from DCCEEW, [Australian plastics flows and fates reporting](#) (2025) and APCO, [Australian Packaging Consumption & Recovery Data 2022–23](#) (2024)

Policy module

The policy module assigns EPR eco-modulated fee structures based on upon the scenario weighted-average eco-modulated fee. Minimum domestic recyclate requirements, are applied, with limits on mechanical recycling determining the split between the use of mechanical and chemical recycling. Mechanical recycling applications are preferenced first.

Elasticities and behavioural responses

The model incorporates **demand elasticities** to estimate how producers, consumers, and supply-chain actors respond to price changes driven by:

- EPR eco-modulated fees,
- Minimum domestic recycled content requirements,

Elasticities are applied at the material level (e.g., polymer substitution), ensuring that cost increases or supply constraints produce realistic shifts in demand.

Lifecycle emissions and environmental costs

The model estimates lifecycle emissions associated with:

- Virgin material production,
- Recyclate production,
- Product manufacture,
- Transportation,
- Reprocessing,
- End-of-life management (landfill, energy recovery, recycling).

Default emissions factors are sourced from literature and confidentially through the industry survey.^{93,94}

Environmental costs are calculated using:

- **Social cost of carbon,**

⁹³ Lawrence Berkeley National Lab, [Climate Impact of Primary Plastic Production](#) (2024)

⁹⁴ Blue Environment, [Carbon emissions assessment of Australian plastic consumption – Project report](#) (2023)

- End-of-use waste disposal cost,
- End-of-use litter cost.

These costs are aggregated at scenario level to produce total environmental cost estimates.

Figure B-4: 5-year real costs of carbon, waste disposal and litter⁹⁵

Description	2025	2030	2035	2040	2045	2050
Carbon cost (\$/t CO ₂ e)	67	85	126	203	293	293
End-of-use waste cost (\$/t plastic waste)	109.2	109.2	109.2	109.2	109.2	109.2
End-of-use litter cost (\$/t litter)	5,595	5,595	5,595	5,595	5,595	5,595

Economic analysis

The model quantifies incremental investment required under each scenario. Costs are annualised and reported by plastic type.

The model evaluates:

- Domestic value creation from reprocessing,
- Avoided virgin resin imports,
- Job creation across the supply chain,
- Net economic benefits after accounting for compliance costs.

Employment impacts are estimated based on:

- Direct roles in collection, sorting, and reprocessing,

⁹⁵ Emissions costs from [Treasury Modelling](#) for the Net Zero Plan. Litter cost from [Microplastics pollution: Economic loss and actions needed](#). Landfill costs from [DCCEEW](#).

Securing Australia's Plastic Packaging Recycling Future

- Indirect supply-chain employment,
- Induced economic activity.

FTE factors are applied consistently across sectors using labour intensity benchmarks.

Economic indicators are developed based upon Rennie Advisory's proprietary Recon model, which broadly aligns with Treasury modelling for the Intergenerational report.

Consumer cost impact assessment

The model estimates changes in consumer costs arising from:

- Increased packaging costs due to minimum domestic recycled content requirements,
- EPR eco-modulated fee pass-through,

Costs are translated into per-household impacts for the weighted-average weekly shop and contextualised with existing waste disposal spend.

Appendix C Brand owner and retailer consultation feedback

This Appendix contains direct summaries of the consultations with Brands. These findings have directly informed thinking around the modelled options and policy approaches put forward. The views in this Appendix do not necessarily reflect the views of Rennie, ACOR, APCO or any recycling industry business.

1. Packaging supply chains are highly complex and diverse, with different business models requiring different policy approaches

- Retailers typically specify packaging requirements to product manufacturers but do not directly control packaging suppliers
- Local manufacturers producing 80-90% of goods domestically source a mix of local and imported packaging materials
- Multinational manufacturers often pack locally but import most packaging materials, while some import finished packaged goods from Asia, where packaging decisions are made for global markets. However, these patterns vary by packaging type, for example, high-volume, low-value items such as milk bottles are rarely imported because transport costs and the inefficiency of "shipping air" make it commercially less viable
- Many Australian manufacturers have significant export businesses, with half or more of production going offshore, which constrains packaging choices due to destination market regulations. For example, brands producing for both Australia and China often cannot use recycled content in their packaging because Chinese regulations restrict or prohibit PCR material, meaning packaging formats must be standardised to meet the strictest market requirement.
- If Australian mandates apply differently to locally produced versus imported goods, it creates competitive inequity
- If mandates apply equally to imported packaged goods, those products may simply be withdrawn from the Australian market or production may shift offshore
- This diversity means a single policy approach will affect different businesses very differently, with some able to adapt relatively easily while others face fundamental business model challenges
- Decision-making processes and supply chain control vary significantly across business models, with multinationals often having packaging decisions made at global headquarters, large Australian businesses having domestic decision-making authority, and small to medium enterprises facing different constraints around access to capital, supply chain leverage, and regulatory compliance resources

2. Current recycled content adoption shows a wide range across polymers, products and businesses. There are significant free-rider concerns.

- Leading organisations have achieved recycled content rates of 20-30% across plastic packaging portfolios and over 50% across all packaging materials
- Some leaders have achieved these rates even when most products are manufactured and packaged overseas, demonstrating that progress is possible across different supply chain models

- Some leaders have removed tens of thousands of tonnes of virgin plastic from supply chains since 2018
- Leaders achieve rates of 95-100% in some rigid plastic applications such as meat trays and water bottles. However, the ease of achieving these levels varies by polymer type and the product being packed, with some applications far more technically or commercially challenging than others
- Many organisations currently use zero or minimal recycled content, citing cost as the primary barrier, with limited availability of suitable recycled material also constraining uptake
- Some major manufacturers using thousands of tonnes of plastic packaging annually still have zero recycled content due to significant cost premiums
- This disparity was repeatedly characterised as a free-rider problem, with early movers bearing costs that competitors avoid. However, many early movers are willing to absorb these costs because they have their own sustainability targets and corporate commitments that drive higher ambition
- Very few companies in Australia have met voluntary APCO targets
- There is frustration among leaders that too many companies will not act until legally required to do so
- Stakeholders consistently reported that voluntary approaches appear to have reached their limit, suggesting mandatory measures will be necessary to bring the broader market along
- However, mathematical analysis demonstrates that current recycled content targets cannot be met from current resin volumes available in the market
- Industry calculations show that with plastic recycling rates at 16-17%, if all manufacturers wanted recycled HDPE in milk bottles alone, only 5% average content could be achieved
- This supply-demand mismatch means targets must be carefully calibrated to available supply or accompanied by massive infrastructure investment

3. Food safety and technical performance requirements create a critical dividing line between what is achievable today and what remains challenging

- Rigid plastics such as PET for food contact are relatively mature with established mechanical recycling pathways. However, recycled HDPE currently lacks EU specific regulations that give industry a clear framework. Concerns remain about the risk of non-intentionally added substances. Decontamination technologies have improved, including the latest Erema systems, yet until recently there were questions about whether high molecular weight compounds could be adequately removed through mechanical recycling
- Some organisations have achieved very high recycled content rates in rigid plastic applications
- Soft plastics for food contact represent a major gap, with no domestic capability for food-grade recycled flexible packaging, and limited collection scale further constraining the development of viable end-market
- Chemical recycling is considered necessary for soft plastics but remains high cost with limited supply availability
- Personal care and therapeutic goods manufacturers apply standards close to food-grade due to product safety requirements

- Some imported recycled materials have not met these stringent standards
- Technical barriers include machine performance issues such as static, speed reductions and quality variability for soft plastics produced to Ceflex or the Association of Plastic Recyclers requirements. Additionally heat resistance of these materials is typically reduced and is a major issue. Equipment needs increased pressure and specific jaw designs to seal the materials, and this control is not always available on older models. As a result, manufacturers may need to replace or upgrade equipment at significant cost
- Chemical compatibility issues arise with corrosive products such as bleach which interact with recycled content requiring high stability packaging
- Colour consistency is extremely difficult to achieve, with some manufacturers unable to reach higher recycled content targets solely due to inability to match required colours
- Transport durability can be affected by recycled content, requiring thicker packaging which increases material volumes and weights
- Supply reliability represents a critical barrier, with multiple examples of manufacturers forced to backtrack on recycled content adoption due to supplier inability to maintain quantity or quality
- Technical performance limits exist for recycled content levels, with HDPE particularly constrained at approximately 50% due to environmental stress cracking and chemical resistance issues
- Large format packaging faces additional constraints, with 50% practical limit for safety reasons including drop test performance and pallet stacking requirements
- Small format packaging with recycled PP faces quality issues where material is not clean enough for injection moulding, requiring machine shutdowns for cleaning
- Practical limits around 80% recycled content have been observed across materials, with the remaining 20% virgin material needed for physical properties in specific applications
- Performance degradation occurs at high recycled content levels across materials including glass and fibre, where excessive recycled content causes products to fail performance requirements
- Even mature recycling systems face technical constraints, with steel furnaces capping out at approximately 20% recycled steel content
- For tin packaging sourced internationally, manufacturers have limited leverage over recycled content decisions made by overseas steel mills
- Dangerous Goods classifications impose additional regulatory constraints on packaging materials, with products subject to Australian DG code for road and rail transport and stricter International Maritime DG code for shipping
- Recycled content in Dangerous Goods packaging may not meet safety requirements for market sale under these regulatory frameworks
- Validation costs are substantial, with companies citing costs exceeding one million dollars and timeframes of 12-24 months to validate even simple polymer changes
- A significant gap exists in food safety certification standards, with mechanical recycling approved in some international jurisdictions but not others
- Companies are left to self-assess risk with no clear national standard

- A tension exists between optimising for design-for-recyclability versus maximising recycled content use, as these objectives do not necessarily complement each other
- Design-for-recyclability principles may restrict material choices to preserve downstream food-grade recovery potential, but this can conflict with using available recycled feedstock that meets performance requirements for non-food applications
- Policy frameworks need to balance upstream recycled content requirements with downstream recyclability objectives to ensure both goals can be achieved
- Food packaging must be designed to protect food integrity, support food security, and minimise food waste, with any reduction in packaging performance potentially leading to increased spoilage and associated carbon impacts from wasted food that may exceed the environmental benefits of using recycled content
- Consumers typically misunderstand the difference between recycled content and recyclability, and there is little consumer-driven demand that would create a commercial incentive for change

4. Chemical recycling is strongly preferred for food contact applications but faces cost and supply constraints, while mechanical recycling has limitations

- For food contact applications, chemical recycling is strongly preferred as it solves food safety concerns, eliminates colour and quality issues, and ensures machine compatibility
- Chemical recycling essentially produces virgin-equivalent polymer
- Chemical recycling comes at a very high cost premium, cited as 50-100% above virgin materials
- Supply is limited both globally and locally
- Even when local chemical recycling capacity has been established, it may be pre-committed and not accessible to all potential users
- Mechanical recycling works well for rigid plastics such as PET and increasingly for HDPE, whereas soft plastics typically rely on chemical recycling pathways
- Mechanical recycling of polypropylene for food contact applications currently has no clear pathway
- Quality and consistency concerns remain issues for mechanically recycled content, largely because input streams are continually changing. Manufacturers need to provide users with confidence that they meet the requirements of the Letter of No Objection, which typically expects input feedstocks to comprise at least 99% food-grade containers
- Mechanical recycling is not considered suitable for soft plastics in food contact applications
- This technological divide means different packaging types face fundamentally different cost structures and technical feasibility for recycled content adoption

5. Domestic versus international sourcing involves trade-offs between cost, quality, availability and traceability

- All stakeholders agreed that imported recycled content is generally cheaper than Australian-sourced material for comparable quality
- Quality can be equivalent to domestic supply if properly managed through diligent supplier selection and strong contractual arrangements
- Overseas sourcing requires careful management but can deliver solid quality at better prices

- Traceability represents a major concern for imported recycled content
- Unlike established certification schemes for sustainable forestry or palm oil, no robust chain of custody certification exists for recycled plastics and Australia lacks a competent authority to validate recycled materials, a gap that creates compliance challenges, particularly in relation to emerging EU regulatory requirements
- This creates fraud risk, particularly when paying premium prices for recycled content
- Mass balance certification methodologies for chemical recycling lack clear standards, particularly around fuel-exempt approaches
- Chemical recycling of soft plastics produces mixed outputs of both plastics and fuel at refineries
- Industry standards such as the New Plastics Economy require fuel-exempt mass balance methodology, excluding fuel outputs from recycled content calculations
- Australia's only refinery capable of processing pyrolysis oil is primarily geared toward fuel production rather than plastics
- This creates greenwashing risks where recycled content claims cannot be substantiated under fuel-exempt methodologies
- Brand owners are highly risk averse regarding recycled content claims that consumers could challenge
- When manufacturers attempt to verify Australian recycled content provenance, they encounter significant barriers as suppliers are only obligated to confirm material is recycled, not disclose its source
- Supply chain information disclosure typically stops at the bottle or packaging manufacturer level, making verification of recycled content origin extremely difficult
- For glass and metal packaging, traceability of recycled content is even more limited, with manufacturers having little or no ability to certify recycled content levels in these materials
- Availability of local options is limited, with some materials having only one or two domestic manufacturers
- The definition of domestic recyclate should focus on material source and destination rather than processing location
- Australian waste collected and returned to the Australian market should count as Australian content even if processed offshore

6. Market structure concerns centre on limited market competition and supply security, with mandates potentially enabling uncompetitive pricing without sufficient competitive pressure

- Strong concerns emerged about Australia's recycled plastics market being dominated by two or three large players
- Multiple stakeholders expressed anxiety that mandates without competitive supply mechanisms could enable uncompetitive pricing
- Mandatory domestic content requirements would create an effective monopoly for Australian recycling industry, particularly problematic given current cost premiums of 200-300%
- Local recyclers could essentially have a licence to charge premium prices without international competitive pressure

- While supporting local industry is important, it should not come at any cost and local suppliers must be held to international competitiveness standards
- Multiple organisations require at least two suppliers for each critical input to manage supply risk, but this is difficult to achieve in the current Australian market
- Sourcing exclusively from local suppliers represents a risk when the supply chain is tight
- Some organisations could potentially secure available supply but this would squeeze other parts of the industry out rather than representing new capacity
- Policy intervention will be needed to ensure competitive market dynamics
- Real-world evidence from the UK demonstrates supply shock risks: when recycled content mandates were introduced, recyclers auctioned off supply at the start of the year, driving prices up significantly as insufficient volumes were available
- In supply-constrained markets, larger organisations can secure available supply through long-term contracts, leaving small and medium enterprises struggling to compete and comply with mandates
- Mandates introduced before adequate supply exists risk market distortions that favour the largest players while crushing smaller competitors

7. Cost pressures and international competitiveness concerns are particularly acute for local manufacturers competing against imports

- Australian manufacturers already face significant cost disadvantages compared to Southeast Asian competitors
- The current cost of doing business was characterised as extremely challenging
- Adding mandatory recycled content requirements at current price premiums could put domestic manufacturing operations at risk
- This is particularly acute for manufacturers competing against imported finished goods where producers face no equivalent requirements
- Energy costs were highlighted as a specific pressure point, with one manufacturer the last remaining paper producer in New Zealand due to energy costs forcing other closures
- Several manufacturers questioned whether mandating local sourcing for recycled content is sustainable when similar mandates do not exist for fibre, cotton and other materials
- Piling additional costs onto domestic manufacturing through recycled content mandates could accelerate the shift of production offshore
- Policy uncertainty is preventing necessary infrastructure investment, with industry unable to commit capital while EPR scheme details and costs remain unclear, and manufacturers are currently dialling back packaging innovation and sustainability initiatives while awaiting regulatory certainty
- Regulatory certainty is essential before members can make the substantial investments required for 3-5 year packaging transitions, with approval processes for multinational companies particularly lengthy and requiring clear policy settings well in advance of implementation
- Cost of living impacts must be considered as packaging improvements and recycled content requirements will increase product costs that are ultimately borne by consumers, with particular concern about regressive impacts on lower-income households for essential items

- For multinational companies, packaging and recycled content decisions are often made at global headquarters in Europe or elsewhere, with Australian market considerations potentially secondary
- Australian policy settings that differ significantly from major markets like the EU may have limited influence on global product specifications
- Packaging labelling and compliance requirements impose significant costs, with label changes costing hundreds of thousands of dollars when collection systems change
- Guidelines on what constitutes recyclable packaging in Australia have been fluctuating significantly, creating daily challenges for manufacturers in determining compliance
- Regulatory uncertainty around labelling requirements creates substantial risk and cost for first movers who must change specifications as rules evolve
- Data management and substantiation requirements for recycled content claims represent a massive administrative burden for manufacturers
- Specific cost threshold data indicates that small premiums per unit are manageable but rapidly become prohibitive at scale
- Small per-unit premiums in the low single-digit cents range across millions of units require internal approval but are achievable, while premiums in the double-digit cents range become extremely challenging
- Cost premiums of 50-100% above virgin pricing for HDPE recycled content represent prohibitive barriers for many applications
- Consumer education and support is necessary to help build understanding that packaging improvements come with costs that will ultimately be borne by consumers

8. Export market constraints impose significant limitations on packaging choices for Australian manufacturers

- Some major export destinations, particularly in Asia, prohibit the use of recycled plastic in food contact applications
- Manufacturers serving both domestic and export markets must either run separate packaging lines or forego recycled content entirely in certain product formats
- Export products must perform under different environmental conditions, with requirements for extended shelf life in high humidity and high temperature conditions and additional load requirements due to the extended supply chain
- Approximately half of production for some manufacturers goes offshore
- Packaging choices are driven by the most restrictive market requirements
- If Australian policy requires recycled content that is prohibited in key export markets, manufacturers must establish separate production runs at significant cost, abandon export markets, or seek exemptions
- Export-focused products may need separate treatment in policy frameworks
- Mandatory local content requirements could create barriers to trade and may trigger reciprocal actions from trading partners, potentially disadvantaging Australian exporters in key markets, with particular attention needed to trans-Tasman trade relationships and mutual recognition arrangements

9. National policy harmonisation is strongly preferred over state-based approaches, with integration of existing CDS schemes essential

- Australia currently has eight different Container Deposit Schemes operating across states and territories, creating complexity for national businesses
- State-based single-use plastics legislation varies significantly, with states seemingly competing to have the most stringent requirements
- Different standards in different states create operational challenges for businesses that manufacture and distribute nationally
- Examples include NSW legislating tethered caps on beverage bottles by 2030, requiring significant capital and operational expenditure
- Manufacturers cannot easily produce different specifications for different states when products cross state borders
- CDS schemes already function as EPR schemes for beverage containers
- Any national EPR scheme must include explicit carve-outs and harmonisation provisions for CDS rather than creating duplicative or conflicting requirements
- CDS schemes represent established producer responsibility mechanisms with existing collection infrastructure, consumer behaviour patterns, and financial flows that should not be disrupted by new EPR frameworks, and policy should focus intervention on materials and packaging types where collection and recovery systems are failing
- Previous instances of poor integration include conflicts between CDS requirements and Australasian Recycling Label requirements, where labels suggested crushing bottles while CDS required intact returns
- State governments and Environmental Protection Authorities generally understand this is an issue and are open to feedback on harmonisation
- Strong preference for federal consistency rather than state-by-state variation, particularly for recycled content requirements
- National businesses need the ability to supply products across the country without navigating multiple different regulatory frameworks
- Proximity and density of collection points in CDS schemes remain below European benchmarks and affect collection rates
- While CDS has successfully addressed litter problems, achieving higher collection rates requires policy improvements including return outlet density

10. Mandate design requires careful attention to practical implementation challenges including scope, flexibility and phasing

- Targets should be set at company or portfolio level rather than at individual SKU level, while allowing for variation based on product type. For example, a manufacturer producing only infant-formula cans will have a lower feasible recycled-content target than a business producing beverages in PET, due to the different technical and regulatory constraints
- Tracking and reporting at SKU level would be extremely difficult for companies with diverse product ranges
- Mandates requiring Australian recycled content in overseas-manufactured packaging are considered impractical
- Requiring offshore facilities to source Australian materials makes no sense from a lifecycle assessment perspective

- Many major brands have the vast majority of products manufactured and packaged overseas, arriving in Australia as finished goods in containers
- These companies will not ship Australian resin to overseas facilities for packaging production
- If mandates apply only to Australian production, this increases costs for local manufacturing and accelerates the shift of production offshore
- This creates an impossible bind where mandating all goods is unworkable but mandating only local production drives production offshore
- Solution requires a differentiated approach: general recycled content requirements for all packaging with additional incentives for Australian content rather than blanket mandates
- Overly prescriptive domestic content requirements could drive production offshore
- Flexibility mechanisms or buy-out options are necessary where technical or commercial barriers prevent compliance
- Carve-outs are needed for medicines and therapeutics, where packaging is often part of regulatory registrations requiring years of stability testing
- Carve-outs are also needed for GST-exempt essential items such as milk, bread and fresh produce
- A moderate starting point was suggested as a logical target, representing a stretch for many companies while being achievable where supply exists
- Phasing should begin with materials where recycled supply exists, particularly rigid PET and HDPE, before tackling more difficult applications
- Packaging transitions typically require 3-5 years to complete, encompassing validation processes, supply chain adjustments, manufacturing line modifications, and regulatory approvals, with multinational companies requiring additional time to secure approvals from global headquarters
- Industry requires clarity and certainty, with frustration about ongoing policy discussions spanning more than five years without clear direction
- Policy uncertainty itself is preventing necessary infrastructure investment, with industry in a waiting game unable to invest while EPR details and costs remain unclear
- Government must establish clear standards for what constitutes acceptable recycled content claims, including chain of custody certification requirements and verification processes
- Without government-defined standards, industry lacks a level playing field for recycled content claims, creating risks of unverified claims and competitive disadvantage for companies investing in proper certification
- Introduce a formalised exemptions process for cases where there are substantive, unsolvable barriers, such as fit-for-purpose requirements, health and safety considerations, or increased product wastage, with exemptions applied at the product-category level

11. EPR scheme design should cover all materials with a focus on problematic materials, incentivise recycled content, ensure mandatory participation and maintain reporting simplicity

- EPR schemes were generally preferred over pure mandates, though a hybrid approach was suggested as most effective

- EPR fees should apply to all packaging materials but with a focus on problematic and hard-to-recycle materials rather than applying fees uniformly across all packaging
- Packaging with functioning recycling systems such as cardboard, paper and glass should be subject to minimal or no fees
- Priority should be soft plastics and complex multi-material packaging where current systems are failing
- Soft plastics collection infrastructure has collapsed following the failure of previous schemes, creating an urgent need for system rebuilding
- Strong preference for incentivising recycled content through rebates or discounts rather than penalising virgin material use
- A three-tier incentive structure was proposed: penalties on virgin plastic, rebates for any recycled content, and greater rebates for Australian recycled content
- This structure ensures early adopters are rewarded rather than disproportionately penalised, while progressively incentivising local content
- International experience shows fee levels must be carefully calibrated: the UK's plastic tax on packaging with less than 30% recycled content has led some producers to reduce recycled content because paying the tax is cheaper than compliance
- EPR fees should be based on the actual packaged product and its recyclability in practice rather than just the materials used
- Identical polymers can have very different recovery rates depending on colour, format and other design features
- Mandatory participation is essential to prevent free riders from gaining competitive advantage by opting out
- Reporting requirements need to be simple and practical
- Current proposals requiring component-level detail are considered impossible to implement and likely to result in inaccurate data
- Funds collected must be reinvested into recycling infrastructure and education rather than becoming general revenue
- Small businesses must be included as they represent a significant portion of the packaging market
- Thresholds need careful design to avoid either excluding too much or creating unworkable compliance burdens
- Recycled content verification for glass and metal packaging presents particular challenges with limited traceability systems
- Policy may need to either exclude these materials from recycled content requirements or use industry average benchmarks where direct verification is not feasible
- EPR schemes must apply consistently across all packaging materials, not just plastics, to avoid unintended material substitution that could worsen overall environmental outcomes
- If EPR fees apply only to plastic packaging, industry may shift to alternative materials such as glass that could have higher lifecycle emissions

- Policy objectives must be explicitly clear whether the goal is reducing overall waste or reducing plastic specifically, as these different objectives drive fundamentally different industry behaviours

12. Consumer understanding and behaviour change is under-developed but critical to supporting the packaging transition

- Consumers appear to only register recycled content claims when percentages exceed 50%, suggesting lower levels may not provide meaningful marketing value
- Recycled packaging does not appear to be a significant reason to buy for many products, particularly at lower income levels where price sensitivity is high
- Consumer research suggests that packaging recyclability is a higher priority than recycled content for purchasing decisions
- International examples demonstrate that stronger cultural approaches to waste and recycling can be built through sustained education campaigns
- The Re-made in Australia brand has potential value if properly supported and communicated
- There are different opinions on Government's role. Some expressed scepticism about government effectiveness in communicating the value of such programs while others explicitly see this as the government's role
- If consumers understand the value and see the brand on competitor products, it could motivate adoption as long as it provides genuine point of difference justifying additional expense
- EPR scheme funding could be directed toward comprehensive consumer education to improve segregation and recycling behaviour
- Current recycling behaviour is poor compared to comparable countries
- Without effective communication about why changes are occurring and what they mean for product costs and environmental outcomes, consumer behaviour is unlikely to shift sufficiently
- Consumer perception regarding changes to packaging formats, colours, and appearance is extremely important for brand owners, as packaging changes using recycled content may alter visual characteristics that consumers associate with product quality and brand identity
- Green hushing is occurring as companies avoid making recycled content claims due to ACCC enforcement risks around substantiation and greenwashing, with manufacturers concerned about making claims that could be challenged when traceability systems remain underdeveloped, as evidenced by recent ACCC actions including penalties imposed on companies for unsubstantiated environmental claims

Appendix D Industry Involvement

Below is a list of organisations who have contributed information to this work. This is a recognition of these contributors' involvement with the project but does not represent an endorsement of this report.

- A2
- Aldi
- Amcor
- Australian Food & Grocery Council
- Australian Institute of Packaging
- Australian Micro Recyclers Association
- Australian Paper Recovery
- Blackmores
- CCEP
- CEMAC Technologies
- Chemistry Australia
- Cleanaway Operations
- Close The Loop
- CSIRO
- Dulux
- Essity
- GT Recycling
- iQ Renew
- Kangaroo Plastics Technology
- Kellanova
- Martogg & Company
- Nestle
- Pact Group
- Pellenc ST
- PepsiCo
- Re. Group
- Reckitt
- Recycling Plastics Australia
- Sanitarium
- Simplot
- Soft Plastic Stewardship Australia
- Solving Plastic Waste CRC
- TOMRA Australia
- Transmutation
- Unilever
- Visy Recycling
- Viva Energy
- Woolworths

Get in touch

 rennieadvisory.com.au

Eamon McGinn
Executive Director
Rennie Advisory
E: emcginn@rennieadvisory.com.au

Suzanne Toumbourou
Chief Executive Officer
Australian Council of Recycling
E: ceo@acor.org.au

Chris Foley
Chief Executive Officer
Australian Packaging Covenant Organisation Ltd.
E: ceo@apco.org.au