ACOR
AUSTRALIAN COUNCIL OF RECYCLING

AUSTRALIAN COUNCIL OF RECYCLING SUBMISSION: INQUIRY INTO WASTE REDUCTION AND RECYCLING POLICIES

15 April 2024

About the Australian Council of Recycling

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 430 tonnes of material recycled in Australia.

Our membership is represented across the recycling value chain, and includes leading organisations in advanced chemical recycling processes, CDS operations, kerbside recycling, recovered metal, glass, plastic, paper, organic, tyre, textile, oil and e-product reprocessing and remanufacturing, and construction and demolition recovery. Our mission is to lead the transition to a circular economy through the recycling supply chain.

Contacts for this submission

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

Aziza Kuypers
Policy Adviser
Australian Council of Recycling
policy@acor.org.au

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Contents

Executive summary

Recycling is an integral gear within the circular economy, delivering significant social, economic and environmental value. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 431 tonnes of material recycled in Australia. The industry operates across our homes, businesses, factories and construction sites. It collects, sorts and reprocesses material, and makes new products with recycled content, creating more jobs for Australians.

The recycling sector is poised to deliver broader economic, environmental and social benefit; however, current national policy and regulatory settings must be addressed to realise this potential.

Current export licensing rules imposed through the *Recycling and Waste Reduction (RAWR) Act 2020* are constraining access to the global circular economy by restricting trade in recycled commodities. It is essential to urgently streamline export licensing in order to enable access to markets and support domestic recycling rates. Furthermore, cost recovery should not be imposed on licensing arrangements that are not fit-for-purpose, leading to perverse outcomes and further dampening resource recovery just as the need for increase resource efficiency is greater than ever.

Export licensing arrangements point to a broader regulatory issue, wherein regulatory settings frustrate the transition to a circular economy: a National Resource Recovery Framework is a necessary first step to align environmental and circular economy principles and create nationally harmonised regulation.

The effectiveness of product stewardship schemes, another key policy measure, needs evaluation. To date, the recycling sector has not been adequately involved in the establishment or governance of product stewardships schemes. Robust measures must be taken to improve scheme governance, accountability and transparency, and to ensure a proper focus on delivering genuine recycling outcomes and creating markets for recycled materials.

Improved product stewardship for e-products is also critical, to address the rising volumes of e-waste, the viability of e-waste recycling and also solve the critical threat posed by battery fires in recycling facilities.

The Australian Government's move to enact mandatory packaging regulation is a welcome launching point for broader circular economy systems and to boost end markets for Australia recycled commodities. At the same time, existing container deposit schemes, product stewardship success stories, should now be harmonised and brought up to best practice standards.

Finally, the community must be engaged by building confidence in recycling and reducing contamination in recycling streams, through the innovative recycling program Recycle Mate.

There is much potential for our industry to grow and thrive, supported by a range of Government initiatives, that will not only unlock barriers to recycling, but also deliver jobs, advance resource efficiency and unleash innovation and productivity in Australia's circular economy.

1 Introduction

1.1 Value of recycling

Recycling is an integral gear within the circular economy, delivering significant social, economic and environmental value. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 431 tonnes of material recycled in Australia. The industry operates across our homes, businesses, factories and construction sites. It collects, sorts and reprocesses material, and makes new products with recycled content, creating more jobs for Australians.

The Australian Government's 2023 wellbeing framework, Measuring What Matters, identified resource use and waste generation as a key parameter for a more healthy, secure, sustainable, cohesive and prosperous Australia. This priority is reflected in the recent, unprecedented investment by government and industry in recycling infrastructure, and the overwhelming public support for resource recovery, recycling, and local remanufacturing.

In the financial year ending 2022, the recycling industry:

- provided nearly 95,000 jobs;
- delivered a 63.1 per cent recycling rate, processing 40.6 million tonnes of material;
- provided higher average employee livelihoods of $82,618, compared to the Australian average weekly earnings of $69,103; and
- grew by 68.8 per cent, compared to Australia's nationwide employment growth of 17.4 per cent.

The policy environment for circular economy and recycling in Australia is rapidly evolving, with a broad range of national initiatives, including the implementation of climate change targets, the *RAWR Act 2020*, an export ban on recyclable materials, the National Waste Policy and Action Plan, the National Reconstruction Fund, a national commitment to a circular economy, the convening of a Circular Economy Ministerial Advisory Group, and a commitment to regulate packaging design.

The circular economy is a much bigger system than recycling, however every product eventually reaches an end of use, no matter how resource efficient, repairable and reusable. Recycling is the critical link that closes the loop in a circular economy.

1.2 Policy overview

In October 2022, Australia's Environment Ministers committed Australia to achieving a circular economy by 2030, by designing out waste and pollution, keeping materials in use longer and fostering end markets for recycled material. Every available lever will be needed to achieve this transformation—particularly in light of the fact that Australia is currently falling short in progressing key targets in the National Waste Action Plan, which include:

- reducing the total waste generated in Australia by 10% per person by 2030
- achieving an 80% average recovery rate from all waste streams by 2030
- significantly increasing the use of recycled content by governments and industry
- halving the amount of organic waste sent to landfill by 2030

The 2022 National Waste Report found recovery rates for household waste have stagnated while commercial and industrial waste recovery rates have declined.

Since 2020, Australia has restricted the export of unprocessed recyclable materials including glass, tyres, plastic and (from July 2024) paper, under the *RAWR Act 2020*, which also provides a framework for voluntary, co-regulatory and mandatory product stewardship. It is therefore imperative to ensure necessary infrastructure exists to transform these recovered resources into higher value commodities, and that there are viable and robust domestic and international markets.

Investment in recycling technologies is also essential to address priority areas including photovoltaic and battery storage systems, electrical and electronic products, clothing textiles and hard-to-recycle plastics. Addressing organic waste will also be critical in reducing climate emissions towards net zero.

Recycling and clean energy have also been identified as a focus for research in the *2021 National Research Infrastructure Roadmap*. To meet future demand while pivoting to cleaner energy and fuel sources, we must leverage greater resource efficiency through recycling.

1.3 Supporting a thriving recycling sector

It is important to distinguish waste management from recycling. While historically, the two sectors were tied, as businesses integrated waste and recycling, in fact these processes are distinct: waste management is a logistical enterprise, whereas the recycling value chain is production, comprising aggregation and sorting, reprocessing and remanufacturing. Recycling processes are often dependent on effective logistics provided by the waste management sector, which transports and disposes of waste and unwanted materials. But, fundamentally, waste entails pollution and risk, whereas recycling entails resource efficiency, value creation, economic opportunity and circular outcomes.

A legacy of this is the resulting poor data and information on recycling, which is an impediment to well informed policy and investment decisions. Data capture has typically conflated waste management and recycling, so that the true capacity for recycling and re-manufacturing infrastructure in Australia is not well mapped and the markets for recycled materials are not well understood or supported. Logistics operators, aggregators, processors and remanufacturers are often defined as one group in datasets, masking genuine capacity and the value chain required to deliver recycling outcomes.

Other barriers to recycling include the complex and fragmented regulatory environment across the country, the low cost of landfilling which diverts material away from recycling, the relatively low value of recovered material, cost competitiveness with virgin materials, and willingness within the supply chain to embrace change. Targeted funding is an important lever to enabling the significant scale required to address these barriers, and as such, funding deployed through the Recycling Modernisation Fund is welcome and necessary. However, strong markets and aligned regulatory frameworks must also be addressed. In particular, the Australian Government must prioritise a nationally harmonised regulatory framework for resource recovery and recycling.

A local circular economy can bolster sovereign capabilities and reduce supply chain vulnerabilities. It will require a transformation of Australia's economy with the creation of new industries, including new collection and recycling infrastructure and remanufacturing of recycled materials.

It must be recognised that the recycling system is essentially comprised of three key elements: collection, processing, and end markets. Each of these elements is vital for real recycling outcomes—and each must be economically viable. A most pressing priority for recyclers is access to dynamic markets, without which the entire recycling system cannot be viable.

There is much potential for our industry to grow and thrive, supported by a range of Government initiatives, that will not only unlock barriers to recycling, but also deliver jobs, advance resource efficiency and unleash innovation and productivity in Australia's circular economy.

2 Recycling export regulations

2.1 Export licensing

Australia is the only country to have enacted legislation on the export of recycled commodities, through the *RAWR Act* (the Act).

ACOR has been a strong advocate for the implementation of a ban on the export of waste, and supportive of the objectives to build Australia's capacity to generate high-value recycled commodities and associated demand, address concern in Australia and around the world about plastic pollution of our oceans, and the need to ensure that any exports of waste do not cause harm to human health and the environment. However, there are lessons to be learned from Australia's leadership position relating to waste export.

Rules underpinning the *RAWR Act* ban the export of 'waste material' such as unprocessed recovered glass, tyres and plastic—unless an exemption is granted at Ministerial level. Additionally, a license is required to export processed recycled materials derived from these 'waste materials', including recovered plastics that have been 'sorted into single resin or polymer type and further processed, for example flaked or pelletised'.

These rules—particularly as they relate to licensing for the export of processed recycled material—are not fit for purpose. The current approach results in the treatment of manufactured materials as waste, adding cost and delay to the trade of recycled commodities and fundamentally undermining investment in domestic recycling infrastructure, including hundreds of millions of dollars contributed by governments through the Recycling Modernisation Fund.

In particular, the current export licensing process is unclear and inefficient, and restricts the trade of Australian recycled polymer commodities. This is a perverse situation, given the unprecedented investment into recycling capability to produce this material, while, at the same time, there are no restrictions on the import of virgin and recycled polymers into Australia.

2.1.1 Urgent need to streamline export licensing

The current arrangements to procure export licenses for pelletised recycled plastic and flakes are cumbersome and restrict access to dynamic international commodity trading—and underpin a fundamentally uneven playing field with virgin polymers. The Australian Government is making efforts to address these issues, while constrained by the Rules under the Act. It remains to be seen whether the proposed alterations to the licensing application process solve any of the identified problems.

Under the existing arrangements, any change to the export license, such as approving a new buyer, requires a variation to be submitted which can take up to six months to approve, by which time the buyer has generally moved on: manufacturing plants need confirmed in-feed sources to meet production and will move on to sellers who can immediately confirm ability to supply. Australian plastic recyclers are missing commercial opportunities due to the onerous licensing system, which renders plastic reprocessors uncompetitive in volatile global commodity markets, a difficulty piled atop higher shipping and labour costs. The longer the existing process is unchanged, the more it will limit healthy access to markets and contribute to a lack of competitiveness for Australian-made products, ultimately causing Australian recycling rates to lag.

The export licensing system also creates the need for ongoing variations, each sometimes subject to months-long delays. For an export trader specialising in recycled plastic pellet and flake, the variations are exponential. A trader may sell for 10 processors, each of which makes perhaps 10 specifications. Each processor might look to sell to 50 different buyers. That alone creates 5000 scenarios, each requiring a variation to be processed.

The process seems to be built around the expectation that one company will make only one product and sell to only one company indefinitely, which doesn't reflect the fundamental business practice of seeking as many buyers for products as possible, particularly in an evolving and volatile recycled plastic sector. Commodity markets are by definition dynamic as they response to shifting supply and demand, with volatile pricing mechanisms. Buyers of Australian recycled pellets and flake can be expected to change regularly. To compete in this space, export licensing decisions must be made within days, rather than weeks or months.

2.1.2 Solutions to export licensing issues

The current export licensing for recycled plastic is based on a combination of three elements: A, the specification of the product being sold; B, the onshore processor selling the product; and C, the buyer and the country. Any change to any element immediately incurs a great delay, as well as, from July 2024, a yet-to-be-determined fee (see section 2.2). The requirement in the current system for a variation for any change in specification (colour, pellet size etc) or the processor or the buyer (either facility or country), has led to ballooning applications for variations.

There are a number of ways this process could be simplified to allow for faster licensing, which would not only make exports more competitive but also relieve what must be an onerous and expensive administrative burden on the Australian Government. We propose three immediate simplifications, noting that broader reform must be enacted:

- Allow broad base specifications: For element A, the specification, allow plastic processors and traders to be licensed to sell a product specification that is as broad as possible; for example, a processor's initial application would approve them to sell all LDPE pellets, rather than one application for natural LDPE pellets, one for black LDPE pellets, one for Jazz LDPE pellets, and the list goes on. Once that broad specification is approved, any subtle variations, made to order for a buyer, should be permitted to be shipped under that broad specification.
  Furthermore, making export licenses contingent on a single specification doesn't reflect typical buyer requests, which are often for all pellet grades of a polymer; a request that's not accommodated in the current export licensing application system.
- Preapprove onshore processing facilities, through the Australian Recyclers Accreditation Program (ARAP) (see section 3.3). Accreditation would reduce the need for some administration: if the seller is an accredited recycler, no further confirmation of the seller's credentials should be necessary.
- Disconnect the buyer client and country from the export license. Submitting a variation for each new buyer enquiry, with the concomitant months-long wait, is a critical obstacle. Complete details for the client and country purchaser could be supplied after a successful sale. This would prevent clogging up the export licensing system with endless variations for new buyers that don't eventuate due to the wait built into the beleaguered system.

2.1.3 Pelletised and flaked plastic is a commodity, not a 'waste'

Fundamentally, ACOR questions why pelletised recycled plastic is regulated as 'waste' and therefore subject to waste export ban exemptions. By no reasonable test is flaked or pelletised recycled plastic 'waste'. 'Waste' is valueless pollution. Recycled pellets (r-pellets) have had their value confirmed in the market many times over: when they're sold from a MRF to a plastic reprocessor, when a plastic repocessor invests in the material by substantially altering the material through pelletising, and when the r-pellets find a buyer on the local or international market. R-pellets, flaked plastic and other recycled plastic manufacturing inputs must be treated just like virgin plastic pellets or any other manufacturing input or commodity.

The Basel convention establishes the criteria for establishing the end-of-waste in the technical guidelines released in June 2021; namely, that 'the substance or object is commonly used for specific purposes', 'a market or demand exists for such a substance or object', 'the substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products' and 'the use of the substance or object will not lead to overall adverse environmental or human health impacts'. For plastic, the Technical Guidelines establish that end-of-waste is understood to have occurred after pelletising. (This summary of the Basel convention was also presented to the Department of Agriculture, Water and the Environment in a report by MRA Consulting, 'Waste Plastics Export Regulation Phase 2—Processing Requirements' in June 2022.)

Classifying Australian-made r-pellets as waste perpetuates an uneven playing field between domestic and imported r-pellets. Food-grade recycled PET pellets imported into Australia, for example, are classified

under the same HS tariff[1] code as virgin PET: HS 3907.6900. Australian-made food-grade rPET should be allowed to be exported under the same HS code. These materials have undergone significant manufactured transformation and meet well-defined and stringent product specifications.

2.2 Waste export cost recovery – proposed fees and charges

In late 2022, the Australian Government sought feedback on cost recovery arrangements for the regulation of waste exports. The Government's consultation paper identified options for application fees ranging between $10,000-$30,000 for license and exemptions, and proposed a levy of $3.98 per tonne across all export types. In effect, this levy would serve as an export tax on recycled material.

In 2023, the Government advised that it would delay the commencement of cost recovery for the waste exports scheme until the 2024–25 financial year. ACOR is concerned that the Government has still not clarified the quantum of these costs, which are apparently intended to be applied by 1 July 2024.

We are also concerned about the regulatory conflation of waste and recycled commodities, the uneven regulatory playing field between Australian recycled commodities and imported materials, and the prospect of further disrupting the international trade of Australian recycled materials through the imposition of additional fees and charges. All of these elements undermine the recycling sector's ability to deliver strong circular economy outcomes in a globally connected marketplace.

The *RAWR Act* is currently under review in the context of product stewardship. A more holistic review must be undertaken, in particular to more clearly define 'end of waste' and ensure that recycled commodities are distinguished from waste.

2.2.1 Export licensing and recycling modernisation

The intention of the Australian Government's Recycling Modernisation Fund (RMF) was to support Australia 'to regulate the export of waste glass, plastic, tyres, paper and cardboard'. Given that the rollout of the RMF is still unfolding, the proposal to enact cost recovery for the export of recycled materials is premature.

While $270 million in government co-funding has been allocated across 123 projects as part of the RMF, the great majority of projects are not yet delivered, with only 22% of announced completed, highlighting a likely shortfall in capability to meet timelines for recycling export regulation.

Finally, recycling infrastructure grants made through the RMF were based on business cases that do not incorporate these cost recovery methods, and their introduction now may lead to the underutilisation of funded infrastructure.

In addition to a necessary review of the *RAWR Act*, further exploration of cost recovery from the recycling sector should be postponed until the RMF has been fully disbursed and infrastructure fully delivered.

2.2.2 Cost recovery on recycling contradicts product stewardship principles

In seeking to reduce waste, the Australian Government has prioritised product stewardship, whereby manufacturers, importers and retailers are responsible for the environmentally sound management of products and materials, including at the end of their useful life.

Enacting cost recovery on the recycling sector in order to fund the administration of waste reduction is contrary to this approach, imposing the entire burden of cost recovery on one group of stakeholders at the 'end-of-pipe' rather than at generation.

It should be noted that Australia does not currently place specific environmental policy restrictions on importers of materials, including for tyres, plastics or paper and cardboard products.

2.2.3 Constrained markets for recycled materials

Spurred by the 'waste export' regulation, Australia's recycling sector is working to transform recovered resources into recycled commodities—most of which have low (or negative) value.

[1] A Harmonised System (HS) tariff code is an internationally standardised system of names and numbers used to classify traded products for customs purposes.

As Australia is a net importer of products comprised of many of the materials affected by the export bans, these recycled commodities are traded in highly price-sensitive international markets. Any increase in cost, due to a levy on exported recycled commodities, will result in these exports becoming uncompetitive and unviable.

Furthermore, there has not been enough domestic growth in the market for recycled materials and there are currently no compelling incentives for manufacturers to prioritise locally produced recycled materials over imported virgin materials.

Case Study 1. Tyre recycling

The tyre recycling industry is highly exposed to export markets and in competition with onshore landfilling operations. Increased costs for the export of used tyre material will make onshore landfilling of tyre shred more economical. Current offshore disposal costs—for tyre derived fuels (TDF) to cement kilns in Asia, for example—are in many cases higher than domestic gate fees and landfill levies.

2.2.4 Fee structure will create barrier to entry and stifle innovation

The proposed license fees for exported recycled commodities will also likely create a barrier to entry and stifle innovation, as a blanket fee structure will favour high-volume producers. High licensing fees will also likely lead to illegitimate operators seeking to avoid the proposed costs.

Imposing a uniform levy across all export types will also penalise heavier export materials, such as tyre-shred, which is much heavier per volume than plastic pellets, for example.

2.2.5 Proposed cost recovery counters Government guidelines

Cost recovery on the recycling sector counters the Australian Government's Cost Recovery Guidelines (CRGs), Resource Management Guide 304, as set out by the Department of Finance. The CRGs allow for the merits for cost recovery to be assessed on a case-by-case basis, and state that exceptions may be made based on:

- 'the impact of cost recovery on competition, innovation or the financial viability of those who may need to pay charges and the cumulative effect of other government activities': This is particularly pertinent given the cost sensitivity of markets for exported recycled commodities, and the current additional external pressures of shipping costs, domestic labour and energy costs on the recycling sector. Consideration should also be given to the possible spillover effects on resource recovery rates and landfill if recycling of certain material streams becomes unviable following the introduction of cost recovery measures.
- 'how cost recovery might affect the policy outcomes for the activity': The Australian Government's commitment to establishing a national circular economy will necessitate a strong recycling sector, which this form of cost recovery will hinder.

The CRGs allow that, 'in certain circumstances, cost recovery may also be contrary to intended policy outcomes, such as the provision of community services or industry support'. The proposed fee and levy will inhibit innovation and growth in an industry the Government has specifically committed to foster through the RMF.

Enacting cost recovery on the recycling sector contradicts the intended outcomes of the *National Waste Policy Action Plan*, including hampering progress towards the national target of an 80% average recovery rate across all material streams by 2030.

Recommendation 1. *As a matter of priority, streamline export licensing for processed recycled commodities.*

Recommendation 2. *Defer the commencement of cost recovery for the waste exports scheme, pending a holistic review of the Recycling and Waste Reduction Act 2020 and its underpinning rules.*

Recommendation 3. *Undertake a holistic review of the Recycling and Waste Reduction Act 2020, addressing the definition of where a 'waste' becomes a 'material' or 'product', and ensuring that recycled commodities are distinguished from waste.*

3 Efficacy and progress on circular economy deliverables

3.1 Frameworks to support a circular, rather than linear, economy

The stated goal of all of Australia's environment ministers is to move to a circular economy by 2030. There is, however, a fundamental lack of alignment between environmental policies and circular economy principles, hindering the ability to maximise resource recovery. The recycling sector also faces a fragmented, variable and duplicative regulatory environment across Australia's States and Territories, which undermines investment confidence in recycling infrastructure.

The main challenges are as follows:

- While the waste management hierarchy objectives are enshrined in legislation across Australian States and Territories to encourage resource recovery and recycling, the mechanisms to lawfully implement such opportunities are the regulatory exception rather than the rule.
- There is a misalignment between environmental protection objectives on the one hand, and circular economy objectives on the other, whereby many recoverable resources are regulated as industrial or regulated wastes that present a contamination risk, rather than prioritised as resource that, with appropriate de-contamination management, presents an economic opportunity and a necessary part of the circular economy supply chain.
- There is a focus on regulation of materials at the 'end of use' to address resource recovery and recycling requirements, rather than working across the full supply chain.
- Policy priorities and settings for resource recovery and recycling across Australia are fragmented and uncertain, particularly across industry sectors.
- Industry is not consistently at the table in regulatory decision-making processes, undermining investment confidence and practical solutions.
- Voluntary and regulated product stewardship models are not progressing efficiently or effectively to meaningfully support circular economy objectives.
- Regulatory processes for resource recovery and recycling are not aligned and opportunities to address this via regulatory impact assessments are often not available where this process is not followed. In turn, this creates uncertainty in the regulatory settings which discourages large-scale investment.
- The regulatory imbalance between raw/virgin materials and recovered/recycled materials has stifled circular economy outcomes for waste material. Exploring opportunities to facilitate broader circular economy outcomes would encourage greater investment in the resource recovery and recycling sector.
- The uncertainty and long timeframes associated with the development/redevelopment of resource recovery and recycling facilities has suppressed innovation, increased costs and created significant barriers to entry.
- Inconsistent waste levies across different jurisdictions and between regions result in landfill often being more economical than resource recovery or recycling. The opportunity exists to reform waste levies to more effectively incentivise resource recovery and recycling.

Substantive and structural reform is required to achieve broadly shared circular economy objectives and also unlock the deep decarbonisation opportunities within a well-functioning circular economy.

3.1.1 A National Resource Recovery Framework

A necessary step in national reform is the establishment of an Australian Resource Recovery Code Board (ARRCB), based on the model of the Australian Building Codes Board (ABCB), to deliver a nationally harmonised framework for resource recovery and recycling. This framework should sit under a portfolio for industry and economic development, rather than environmental protection.

The proposed ARRCB's work would be underpinned by a nationally applied definition of 'end of waste', to provide certainty about when a material is a resource versus a waste. The proposed ARRCB should also oversee an aligned and consistent approach to product stewardship, including container deposit schemes, with the priority of advancing circular economy outcomes.

The existing ABCB provides a relevant governance model for the proposed ARRCB, as it incorporates several key elements that will be essential in delivering a nationally harmonised, sustainable, economically viable

and whole-of-supply-chain approach to resource recovery and recycling. For example, this governance model will:

- provide a stable, nationally harmonised resource recovery and recycling framework to improve investment confidence and growth in the sector, while building community trust and ultimately supporting a balanced regulatory playing field between recovered and raw/virgin materials;
- enable the development of consistent definitions for waste and resource recovery, and incentivise the creation of Australian Standards, which can be reflected into State and Territory legislation;
- appoint industry representatives to the Board to ensure a broad range of perspectives, resulting in practical, economically viable and sustainable measures;
- ensure that regulatory processes for resource recovery and recycling are aligned with best-practice regulation, to support policy stability and encourage innovation and scaled investment;
- inform decision making relating to resource recovery and recycling infrastructure to address approval timeframes for development/redevelopment of facilities;
- determine the application of waste levies across jurisdictions and between regions to incentivise resource recovery;
- operate in parallel with other national bodies, including the ABCB, the National Environment Protection Council and Safe Work Australia, to coordinate management and reuse of recovered materials impacted by contaminants; and
- work with industry, across supply chains, to address circular economy issues and inform product stewardship regulation, as well as strong markets for recycled content.

The following sections identify other key issues that should be addressed through a national resource recovery framework.

3.1.2 Sharing responsibility across the supply chain

Environmental regulation traditionally places the burden of responsibility for risk management primarily on the waste management and recycling sectors. However, this approach overlooks the source of the most severe risks generated further up the supply chain.

Materials like lithium-ion batteries, asbestos, and other hazardous substances contaminate recycling streams due to poor waste management practices further up the supply chain. These forms of contamination impose an unjust and undue burden on the recycling sector, exacerbating challenges and risks for our industry.

Batteries, for example, are an overwhelming hazard across all waste and recycling streams. Fires caused by batteries are widespread across waste and recycling trucks, in depots, MRFs, and a broad range of recycling facilities—in short, at every point across collection, disposal and recovery streams. While our sector is extremely concerned about the increasing numbers of incidents in which lithium-ion batteries cause property damage, serious injury and death—resulting in skyrocketing insurance fees, financial assurance requirements and further constraining access to leases—this is not a problem of our making and not one the recycling sector can effectively address at end-of-pipe. (See section 4.3 and Appendix 2).

Much more regulatory focus must be applied to addressing risks before they reach waste and recycling streams, with mandatory extended producer responsibility for contaminated items, comprehensively accessible and safe disposal options, stronger compliance measures for incorrect disposal and community awareness and incentives to ‘recycle right’.

3.1.3 Emissions reduction and recycling

The opportunities for the recycling sector to contribute to emissions reduction and the path to net zero have not yet been sufficiently harnessed.

NGERs and the safeguard mechanism do not consider life cycle assessments and emissions, which limits recognition of the ways the recycling sector can contribute to a net zero future. In other jurisdictions, such as California, life cycle assessments are included in emissions reduction, whereas in Australia only landfill gas capture and organics are regarded as emission reduction activities in the waste and recycling sectors.

3.1.4 Balancing risk and reward to support a circular economy

The right regulatory balance has not yet been struck between mitigating the risks of waste and unleashing the benefits of recovered resources. Recovered resources are governed by environmental regulation, rather than recognised as commodities, creating an uneven regulatory playing field between recovered and virgin resources.

Environmental regulators prioritise the precautionary principle in addressing risk. The precautionary principle posits that it is better to avoid any new action that carries a hypothetical risk for human health or the environment, regardless of whether the hypothesis has been subjected to formal testing. However, a more balanced approach is needed in evaluating risks in resource recovery, aligning with ecologically sustainable development and circular economy priorities.

An alternative to the precautionary principle is the ALARP ('as low as reasonably possible') model, originating in the UK and integrated into occupational health and safety legislation in Australia and New Zealand. ALARP focuses on reducing residual risk, acknowledging that total risk elimination is impractical. It involves cost-benefit assessments, considering various factors such as codes of practice, industry standards, and comparisons with similar hazards.

Illustratively, in recycling, while the precautionary principle might advocate for complete avoidance of microplastics in recovered resources, ALARP acknowledges ubiquitous exposure to microplastics and evaluates whether additional risks from recovered resources justify preventive measures. ALARP offers a nuanced approach, considering existing risks comprehensively and supporting ecologically sustainable practices in the circular economy.

3.1.5 Addressing regulatory uncertainty

A major challenge in advancing innovation in recycling is regulatory uncertainty. The difficulty arises when recycling technologies don't neatly fit into existing regulatory frameworks, leaving regulators unsure how to address them. This lack of clarity impedes progress, as businesses seeking regulatory and planning approvals for innovative technologies face project blockages, with regulators hesitating to greenlight initiatives they find challenging to classify.

Case Study 2. Innovation barrier in NSW

iQ Renew and Licella sought to build a Catalytic Hydrothermal Reactor (CAT-HTR) technology plant in NSW to process bio-mass and plastics destined for landfill into high-value, low-carbon products. The then-NSW Minister for the Environment (formerly the Minister for Innovation) was enthusiastic about the technology, and instructed the EPA to 'sandbox' the project: a process to allow new technology to be tried and tested outside the normal requirements.

Instead, after 18 months' discussion, the NSW EPA determined it needed to be classed as either chemical recycling or waste to energy, and that if iQ Renew and Licella would set up a 40-million-dollar facility, the EPA would consider granting a 12-month license. This was clearly an impossible scenario. The operation moved interstate and began again.

This example highlights the barriers to investing in new technology. In the research and development phase there is great potential for investment and growth, however this is impeded by a risk-averse regulatory environment.

While regulators play an important role, there must be a bridge between an industry trying to drive circularity and governments trying to support a circular economy. The Australian Government should assist the delivery of a great idea through to commercialisation. For example, a government-funded 'innovation lab' could shepherd worthwhile projects through planning and permissioning: new ideas that drive circularity, pass a range of tests and are ready to scale commercially should bypass the usual planning and regulatory hurdles for the construction of the first commercial scale operation, creating a clear pathway for growth.

3.1.6 Defining 'end of waste'

A circular economy cannot advance if recovered resources are enduringly defined and managed as waste: regulation prescribing an end-of-waste is essential to enabling a circular economy. The 'once waste, forever waste' outlook is a relic of a linear economy approach. Waste must not be indefinitely controlled as a

pollutant, but rather facilitated as a resource from which social, economic, and environmental benefits can be derived.

In particular, treating recycled materials as waste when they are indistinguishable from virgin products and have a market and a value creates an uneven playing field between producers of virgin and recycled materials and impedes circular economy outcomes. Processed and pelletised recycled plastic, for example, is a commodity that should be regulated under the same terms as tradeable goods made from virgin resources. Instead, Australia's waste export regulations result in the treatment of manufactured recycled materials as waste.

Once a business has invested in developing and manufacturing a recovered resource that has found acceptance with consumers, the safety of that recycled product should be regulated by general consumer and product liability law, along with relevant industry standards and other legislation. The category of waste should be applied as a last resort in a circular economy context, after all other resource recovery avenues have been exhausted, rather than as an initial and enduring classification. In particular, materials that have undergone processing should be given the same designation as manufacturing outputs. Recyclers need to be able to produce recycled products. If our sector can't store and process material without overwhelming compliance costs, scaled production will not be economical.

3.2 Robust and viable markets for Australian recycled commodities

Without markets for domestica recycled material, the recycling system cannot work.

While Australia is a net importer, all products and packaging end up in the Australian waste stream—regardless of whether they are produced domestically or offshore. With export regulation of recovered glass, tyres, plastic and (soon) paper, adequate processing capacity and markets for these recycled materials are vital.

Thresholds for domestic recycled content must be mandated to ensure the viability of the Australian recycling system, and address significant barriers to strong market uptake of recycled material, including cost competitiveness with virgin materials and willingness within the supply chain to embrace change. This is especially the case for plastic packaging, where more than half of all plastic packaging on Australian shelves is imported but the entire amount must be reprocessed onshore, due to waste export regulation.

As Australia's largest infrastructure client and major procurer of goods, the Australian Government has a key role to play in leading market demand for recycled content. Australian recycled content in Government-procured goods, as well as buildings and infrastructure projects, should be strongly prioritised. Currently, there are no clear measures in place to ensure the implementation of government policies relating to procurement of recycled material, such as published benchmarking, measurement and reporting on procurement of recycled content.

Programs to facilitate uptake of Australian recycled materials in infrastructure must be a priority. A leading example is ecologiQ, the delivery mechanism for Victoria's Recycled First policy. The ecologiQ program has meaningfully supported the delivery of recycled material to market, acting as a 'matchmaker' between infrastructure projects and producers of recycled materials, and assisting in de-risking the utilisation of innovative products in major projects.

Incentives should also be implemented for business to buy products 'ReMade in Australia' and Government should work with industry to identify ambitious targets for Australian recycled content by 2030 and 2050, with transparent reporting on progress.

Case Study 3. Recycled content in roads

In 2023, Standards Australia and ACOR identified ways to advance the use of recycled materials in roads. The use of recycled materials in roads and pavements can positively influence triple bottom line performance:

- Environmental impact reduction: Incorporating recycled materials can reduce emissions and conserve natural resources by minimising the need for virgin materials. Depending on the type of recycled materials used, greenhouse gas emissions can be reduced by between 47% and 98%.
- Improved performance: Certain recycled materials can enhance both the durability and lifespan of road infrastructure. Researchers at RMIT and the University of South Australia tested asphalt with crumb rubber and found that it could double the durability of roads in hot weather. Crumb rubber has also positive effects on pavements, including through reduced noise and risk of cracking.
- Material cost saving: The ARRB (2022) estimates that most recycled material applications in road and rail infrastructure can create cost savings between 2% and 83%. The use of reclaimed asphalt pavement has the highest economic benefit, with a cost saving of 83%.
- Job creation: Expanding the market for recycled materials can generate additional employment opportunities. A report by Access Economics for the Department of the Environment, Water, Heritage and the Arts found that job creation in the recycling sector is higher than waste disposal with 9.2 jobs created for every 10,000 tonnes of materials recycled, compared with only 2.8 jobs created for sending materials to landfill.

Gaps in procurement policies, lack of evidence demonstrating long-term environmental and performance outcomes, and nascent markets for some materials are several of the barriers that prevent the widespread use of recycled materials in roads. For example, materials such as crushed concrete, reclaimed asphalt pavement, and crumb rubber benefit from established markets with high levels of industry confidence. Other materials such as plastics, however, have less developed markets due to their uncertainty around long term performance and environmental impact.

Standards Australia, the Australian Government, and key industry expert participants should collaborate to modify existing and/or create new performance-based Australian Standards that harmonise the inconsistencies in existing specifications. Standards should support the application of recycled content across jurisdictions, and be up to date with current waste streams and the types of recycled materials used in roads

Meanwhile, practical guidance material for the use of recycled content in roads should:

- Clearly communicate the benefits and applications of these materials in roads
- Highlight the enabling standards and relevant use cases that govern the use of recycled materials
- Provide the necessary knowledge to dispel misconceptions around recycled materials and the associated Australian Standards

For further information, see the joint report from Standards Australia and ACOR, 'Standards to facilitate the use of recycled material in road construction', May 2023.

3.3 Improving confidence in Australia recycling outcomes

As recyclers evolve and transition to a more circular economy, there is a need to support better practice across industry and improve confidence in recycling outcomes. Recyclers have a very broad range of capabilities and practices across the sector, and those engaged in poor practices can affect the reputation of the entire industry.

It can be difficult for stakeholders to distinguish waste operations from recycling activities, or good from poor practices, leading to increasing demand for generic third-party performance and outcome verification.

Amid the growing suite of mandatory and voluntary product stewardship initiatives rolling out across Australia, schemes can prioritise cost reduction over recycling outcomes, contracting with cheap and non-compliant operators. Recyclers striving for full compliance operate at a competitive disadvantage to these operators, creating an uneven playing field.

Conflicts of interest also arise when product stewardship schemes create their own accreditation systems (see section 4.1 and Appendix 1). These accreditation systems sometimes involve self-reports which can go unchallenged.

An accreditation program for recyclers will deliver value to industry, government, and the community by providing confidence to stakeholders that accredited recyclers are operating legitimately; are at, or moving towards, best practice; and are proactively meeting appropriate quality outcomes suitable for the recycling sector.

Therefore, a key priority for the recycling sector is the delivery of an Australian Recyclers Accreditation Program (ARAP), a national accreditation program available to all recyclers.

The ARAP will establish an objective, consistent and efficient process for assessing a recycling operator's performance, providing assurance around the legitimacy of recycling operations.

The ARAP would be an independently governed program, ensuring transparency and accountability. As a site-based accreditation program, it will offer confidence and reassurance to the community.

In 2021, the Australian Government supported a feasibility study into the establishment of the ARAP, which identified that the implementation phase should be federally funded, after which it would be self-sustained through a user-pays approach. This development to date means the ARAP could be implemented within a short timeframe of 6-12 months.

3.4 Recycled content traceability

The Australian Government has developed a traceability framework as a key measure to support a circular economy. As Australia moves closer to mandatory recycled content standards—especially for packaging, as committed to by Australia's Environment Ministers—traceability is essential to build confidence in recycled goods.

The traceability framework must go hand-in-hand with government-mandated domestic recycled content thresholds—which could initially apply to packaging, and ultimately across all product categories. Mandatory domestic recycled content thresholds, verified and underpinned by traceability, can shift the current price barriers to uptake. Without mandated domestic recycled content, traceability may become yet another regulatory impediment to recycling rather than an enabler.

Widespread acceptance/adoption of a recycled content traceability framework will be entirely dependent on other supportive policy measures, including mandatory recycled content thresholds and accreditation of Australian recycling facilities.

Many recyclers already undertake traceability: operators participating in container deposit schemes trace eligible materials through their facilities; the value chain for food-grade packaging involves stringent tracking; recyclers participating in product stewardship schemes trace in-scope products; and many MRFs trace baled materials through their facilities and to the next destination.

Case Study 4. Martogg Group

Martogg undertakes traceability through a quality management system (QMS) compliant with ISO 9001:2015, and an occupational health and safety management system (OH&SMS) compliant with ISO 45001:2018.

Both systems require periodic auditing from an accredited third party, with annual surveillance audits and a complete compliance audit every three years. The QMS documents a wide range of business processes and procedures, with all products made and sold subject to 'one up, one down' traceability.

The QMS enables Martogg to track incoming raw materials by material type, quantity, supplier and source, then through product manufacturing and quality assurance processes, and finally as finished products to customers. For recycled polymer products, only approved raw material suppliers are used, with required demonstration that products meet quality standards and compliance requirements, with additional tests against internal standards.

All raw material input information is held on a works order document and assigned to a batch number, which appears on packaging and sales documentation provided to customers: it is expected that customers incorporate this information into their own product traceability system, satisfying the traceability framework's interoperability requirement.

Martogg also supplies Certificates of Conformance and Analysis for each batch of products, as required by customers. Martogg's QMS system and the traceability process it encompasses meets the requirements of the proposed recycled content traceability framework.

Case Study 5. Curby

Curby partners with councils to collect soft plastics from the community via the existing yellow recycling bin. Households download the Curby app and place their soft plastics in a CurbyBag with an attached CurbyTag (or any soft plastic bag with a CurbyTag attached) into their yellow bin. Once the CurbyBag or CurbyTag reaches the sorting facility, iQRenew separates the bag from the other recycling materials. From here the bag is sent on to secondary processing and then turned into new products.

A CurbyTag has two primary functions: to enable MRF operators to correctly identify the bag as program material and pick it out, and to enable the program to collect more accurate information about how much soft plastics is being generated in different council areas, leading to increased provenance and traceability. The intent is a full traceability system from MRF through to end-market manufacturer.

Case Study 6. Metal recycling

The metal recycling industry operates as a mature and well-established sector, trading recyclates on the basis of long-standing international specification standards set by the Institute of Scrap Recycling Industries (ISRI). These standards ensure the quality and consistency of the materials.

The traceability framework can support the Australian Government-led ReMade in Australia initiative, which seeks to develop a verification framework to label and validate products with Australian recycled content. A ReMade in Australia campaign must leverage strong public support for recycling and local investment, elevate consumer awareness and confidence in recycling, and, most importantly, help to generate strong end markets for recycled materials.

Recommendation 4. *Establish an Australian Resource Recovery Board, to deliver a nationally harmonised framework for resource recovery and recycling (including 'end of waste' codes and product stewardship schemes such as container deposit), with the priority of advancing circular economy outcomes.*

Recommendation 5. *Publish benchmarks, measurements and reports on government procurement of Australian recycled content.*

Recommendation 6. *Set mandatory thresholds for Australian recycled materials, underpinned by a traceability framework for recycled materials, with an initial focus on packaging.*

Recommendation 7. *Support confidence in Australian recycling by funding the implementation of an Australian Recyclers Accreditation Program.*

4 Progress on the implementation of mandated product stewardship schemes

4.1 Product stewardship challenges and solutions

The *RAWR Act* provides a framework for managing Australia's recycling and waste reduction objectives, which include the development of a circular economy. The Act identifies voluntary, co-regulatory and mandatory product stewardship schemes as a means to manage the impacts of products and materials throughout their lifecycle, and enables a more accessible framework for accreditation of voluntary schemes. The Act provides for the use of the Commonwealth's logo for accredited voluntary schemes, promoting the recognition and credibility that government accreditation affords.

The Australian Government has signalled a preference for industry action through product stewardship schemes. The establishment of many government-accredited schemes has also been encouraged by the Minister's product stewardship priority list, which identifies products lacking circular or recycling solutions at their end of use.

The recycling sector strongly supports an increased focus on producers and distributors (known as 'brand owners') to take greater responsibility across the full lifecycle of products, including at end of use. Product stewardship and extended producer responsibility can be an effective way to reduce waste and lift recycling rates—particularly where recycling rates are low, or materials have low or negative value—but only if these schemes are properly designed in partnership with recyclers.

At present, existing voluntary and co-regulated product stewardship schemes endorsed by the Australian Government predominantly cater to brand owners. However, it is imperative to recognise that these entities represent only a part of a product's lifecycle.

Many product stewardship schemes appropriately emphasise the waste management hierarchy priorities of avoidance, reusability, and designing for repair, yet all products inevitably reach an end of use, where the ideal outcome is recycling.

Overwhelmingly, when schemes do engage with recycling activities, the focus is primarily on the public-facing, marketable elements of collection and processing, while underinvesting in the equally critical aspect of high value recycling outcomes and demand generation for recycled material.

Too often, cost reduction is prioritised over quality recycling outcomes in such schemes. Not only does this undermine legitimate recycling operations, but it also erodes community confidence in recycling when the system fails.

The recycling sector is concerned that some existing voluntary and co-regulated product stewardship schemes are not delivering robust recycling outcomes while new schemes are being established without the correct mechanisms in place to drive effective resource recovery. Recent trends indicate recovery rates for household waste have stagnated, while commercial and industrial waste recovery rates have declined. This pattern underscores the urgent need for a concerted effort to invest in genuine recycling outcomes.

The establishment of a scheme must not be seen as an end in itself: it must be a means to delivering sustainable and economically viable circular outcomes, in partnership with the entire supply chain. Engagement with the rest of the supply chain—especially recyclers, who are the subject matter experts on recycling—is essential to ensure product stewardship schemes deliver genuine value to brand owners, government entities, communities, and recyclers, and support the transition to a circular economy.

With thirteen industry-led government-accredited voluntary and co-regulated schemes and almost one hundred initiatives operating in Australia, and many more in development, now is the time to better align these initiatives, set stronger targets, adopt better governance and ensure accountability, to deliver genuine outcomes that support community confidence and proper investment in recycling.

ACOR's *Recyclers in Product Stewardship: Challenges, priorities, and recommendations from the recycling sector* (Appendix 1) outlines the priorities and challenges for recyclers in the current context of a drive towards more stewardship and extended producer responsibility models. It recommends measures for product stewardship schemes that will deliver better environmental outcomes and more genuine engagement across the supply chain, including designing for recycling and reuse, expanded collection and safe disposal measures, creating market demand and transparent scheme governance focussing on compliance and consequences.

Priority areas to deliver better recycling outcomes from product stewardship are as follows:

- Rethink and restructure product stewardship
- Design for recycling and reuse
- Create market demand
- Enhance collection infrastructure and consumer incentives
- Tighten scheme governance, ensuring recycler representation
- Enforce compliance and consequences

Now a critical time to revisit the Australian Government's approach to product stewardship, in the context of the forthcoming review of the *RAWR Act*.

4.2 E-stewardship reform

4.2.1 Comprehensive, rigorous and transparent e-stewardship

The recycling sector has welcomed the Australian Government's move to broaden the parameters of e-stewardship regulation to include solar photovoltaic systems and small electrical and electronic products, in order to support circular economy outcomes for e-products. However, the process is moving slowly, despite an urgent need to reform National Computer and Television Recycling Scheme.

Australia is one of the highest per capita consumers of e-products—we have a responsibility to manage these products at end of use. Boosting e-waste recycling, or urban mining, can also secure critical minerals with lower embodied emissions.

Case Study 7. National Television and Computer Recycling Scheme

The National Television and Computer Recycling Scheme (NTCRS), established in 2011, provides collection and recycling services for televisions and computers, including printers, computer parts and peripherals. The scheme is intended to reduce e-waste to landfill, increase the recovery of reusable materials, and provide convenient access to recycling services for households and small businesses.

Companies who import or manufacture television and computer products over certain thresholds are liable under the scheme, and are required to pay for a proportion of recycling through membership in an approved co-regulatory arrangement. These five co-regulators are responsible for the day-to-day operation of the scheme, including organising collection and recycling of e-waste on behalf of brand owners (known as liable party members within the NTCRS).

However, the NTCRS has become an inefficient system with a two-tiered marketplace: the five co-regulators compete to offer the lowest fees to brand owners, forcing prices down to unsustainable levels, while recyclers are reduced to price-takers. The NTCRS has become a 'race to the bottom' for some brand owners at the expense of best-practice recycling and environmental outcomes.

The drive towards low-cost outcomes has incentivised some co-regulators to reduce accessibility, or compromise on material recovery rates. There is little transparent downstream verification or reporting of recycling outcomes: audits in the NTCRS are primarily financial audits, with cursory attention to operational elements.

The Department of Climate Change, Energy, the Environment and Water is currently leading a redesign of the NTCRS to broaden the parameters of e-stewardship regulation to likely include all small electrical and electronic products as well as solar photovoltaic systems. The revised scheme must address the NTCRS's inefficiencies and inherent conflicts of interest, while driving a properly comprehensive approach to e-stewardship, incorporating all consumer electronic and electrical equipment and loose and embedded batteries.

The move to renewables is essential and a coordinated response is required to meet the growing challenge of the end-of-use clean energy technology. Solar PV system products at end of use are set to surge, with clean energy infrastructure reaching end of use is set to increase 30-fold by 2031. Raising recovery rates of recyclable material in clean energy tech, and other e-products, is one of the Government's National Waste Policy Action Plan targets, as well as being among the problematic waste streams identified on the Minister's Priority List.

As some local councils are already turning away end-of-use solar panels, there is an urgent need to scale systems for collection and processing, and ensure there are robust end markets for the commodities derived from recycled clean tech.

The scale of this problem is not unique to Australia, however: the Global E-waste Monitor 2024 identified that electronic waste is rising five times faster than documented e-waste recycling.

E-waste is a contaminant in household comingled recycling bins: items including home printers, televisions, vapes, and hand-held power tools are frequently deposited in household recycling, resulting in contamination and fire risk at throughout the waste and recycling systems—in particular trucks and materials recovery facilities (MRFs) (see section 4.3).

The recycling industry takes on market, regulatory, investment and operating risk to achieve recycling outcomes, often within product stewardship schemes that do not sufficiently address these risks and therefore lead to sub-optimal recycling outcomes. It will be vital for a future e-stewardship scheme to ensure there are markets for recycled commodities derived from e-products, that compliance is enforced, and that risk and costs are equitably spread across the supply chain.

Any e-stewardship scheme should first and foremost be focused on value creation and environmental outcomes rather than cost-cutting: promoting the recovery of reusable materials, reducing waste to landfill, and supporting Australia's transition to a more circular economy by providing convenient access to e-stewardship services across Australia and fostering shared responsibility across the lifecycle of covered products.

An additional objective for e-stewardship must be to provide an integrated response to problematic e-waste, such as batteries. A regulated e-product stewardship scheme has the mandate and means to avoid the fragmentation that arises with proliferating voluntary industry-led schemes that can cherry pick inclusions and exclude those products they don't wish to cover. Hazardous products require a consistent form of safe disposal at end of use.

Multiple product stewardship schemes—exemplified by the current arrangement, with the five co-regulators of the National Television and Computer Recycling Scheme (NTCRS), Mobile Muster and B-cycle—also result in too many items that don't align with a specific scheme or don't have a responsible party slipping through the gaps, such as vapes, and goods placed on market illegitimately or illegally.

Vapes are a clear example of the need for an integrated scheme without exceptions or exclusions. Vapes contain embedded batteries which cause fires in recycling streams: they must never be placed in kerbside or public bins (nor littered), but there are scarcely any safe disposal options. Vapes in many instances may be illegally imported or sold, with no identifiable liable party, but are nonetheless present in the community and accessible options for safe disposal are essential.

Future scheme development must involve considerable mapping and quantifying of actual imports and in-scope material in country, including white label products, online purchases, illegal imports, counterfeit products and banned products. Unless incorporated into the scheme, e-waste from these sources will continue to be littered, illegally dumped and cause devastating fires in recycling infrastructure.

The costs of the safe recovery or disposal of any products exempted from an e-stewardship system will be borne by the broader community. A simplified all-encompassing scope will avoid public confusion, align the domestic recycling sector with international markets, and reduce waste.

4.2.2 E-stewardship reform is urgent

The need for e-stewardship reform is urgent, as e-product recyclers are being affected by the uncertainty in the sector.

The underlying assumption seems to be that while consultation on the reform is underway, the NTCRS is operating effectively, however, NTCRS misalignments and shortfalls, combined with uncertainty around the implementation of a new e-stewardship scheme, has significantly undermined investment confidence for e-product recycling.

The operation of the NTCRS—where multiple co-regulators (co-regs) compete for liable parties (the original equipment manufacturers), in part by offering the lowest fees—has created a 'race to the bottom' for some liable parties at the expense of best-practice recycling and environmental outcomes. The drive towards low-cost outcomes has resulted in some co-regs reducing accessibility, limiting collected volumes or compromising on material recovery rates.

With the Australian Government's announcement of a scheme redesign, the level of uncertainty has across the e-waste industry and value chain has increased. This in turn may lead to decreased investment and further cost-cutting by co-regs, some of which is already happening: recycling fees offered by co-regs for the 2024 financial year have been around 30 cents per kilogram, down from $1 per kilogram a few years ago. The negative impact on the recycling industry has increased the possibility of a degree of market failure.

A key proposal for the redesigned Federal e-stewardship scheme is that existing co-regulators will be grandfathered into the new arrangement. As such, many co-regulators are planning for this adjustment.

Under the current NTCRS, original equipment manufacturers (OEMs) pay an annual recycling fee to a preferred NTCRS co-regulator, who in turn is supposed to collect e-waste, assign physical products to recyclers and 'push-down' the recycling fee. However, in many instances the co-regulator collects the fee from the OEM while recyclers collect the physical e-waste from the community, perform the recycling and convey recycling performance data to the co-reg for remittance. This is referred to within the industry as 'ad hoc' volume. Co-regulators only buy 'ad-hoc' liability to the value of their annual recycling targets, but to keep the e-waste market fluid and ensure good recycling outcomes, there must be a balance between the ad hoc volumes collected and recycled by the recycling industry, and the NTCRS liability co-regulators buy from recyclers.

Since late 2023, coregulators, uncertain about the Scheme's future structure, have become hesitant to invest in recycling volumes and conserve funds and balance sheets. Furthermore, recycling industry consensus is that a significant amount of the data passed to co-regulators from rogue recycling operators is unverifiable. This potentially inflated recycling data (some of which may remain on co-regs' balance sheets), represents a market inefficiency and an ongoing cost to the recycling industry.

This is all combining to restrict the ability of the e-waste processing industry—including councils, logistics providers and recyclers—to plan, budget and forecast. If this situation exacerbates, councils and recyclers face a funding risk, in that NTCRS funding may not be allocated, leaving councils and recyclers to bear the entire cost of e-waste recycling. There must be proactive transition support to mitigate this impact, especially for councils.

4.2.3 Solar photovoltaic systems

E-product recyclers are investing in technologies to recycle end-of-use solar panels. Too often, entities are exporting end-of-use or faulty PV panels to developing nations, where the waste is unlikely to be managed, resulting in environmental harm. Regulation of the local PV panel recycling market to address this is essential.

PV panels contain valuable fractions such as aluminium, and critical minerals including silver and silicon. An effective and robust regulatory framework for recycling end-of-use PV panels can boost confidence in investment in the recovery and re-introduction of these valuable raw materials to the Australian economy, whilst addressing market creation for lower-value component parts such as solar panel glass.

4.2.4 End markets and fair pricing

End markets for e-waste recyclate are fundamental. A core objective of e-stewardship should be investing in and creating end markets for recycled commodities. If recycled materials have value, recyclers can continue to invest in new sorting facilities, technology and manage complex inputs.

Legitimate e-waste recyclers are concerned, for example, by claims that 100 per cent of material collected through the NTCRS was 'recycled' as there are currently no scaled end markets for e-waste plastics. With a broad scope, much of what is collected will not presently be recoverable.

An integrated scheme with a broad scope will in many instances be providing avenues for safe disposal only, rather than recycling and recovery. But an integrated scheme will also create the opportunity to properly map the type and volume of e-waste in the community to determine directions for research and development into new recovery options.

Furthermore, there must be fair pricing throughout the supply chain. Where there is too much control over collections and prices increase, those increased costs are passed along the supply chain, resulting in unmanageably expensive recycled commodities, which are already more expensive than raw materials.

4.2.5 Securing critical minerals from urban mining

The intrinsic value of critical minerals in e-product and clean energy waste streams presents an opportunity to the Australian economy. E-waste contains abundant quantities of critical minerals: the value of critical minerals in one kilogram of e-waste can be many hundred times that of an equivalent mass of mining ore. Recovering these highly valuable raw materials through recycling processes will help ensure supply chain security of critical minerals for development of battery and clean energy technologies locally.

Recycling at scale will require a whole-of-government approach across every relevant department. For example, while the Department of Climate Change, Energy, the Environment and Water works to boost e-waste recycling rates, the Department of Industry, Science and Resources is also seeking to secure critical minerals for clean energy technology.

Australia currently lacks the infrastructure to recover raw materials contained in e-waste and batteries at a sufficient scale. For example, there is limited onshore capacity for refining battery dust. This lack of scaled infrastructure increases costs: it currently costs 400 per cent more to refine recycled battery dust onshore in the sole facility than to ship it overseas. Additionally, when Australia's battery recyclate is sent offshore for refining, we can exercise little control over poor environmental practices concerning off-gassing and landfilling.

There is a great opportunity for Australia's economy to benefit from value-add from recovered critical minerals, and also for the Australian Government to demonstrate global leadership in the safe and environmentally responsible refining of potentially hazardous materials. Scaling e-product recycling would secure a supply of critical minerals and resolve an environmental challenge.

4.3 Fire risk from loose and embedded batteries

Batteries—in loose or embedded form—are an increasingly alarming hazard in both kerbside and commercial waste and recycling streams. The recycling and resource recovery sector are overwhelmingly concerned about increasing incidents involving batteries causing property damage, serious injury and death—and resulting in skyrocketing insurance fees and financial assurance requirements.

The rapid digitisation of everyday items, the increasing number of 'smart' and 'disposable' items such as vapes containing embedded and sealed batteries, and a lack of safe disposal options and poor consumer education, have all contributed to the steep rise in batteries in inappropriate waste streams. This is causing fires and property damage, and severely compromising collection and resource recovery operations for recyclers all across Australia.

Fires caused by batteries are now widespread across material recovery facilities (MRFs), in waste and recycling trucks, and in depots—in short, at every point across collection, disposal and recovery streams. These fires pose great dangers to human health and life, and are also damaging to the environment through smoke and polluted runoff. The economic impact of these incidents is being borne by the community through rising rates, by councils through truck fires and future risk, and by industry in the loss of critical infrastructure.

The National Waste and Recycling Industry Council has identified that in the 2023, there were over one thousand battery-related fire incidents reported in the waste and recycling sectors nationwide, amounting to over three a day. It is unlikely that this figure even begins to reveal the true extent of the battery crisis for recyclers. A lack of accurate data and information on e-waste fires can be traced to under-reporting—as colossal insurance premiums disincentivise operators to report—along with the fragmented regulatory landscape, with eight environmental regulators, eight fire and rescue organisations and almost 550 local councils nationwide.

While the damage caused by batteries is critical, current volumes are only the beginning. The generation of lithium-ion battery waste is projected to grow exponentially over the next 20 years.

The Australian Government has identified that lithium-ion, sodium-ion, vanadium flow batteries and others will support the transition to a net zero emissions economy. Batteries are now part of our energy arsenal and everyday lives—and so is their waste. According to a 2016 report commissioned by the Australian Government's then-Department of the Environment, lithium-ion battery waste alone is projected to increase exponentially from 3,340 tonnes in 2016 to 137,618 tonnes in 2036.

While issues relating to battery safety reach broadly across society, pointing to an urgent need for battery quality standards, the principal focus of the recycling sector is to address the risks at end of use.

In December 2023, ACOR released *A Burning Issue: Navigating the battery crisis in Australia's recycling sector* (Appendix 2), exploring the overarching considerations in this space and identifying solutions to this current crisis.

Critical actions to address safe battery disposal are:

- Ensure comprehensive safe collection
- A community education campaign
- E-stewardship reform, including a deposit scheme
- Regulatory harmonisation and enforcement

4.4 Packaging regulation as the launching point for broader circular economy systems

The Environment Ministers Meeting (EMM) announcement in November 2023 of forthcoming packaging regulation of packaging is strongly welcomed by the recycling sector. Not only can this support the delivery of a circular system for packaging in Australia, but it can also form a launching point for broader circular economy systems across other priority products.

ACOR is very pleased to be part of the National Design Standards Working Group to advance recycling priorities in the Australian Government's proposed packaging regulation.

The National Packaging Design Standards should support:

- the mandated use of Australian-made recycled content
- designing for recyclability (e.g. mono material packaging)
- moving away from problematic materials, such as composite formats, expanded polystyrene and rigid PVC, as stipulated by APCO's action plan to phaseout problematic and unnecessary single-use plastic packaging.

In advancing packaging regulation, the following issues should be addressed:

- prioritisation of Australian recovered material
- recognition of the value of recovered content vs virgin
- dumping of virgin and recovered materials on the Australian market
- verified provenance of recycled content
- composite and laminated design which inhibits recovery and recycling
- contamination in recycling streams (labels, closures)
- capability of existing collection and sorting systems
- full consideration of life cycles
- ensuring national harmonisation, noting the fragmented framework of State and Territory regulation on single use plastic.

4.5 Priorities for nationally harmonised container deposit schemes

Container deposit schemes (CDS) will soon be operating in every Australian State and Territory. These schemes have attracted industry and community participation and substantially reduced beverage container litter. The schemes increase access to quality recovered material, which leads to highest-value material reuse, such as bottle-to-bottle recycling. For example, the hot-wash PET flake generated from CDS products delivers high-quality rPET for the Australian packaging market. The schemes also deliver uncontaminated glass for high-value recycling.

It is essential that CDS supports meaningful progress towards Australia's National Packaging Targets, by ensuring that recycled content is prioritised in beverage containers and that beverage containers are genuinely reusable and recyclable.

As States and Territories respond to these successes by expanding the scope of eligible containers in schemes around the country—and as the focus of government and community concern shifts from litter

reduction to establishing a circular economy—questions will arise as to what role these schemes are intended to fulfil, how they will interact with kerbside recycling collection, how to ensure strong markets for the CDS-generated recyclate, and how they can support higher resource recovery rates.

To be sustainable, container deposit schemes must have an efficient and effective operation, be financially and commercially feasible for all parties, enjoy social licence to operate, and be conducted under the right policy setting.

ACOR's position paper on 'Priorities for nationally harmonised Container Deposit Schemes' (Appendix 3) sets out key priorities for a nationally harmonised approach. The paper outlines principles for how CDS should evolve and expand under the leadership of the Australian Government, and through relevant intergovernmental forums, such as the Heads of Environmental Protection Agencies (HEPA), and the Environment Ministers Meeting (EMM), in partnership with industry.

It is important to note that each individual measure cannot deliver strong CDS outcomes—they must be progressed together as a comprehensive and complementary package.

Priorities for well-functioning CDS are:

- return rate targets
- adjusting the CDS deposit rate to 20 cents, with subsequent two-yearly review periods
- comprehensive access and coverage, including 'return to retail'
- consistent, strong marketing
- improved governance
- expanding the scope of eligible containers to include glass wine and spirit bottles
- prioritising containers that are recyclable and made from recycled materials
- protocols for material recycling facilities (MRFs), glass crushers and other third-party glass aggregators.

4.6 Urgent update to the Product Stewardship for Oil Scheme

ACOR strongly supports the aim of the legislated Product Stewardship for Oil (PSO) Scheme to both capture the value inherent in end-of-use oil and reduce the harm caused from dumping into the environment.

However, there are key updates to the PSO that are well overdue. The recycling benefit paid through the PSO has remained unchanged for 22 years, at 50 cents per litre, while costs have substantially increased. There was a recent welcome increase to the PSO levy from 8.5 cents to 14.2 cents per litre. The benefit for recycling should also be raised as a matter of priority. This would enable the scheme to continue to successfully provide an important environmental service while supporting investment confidence in recycling.

Collection of used oil by recyclers has typically been offered at low or no cost, leading to a good collection rate, with a 2020 review finding that the 'consensus view of stakeholders [is] that the majority of waste oil produced around Australia is being collected as a result of the PSO'. Without an increase in this benefit paid through the scheme, the increased costs for collection will need to be passed on—particularly in regional and rural areas where transport costs are substantially more than the benefit paid. Increased collection charges present a risk of undesirable outcomes, such as the dumping of oil into the environment (including waterways) by parties seeking to avoid added costs.

The PSO's stasis has resulted in a lack of investment certainty for the oil recovery and recycling industry. While the benefit rate remained unchanged, low- or no-cost collection has continued as a result of industry goodwill, but just as the scheme could not continue to run in deficit, recyclers cannot operate at a loss.

It is a priority for the Australian Government to work collaboratively with the oil recycling sector, and to prioritise an increase to the benefit for recyclers.

Recommendation 8. *Urgently address the inefficiencies and conflicts of interest in the National Television and Computer Recycling Scheme (NTCRS), to support the viability of the Australian e-waste recycling system.*

Recommendation 9. *Prioritise and expedite holistic e-stewardship reform, with the implementation of a scheme that includes all consumer electric and electronic items, including batteries and solar PV systems.*

Recommendation 10. *Undertake a holistic review of the provisions for product stewardship within the Recycling and Waste Reduction Act 2020 and all relevant government policies and programs, to ensure that all voluntary and mandatory schemes support genuine recycling outcomes, addressing: scheme design; reuse and recyclability; creation of market demand for recycled materials; enhancing and incentivising collection; and ensuring transparency, accountability and whole-of-supply chain, including recycler representation in scheme governance.*

Recommendation 11. *Urgently address the escalating hazard posed by batteries in recycling streams: fully catalogue all items in the market that are or contain batteries; support the rollout of a comprehensive safe collection system; deliver a nation-wide community education campaign; implement e-stewardship reform, including a deposit scheme for all battery-containing items; and work with all jurisdictions to harmonise regulation for battery disposal and collection.*

Recommendation 12. *Ensure that the proposed National Packaging Design Standards support mandated thresholds for Australian-made recycled content; designing for recyclability; and national harmonisation of State and Territory regulation on single use and problematic plastics.*

Recommendation 13. *Support national harmonisation of Container Deposit Schemes, prioritising: targets for return rates; an increased CDS deposit rate; comprehensive access and coverage; consistent, strong marketing; improved governance; expansion of the scope of eligible containers to include glass wine and spirit bottles; prioritising recyclability and recycled content; and consistent protocols for material recycling facilities (MRFs) and glass aggregators.*

Recommendation 14. *Urgently update the Product Stewardship for Oil Scheme recycler benefit.*

5 Other related matters

5.1 Building community confidence and supporting good data on recycling right

Recycle Mate is an ACOR initiative, a first-of-its-kind recycling app, supported by the Australian Government under the National Waste Policy Action Plan, action 2.17–'Develop and launch a recyclability app to support community participation and reduce contamination rates in municipal solid waste'.

Australia has a complex array of kerbside and away from home resource recovery systems, influenced by various factors such as geography, demographics, council resources, infrastructure discrepancies, access to markets and the growth in product stewardship and other social enterprise schemes.

Different recycling information and rules are being delivered to the community by over 500 local councils, state governments, professional recyclers, product stewardship schemes, state container deposit schemes (CDS), charities and social enterprises, environmental organisations, community groups and more. This results in enormous duplication of effort, mixed messages and often incorrect information, which can fuel recycling myths. Adopting a one-size-fits-all approach does not accommodate the current complexities of recycling and circular economy efforts in Australia—and blanket statements that are not reflective of local recycling practices can contribute to confusion and poor recycling behaviours.

Consumer confidence in recycling has also been impeded by a lack of awareness of the breadth of genuine and productive recycling activities undertaken in Australia. This affects behaviours when it comes to disposal of recyclable materials, which can result in contamination of the recycling stream. The rates of contamination through recycling streams in MRFs demonstrates that there is insufficient knowledge in the community on how to recycle right.

The Australian recycling industry is dynamic, as investment and innovations are creating new opportunities, or in some instances as programs are discontinued. However, community recycling knowledge can remain static when people do not know where to look for new information or if they lack motivation because they have become sceptical of the process or are uncertain about the value of recycling.

Informed by national focus group research to understand community recycling attitudes and behaviours, Recycle Mate has found that most people don't actively seek new information about recycling: they either depend on what they first learnt, or make a snap decision at the bin, which can result in wish-cycling (which contaminates kerbside bins) or overcaution (which results in valuable resources going to landfill). Recycle Mate has also found that when people do search for recycling information, they typically use language based on how they shop, using brand names or item descriptions, whereas recycling information is traditionally presented in the language of material waste and industry jargon.

While Recycle Mate was designed as a consumer-facing app, after three years of amassing data it is now also Australia's most comprehensive recycling directory, with recycling options for over 7,500 items linked to mapped directions to more than 40,000 geolocated disposal options. Development of QR code and barcode scanning capabilities is also currently underway to further enhance item identification and user experience.

Recycle Mate also provides a live national platform that allows governments, recyclers, product stewardship schemes and the whole community to work together to gather, share and update recycling information and avoid duplication of effort as our industry evolves.

The Recycle Mate national recycling data hub allows all councils and participating organisations to update their recycling information in real-time, as new collection points, and recycling capabilities are established. The Australian community is then able to access this information accurate to their location via the Recycle Mate app and linked platforms to quickly learn how best to dispose of an item—whether that is reuse, recycling, safe disposal or landfill.

With the solid base and extensive stakeholder involvement now established, additional resourcing will allow the Recycle Mate initiative to be expanded to support recycling education beyond household waste. There is keen interest in rolling out the program to different organisation's waste and recycling systems, for use in commercial and government buildings, public places, multi-unit dwellings, aged-care facilities, schools and more.

The data collected through the Recycle Mate data and user analytics presents an opportunity for the Australian Government to be at the forefront of national data collection on recycling behaviours and capabilities.

With appropriate resources, Recycle Mate also has the data to build interactive heat maps against population density to illustrate community access to safe disposal and recycling options for items either not suitable for kerbside collection or which have more positive away from home recovery options. The data when mapped identifies where there are gaps in community access to recovery options to help inform future federal and state policy and legislative considerations.

Recommendation 15. *Provide appropriate funding to foster collaboration and restore community confidence to 'recycle right' through the national education tool Recycle Mate, generating higher recycling participation nationally, and delivering more data to Government on the recycling capabilities and community behaviours across Australia.*

6 Conclusion

There is much potential for our industry to grow and thrive, supported by a range of very modest Federal budget measures that will not only unlock barriers to recycling, but also deliver jobs, advance resource efficiency and unleash innovation and productivity around the country.

We encourage the Australian Government to help to connect the recycling sector to the global trade in recycled commodities through fit-for-purpose export licensing. To enact a National Resource Recovery Framework to ensure regulation drives a circular rather than linear economy within the common national economy. To support effective product stewardship, particularly for e-products, which will help to protect our critical national infrastructure against growing fire risk while securing critical minerals for a clean energy future. And to help the community to recycle right through supporting Recycle Mate.

ACOR strongly welcomes moves to support the transition towards a circular economy and is committed to playing a constructive role in maximising recycling to further these goals. This submission is an offer to work with Australia's leaders to realise shared goals of supporting a thriving recycling sector and circular economy.

Summary of recommendations

1. As a matter of priority, streamline export licensing for processed recycled commodities.
2. Defer the commencement of cost recovery for the waste exports scheme, pending a holistic review of the Recycling and Waste Reduction Act 2020 and its underpinning rules.
3. Undertake a holistic review of the Recycling and Waste Reduction Act 2020, addressing the definition of where a 'waste' becomes a 'material' or 'product', and ensuring that recycled commodities are distinguished from waste.
4. Establish an Australian Resource Recovery Board, to deliver a nationally harmonised framework for resource recovery and recycling (including 'end of waste' codes and product stewardship schemes such as container deposit), with the priority of advancing circular economy outcomes.
5. Publish benchmarks, measurements and reports on government procurement of Australian recycled content.
6. Set mandatory thresholds for Australian recycled materials, underpinned by a traceability framework for recycled materials, with an initial focus on packaging.
7. Support confidence in Australian recycling by funding the implementation of an Australian Recyclers Accreditation Program.
8. Urgently address the inefficiencies and conflicts of interest in the National Television and Computer Recycling Scheme (NTCRS), to support the viability of the Australian e-waste recycling system.
9. Prioritise and expedite holistic e-stewardship reform, with the implementation of a scheme that includes all consumer electric and electronic items, including batteries and solar PV systems.
10. Undertake a holistic review of the provisions for product stewardship within the Recycling and Waste Reduction Act 2020 and all relevant government policies and programs, to ensure that all voluntary and mandatory schemes support genuine recycling outcomes, addressing: scheme design; reuse and recyclability; creation of market demand for recycled materials; enhancing and incentivising collection; and ensuring transparency, accountability and whole-of-supply chain, including recycler representation in scheme governance.
11. Urgently address the escalating hazard posed by batteries in recycling streams: fully catalogue all items in the market that are or contain batteries; support the rollout of a comprehensive safe collection system; deliver a nation-wide community education campaign; implement e-stewardship reform, including a deposit scheme for all battery-containing items; and work with all jurisdictions to harmonise regulation for battery disposal and collection.
12. Ensure that the proposed National Packaging Design Standards support mandated thresholds for Australian-made recycled content; designing for recyclability; and national harmonisation of State and Territory regulation on single use and problematic plastics.
13. Support national harmonisation of Container Deposit Schemes, prioritising: targets for return rates; an increased CDS deposit rate; comprehensive access and coverage; consistent, strong marketing; improved governance; expansion of the scope of eligible containers to include glass wine and spirit bottles; prioritising recyclability and recycled content; and consistent protocols for material recycling facilities (MRFs) and glass aggregators.
14. Urgently update the Product Stewardship for Oil Scheme recycler benefit.
15. Provide appropriate funding to foster collaboration and restore community confidence to 'recycle right' through the national education tool Recycle Mate, generating higher recycling participation nationally, and delivering more data to Government on the recycling capabilities and community behaviours across Australia.

Appendix 1: Recyclers in Product Stewardship: Challenges, priorities, and recommendations from the recycling sector

ACOR
AUSTRALIAN COUNCIL OF RECYCLING

Recyclers in Product Stewardship

Challenges, priorities, and recommendations from the recycling sector

Issues paper
Prepared by the
Australian Council of Recycling

April 2024

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with. We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities, economies and the environment.

About ACOR

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 430 tonnes of material recycled in Australia.

Our membership is represented across the recycling value chain, and includes leading organisations in advanced chemical recycling processes, CDS operations, kerbside recycling, recovered metal, glass, plastic, paper, organic, tyre, textile, oil, battery and e-product reprocessing and remanufacturing, and construction and demolition recovery. Our mission is to lead the transition to a circular economy through the recycling supply chain.

Table of contents

Case Studies

Executive summary

The recycling sector strongly supports an increased focus on producers and distributors (known as 'brand owners') to take greater responsibility across the full lifecycle of products, including at end of use. Product stewardship and extended producer responsibility can be an effective way to reduce waste and lift recycling rates—particularly where recycling rates are low, or materials have low or negative value—but only if these schemes are properly designed in partnership with recyclers.

At present, existing voluntary and co-regulated product stewardship schemes endorsed by the Australian Government predominantly cater to brand owners. However, it is imperative to recognise that these entities represent only a part of a product's lifecycle.

Many product stewardship schemes appropriately emphasise the waste management hierarchy priorities of avoidance, reusability, and designing for repair, yet all products inevitably reach an end of use, where the ideal outcome is recycling.

Overwhelmingly, when schemes do engage with recycling activities, the focus is primarily on the public-facing, marketable elements of collection and processing, while underinvesting in the equally critical aspect of high-value recycling outcomes and demand generation for recycled material.

Too often, cost reduction is prioritised over quality recycling outcomes in such schemes. Not only does this undermine legitimate recycling operations, but it also erodes community confidence in recycling when the system fails.

Recent trends indicate recovery rates for household waste have stagnated, while commercial and industrial waste recovery rates have declined. This pattern underscores the urgent need for a concerted effort to invest in genuine recycling outcomes.

The establishment of a scheme must not be seen as an end in itself: it must be a means to delivering sustainable and economically viable circular outcomes, in partnership with the entire supply chain.

Engagement with the rest of the supply chain—especially recyclers, who are the subject matter experts on recycling—is essential to ensure product stewardship schemes deliver genuine value to brand owners, government entities, communities, and recyclers, and support the transition to a circular economy.

The recycling sector is concerned that some existing voluntary and co-regulated product stewardship schemes are not delivering robust recycling outcomes while new schemes are being established without the correct mechanisms in place to drive effective resource recovery and demand for recycled materials.

With thirteen industry-led government-accredited voluntary and co-regulated schemes, almost one hundred schemes operating in Australia, and many more in development, now is the time to better align these initiatives, set stronger targets, adopt better governance and ensure accountability, to deliver genuine outcomes that support community confidence and proper investment in a robust and competitive recycling value chain.

This paper outlines the priorities and challenges for recyclers in the current context of a drive towards more stewardship and extended producer responsibility models. It recommends measures for product stewardship schemes that will deliver better environmental outcomes and more genuine engagement across the supply chain, including designing for recycling and reuse, expanded collection and safe disposal measures, ensuring robust market demand for recycled materials and transparent scheme governance focussing on compliance and consequences.

Priority areas to deliver better recycling outcomes from product stewardship are as follows:

- **Rethink and restructure product stewardship**
- **Design for recycling and reuse**
- **Create robust market demand**
- **Enhance collection infrastructure and consumer incentives**
- **Tighten scheme governance**
- **Enforce compliance and consequences**

Summary of product stewardship challenges and solutions

Common issues in product stewardship schemes	Recommendations
– Underfunding recycling – Product stewardship prioritised above more effective policy and regulatory levers – Duplicative schemes creating inefficiency and confusion	1.1 'Trigger Framework' to determine when a product stewardship scheme is required 1.2 Assess and embed actual costs of recovery and recycling
	2.1 Federal EPR legislation, initiated by 'Trigger Framework' 2.2 Evidence-based targets for recyclability, with targets increasing over time
– Weak end markets for recycled materials	3.1 Robust end markets for Australian recycled content 3.2 Economic incentives for use of recycled materials 3.3 Minimum thresholds for Australian recycled content 3.4 Certification and labelling for Australian recycled content 3.5 Target dumped and subsidised imported material
– Poor governance, including conflicts of interest, and under-representation across supply chain – Scheme administration prioritised over recycling – Lack of appropriate targets or proportional consequences for non-achievement	4.1 Expand the scope of mandatory e-stewardship, incorporating all consumer electronic and electrical equipment and loose and embedded batteries into one comprehensive scheme 4.2 Gap analysis of disposal options for all electronic and hazardous waste streams 4.3 Comprehensive network of safe disposal sites 4.4 Incentivise safe battery collection with deposit refund
	5.1 Supply-chain representation in product stewardship scheme governance 5.2 Recycling sector expert convenor to engage product stewardship schemes with recycling sector 5.3 Clearly defined and measurable objectives, rules and targets 5.4 Transparent data about objectives, decision-making processes, recovery rates, recycling outcomes and material movement 5.5 Ensure scheme's objectives are met with accountability measures
– Poor accountability and transparency	6.1 Australian Recyclers Accreditation Program (ARAP) 6.2 Enforce waste export regulations 6.3 Regulate the export of waste textiles, unprocessed scrap metal and unprocessed e-products 6.4 Tax incentives or priority access to markets for best-practice recycling facilities 6.5 Product stewardship schemes to be subject to third-party audits and/or inspections 6.6 A nationally harmonised resource recovery framework

Background

The *Recycling and Waste Reduction Act* was passed in 2020, providing a framework for managing Australia's recycling and waste reduction objectives, which include the development of a circular economy.[1] The Act identifies voluntary, co-regulatory and mandatory product stewardship schemes as a means to manage the impacts of products and materials throughout their lifecycle, and enables a more accessible framework for accreditation of voluntary schemes. The Act provides for the use of the Commonwealth's logo for accredited voluntary schemes, promoting the recognition and credibility that government accreditation affords.[2]

The Australian Government has signalled a preference for industry action through product stewardship schemes. The establishment of many government-accredited schemes has also been encouraged by the Minister's product stewardship priority list,[3] which identifies products lacking circular or recycling solutions at their end of use.

The Product Stewardship Centre of Excellence (Centre of Excellence) was established in 2021 with the support of the Australian Government. The Centre of Excellence maintains the Product Stewardship Gateway, a directory of product stewardship schemes in Australia, detailing any reporting data product stewardship schemes disclose.

In 2023, the Centre of Excellence delivered their evaluation of product stewardship and extended producer responsibility activity in Australia,[4] in line with action 3.3 of the National Waste Action Plan 2019.[5] The summary report presented a positive view of product stewardship in Australia, despite acknowledging difficulties in assessing efficacy due to poor reporting from schemes:

> Given the inconsistency and gaps in data collection and reporting, only a few of annual performance indicators could be aggregated. There were also limitations in assessing how effective initiatives are performing. For example, tonnes of waste products collected for recovery and materials recovered were not always reported in the context of total waste arising. Without this data, it is difficult to determine how effective the initiative has been in increasing recovery or diverting waste from landfill.[6]

Some mandatory and well-governed product stewardship schemes have been successful. State-based container deposit schemes (CDS) will soon be operating nationwide. They are generally considered to be an appropriately governed and funded approach by recyclers, industry and government stakeholders alike. These mandatory schemes provide a 10-cent refund for the return of beverage containers, aligning economic incentives with environmental goals.

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[1] Australian Government Department of Finance, 'Recycling and Waste Reduction Act 2020', Australian Government Transparency Portal website, accessed March 2024.

[2] Department of Climate Change, Energy, the Environment and Water, 'Product stewardship schemes and priorities', DCCEEW website, accessed March 2024.

[3] Department of Climate Change, Energy, the Environment and Water, 'Minister's Priority List 2023–2024', DCCEEW website, accessed December 2023.

[4] Product Stewardship Centre of Excellence (May 2023) 'Evaluating product stewardship: Benefits and effectiveness, summary report', Product Stewardship Centre of Excellence website, accessed March 2024.

[5] Department of Climate Change, Energy, the Environment and Water (2019, 2022) 'National Waste Policy Action Plan 2019', DCCEEW website, accessed March 2024.

[6] Product Stewardship Centre of Excellence (May 2023) 'Evaluating product stewardship: Benefits and effectiveness, summary report', p. 10, Product Stewardship Centre of Excellence website, accessed March 2024.

Case Study 1: Container Deposit Schemes

Container deposit schemes (CDS) will soon be operating in every Australian state and territory.

These schemes have attracted industry and community participation and substantially reduced beverage container litter and landfilling. The schemes allow for access to quality recovered material, which leads to highest-value material reuse, such as bottle-to-bottle recycling. For example, the hot-wash PET flake generated from CDS products delivers high-quality recycled PET (rPET) for the Australian packaging market. The schemes also deliver uncontaminated glass for high-value recycling.

Through mandatory product stewardship including a 10-cent refund on returned containers, these schemes have delivered a national average recovery rate of 69%,[7] collectively resulting in the recovery of over 30 billion beverage containers, while supporting jobs as well as fundraising for community groups.

More work now needs to be done to improve return rates to international standards, achieve a nationally harmonised approach and lift governance in some schemes.

Product stewardship and extended producer responsibility schemes are intended to encourage manufacturers, retailers, consumers, and other stakeholders to take shared responsibility for the environmental and human health effects of products. They aim to drive environmentally beneficial outcomes through good design and clean manufacturing, including the use of components and materials that are easier to recover, reuse and recycle, and often involve strategies such as designing products for recycling, creating take-back programs for used products, and promoting responsible disposal practices.

Case Study 2: Dutch Extended Producer Responsibility Textiles Decree

In the Netherlands, an extended producer responsibility scheme (Uitgebreide Producentenverantwoordelijkheid, UPV)[8] for textiles came into effect on 1 July 2023. It establishes the following targets for reuse and recycling, which will ratchet up over time:

- By 2025, 50% of the previous year's total weight sold must be recovered for reuse or recycling. Of this percentage, at least 20% must be reused, with at least half reused in the Netherlands. By 2030, it increases to 75% of the previous year's total weight sold, with at least 25% reused of which 15% must be reused in the Netherlands.
- By 2025, 25% of all textile fibres of discarded textile products must be used in materials for new products (fibre-to-fibre recycling). By 2030, this must be 33% of all textile fibres.
- Producers will have to submit an annual report setting out the details of their compliance with the decree, and are financially responsible for setting up a suitable collection and processing system for discarded textile products. Non-compliance may be punishable with criminal law sanctions.

However, all products produced or distributed in Australia ultimately reach the Australian waste stream—including materials banned from export over the last few years. Onshore recycling and the creation of markets for recycled materials must therefore be an overarching priority across all product stewardship initiatives.

At a time when resource recovery rates have stagnated,[9] it is vital that recycling is prioritised. The recycling sector plays an indispensable role in diverting materials from landfill and reintegrating them into the supply chain, closing the loop in a circular economy.

Recycling operates as an integrated system, comprising collection, processing, and end markets for recycled materials. In particular, markets for recycled materials are paramount; without robust markets, the system fails.

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[7] Total Environment Centre (2023) 'Review: Australian Container Refund Schemes', TEC website, p. 11, accessed March 2024.

[8] Netherlands Enterprise Agency, RVO 'Uitgebreide Producentenverantwoordelijkheid UPV', Business.gov.nl, accessed March 2024.

[9] Blue Environment (2022) 'National Waste Report 2022', report to the Australian Government Department of Climate Change, Energy, the Environment and Water, DCCEEW website, accessed March 2024.

Case Study 3: REDcycle

REDcycle was an industry-led program operating from 2011 as a broad-based return-to-store, soft plastics recovery program in Australia, facilitating the collection and processing of soft plastics into a variety of durable recycled plastic products. Product manufacturers and major Australian supermarkets partnered with REDcycle to run the program.

In November 2022, REDcycle announced that it was suspending soft plastics collection, as processing capacity for soft plastics and markets for recycled soft plastic products became limited.[10] It was later revealed that REDcycle was stockpiling over 10,000 tonnes of unprocessed soft plastic across dozens of locations Australia-wide.[11] In February 2023, REDCycle was declared insolvent, reflecting broader limitations of the recycling system for soft plastic.

As a product stewardship scheme, REDcycle was fuelled by strong marketing and collection rather than a robust recycling supply chain and stable end markets. In a market environment where the production of new plastics is still far outstripping the demand for recycled materials, the collapse of REDcycle underscores the importance of scrutinising the operational aspects of product stewardship schemes to ensure they are capable of fulfilling their objectives and contribute meaningfully to circular economy outcomes.

The failure of REDcycle has had a broad impact on public confidence in recycling, with the media often calling into question the effectiveness of Australia's broader recycling system, demonstrating that the reputation of the recycling industry (rather than manufacturers) is most severely compromised by poorly designed schemes.

Currently, many voluntary and co-regulated product stewardship schemes frustrate higher-order recycling outcomes by compounding a disconnect between manufacturers and recyclers, rather than fostering partnership. This divide persists partly because manufacturers are hesitant to bear the entire expense of recycling, which is not a cheap process in Australia, entailing higher costs than other countries in the region due to factors including labour, energy, logistics and stringent regulations protecting the environment and human health. Despite the challenges, the recycling sector remains indispensable in fostering sustainability and responsible material management.

Often, scheme administrators prioritise the establishment of a scheme as an end in itself, with a great portion of funding dedicated to administration, rather than actual and viable recycling. This emphasis on scheme establishment rather than delivery of robust outcomes, leads to many inefficiencies, particularly in crossover markets, as well as aggregation, and overall administration. In this sense, scheme administrators can create duplicative systems, adding cost to recycling systems without adding value.

Product stewardship and extended producer responsibility

'Extended producer responsibility (EPR)' and 'product stewardship' refer to management approaches that emphasise producer responsibility for end-of-use outcomes for the materials and products they place on market. The terms are often used interchangeably as the sector matures and related initiatives expand and proliferate, which can create confusion among stakeholders.

For the purposes of this paper, product stewardship will be used to refer to both EPR and product stewardship unless stipulated otherwise—with a specific focus on voluntary and co-regulated schemes.

Whether EPR, or voluntary or mandatory product stewardship, or neither, is the correct approach for managing a product at end-of-use will be determined by the nuances such as the material's inherent value and properties, the maturity and economic viability of the recycling supply chain and end markets, and existing policy and regulation.

[10] Australian Competition and Consumer Commission (30 March 2023) 'Cooperation proposed to continue on soft plastics recycling after REDcycle liquidation', ACCC website, accessed March 2024.

[11] Miles, Daniel (30 November 2023) 'One year on from REDcycle's collapse, Australia remains without soft plastics recycling program', ABC News website, accessed March 2024.

What is extended producer responsibility?

Extended producer responsibility (EPR) places legal obligations on manufacturers, importers, or brand owners to take responsibility for the end-of-use management of their products. If enacted properly, it can be an effective way to ensure recyclability and fund recycling efforts. EPR schemes can mandate that brand owners take financial or operational responsibility for the collection, reuse, recycling, or safe disposal of their products at the end of their useful life.

Broader application of EPR can support greater resource efficiency if carefully implemented to avoid perverse outcomes. There must be transparency, meaningful and enforceable targets, continuous improvement and the input and involvement of the recycling industry, with EPR designed to work within, and improve, existing recycling systems.

What is product stewardship?

Product stewardship schemes can be voluntary, co-regulated or mandatory initiatives, where stakeholders engage in programs or initiatives to reduce the environmental footprint of products. Product stewardship can devolve producer responsibility for managing the lifecycle impacts of products onto a broader pool of stakeholders, particularly retailers, consumers and recyclers.

Currently, product stewardship schemes in Australia largely cater to the brand owners above the interests of the rest of the supply chain, which contains inherent risks and can result in poor environmental outcomes, for both product stewardship schemes and EPR. These concerns are shared by the Bureau of International Recyclers (see Case Study 4).[12]

It has become increasingly apparent that many EPR and product stewardship schemes have not sufficiently met expected targets,[13] and too much power given to only one type of stakeholder has resulted in opaque schemes lacking checks and balances and leading to poor environmental outcomes (see Case Study 9).

Case Study 4: Bureau of International Recyclers Position on Extended Producer Responsibility[14]

The Bureau of International Recycling (BIR) is a global federation supporting the interests of the recycling industry. BIR represents over 30,000 companies across 70 countries, through 37 national associations and over 1000 direct corporate members, covering eight material streams, including ferrous and non-ferrous metals, paper, textiles, plastics, tyres/rubber, and electrical/electronic equipment.

In 2023, BIR released a position paper on EPR highlighting growing international concern from recyclers about EPR. Key recommendations outlined in their statement include:

- EPR schemes must not disrupt existing efficient markets, and should be set up only when there is a need and only once the effectiveness and the intrinsic value of a waste stream have been assessed;
- governments should also consider other policy instruments to increase circularity, such as mandatory design for recycling and legally-binding recycled-content targets;
- recyclers should be involved in the governance bodies of such schemes to ensure an appropriate balance of interests among the most relevant stakeholders in the value chain, and;
- ownership of waste should be retained by the recycling company entrusted with the responsibility of processing the waste, with transparent and fair tenders to avoid monopolies and comply with competition rules.

[12] Bureau of International Recycling (November 2023) 'BIR Position Paper on Extended Producer Responsibility (EPR)', BIR website, accessed March 2024.

[13] Many product stewardship schemes do not report outcomes. Of those schemes required to do so, APCO has reported that the 2025 National Packaging Targets are on track but will not be met: APCO (2023) 'Australian packaging material flow analysis for 2020–21', APCO website, accessed March 2024.

[14] Bureau of International Recycling (November 2023) 'BIR Position Paper on Extended Producer Responsibility (EPR)', BIR website, accessed March 2024.

Recyclers: The missing link in strong product stewardship outcomes

Critical problems arise when a key part of the scheme supply chain is unable to meaningfully engage on costs, logistics, and the state of end markets. While product stewardship schemes are intended to operate with all stakeholders working in concert, this is often not the case. In particular, recyclers and remanufacturers are not sufficiently involved in the establishment or ongoing operations of schemes.

Recyclers can highlight challenges and opportunities in the recycling process, such as recyclability of materials, components that help or hinder the recycling stream and markets for recycled materials. They are also positioned to provide expertise into efficient collection, sorting, quality control and processing methods, improving the overall effectiveness of the stewardship scheme and reducing contamination in recycling streams.

Currently, recyclers and remanufacturers are under-represented on boards across product stewardship schemes. Of the thirteen co-regulated and Government-accredited voluntary schemes in Australia, only five publicly disclose their governance arrangements, and of those, only two show recyclers on the board (as shown in *Appendix 1: Governance arrangements of Australian Government-accredited schemes.*

The involvement of recyclers in the governance of product stewardship schemes can help to ensure that recycling is economically viable and drive market demand for recycled materials. With rising costs across recycling facilities, it is particularly critical that recyclers are at the table to highlight market failures, to inform whether, and when, intervention through a product stewardship scheme is necessary.

Case Study 5: Tyre Product Stewardship Scheme

Tyre Stewardship Australia (TSA), which commenced in 2014, raises a 25 cent per tyre levy from participating tyre manufacturers, amounting to $7.6 million in 2023. These funds are distributed across three primary functions: research and development for new end-of-life-tyre (EOLT) products; an accreditation program for collectors, recyclers and retailers; and consumer marketing.

TSA is a manufacturer-led and governed organisation. There is no recycling industry representation on the board and little overall strategic engagement with the recycling sector. TSA has no role in the collection and recycling of EOLTs, and no funds from the scheme are provided to the sector. In the year ending June 2023, while TSA's levy income increased by 20%, spending on market development dropped to one-quarter of the company's spending (47% went to consultancy expenses, advertising and marketing).

This lack of engagement with the recycling sector has led to some ill-informed decisions. For instance, by accrediting 'balers' (the cheapest disposal option for tyre retailers), prior to the Australian Government's ban on the export of whole baled tyres, TSA effectively endorsed many millions of unprocessed EOLTs to be exported to developing countries in our region and to very poor environmental outcomes such as open burning.

The ACCC recently acknowledged concerns raised by sector stakeholders in relation to the effectiveness of the scheme, citing insufficient representation on the TSA board, particularly in relation to the tyre recycling sector.[15] Stakeholders identified further concerns stemming from this lack of representation, including the accreditation, under the scheme, of businesses that were uncompliant with scheme objectives, and insufficient oversight of unprocessed EOLT's exported overseas.

ACCC- and Government-endorsed product stewardship schemes are often called on to speak as authorities on recycling, or are credited with recycling outcomes. TSA, for example, points to increased EOLT recovery rates since the scheme's formation as demonstration of its success; however, this change should more appropriately be credited to tightened state-based regulation: over the same time period, every state substantially reformed regulation of the storage, transportation, fire safety, end-of-use disposal and other environmental management aspects of EOLTs. Together, these regulatory changes provided an impactful disincentive to stockpiling EOLTs and fostered increased recycling investment and activity.

TSA is lobbying the Australian Government to intervene in the sector via regulated product stewardship, despite a 97% collection rate for used passenger and commercial tyres. Since state regulations to limit stockpiling and illegal dumping have been effective, it is unclear what environmental outcome a regulated scheme would deliver.

[15] Australian Competition and Consumer Commission (May 2018) 'ACCC re-authorises Tyre Stewardship Scheme', ACCC website, accessed January 2024.

Scheme accountability

Government-backed schemes must deliver genuine circular economy and recycling outcomes. One way to deliver meaningful outcomes is to ensure that schemes are advancing progress towards the targets in the National Waste Policy Action Plan and Australia's 2025 Packaging Targets,[16] specifically:

- reducing the total waste generated in Australia by 10% per person by 2030
- achieving an 80% average recovery rate from all waste streams by 2030
- phasing out problematic and unnecessary plastics by 2025
- halving the amount of organic waste sent to landfill by 2030
- 100% of packaging being reusable, recyclable or compostable by 2025
- 70% of plastic packaging being recycled or composted by 2025
- 50% of average recycled content included in packaging by 2025.

Accountability at present is insufficient to ensure best-practice operations and high-value recycling outcomes. A history of self-reporting with little benchmarking or consideration for tangible targets appears to have fostered a culture of accepting any increase in material collection as 'success' of some schemes (see Case Study 5). This self-reported data often goes unchallenged, even where issues are brought to the ACCC's attention, leading to reduced confidence and ultimately constraining investment in new recycling capacity and capability.[17]

Product stewardship schemes in Australia are also able to run their own accreditation programs for recyclers, establishing specific criteria and standards that recyclers must meet to participate in their schemes. These criteria typically focus on factors such as operational processes, compliance with regulations, the ability to meet quality standards for recycled materials, and (ideally) environmental impact. Recyclers seeking accreditation usually undergo assessments, audits, and evaluations to ensure they meet these set standards before being approved to participate in the product stewardship schemes.

These 'bespoke' accreditation programs for recyclers represents a conflict of interest insofar as the priority of schemes is to keep recycling costs low, rather than ensure best-practice recycling outcomes (see Case Studies 7 and 9). This is costly and inefficient for both recyclers and brand owners, given that some recyclers service more than one scheme and are therefore required to be separately accredited. For example, in the mandatory National Television Computer and Recycling Scheme, recyclers must be approved by each and every co-regulator that they supply, resulting in duplication of effort.

Product stewardship schemes must ensure transparency, accountability and effectiveness. In particular, schemes that are accredited by the Australian Government must be required to meet a much higher standard of governance, transparency and material outcomes.

ACCC leverage and access

Federal accreditation is a six-month process that enables industry-led product stewardship operations to demonstrate to businesses and consumers that the arrangement has the Australian Government's stamp of approval.[18]

An ACCC authorisation can also be granted, where schemes can be exempted from competition provisions—such as those guarding against anti-competitive and cartel-like behaviours—and the ACCC may grant protection from legal action for conduct that might otherwise breach the *Competition and Consumer Act 2010* (the Act). Schemes seek authorisation where they wish to engage in conduct that is at risk of breaching the Act but nonetheless consider there to be public benefit.

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[16] Department of Climate Change, Energy, the Environment and Water (2019, 2022) 'National Waste Policy Action Plan 2019', DCCEEW website, accessed March 2024.

[17] Australian Tyre Recyclers Association (2 February 2024) 'Authorisations register: Tyre Stewardship Australia Limited', submission, ACCC website, accessed March 2024.

[18] Department of Climate Change, Energy, the Environment and Water (March 2023) 'Product stewardship accreditation', DCCEEW website, accessed March 2024.

Since product stewardship should align with broader public interest by promoting sustainability, reducing waste, and safeguarding environmental and public health, ACCC authorisation affords schemes access to a suite of anti-competitive instruments,[19] such as:

- cartel conduct,
- contracts, arrangements or understandings containing anti-competitive provisions,
- exclusive dealing,
- misuse of market power,
- secondary boycotts, and
- resale price maintenance.

While ACCC authorisation can support the delivery of public benefit through a product stewardship scheme, some schemes have elicited commercial in-confidence data from the recycling industry through their ACCC authorisation, which has subsequently been used to benefit brand owners of the scheme, rather than support a whole-of-supply-chain stewardship outcome.[20] Some schemes also seek to conflate the achievements of the recycling sector with those of the scheme (see Case Study 5).

[19] Robert Janissen (3 September 2021) 'ACCC Authorisation for product stewardship schemes', webinar, Product Stewardship Centre of Excellence website, accessed March 2024.

[20] Australian Tyre Recyclers Association (2 February 2024) 'Authorisations register: Tyre Stewardship Australia Limited', submission, ACCC website, accessed March 2024.

Recommendations

1. Rethink and restructure product stewardship

While product stewardship and EPR schemes can have positive outcomes if operated fairly and transparently, to ensure best practice there needs to be greater critical consideration of the market conditions and alternative approaches before new product stewardship schemes are established.

Consideration should be given as to whether product stewardship should be the only mechanism to be instituted. Other effective mechanisms, such as higher landfill levies, landfill bans, product bans and the enforcement of existing regulation, will be effective in some sectors, and often more cost-effective. Many of these policy mechanisms are blunt instruments that do not place responsibility and costs on the brand owner. EPR should be considered amid this range of policy options, and prioritised where adequate funding is not available for optimum end-of-life solutions, or where there is significant market failure.

Product stewardship schemes should be considered as a mechanism to support the development of infrastructure and markets for recycled materials, encourage correct collection, and increase end producer responsibility. If a robust end market exists with adequate investment in recycling and resource recovery, a scheme could, where appropriate, be wound down.

Product stewardship schemes are more appropriate and effective when applied to new recycling supply chains—or where collection and recycling rates are low—rather than retrofitting to mature recycling markets. Uncertainty about how new schemes might be established will deter investment in particular material streams, with a potential domino effect on investment confidence across broader recycling streams. There is a need for clarity about where the Australian Government will, and will not, intervene, with a priority of engaging closely with the recycling sector to ensure that domestic investment is not disrupted or undermined.

A product stewardship scheme 'Trigger Framework' could define clear parameters about when a scheme should be initiated for a product, or whether a new product or category should be added to an existing scheme in order to improve efficiency and minimise duplication of effort. Ensuring all parties in the supply chain know schemes will be triggered once a set of transparent criteria are met—alongside consultation with relevant supply chain stakeholders, including the recycling sector—will foster market and investment confidence.

While end markets are key to driving recycling, there will often remain a recycling cost to be covered by a credible scheme that distributes risk equitably across the supply chain. In sectors where there are low recovery rates, or the free market does not support an economically viable recycling system, levies must represent the real cost of recovery and recycling, take into consideration different recycling outcomes that can deliver lower and higher value outputs, and support recycling development innovation.

Scheme funding that falls short of covering the cost of recycling fundamentally undermines genuine recycling outcomes.

RECOMMENDATION 1.1 'Trigger Framework' to determine when a product stewardship scheme is required

In consultation with recyclers, brand owners and sector experts, the Australian Government should **establish a transparent 'Trigger Framework'** to determine when a product stewardship scheme becomes necessary: when certain market conditions exist or recovery rates stagnate or fall. This framework must include consultation with all supply chain stakeholders, particularly recyclers.

Attached to the 'Trigger Framework', an **exit conditions metric should be outlined for every new scheme,** dictating under what economic and environmental conditions and recycling rates a scheme could be wound down, repositioning some schemes as tools for market rehabilitation and not an end in themselves.

RECOMMENDATION 1.2 Assess and embed actual costs of recovery and recycling

Ahead of endorsing any product stewardship or EPR scheme, the Australian Government should work with the recycling sector to conduct a comprehensive assessment of the **actual costs of recovery, recycling and remanufacture** of relevant material streams. This assessment should consider the entire recycling value chain, including collection, logistics, sorting, processing and markets for recycled materials, and would inform appropriate scheme fees and financing.

Governments must ensure that extended producer responsibility measures undertaken by product stewardship schemes address actual costs of recovery and recycling, support genuine and highest-value recycling outcomes, and investment in Australian recycling.

2. Design for recycling and reuse

One of the biggest challenges to material recovery at end of use is poor design. A key component for every product stewardship scheme must be to ensure that brands and brand owners design for better material recovery and reuse, with a priority of procuring recycled materials.

Around the world, innovative closed-loop solutions are being deployed independently of product stewardship schemes. For example, an aid in the correct sorting of materials for reuse is the 'materials passport'.[21] Through smart material choices and designing for disassembly, these materials passports will make it possible for manufacturers to recoup some of their original investment, as materials can be sold back into the supply chain, and ultimately used again.

Case Study 6: Materials Passport and Venlo City Hall

In the Netherlands, a 'materials passport' innovation was deployed during the construction of Venlo City Hall. The passport records exactly what goes into the building, and will support the correct sorting of materials for reuse.

All components of the building were documented during construction in a materials database—or 'materials passport'—that describes the materials and provides an end-of-use plan, such as how to disassemble and recycle or return them to the manufacturer. By effectively creating a materials bank within the walls of the City Hall and designing for disassembly, it will be possible to recoup some of the original investment, at a later date, as materials can be sold back to manufacturers through a 'buy and buy-back' scheme, and ultimately used again.[22]

Furthermore, during its construction numerous producers and suppliers acquired Cradle to Cradle (C2C) certifications for their products.[23]

It is understood that relatively few products are manufactured in Australia; however, given that all products distributed in Australia ultimately enter into Australian waste streams, it is vital that schemes implement measures to influence design for the Australian market.

Adopting more robust EPR regulations enforces producer responsibility for the entire lifecycle of their products, including collection, recycling, and remanufacture. This, in turn, encourages the design of products that are easier to disassemble, reuse, or recycle.

RECOMMENDATION 2.1 Federal EPR legislation, initiated by 'Trigger Framework'

The Australian Government should **implement Extended Producer Responsibility legislation** that holds manufacturers responsible for the end-of-use management of their products, to encourage circular design and increase the demand for recycled materials. This EPR legislation should only be initiated when conditions of a **'Trigger Framework'** (RECOMMENDATION 1.1) have been met.

[21] Cradle to Cradle, 'City Hall Venlo', C2C Venlo website, accessed March 2024.

[22] Ellen Macarthur Foundation (June 2021) 'City Hall from Cradle to Cradle: Venlo', Ellen Macarthur Foundation website, accessed March 2024.

[23] Kraaijvanger Architects, 'Municipal Office Venlo', Kraaijvanger website, accessed March 2024.

RECOMMENDATION 2.2 Evidence-based targets for recyclability, with targets increasing over time

Overseen by the Australian Government, product stewardship schemes should set **evidence-based targets** for reuse and recyclability within product categories that are reusable/recyclable and those that are not. Targets for reusability and recyclability should increase over time, with measures in place to hold brand owners and distributors to account.

3. Create market demand

Too often, product stewardship advocates appear to consider the establishment of a scheme as an end in itself—in terms of meeting sustainability obligations—rather than a means to this end. A thriving and scaled recycling sector is an essential component of a functioning circular economy—and recycling cannot function without robust markets for recycled materials.

Theoretically, anything is recyclable, but recycling at scale must be economically viable, addressing the cost of Australian labour, logistics, compliance, infrastructure, research and development, and, most critically, supporting end markets for recycled materials.

Case Study 7: Seamless

Australians are the second-largest consumers per capita of textiles globally, purchasing on average an estimated 27 kilograms of new fashion and textiles each year, of which on average 93% is disposed of.[24] In 2018–2019, 227,000 tonnes of clothing were landfilled in Australia, 105,900 tonnes were exported, 51,000 tonnes were reused locally, 7,000 tonnes were recycled and 5,000 tonnes went to waste to energy.

The Australian Fashion Council clothing product stewardship scheme, Seamless, launched in June 2023. The Board was announced in in December 2023,[25] with no representation from the recycling sector.

The scheme design outlined a proposal to reduce this consumption and waste by raising a levy of 4 cents per garment to be invested in education, scheme administration, and research and development[26].

This levy does not adequately address the costs of recycling and the scheme design in fact risks potentially locking in a status quo arrangement in the fashion industry: restricting trade and access to feedstock, and remuneration for recyclers.

The scheme design does not address the economic and regulatory mechanisms necessary to drive resource recovery: there are no identified end markets for recycled products generated by the scheme and no firm work plans to develop these markets; no restrictions on the export of textile waste; no landfill bans (noting that some participants are entitled to a waste levy exemption); and insufficient funding for higher-order recycling.

Under the current design, Seamless will likely raise revenue from consumers while increasing export revenue from used textiles (including textile waste), without increasing Australian recycling rates.

There are significant barriers to strong market uptake of recycled material, including cost competitiveness with virgin materials and willingness within the supply chain to embrace change. To date, an uneven approach has been taken by the Australian Government, with a focus on banning the export of 'waste' without measures to address imported products that ultimately enter Australian waste streams. Conversely, there are no drivers to address the import of products that ultimately all become Australian waste, at end of use, as well as imported virgin and recycled materials that compete with Australian recycled products.

While there must be strong prioritisation of domestic end markets, export markets for processed recycled commodities should be recognised as a legitimate avenue, akin to any other exported commodity, noting that the focus must be on domestic processing.

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[24] Monash Sustainable Development Institute (2022) 'Textiles: A transitions report for Australia identifying pathways to future proof the Australian fashion and textile industry', report, p. 6, Monash University website, accessed April 2024.

[25] Australian Fashion Council (18 December 2023) 'Seamless announces inaugural CEO and Board of Directors', media release, Australian Fashion Council website, accessed February 2024.

[26] Australian Fashion Council (2023) 'Scheme Design Summary Report', Australian Fashion Council website, accessed February 2024.

Establishing a circular economy underpinned by a strong recycling sector will require the correct economic drivers. For example, mandated recycled plastic content in the United Kingdom has catalysed investment in recycled polymers by creating market demand.[27] Requiring manufacturers to use a certain percentage of recycled content in their products has created a stable market for recycled polymers, encouraging investment in recycling infrastructure and technologies to meet this demand.

In Australia, many in the recycling industry advocate for the mandatory implementation of the 2025 National Packaging Targets set out in the Australian Packaging Covenant Organisation. In 2023, the Australian Government committed to regulate packaging and ultimately enforce these targets:[28] the creation of robust end markets by 2025, ensuring that packaging incorporates 50% recycled content on average, and achieving 100% reusability, recyclability, or compostability.[29] While not yet defined, it is anticipated that the scope of this regulation will encompass all packaging sold in Australia, accompanied by consistent benchmarking and transparent reporting.

Formal government adoption of these targets would provide substantial backing for a flourishing, competitive recycling sector by mandating recycled content in packaging. This would support the integration of recycled products and materials into supply chains, fostering resilient and strong end markets.

Circular agreements can also play a useful role in fostering downstream end markets.[30]

RECOMMENDATION 3.1 Robust end markets for Australian recycled content

Product Stewardship schemes must prioritise **demand generation** and play an active and specific funded role in directly supporting robust and viable end markets for Australian recycled materials.

RECOMMENDATION 3.2 Economic incentives for use of recycled materials

The Australian Government should create **economic incentives** for using recycled materials, such as tax incentives, subsidies, grants, or differentiated regulatory fees, which can offset the cost difference between recycled and virgin materials, making the use of recycled materials more financially attractive for businesses. Incentives to use recycled materials specifically derived from product stewardship schemes should be considered.

RECOMMENDATION 3.3 Minimum thresholds for Australian recycled content

All Governments should implement strong drivers and mandated procurement targets to support uptake of Australian recycled content, such as a **price signal** to prioritise Australian recycled content over virgin materials and mandatory **minimum thresholds for Australian recycled content**.

RECOMMENDATION 3.4 Certification and labelling for Australian recycled content

The Australian Government should work with industry to **establish certification and labelling programs** that identify products made from recycled materials to help consumers make informed choices and increase demand by driving manufacturers to incorporate more recycled content.

RECOMMENDATION 3.5 Target dumped and subsidised imported material

The Australian Government should support a level playing field for the Australian recycling market by more **strongly targeting dumped and subsidised imported materials**.

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[27] NetZero Pathfinders, 'Recycled Content Mandates: U.K.', Bloomberg website, accessed March 2024.

[28] Department of Climate Change, Energy, the Environment and Water, 'Reforming packaging regulation', DCCEEW website, accessed March 2023.

[29] APCO, 'Australia's 2025 National Packaging Targets', APCO website, accessed March 2024.

[30] Steve Morriss (1 February 2024) 'Circular Contracts: The future of recycling', Close the Loop blog, accessed March 2024.

4. Enhance collection infrastructure and consumer incentives

While some product stewardship schemes have achieved desirable collection rates for end-of-use items, this is not the case across all product categories. Schemes that provide little incentive for consumers to return items to away-from-home collection points, and/or haven't supported a comprehensively accessible and well-marketed collection network, generally have poor collection rates.[31]

Of major concern are items that pose a risk across all other collection and recycling streams, such as those containing loose or embedded batteries which cause fires in waste and recycling trucks and facilities. The rapid digitisation and electrification of everyday items, the increasing number of 'smart' and disposable items such as vapes containing embedded and sealed batteries, and a lack of consumer education around their safe collection, have all contributed to the steep and hazardous rise in batteries in inappropriate waste streams.[32]

There is considerable confusion about which items contain batteries and which schemes different electronic products are subject to. For example, it is not widely understood that vapes and digital thermometers contain batteries. Also, while there are an array of schemes addressing electronic and electrical products—including the mandatory National Television Computer and Recycling Scheme (NTCRS), the voluntary Mobile Muster scheme, and the voluntary B-cycle scheme—many items are not accepted by any of these schemes, leaving gaps for necessary collection and creating confusion in the community about appropriate disposal options.

Despite this critical lack of access to safe collection locations for these items, to date no comprehensive geographic mapping of the gaps has been undertaken. Even with a product stewardship scheme in place, if there are limited accessible safe disposal avenues, the only options for the community are to stockpile, litter or dispose into incorrect waste streams.

Not only is there insufficient infrastructure to collect such items safely and comprehensively, but there are also no compelling drivers to divert these types of products from conventional recycling streams (such as household bins), resulting in major hazards across the recycling sector.

As the Australian Government reviews the framework for e-stewardship, it is essential that all e-products (including those with batteries) are addressed holistically, rather than the current piecemeal approach.

There must be comprehensive access for collection, as well as compelling incentives for consumers to return items to appropriate drop-off locations—especially items that pose a risk to human health, the environment or conventional waste and recycling systems.

Highest-value recycling outcomes are achieved through well-sorted and separated recovered products and materials.

At a consumer level, there must be a strong incentive to safely dispose of these products through the introduction of a refund or deposit scheme, similar to container deposit schemes. This will help to drive the correct collection of products at end of use, which is critically important for items that are hazardous, such as loose and embedded batteries. Concerns that a refund on batteries might expose consumers to risk can be addressed by ensuring that refunds are contingent on safe collection practices and appropriate community education.

[31] For example, in 2023, B-cycle's collection rate of in-scope loose batteries was 12%. See B-cycle (July 2023) 'Positive Charge: 2022–2023 Report', B-cycle website, accessed March 2024.

[32] ACOR (December 2023) 'A Burning Issue: Navigating the battery crisis in Australia's recycling sector', ACOR website, accessed March 2024.

Case Study 8: B-cycle

B-cycle, which launched in January 2022, is an ACCC-authorised product stewardship scheme for loose batteries, run by the Battery Stewardship Council.

The B-cycle scheme accepts all small loose and easily removable batteries, including regular AA and other sizes, button batteries, rechargeable batteries, and small removable batteries from devices like hearing aids, power tools, e-bikes and digital cameras, but does not accept embedded batteries, batteries over 5 kilograms, mobile phone or laptop batteries, lead acid batteries or exit lighting. Not all loose batteries are within the scope of the scheme, and determining which batteries are in or out of scope remains confusing even for those working in the sector.

The authorisation by the ACCC identified that a levy would be applied to imported batteries at a rate of 4 cents per 24 grams, and would be used to fund the scheme and a rebate system for service providers responsible for the battery's collection, sorting and processing. However, the scheme only applied a 2 cent levy at its inception, raising this amount to 3 cents in 2022 and subsequently applying the 4 cent levy at the beginning of 2024.[33]

Meanwhile, Australia's battery recyclers have identified that the B-cycle funding for recycling is insufficient.[34] In 2023, the collection rate was 12% of loose in-scope batteries.[35]

Some battery manufacturers and retailers are in competition with B-cycle, in an effort to pursue better recycling outcomes more efficiently. Those who independently pay for their batteries to be recycled can achieve higher-value outcomes by paying the recycler directly, rather than paying a levy to B-cycle on one hundred per cent of products for the lower rate of recycling.

RECOMMENDATION 4.1 Expand the scope of mandatory e-stewardship, incorporating all consumer electronic and electrical equipment and loose and embedded batteries into one comprehensive scheme

The Australian Government should **expand the scope of mandatory e-stewardship, incorporating all consumer electronic and electrical equipment into one comprehensive scheme**—including any product connected to a plug or that contains batteries, as well as all loose and embedded batteries, to bring Australia into line with European standards.

RECOMMENDATION 4.2 Gap analysis of disposal options for all electronic and hazardous waste streams

State and Territory Governments must conduct a detailed **gap analysis of disposal options for all electronic and hazardous waste streams**, to help inform future schemes and policy decisions.

RECOMMENDATION 4.3 Comprehensive network of safe disposal sites

State and Territory Governments must ensure that **a comprehensively accessible network of safe disposal options is provided to all Australians** for materials that are hazardous in conventional waste and recycling streams, such as loose and embedded batteries, supported by strong community education campaigns.

RECOMMENDATION 4.4 Incentivise safe battery collection with deposit refund

Product stewardship schemes must strongly incentivise safe collection of batteries at end of use by **introducing a deposit refund for safe disposal at appropriate collection points**.

[33] Battery Stewardship Council (December 2023) 'Circular Batteries Australia Position Paper', p. 7, B-cycle website, accessed March 2024.

[34] Lisa Korycki (29 February 2024) 'Ecocycle flags e-waste recycling challenges', *Waste Management Review*, accessed March 2024.

[35] B-cycle (July 2023) 'Positive Charge: 2022–2023 Report', B-cycle website, accessed March 2024.

5. Tighten scheme governance

Governments and industry are increasingly relying on product stewardship schemes to meet circular economy principles. A properly functioning circular economy requires participation from every stage of the supply chain. Currently, these schemes typically represent only one stage of the circular economy supply chain: producers and distributors (also known as brand owners).

Many existing product stewardship schemes are not neutral bodies, but rather reflect the interests of brand owners over the rest of the supply chain, including recyclers. To effectively deliver a circular economy, product stewardship schemes must have a governance structure that equitably represents every stage of the supply chain.

Product stewardship schemes often exclude the recycling sector—tasked with delivering the scheme's ultimate outcomes—from meaningful participation in scheme governance, development and design. It is essential that the entire supply chain should participate in establishing a scheme's goals and ongoing operation, through adequate representation on scheme boards.

Stakeholder governance is increasingly acknowledged as a path for organisations to better address environmental, social and governance (ESG) considerations,[36] with conflicts of interests addressed through compliance with director's responsibilities, including fiduciary duties.[37] Scheme governance can also include community and council representatives. An independent chair may also help to address producer dominance of schemes.

Effective stakeholder representation in product stewardship scheme leadership is particularly pressing in light of the ACCC's recently prioritised focus on environmental claims, and given that every product stewardship initiative aims to collect and recycle their products. Schemes must deliver genuine recycling outcomes in order to support a circular economy and community confidence in recycling.

Transparent, objective and consistent data and reporting is also required to assess scheme efficacy against rigorous targets.

RECOMMENDATION 5.1 Supply-chain representation in product stewardship scheme governance

Product stewardship schemes must have **supply-chain representation within their governance structures**. This should comprise an independent Chair, and a Board that includes representatives and expertise from all stages of a circular supply chain, with equal decision-making powers and formal channels to provide expertise. Recycling industry representation should be proportionate to the operational costs borne for the actual recycling of the product waste stream.

RECOMMENDATION 5.2 Recycling sector expert convenor to engage product stewardship schemes with recycling sector

To address RECOMMENDATION 5.1, establish and adequately resource a **recycling sector expert convenor**, under the auspice of the Australian Council of Recycling, to facilitate engagement with subject matter experts and leaders in the recycling sector and provide guidance and board directors to schemes.

[36] Zishu Chen (June 2022) 'Corporate governance: Meet the new champions of stakeholder capitalism', World Economic Forum website, accessed March 2024.

[37] Various frameworks and guidelines set out directors' responsibilities regarding environmental outcomes, including the European Commission's Corporate Sustainability Due Diligence Directive, the UN's Guiding Principles on Business and Human Rights, and the OECD's Guidelines for Multinational Enterprises and Due Diligence Guidance for Responsible Business Conduct.

RECOMMENDATION 5.3 Clearly defined and measurable objectives, rules and targets

Schemes should have **objectives, rules and targets that are clearly defined and measurable**, to track progress, evaluate the effectiveness of the scheme, and make necessary adjustments over time. Well-defined metrics—especially regarding recycling and scheme compliance from all parts of the supply chain—will identify areas for improvement and highlight successes.

RECOMMENDATION 5.4 Transparent data about objectives, decision-making processes, recovery rates, recycling outcomes and material movement

All stakeholders should have access to information about the scheme's objectives, decision-making processes, recovery rates, recycling outcomes and material movement, reported at a state level. This transparency helps prevent conflicts of interest when tendering for services and ensures that the scheme's actions align with its intended goals.

RECOMMENDATION 5.5 Ensure that the scheme's objectives are met with accountability measures

Stakeholders within schemes should be incentivised to actively participate in and contribute to the circular economy, particularly recycling. There must be **mechanisms for holding participants accountable** to commitments and actions in place to ensure that the scheme's objectives are met.

6. Enforce compliance and consequences

Ensuring compliance with existing regulations must be a priority to increase recycling rates, along with a harmonised accreditation scheme that supports best-practice recycling outcomes.

'Bespoke' accreditation systems for schemes effectively lead to schemes self-reporting, while creating excessive costs and inefficiencies for both recyclers and brand owners.

Conflict of interest can also go unchecked when schemes develop their own accreditation systems for recyclers, for example, by emphasising cost-cutting measures over high-quality results.[38] Scheme accreditations can introduce uncertain and untrustworthy data, undermining confidence and ultimately limiting investments in expanding new recycling capacities and capabilities.

ACOR has scoped the value of a national accreditation program for Australian recyclers, and is now working with industry and government to advance the establishment to provide a framework for independent, objective and consistent assessments that determine whether a recycling site is operating to a specified standard in a secure, sustainable and resilient manner.

While it is crucial to ensure that recyclers are operating legitimately, it is also a priority to address the fragmented, variable and duplicative regulatory environment across Australia's States and Territories. There must be a nationally harmonised resource recovery framework to prioritise circular economy outcomes, define 'end of waste' and support investment confidence in recycling. There must also be much more effective enforcement of Australia's waste export regulation and a broadening of this regulation to address other materials—including textiles and unprocessed scrap metal—to ensure that Australia's international environmental duties are met, and Australia's recycling capabilities are supported. The cost of this regulation should be placed on producers and distributors, who are responsible for the products placed on market, not on the recycling sector.

[38] For examples, refer to the included case studies.

Case Study 9: National Television and Computer Recycling Scheme

The National Television and Computer Recycling Scheme (NTCRS),[39] established in 2011, provides collection and recycling services for televisions and computers, including printers, computer parts and peripherals. The scheme is intended to reduce e-waste to landfill, increase the recovery of reusable materials, and provide convenient access to recycling services for households and small businesses.

Companies who import or manufacture television and computer products over certain thresholds are liable under the scheme, and are required to pay for a proportion of recycling through membership in an approved co-regulatory arrangement. These five co-regulators are responsible for the day-to-day operation of the scheme, including organising collection and recycling of e-waste on behalf of brand owners (known as liable party members within the NTCRS).

However, the NTCRS has become an inefficient system with a two-tiered marketplace: the five co-regulators compete to offer the lowest fees to brand owners, forcing prices down to unsustainable levels, while recyclers are reduced to price-takers. The NTCRS has become a 'race to the bottom' for some brand owners at the expense of best-practice recycling and environmental outcomes.

The drive towards low-cost outcomes has incentivised some co-regulators to reduce accessibility, or compromise on material recovery rates. There is little transparent downstream verification or reporting of recycling outcomes: audits in the NTCRS are primarily financial audits, with cursory attention to operational elements.

The Department of Climate Change, Energy, the Environment and Water is currently leading a redesign of the NTCRS to broaden the parameters of e-stewardship regulation to likely include all small electrical and electronic products as well as solar photovoltaic systems. The revised scheme must address the NTCRS's inefficiencies and inherent conflicts of interest, while driving a properly comprehensive approach to e-stewardship, incorporating all consumer electronic and electrical equipment and loose and embedded batteries.

RECOMMENDATION 6.1 Australian Recyclers Accreditation Program (ARAP)

The Australian Government should support compliance through the implementation and adoption of an **Australian Recyclers Accreditation Program** (ARAP).[40]

RECOMMENDATION 6.2 Enforce waste export regulations

The Australian Government should more effectively and proactively **enforce existing waste export regulations,** with impactful consequences including fines and imprisonment. The cost of regulation should be placed on producers and distributors, who are responsible for products placed on market.

RECOMMENDATION 6.3 Regulate the export of waste textiles, unprocessed scrap metal and unprocessed e-products

The Australian Government should **expand the existing waste export rules** to specifically address waste textiles, unprocessed scrap metal and unprocessed e-products.

RECOMMENDATION 6.4 Tax incentives or priority access to markets for best-practice recycling facilities

The Australian Government should create incentives, such as **tax incentives or priority access to markets**, for recycling facilities that consistently demonstrate high levels of compliance.

[39] Department of Climate Change, Energy, the Environment and Water, 'National Television and Computer Recycling Scheme', DCCEEW website, accessed March 2024.

[40] Australian Council of Recycling, 'Australian Recyclers Accreditation Program', ACOR website, accessed March 2024.

RECOMMENDATION 6.5 Product stewardship schemes to be subject to third-party audits and/or inspections

The Australian Government should require **regular independent audits** to assess compliance with regulations and internal policies, holding stewardship schemes to greater account via more vigilance, auditing and assessment of claims made by schemes regarding performance, industry data and reporting protocols. **Third-party audits and/or inspections**—underpinned by circular principles—should also be implemented to provide unbiased assessments of compliance and identify areas for improvement.

RECOMMENDATION 6.6 A nationally harmonised resource recovery framework

The Australian Government, together with State and Territory Governments, should **establish a nationally harmonised resource recovery framework**, to prioritise circular economy outcomes, define 'end of waste' and support investment confidence in recycling.

Conclusion

This paper has outlined some of the challenges for recyclers in the current operations and mandates of product stewardship schemes. As governments and industries look towards greater product stewardship and extended producer responsibility (EPR) models as a key tool in the circular economy, it is vital that we encourage a more transparent, inclusive and effective dialogue around their establishment and viable operations. Greater collaboration will ultimately lead to product stewardship schemes that deliver more benefits for brand owners, governments, the community and recyclers.

It is essential to the success of any recycling operation, regulation or policy that recyclers and remanufacturers have a seat at the table, and are consulted often and with intention. In product stewardship schemes, brand owners represent only a small fraction of the mechanism, but hold the most authority and decision-making power. As a key part of the supply chain, the recycling, resource recovery, and remanufacturing sector is essential to ensure product stewardship schemes deliver a circular economy. To date, this sector's experience and expertise has largely been overlooked at best, or systematically ignored at worst.

Ultimately, the key recommendations contained in the paper are an offer from our sector to collaborate, share our expertise and find a path forward to work together with government and industry to achieve a thriving circular economy.

Appendix 1: Governance arrangements of Australian Government-accredited schemes

Scheme	Type	Governance arrangements published?	Recycler on Board?
Activ Group	Co-regulated	No	Unknown
ANZRP	Co-regulated	Yes	No
APCO	Co-regulated	Yes	Yes
B-cycle	Voluntary	Yes	Yes
Big Bag Recovery	Voluntary	No	Unknown
EcoCycle	Co-regulated	No	Unknown
Ecoloop	Voluntary	No	Unknown
Ecycle	Co-regulated	No	Unknown
Mobile Muster	Voluntary	No	Unknown
Project Earth (Dulux)	Voluntary	No	Unknown
Seamless	Voluntary	Yes	No
SPS Aust	Co-regulated	No	Unknown
Tyre Stewardship Australia	Voluntary	Yes	No

Appendix 2: Summary of recommendations

1. Rethink and restructure product stewardship

RECOMMENDATION 1.1 'Trigger Framework' to determine when a product stewardship scheme is required

In consultation with recyclers, brand owners and sector experts, the Australian Government should establish a transparent 'Trigger Framework' to determine when a product stewardship scheme becomes necessary: when certain market conditions exist or recovery rates stagnate or fall. This framework must include consultation with all supply chain stakeholders, particularly recyclers.

Attached to the 'Trigger Framework', an exit conditions metric should be outlined for every new scheme, dictating under what economic and environmental conditions and recycling rates a scheme could be wound down, repositioning some schemes as tools for market rehabilitation and not an end in themselves.

RECOMMENDATION 1.2 Assess and embed actual costs of recovery and recycling

Ahead of endorsing any product stewardship or EPR scheme, the Australian Government should work with the recycling sector to conduct a comprehensive assessment of the actual costs of recovery, recycling and remanufacture of relevant material streams. This assessment should consider the entire recycling value chain, including collection, logistics, sorting, processing and markets for recycled materials, and would inform appropriate scheme fees and financing.

Governments must ensure that extended producer responsibility measures undertaken by product stewardship schemes address actual costs of recovery and recycling, support genuine and highest-value recycling outcomes, and investment in Australian recycling.

2. Design for recycling and reuse

RECOMMENDATION 2.1 Federal EPR legislation, initiated by 'Trigger Framework'

The Australian Government should implement Extended Producer Responsibility legislation that holds manufacturers responsible for the end-of-use management of their products, to encourage circular design and increase the demand for recycled materials. This EPR legislation should only be initiated when conditions of a 'Trigger Framework' (Recommendation 1.1) have been met.

RECOMMENDATION 2.2 Evidence-based targets for recyclability, with targets increasing over time

Overseen by the Australian Government, product stewardship schemes should set evidence-based targets for reuse and recyclability within product categories that are reusable/recyclable and those that are not. Targets for reusability and recyclability should increase over time, with measures in place to hold brand owners and distributors to account.

3. Create market demand

RECOMMENDATION 3.1 Robust end markets for Australian recycled content

Product Stewardship schemes must prioritise demand generation and play an active and specific funded role in directly supporting robust and viable end markets for Australian recycled materials.

RECOMMENDATION 3.2 Economic incentives for use of recycled materials

The Australian Government should create economic incentives for using recycled materials, such as tax incentives, subsidies, grants, or differentiated regulatory fees, which can offset the cost difference between recycled and virgin materials, making the use of recycled materials more financially attractive for businesses. Incentives to use recycled materials specifically derived from product stewardship schemes should be considered.

RECOMMENDATION 3.3 Minimum thresholds for Australian recycled content

All Governments should implement strong drivers and mandated procurement targets to support uptake of Australian recycled content, such as a price signal to prioritise Australian recycled content over virgin materials and mandatory minimum thresholds for Australian recycled content.

RECOMMENDATION 3.4 Certification and labelling for Australian recycled content

The Australian Government should work with industry to establish certification and labelling programs that identify products made from recycled materials to help consumers make informed choices and increase demand by driving manufacturers to incorporate more recycled content.

RECOMMENDATION 3.5 Target dumped and subsidised imported material

The Australian Government should support a level playing field for the Australian recycling market by more strongly targeting dumped and subsidised imported materials.

4. Enhance collection infrastructure and consumer incentives

RECOMMENDATION 4.1 Expand the scope of mandatory e-stewardship, incorporating all consumer electronic and electrical equipment and loose and embedded batteries into one comprehensive scheme

The Australian Government should expand the scope of mandatory e-stewardship, incorporating all consumer electronic and electrical equipment into one comprehensive scheme—including any product connected to a plug or that contains batteries, as well as all loose and embedded batteries, to bring Australia into line with European standards.

RECOMMENDATION 4.2 Gap analysis of disposal options for all electronic and hazardous waste streams

State and Territory Governments must conduct a detailed gap analysis of disposal options for all electronic and hazardous waste streams, to help inform future schemes and policy decisions.

RECOMMENDATION 4.3 Comprehensive network of safe disposal sites

State and Territory Governments must ensure that a comprehensively accessible network of safe disposal options is provided to all Australians for materials that are hazardous in conventional waste and recycling streams, such as loose and embedded batteries, supported by strong community education campaigns.

RECOMMENDATION 4.4 Incentivise safe battery collection with deposit refund

Product stewardship schemes must strongly incentivise safe collection of batteries at end of use by introducing a deposit refund for safe disposal at appropriate collection points.

5. Tighten scheme governance

RECOMMENDATION 5.1 Supply-chain representation in product stewardship scheme governance

Product stewardship schemes must have supply-chain representation within their governance structures. This should comprise an independent Chair, and a Board that includes representatives and expertise from all stages of a circular supply chain, with equal decision-making powers and formal channels to provide expertise. Recycling industry representation should be proportionate to the operational costs borne for the actual recycling of the waste stream.

RECOMMENDATION 5.2 Recycling sector expert convenor to engage product stewardship schemes with recycling sector

To address Recommendation 5.1, establish and adequately resource a recycling sector expert convenor, under the auspice of the Australian Council of Recycling, to facilitate engagement with subject matter experts and leaders in the recycling sector and provide guidance and board directors to schemes.

RECOMMENDATION 5.3 Clearly defined and measurable objectives, rules and targets

Schemes should have objectives, rules and targets that are clearly defined and measurable, to track progress, evaluate the effectiveness of the scheme, and make necessary adjustments over time. Well-defined metrics—especially regarding recycling and scheme compliance from all parts of the supply chain—will identify areas for improvement and highlight successes.

RECOMMENDATION 5.4 Transparent data about objectives, decision-making processes, recovery rates, recycling outcomes and material movement

All stakeholders should have access to information about the scheme's objectives, decision-making processes, recovery rates, recycling outcomes and material movement, reported at a state level. This transparency helps prevent conflicts of interest when tendering for services and ensures that the scheme's actions align with its intended goals.

RECOMMENDATION 5.5 Ensure that the scheme's objectives are met with accountability measures

Stakeholders within schemes should be incentivised to actively participate in and contribute to the circular economy, particularly recycling. There must be mechanisms for holding participants accountable to commitments and actions in place to ensure that the scheme's objectives are met.

6. Enforce compliance and consequences

RECOMMENDATION 6.1 Australian Recyclers Accreditation Program (ARAP)

The Australian Government should support compliance through the implementation and adoption of an Australian Recyclers Accreditation Program (ARAP).

RECOMMENDATION 6.2 Enforce waste export regulations

The Australian Government should more effectively and proactively enforce existing waste export regulations, with impactful consequences including fines and imprisonment. The cost of regulation should be placed on producers and distributors, who are responsible for products placed on market.

RECOMMENDATION 6.3 Regulate the export of waste textiles, unprocessed scrap metal and unprocessed e-products

The Australian Government should expand the existing waste export rules to specifically address waste textiles, unprocessed scrap metal and unprocessed e-products.

RECOMMENDATION 6.4 Tax incentives or priority access to markets for best-practice recycling facilities

The Australian Government should create incentives, such as tax incentives or priority access to markets, for recycling facilities that consistently demonstrate high levels of compliance.

RECOMMENDATION 6.5 Product stewardship schemes to be subject to third-party audits and/or inspections

The Australian Government should require regular independent audits to assess compliance with regulations and internal policies, holding stewardship schemes to greater account via more vigilance, auditing and assessment of claims made by schemes regarding performance, industry data and reporting protocols. Third-party audits and/or inspections—underpinned by circular principles—should also be implemented to provide unbiased assessments of compliance and identify areas for improvement.

RECOMMENDATION 6.6 A nationally harmonised resource recovery framework

The Australian Government, together with State and Territory Governments should establish a nationally harmonised resource recovery framework, to prioritise circular economy outcomes, define 'end of waste' and support investment confidence in recycling.

Appendix 2: A Burning Issue: Navigating the battery crisis in Australia's recycling sector

A Burning Issue:

Navigating the battery crisis in Australia's recycling sector

Issues Paper

Prepared by the
Australian Council of Recycling

December 2023

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with. We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities, economies and the environment.

About ACOR

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 430 tonnes of material recycled in Australia.

Our membership is represented across the recycling value chain, and includes leading organisations in advanced chemical recycling processes, CDS operations, kerbside recycling, recovered metal, glass, plastic, paper, textile, tyre and e-product reprocessing and remanufacturing, road recycling, and construction and demolition recovery. Our mission is to lead the transition to a circular economy through the recycling supply chain.

About Recycle Mate

Recycle Mate is an initiative of the Australian Council of Recycling, with funding support from the Australian Government's *Environment Restoration Fund* program, and currently supported by the Queensland Government. Adaptation Environmental Support is the program delivery partner.

Table of Contents

Introduction

Batteries—in loose or embedded form—are an increasingly alarming hazard in both kerbside and commercial waste and recycling streams. The Australian Council of Recycling (ACOR) and the recycling and resource recovery sector are overwhelmingly concerned about increasing incidents involving batteries causing property damage, serious injury and death—and resulting in skyrocketing insurance fees and financial assurance requirements.

The rapid digitisation of everyday items, the increasing number of 'smart' and 'disposable' items such as vapes containing embedded and sealed batteries, and a lack of safe disposal options and poor consumer education, have all contributed to the steep rise in batteries in inappropriate waste streams. This is causing fires and property damage, and severely compromising collection and resource recovery operations for recyclers all across Australia.

Fires caused by batteries are now widespread across material recovery facilities (MRFs), in waste and recycling trucks, and in depots—in short, at every point across collection, disposal and recovery streams. These fires pose great dangers to human health and life, and are also damaging to the environment through smoke and polluted runoff. The economic impact of these incidents is being borne by the community through rising rates, by councils through truck fires and future risk, and by industry in the loss of critical infrastructure.

In the year ending 30 June 2023, there were over one thousand battery-related fire incidents reported in the waste and recycling sectors nationwide, amounting to over three a day.[1] It is unlikely that this figure even begins to reveal the true extent of the battery crisis for recyclers. A lack of accurate data and information on e-waste fires can be traced to under-reporting—as colossal insurance premiums disincentivise operators to report—along with the fragmented regulatory landscape, with eight environmental regulators, eight fire and rescue organisations and almost 550 local councils nationwide.

While the damage caused by batteries is critical, current volumes are only the beginning. The generation of lithium-ion battery waste is projected to grow exponentially over the next 20 years. The Australian Government has identified that lithium-ion, sodium-ion, vanadium flow batteries and others will support the transition to a net zero emissions economy. Batteries are now part of our energy arsenal and everyday lives—and so is their waste. According to a 2016 report commissioned by the Australian Government's then-Department of the Environment, lithium-ion battery waste alone is projected to increase exponentially from 3,340 tonnes in 2016 to 137,618 tonnes in 2036.[2]

While issues relating to battery safety reach broadly across society, pointing to an urgent need for battery quality standards, the principal focus of the recycling sector is to address the risks at end of use.

There are critical actions that governments must take to address safe battery disposal, including:

- Ensure comprehensive safe collection
- A community education campaign
- E-stewardship reform, including a deposit scheme
- Regulatory harmonisation and enforcement

This issues paper explores the overarching considerations in this space and seeks to identify solutions to this current environmental crisis. We acknowledge the work already commenced by the State and Territory Governments, the Australian Government, CSIRO, the Australian Competition & Consumer Commission (ACCC), and peak bodies, including the National Waste and Recycling Industry Council (NWRIC) and the Waste Management and Resource Recovery Association of Australia (WMRR).

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1 NWRIC letter to federal ministers, 'Industry call for immediate and urgent action—dangers of incorrectly disposed batteries', 31 July 2023.

2 'Waste lithium-ion battery projections', Randell Environmental Consulting, 19 July 2016.

Overarching considerations

Rapid digitisation and single-use electronics

The rapid digitisation of everyday items has led to the increased use of batteries in products across the world, including Australia. As more devices become 'smart' or connected to the internet, they often require power sources to function, and batteries are a common choice due to their portability and efficiency gains.

The proliferation of smartphones, smartwatches, fitness trackers, wireless headphones, and other portable gadgets is contributing to the rising demand for batteries. Additionally, the Internet of Things (IoT) has led to the integration of connectivity and sensors into various household items, from thermostats to kitchen appliances, necessitating power sources, including batteries.

Many consumer goods that enter recycling streams, particularly 'disposable' items such as vapes, contain embedded and sealed batteries that are unable to be safely removed. In many cases, the item is not labelled with advice that it contains a battery, let alone the type. Furthermore, appropriate disposal options are often not accessible or available. Recyclers are now finding these batteries in increasingly obscure items, which makes fire risk harder and harder to address, exposing the industry to increasing danger to people, equipment and property.

While operators are rapidly introducing safety procedures to deal with these items, it is impossible to comprehensively detect batteries that have been placed in waste and recycling streams, including kerbside bins, commercial bins, e-waste collection and scrap metal loads.

A major Australian MRF operator has identified that there is one vape per two tonnes of material received—potentially extrapolating to hundreds of thousands of vapes across all waste streams. Vapes are one of the many new products that are being introduced into the market with no producer regard or responsibility for the safe disposal of their component parts when their useful life comes to an end.

In October 2023, Clean Up Australia and WMRR called for producer responsibility for vape disposal. Due to the battery being embedded, vapes are not included in the nationwide Battery Stewardship Scheme, meaning they cannot be dropped off at battery collection points, like supermarkets and retailers. Clean Up Australia's Pip Kiernan points out that '*at the moment, there is no standardised or consistent way to collect and safely dispose and recover vapes in Australia'* and notes that the onus of figuring out how to safely dispose of them is placed on the consumer, when really it should be the responsibility of the producers.[3]

The use of personal electric vehicles, including electric bicycles (e-bikes), electric scooters (e-scooters), and even one-wheeled or two-wheeled electric vehicles, has also been steadily increasing in Australia, reflecting a global trend toward sustainable and innovative transportation options. Simultaneously, the demand for electric vehicles (EVs) is rising sharply. By June 2023, 8.4% of all new cars sold were EVs, a more than 120% increase on all of 2022.[4]

The International Energy Agency (IEA) reports that annual global battery production for EVs could increase from 160GWh to 6,600GWh in 2030.[5]

This increased use of batteries has wide-ranging implications for recyclers, waste management and environmental concerns related to disposal and recycling. Efforts to manage battery waste responsibly and develop more sustainable battery technologies are becoming increasingly important as digitisation continues to advance.

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[3] WMRR, 'Producer responsibility needed for vape disposal: Clean Up Australia and WMRR', media release, 4 October 2023, www.wmrr.asn.au/Web/Web/Media/Media_Release/2023/Producer%20Responsibility%20Needed%20for%20Vape%20Disposal.aspx.

[4] Electric Vehicle Council, 'State of Electric Vehicles', July 2023, https://electricvehiclecouncil.com.au/wp-content/uploads/2023/07/State-of-EVs_July-2023_.pdf.

[5] International Energy Agency, 'Net Zero by 2050: A roadmap for the global energy sector', 2021.

Lack of comprehensive access to safe disposal locations

Currently, there is no comprehensive network of e-waste collection points in the community. We are already witnessing the effects of inadequate or irregular access to safe disposal locations, and with no readily available avenues for consumers to safely (and legally) dispose of their end-of-life batteries, improper storage and disposal has become dangerously common. Unsafe disposal is leading to littering, fires and other critical incidents, and poses risks to human health through exposure to harmful chemicals. Our sector is seeing this scenario play out across Australia at an alarming rate; however, the full extent of these incidents is unknown.

There are two fundamental gaps that must be addressed in order to provide Australians with a comprehensive network of safe disposal locations.

Firstly, there is no comprehensive catalogue of items that contain batteries, which pose a hazard in conventional waste and recycling streams: essentially, anything that is a battery, or has a battery, or is powered by a battery, to produce any movement, noise, light or process. A comprehensive catalogue of these items must be developed to support a sufficiently robust form of categorisation and inform the delivery of a full-coverage safe disposal network.

Such items include:

- E-cigarettes/vapes
- Vehicle batteries, car and boat
- Household batteries
- Emergency locator beacons
- Smoke detectors
- Household appliances with rechargeable batteries
- Products with removable batteries
- Products with integrated batteries: flashing toys, disposable torches, Christmas decorations, kids shoes, musical greeting cards

Secondly, there is a critical lack of access to safe disposal locations for these items, with no comprehensive geographic mapping of the gaps. Where there are no accessible safe disposal avenues, the only options for the community are to stockpile, litter or dispose into incorrect waste streams.

A CSIRO report prepared for the ACCC in 2023, 'Lithium-ion battery safety', acknowledges that, 'At present, there are no readily available methods and sources of information that the public can adopt to allow them to safely manage a damaged battery and places for appropriate disposal/recycling.'[6]

A complete gap analysis of disposal options must be undertaken for all item categories, to inform where and how safe collection points must be provided. Urgent action must then be taken to ensure that all collection point gaps are filled, maintaining adherence to appropriate guidelines and ensuring there is always an easily accessible option for the community to safely dispose of any problem item.

By establishing safe disposal points, we can create a structured, reliable system that encourages responsible recycling practices, protects the environment, and promotes resource recovery.

Consumer and sector safety

Battery fires are now a real and present threat across MRFs, in waste and recycling trucks, and in depots—in short, at every point across collection, disposal and recovery streams. But they are also becoming an increasing threat to businesses, consumers and public property, with incorrect disposal or storage in households or businesses, and unmonitored collection points at public libraries all at risk.

In one e-waste recycling facility, for example, a recent fire was caused by a lithium-ion battery in an electric toothbrush. Items containing embedded batteries are not conventional e-waste and can't be safely dismantled or recycled, yet at this facility half of all deliveries contain an item with an embedded battery, and one in five contain multiple embedded or loose batteries.

[6] ACCC, 'Lithium-ion batteries and consumer product safety', October 2023, www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report_3_0.pdf.

It is important to remember that batteries such as these are classified as dangerous goods under the Australian Dangerous Goods Code. Lithium batteries, in particular, are deemed 'Class 9—Miscellaneous dangerous substances and articles, including environmentally hazardous substances'.

NSW Fire and Rescue research found that in the first six months of 2023 there were 114 lithium battery-related fires in NSW alone, with key items of concern being power packs and chargers, micro-mobility devices like e-bikes and e-scooters and portable power banks.[7]

> 'Firefighters are responding to an average of more than three battery fires a week from in-home charging issues or incorrect disposal.
>
> As we bring more batteries into our homes, it is important that we dispose of them correctly once they've reached the end of their life.'
>
> *Trent Curtain, Acting Deputy Commissioner, Field Operations, Fire and Rescue NSW*

An Australia-wide audit conducted by ACOR's Recycle Mate program found every Australian council had already banned batteries from kerbside bins. Despite being dangerous substances and banned from kerbside bins, batteries keep ending up there, and no enforcement is applied to keep them out of waste and recycling streams.

In its 2023 'Lithium-ion Batteries Report', the ACCC's first recommendation was that, 'Commonwealth, state, and territory governments should improve, expand and standardise data collection practices around the hazards posed by consumer electrical products, including Li-ion batteries.'[8] The recommendation went on to place critical importance on not just the collection of this data in a timely manner, but also, wherever practicable and to the extent permitted by law, the incident data being regularly shared among stakeholders to facilitate a better understanding of emerging risks and hazards.

This knowledge-sharing is essential to keep consumers and the sector safe, and would inform whether the standards and regulations for the minimum requirements for safe collection, storage, and transport to recycling depots are being met. Understanding what collection points exist where, and what safety and hazardous waste protocols are in place, is essential to public safety. Without this, it is incredibly difficult to enforce the jurisdictional standards and regulations to manage these issues.

Regulatory inconsistency and confusion

Currently, there are significant gaps between product stewardship schemes that cover batteries and e-products. This goes on to create geographic black holes where no collection points exist for certain—or in some cases any—types of batteries. This leads to increasingly confused consumers seeing no convenient, safe disposal option and therefore disposing incorrectly, often in their kerbside bins.

In January 2022, the ACCC authorised a product stewardship scheme for loose batteries called B-cycle, run by the Battery Stewardship Council. The B-cycle scheme accepts all small loose and easily removable batteries, including regular AA and other sizes, button batteries, rechargeable batteries, and small removable batteries from devices like hearing aids, power tools, e-bikes and digital cameras. But it does not accept any embedded batteries at all, nor mobile phone or laptop batteries, lead acid batteries, remote-controlled car batteries, Dyson batteries, exit lighting, nor any batteries produced by brands not in the scope of the scheme.

B-cycle's latest report, 'Positive Charge: 2022–2023', estimates that only 12% of handheld batteries were collected for recycling in Australia. That means 88% of our batteries are ending up in landfills, MRFs or otherwise disposed of incorrectly.[9]

Regulatory confusion exists across every jurisdiction in Australia. The end-of-life management for e-products and battery products in Australia is structured around an array of product stewardship schemes, with many items falling through the gaps. While mobile phone batteries are accepted by Mobile Muster, laptop batteries

[7] https://www.nsw.gov.au/media-releases/battery-safety-to-prevent-fires

[8] ACCC, 'Lithium-ion batteries and consumer product safety', October 2023, www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report_3_0.pdf.

[9] B-cycle, 'Positive Charge: 2022–2023 report', https://bcycle.com.au/wp-content/uploads/2023/12/B-cycle-Positive-Charge-Report-20231207.pdf.

must go to an NTCRS-affiliated recycler. While an NTCRS-affiliated recycler is paid to recycle a laptop, the battery recycler that subsequently receives the removed embedded battery receives no recycling fee from the NTCRS to recycle the laptop's battery. E-product recyclers themselves find determining which batteries are in and out of scope of the various schemes to be near impossible to navigate.

With their rapid rise in popularity, vapes are an emblematic case study for the practical and policy difficulties around how to dispose of 'smart', 'disposable', or 'single-use' products with integrated batteries. Clean Up Australia Chair Pip Kiernan stated that for years cigarette butts were the most littered item across the country, but vape litter is emerging as a new and serious environmental issue.

> *There is an urgent, overdue need for a safe system for the disposal of vapes devices, refills and e-liquids. There is currently no federal or state legislation governing end-of-life disposal for vapes. They are simultaneously classified as e-waste because of their electronic components, and as hazardous waste due to the liquid nicotine residue, making recycling difficult.*[10]

The recent rise of electric vehicles (EVs) is also an increasing concern, as these first-generation vehicles' batteries approach their end of life. A CSIRO report found that 'most markets have no EV-battery-specific requirements or delineations of responsibility between the producer and the consumer … the lack of regulation creates uncertainties for Original Equipment Manufacturers (OEMs), second-life-battery companies, recyclers and potential customers. The lack of regulation also gives rise to challenges to battery recycling for end-of-life (EOL) lithium-ion batteries and leads to low collection rates, environmental pollution due to poor disposal practices and hazards to the public.'[11]

Beyond OEM and consumer confusion, there are also flow-on economic impacts of regulatory confusion. The National Retail Association stated in its submission to CSIRO that 'inconsistent regulatory approaches are causing trade barriers between jurisdictions, unnecessary costs, commercial risks, and market confusion, ultimately impacting rates of non-compliance'.[12]

Regulations play a pivotal role in shaping the infrastructure, processes, and awareness necessary for proper battery disposal and recycling practices across the country. Currently, regulatory inconsistencies and confusion are impeding safe disposal options, the effectiveness of product stewardship schemes, and creating safety risks at all points of the disposal logistics chain, with increasing economic impacts for recyclers and the resource sector. The cost of unsafe battery disposal is being borne by the community through rising rates, by councils through truck fires and future risk, by industry in the loss of critical infrastructure, in damage to the environment through smoke and polluted runoff from fires, and, above all, through the dangers to human health and life.

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[10] WMRR, 'Producer responsibility needed for vape disposal: Clean Up Australia and WMRR', October 2023, www.wmrr.asn.au/Web/Web/Media/Media_Release/2023/Producer%20Responsibility%20Needed%20for%20Vape%20Disposal.aspx.

[11] ACCC, 'Lithium-ion batteries and consumer product safety', October 2023, www.accc.gov.au/system/files/Lithium-ion%20Batteries%20report_3_0.pdf.

[12] National Retailer Association, submission to the ACCC Lithium-ion Batteries Issues Paper, https://consultation.accc.gov.au/accc/lithium-ion-batteries-issues-paper/consultation/view_respondent?uuId=1062153462.

ACOR recommendations

1. Ensure comprehensive collection

Any education campaign to raise necessary awareness around battery and e-waste disposal will be ineffective without ensuring that there is a comprehensive network of collection points. Our sector is already aware that some jurisdictions across Australia don't have convenient access to safe disposal options for batteries, so a gap analysis is necessary to support the creation of safe disposal infrastructure.

ACOR has built a national recycling data hub, Recycle Mate, where councils and recycling organisations are able to update their recycling information in real-time, as new collection points and recycling capabilities are introduced. The Recycle Mate data hub is a first-of-its-kind initiative, created with funding support from the Australian Government's *Environment Restoration Fund* program, and currently supported by the Queensland Government.

The Recycle Mate data hub has been developed as a free resource for every local government, recycling program and charitable organisation across Australia to more easily share information about their recycling programs, disposal locations and product stewardship schemes, and contribute better recycling information for all. The data contributed through the hub by local councils, the recycling and resource management sector, and private businesses, helps deliver accurate recycling and waste disposal information through the app to the community, specific to their local area.

Recycle Mate has already catalogued recycling information for all Australian local councils, 10 major product stewardship schemes, CDS schemes and over 2,000 community recycling centres, transfer stations and landfills. Critically, Recycle Mate has the capability to assess and add safe disposal information on new products that hit the market, providing this information via the Recycle Mate app directly to councils and consumers' phones.

Recycle Mate has already identified, through a detailed breakdown of electronic product categories, many regions where there are no recovery paths for certain items, such as types of batteries and electronic waste that are unsafe for kerbside disposal and subject to landfill bans. There also do not appear to be any legitimate disposal options for vapes, apart from pilot programs run by Envirostream, and many councils are hesitant to launch their own trials for fear they will assume the cost of managing neighbouring councils' vape waste.

A solution to addressing this data gap would be an initiative by all State and Territory governments to conduct a detailed gap analysis of disposal options for all electronic waste streams to identify where safe collection points should be located, as well as inform future programs and policy decisions.

Recycle Mate is uniquely placed to conduct a nationwide audit on battery and e-waste safe disposal collection points, with information proactively gathered from product stewardship schemes such as Mobile Muster, B-cycle and the National Television and Computer Recycling Scheme, businesses and councils. Recycle Mate is working with the Queensland Government to conduct such a gap analysis of disposal pathways for the 34 categories of electronic waste, mapping recovery locations against population density. This will result in an interactive data visualisation map, enabling filtered searches of different product categories to show community access to recovery options and quickly identify system gaps.

As the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia, ACOR is also well placed to initiate the data gathering of critical incidents and battery-related fires that are occurring across the sector.

RECOMMENDATION 1. The Australian Government should **prepare a full catalogue of all items on the market** that are known to be causing, or are capable of causing fires and significant issues in household bins. This includes all products that are a battery, have a battery or are powered by a battery to produce any movement, noise, light or process.

RECOMMENDATION 2. All State and Territory governments to **conduct a detailed gap analysis of disposal options for all electronic waste streams,** to help identify where safe collection points should be located and inform future programs and policy decisions. This should be delivered as an interactive data visualisation map, which enables filtered searches of different product categories to show community access to recovery options to quickly identify system gaps.

RECOMMENDATION 3. The Australian, State and Territory Governments should work together with relevant stakeholders to **fill the identified gaps, so that there is always an easily accessible option for the community** to safely dispose of any problem item. The cataloguing and gap analysis will allow for efficiently targeted allocations of resources to ensure safe disposal pathways.

RECOMMENDATION 4. As an emergency measure, **a safe disposal location for all items must be provided within every council area**, with the support of State Governments. The nationwide response to the presence of needles and syringes in the environment and conventional waste streams in the 1990s could offer a model, in terms of comprehensive access to safe community sharps disposal.

2. A community education campaign

As the number of everyday items containing embedded and sealed batteries increases, a critical priority will be ensuring that these items are diverted away from conventional waste and recycling streams, collected in a safe manner, and directed towards facilities that are equipped to safely process them. Currently, there is a lack of public education and resources around safe disposal, the risks of improper battery disposal, and consumer responsibility for end-of-life batteries.

There must be a well-funded and comprehensive awareness-raising and education campaign. Recycle Mate is an ideal delivery partner for the education campaign and recycling advice to avoid duplication of effort and information and maximise the potential of data collection. Through Recycle Mate's data, a targeted, cost-effective, evidence-based education campaign could be rolled out across Australia with up-to-date information on collection points, with a particular focus on areas where high incorrect disposal rates are reported.

The language surrounding battery disposal should also be addressed. An emphasis must be made on 'safe disposal', rather than 'recycling' of batteries and e-waste. 'Safe disposal' helps emphasise that batteries can be dangerous, whereas people think of 'recycling' as optional. It is essential that we get all batteries out of household and commercial bins and diverted to safe disposal locations.

Furthermore, Recycle Mate's research already shows that many members of the community associate the term 'recycling' with their household bins—and are likely not aware of alternative disposal options. When something is promoted as being 'recyclable', it can give the impression that it can be recycled in their household bins, where batteries become a major problem.

ACOR believes that any consumer education must contain the following elements:

1. **Risk awareness.** It is necessary for the public to understand the environmental and safety risks posed by improper battery disposal. Awareness must also be raised around products with embedded batteries that consumers may not have considered, such as vapes, digital pregnancy tests and electric toothbrushes.
2. **Safe disposal methods.** Educate people about the correct disposal methods for batteries in designated battery recycling centres, drop-off locations, or collection programs available across communities. This should also extend to storing batteries safely before disposal and how to identify when batteries are at risk of being unsafe.
3. **Convenience and accessibility.** Make it easy for people to find nearby collection points or drop-off locations. Provide up-to-date and easy-to-access information on where these facilities are located and what type of batteries they take.

4. **Broad use of communications channels.** The education campaign should be implemented across multiple channels such as television, social media, and digital advertising, as well as disseminating educational materials in schools, community events, and partnerships with councils, retailers and manufacturers to raise awareness about battery disposal.

ACOR joins with the National Waste and Recycling Industry Council in calling for a nationwide education campaign for the safe disposal of batteries.[13] We believe that ACOR, with support from our Recycle Mate initiative, is uniquely positioned to deliver this campaign.

RECOMMENDATION 5. Once a comprehensive collection network is assured, **a comprehensive awareness-raising and education campaign should be launched** nationally to ensure the public understands the risks of batteries in bins, how they can access the existing safe disposal options, and how batteries and e-products can be recycled if they are deposited in the right place. The messaging must be centred on 'safe disposal' rather than 'recycling'.

3. E-stewardship reform

With rapid digitisation and the market expansion of battery-powered and smart devices, it is essential that product stewardship schemes take the full breadth of products available on the market.

It is understood that DCCEEW is designing an expanded product stewardship scheme for small electrical and electronic equipment (SEEE) and small-scale PV systems. The scope is expected to include any SEEE weighing less than 20 kilograms, and solar PV systems, including solar panels, racks, inverters and wiring, with household batteries considered for inclusion. The scheme would also include embedded batteries, but not loose batteries, which are proposed to still be captured by the B-cycle scheme.

It is essential that the Federal e-stewardship program continues these reforms to deliver an integrated scheme covering all small e-products and batteries and leaving no gaps in relevant product categories. Under the model currently under consideration, e-waste recyclers are facing the confusing situation of at least three product stewardship schemes covering and excluding different battery types: the current National Television and Computer Recycling Scheme, Mobile Muster and B-cycle.

Under the current NTCRS scheme, scheme operators, called co-regulators, are funded by brand owners to only collect a certain volume per year and can and do cease to fund e-waste recycling when those quotas are filled. Furthermore, the uncertainty caused by the scheme review has led to co-regulators reducing the volume of e-products being funded for recycling even further, as they shore up balance sheets in anticipation of a changing regulatory environment. As e-product-to-landfill bans are implemented around Australia, and the recycling sector bears the brunt of improperly regulated battery collection, the need for holistic and comprehensive extended producer responsibility for battery collection is greater than ever before, as well as strong instructions to the existing NTCRS co-regulators to continue to fund e-product collection and recycling through the scheme at existing levels to avoid worsening an already critical situation.

Furthermore, ACOR recommends that the Australian Government introduce regulations that mandate a deposit scheme to be fully funded by all manufacturers and importers of batteries and products that contain batteries in any form. There must be much stronger incentives to mobilise the population to safely draw them out of waste and recycling streams and towards safe disposal locations.

While some product stewardship schemes may have achieved desirable recovery rates for end-of-use items without incentivisation beyond 'doing the right thing', this is not the case across all product categories. Schemes that provide little incentive for consumers to return items to away-from-home collection points generally result in poor recovery rates. A model to consider is the container deposit scheme (CDS), which provides a refund for the return of these items. By offering a financial incentive for returning containers, CDS

[13] NWRIC, submission to the ACCC lithium-ion batteries issues paper, March 2023, www.nwric.com.au/download/1149/?tmstv=1679277906.

encourages individuals to recycle. People will participate in collection efforts if there is a tangible reward such as a monetary incentive for each container returned.

It is evident that the health and environment risks of disposing of batteries incorrectly are not enough of a deterrent or not widely enough understood for the average community member to always seek out a safe disposal option. The CDS strategy works by aligning economic incentives with environmental goals, and when applied to battery disposal would be a game-changing driver for encouraging safe collection behaviours.

RECOMMENDATION 6. As soon as practicably possible, the Australian Government must **enact extended producer responsibility (EPR) regulation for consumer electronic products** to fully fund safe collection, and where possible, recycling. Such regulation must deliver an integrated scheme covering all consumer e-products, including batteries and items containing batteries (including vapes), and leaving no gaps in relevant product categories.

RECOMMENDATION 7. Establish a deposit scheme similar to the CDS model to encourage community safe disposal of batteries and products containing batteries, providing a tangible reward for safe disposal behaviour. Lessons should be drawn from the container deposit schemes that have been established in States and Territories across Australia, prioritising safe collection methods and a strong deposit rate to support high recovery rates.

4. Regulatory harmonisation and enforcement

The recycling and waste management sector has long faced a fragmented, variable and duplicative regulatory environment across Australia's States and Territories, undermining investor confidence in infrastructure and impeding innovation. While laws and regulations for waste and recycling are implemented at a State level, there is an increasing need for harmonisation and enforcement at a national level to prioritise circular economy outcomes. This is especially critical in the battery and e-waste space dealing with hazardous waste components.

WMRR has noted the necessity of battery and e-product regulation and called on the Australian Government to institute a comprehensive regime, akin to those instituted in Europe, highlighting that the proposed national e-waste scheme scope is too narrow, ignoring key elements such as redesign and repair.[14]

The European Union's Batteries Regulation aims to ensure that future batteries have a reduced carbon footprint, contain fewer harmful substances, rely less on raw materials sourced from non-EU countries, and undergo extensive collection, supporting a high degree of reusability and recycling. This initiative aligns with the circular economy goals outlined in the European Green Deal, marking a milestone in European legislation by encompassing the entire life cycle of batteries—from sourcing and manufacturing to usage and recycling—within a singular law. This comprehensive approach underscores the commitment to sustainability and the EU's objectives of securing raw material supply.[15]

In line with the classification of lithium-ion batteries as dangerous goods under the Australian Dangerous Goods Code, it is imperative that the Australian Government also institutes national standards and regulations for battery disposal collection points. CSIRO's report for the ACCC notes that **'**Current collections occur in public places and stores which can pose a hazard to people and property in the event of fire … Harmonisation would assist in collection and recycling rates and minimise safety hazards, especially for

[14] WMRR, LinkedIn post, 2023, www.linkedin.com/posts/wmrr_international-e-waste-day-australia-needs-activity-7118902238139359232-gQLi/.

[15] European Commission, 'Circular economy: New law on more sustainable, circular and safe batteries enters into force', August 2023, https://environment.ec.europa.eu/news/new-law-more-sustainable-circular-and-safe-batteries-enters-force-2023-08-17_en.

damaged batteries.'[16] Consequently, they recommend the implementation of separate boxes for either damaged/faulty batteries and exhausted/visually intact batteries.

Collection guidelines exist in many State and Territory jurisdictions but are generally not enforced. For example, the Environment Protection Authority has produced extensive guidelines on the storage and management of waste batteries,[17] widely considered a benchmark document. However, these guidelines are often simply not adhered to because there are no regulatory consequences for non-compliance.

A key component to acknowledging the serious economic and environmental risks posed by the unsafe disposal of batteries and e-waste would be to implement stronger rules for collection and disposal of batteries, and ensure penalties are applied for non-compliance. Holding individuals and businesses to account over the irresponsible collection and disposal of batteries and e-waste would send a clear message about the serious risks and consequences these actions place upon community health, the environment, workplace safety and property.

RECOMMENDATION 8. The Australian Government should work with State and Territory Governments to **institute national standards and regulations for battery disposal collection points**, with clearly understood and enforceable consequences for non-compliance.

RECOMMENDATION 9. State and local governments should work together, in partnership with industry, to ensure compliance with existing rules relating to battery disposal. It is essential that penalties instituted for non-compliance with the end-of-use disposal requirements for batteries under current regulations are enforced.

RECOMMENDATION 10. The Australian Government must ensure NTCRS co-regulators continue to fund e-product collection and recycling at current levels while the new scheme is designed.

Conclusion

The escalating hazards posed by batteries in conventional waste and recycling streams demand immediate attention. The increasing incidents resulting in property damage, injuries, and financial burdens underscore the urgent need for Australian governments, producers and recyclers to work together and take comprehensive action. While the issue of battery safety spans the community at large, the paramount concern for the recycling sector is addressing environmental end-of-use risks to the sector and community.

Governments have a pivotal role to play in ensuring safe battery disposal. Critical actions include establishing a comprehensive collection network, initiating robust community education campaigns, reforming e-stewardship practices, and enforcing harmonised regulations. Regulatory inconsistencies currently undermine safe disposal rates, the effectiveness of stewardship schemes, and pose risks throughout the disposal logistics chain, leading to economic impacts on recyclers and the broader resource sector.

ACOR's proposed cataloguing of problematic items and the recommendation for a fully funded battery stewardship program by manufacturers and importers aims to mitigate these risks. Moreover, deposit schemes have proven successful in driving stronger collection outcomes. Aligning economic incentives with environmental goals, as demonstrated by the success of container deposit schemes, will serve as a pivotal strategy in encouraging responsible battery disposal and recycling practices.

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[16] CSIRO, 'Lithium-ion battery safety', May 2023, www.productsafety.gov.au/system/files/CSIRO-ACCCLithiumIonBatteries.pdf.

[17] EPA Victoria, '2018: Storage and management of waste batteries – guideline', www.epa.vic.gov.au/about-epa/publications/2018.

Appendix 3: Priorities for nationally harmonised Container Deposit Schemes

Priorities for nationally harmonised Container Deposit Schemes

April 2024

Background

Container deposit schemes (CDS) will soon be operating in every Australian State and Territory. These schemes have attracted industry and community participation and substantially reduced beverage container litter. The schemes increase access to quality recovered material, which leads to highest-value material reuse, such as bottle-to-bottle recycling. For example, the hot-wash PET flake generated from CDS products delivers high-quality rPET for the Australian packaging market. The schemes also deliver uncontaminated glass for high-value recycling.

It is essential that CDS supports meaningful progress towards Australia's National Packaging Targets, by ensuring that recycled content is prioritised in beverage containers and that beverage containers are genuinely reusable and recyclable.

Recycling is essentially comprised of three key elements: collection, processing and end markets. These elements generally work well within CDS, ensuring that well-sorted, high-value recovered materials can support domestic closed-loop recycling outcomes, such as recycled PET and glass beverage containers.

As States and Territories respond to these successes by expanding the scope of eligible containers in Schemes around the country—and as the focus of government and community concern shifts from litter reduction to establishing a circular economy—questions will arise as to what role these Schemes are intended to fulfil, how they will interact with kerbside recycling collection, how to ensure strong markets for the CDS-generated recyclate, and how they can support higher resource recovery rates.

To be sustainable, Container Deposit Schemes must have an efficient and effective operation, be financially and commercially feasible for all parties, enjoy social licence to operate, and be conducted under the right policy setting.

This paper sets out key elements of CDS to which all States and Territories should align under a nationally harmonised approach, and also offers principles for how CDS should evolve and expand. The national alignment of container deposit schemes should be effected through relevant intergovernmental forums, such as the Heads of Environmental Protection Agencies (HEPA), and the Environment Ministers Meeting (EMM), in partnership with industry.

It is important to note that each individual measure cannot deliver strong CDS outcomes—they must be progressed together as a comprehensive and complementary package.

1. Return rate targets

Clear and consistent return rate targets should be established to ensure Scheme growth and high performance, consistent with existing targets set by Queensland and Western Australia.

Such targets should be supported by effective legislative, Scheme administration, and operational structures, and driven by a strong deposit rate.

Accuracy and transparency of data is vital in measuring progress against targets, and for engaging and building the trust of the community. For example, use of barcodes is a well-established means of generating verified, accurate data.

2. Deposit rate setting

It is well understood and broadly evidenced that higher return rates correlate with higher refund amounts.

A useful metric in considering appropriate refund amounts is the number of empty containers required to purchase a new beverage. Comparison of Australia's current refund amount ($0.10) with other successful schemes, such as in Germany (€0.25 or approximately $0.40), show that our refund amount is very low in absolute terms and at the lowest end of international schemes as a proportion of beverage prices.

Recognising that the deposit rate devalues over time with inflation, and also acknowledging the importance of balancing cost of living priorities, a process should be put in place to adjust the CDS deposit rate to 20 cents. Notably, those most affected by cost of living pressures are also those most incentivised to collect and return more containers for additional income.

Following the increase, two-year review periods should be adopted, with the deposit value further increased if return rate targets are not met for two years in a row.

3. Convenience access and coverage

Convenience is a core element of a well-functioning CDS. Most world-leading schemes are required to accommodate scheme returns within retail operations, on the basis that retail involvement maximises convenience cost-effectively and increases return rates.

There must be comprehensive access and coverage across geographical areas, with accessible and convenient coverage, including 'return to retail' options.

4. Marketing

There must be consistent, strong marketing to create high levels of awareness within the community, in order to maximise return rates.

Beverage companies should market the schemes they're involved in and refer to the refund/deposit amount in their own advertisements. Information on deposit amounts should be printed on retail price displays and customer receipts.

Scheme-wide marketing should aim for agreed metrics, including community awareness levels of at least 95% and be monitored with six-monthly surveys.

5. Governance

Governance structures for CDS should protect for inherent conflicts of interest, which must be declared.

A mechanism for government intervention should be possible, in the event that recovery rates fall below agreed levels, with the ability to either raise the refund amount, or address the root cause of failures, such as insufficient marketing, convenience or network coverage.

The Australian Government should support the coordination of those factors that need national alignment: the deposit payment rate; consistent eligible containers; and a consistent registration process.

6. Scope

Expanding the scope of eligible containers to include glass wine and spirit bottles will increase the supply of clean glass for high-grade recycling. This move must be adopted in concert nation-wide, to ensure national harmonisation and alignment of CDSs. Any such expansion must consider the impacts on current and planned collection infrastructure, including widely used technologies.

At various times, container deposit schemes have been floated as a possible collection mechanism for additional waste streams, such as batteries, e-waste, soft plastics and other rigid containers. There may be potential to maximise resource recovery through this system, however, many of these other materials have different consumption patterns, and may not be suited to current return infrastructure and technology. In

addition, the potential to cause contamination in high-value pure CDS streams needs to be addressed. Any such expansion would need thorough consultation with industry.

For any additional resource recovery sources to be added, many considerations would need to be resolved, including mandated recycled content (as discussed above), end-markets for recycled materials, return infrastructure, and technology and funding structures.

It is essential that industry is closely engaged in any consideration of broader expansion of CDS to include other container types.

7. Recyclability

Beverage containers must be designed to be recovered and recycled, and CDS must not accommodate an unmoderated flow of material that cannot be recycled in practice.

Non-recyclable materials, including all those identified for phaseout within the Australian Packaging Covenant Organisation's (APCO) *Action Plan for Problematic and Unnecessary Single-Use Plastic Packaging*, should not be included in any CDS.

Inclusion of non-recyclable containers not only incurs costs to collect and process containers that are ultimately sent to landfill, but affects the reputation of the scheme and sends the wrong message to consumers. Problematic packaging as identified by APCO includes PVC containers, opaque PET bottles, drink sachets and wine casks. Container formats that are not recyclable in Australia or eligible for the Australasian Recycling Label such as drink pouches and wine casks should not be included.

Essentially, beverage containers included in CDS should be comprised of recycled and recyclable material. Material that is non-recyclable—insofar as it is unrecoverable, lacks processing infrastructure or lacks end markets in the real world—must not be part of any container deposit scheme.

Ensuring that all containers are recyclable and supporting high recovery rates facilitates the priority of mandating recycled content in packaging, which is essential to overcome the price disparity between raw and recovered materials, and ensure end markets for recovered materials, enabling recycling at scale.

Beverage producer payments to the scheme should be eco-modulated based on the value of the material (i.e., higher fees for materials with lower circularity), return rates for specific formats, and Australian recycled content.

It is important to ensure that containers left out of the Scheme due to being non-recyclable do not gain a competitive advantage over recyclable containers in any expanded scheme. Ideally, this would involve a mandated transition process, and there may be an opportunity to work with all Australian States and Territories to expand the parameters of the 'single-use plastic bans' being rolled out across all jurisdictions to include non-recyclable containers. This would also practically support the delivery of the National Packaging Targets.

8. Protocols

A protocol for material recovery facilities (MRFs) is vital to sustain the wider recycling supply chain, specifically municipal resource recovery through kerbside recycling. An increased deposit rate will support the collection of higher value recyclable materials through CDS. On the other hand, this has the effect of reducing the volume and affecting the overall quality of recyclable material received by MRFs.

A MRF protocol must support the economic viability of MRFs, which are not only subject to long-term contractual agreements but also highly variable markets for recovered material.

In determining this protocol, it is necessary to ensure a balanced approach to auditing for the purpose of statistical relevance, informed by current systems in place around Australia, and a practical, cost-effective approach to stringency. This approach must also ensure adequate flexibility to ensure SMEs—and specifically regional facilities—can participate.

Additionally, it is important that glass crushing and other third-party glass aggregators must be covered by specific protocols. In particular, there should be a protocol for bottle-crushing services to the hospitality sector, consistent with other jurisdictions such as Western Australia and NSW.

9. Recycling outcomes must be transparent, tracked and reported

Container Deposit Schemes must consistently establish detailed downstream reporting requirements, which clearly identify collection channels, to support the highest-possible value material recovery, such as recycling bottle-to-bottle or into food-grade packaging.

Conclusion

It is vital that container deposit schemes across Australia support recycling through a nationally harmonised approach to targets, higher deposit rates, broad collection network coverage, strong marketing, appropriate eligibility settings, and robust governance and accountability. These elements are standard practice in well-designed schemes around the world, resulting in strong recycling outcomes and higher return rates than those achieved by Australian schemes. As Australia gears up for nationwide operation of container deposit schemes, now is the time to step up to these globally accepted measures.

About ACOR

The Australian Council of Recycling (ACOR) is the peak industry body for the resource recovery, recycling, and remanufacturing sector in Australia. The Australian recycling industry contributes almost $19 billion in economic value, while delivering environmental benefits such as resource efficiency and diversion of material from landfill. One job is supported for every 430 tonnes of material recycled in Australia.

Our membership is represented across the recycling value chain, and includes leading organisations in advanced chemical recycling processes, CDS operations, kerbside recycling, recovered metal, glass, plastics, paper, textiles, tyres, oil, batteries and e-product reprocessing and remanufacturing, road recycling and construction and demolition recovery. Our mission is to lead the transition to a circular economy through the recycling supply chain.

Australian Council of Recycling

Level 23, 520 Oxford Street, Bondi Junction NSW 2022

02 8074 7007 | Email: admin@acor.org.au | www.acor.org.au

ABN 60 574 301 921