



Effectiveness and benefits of product stewardship

Themes from 60 qualitative interviews

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1 Introduction

This research report forms part of the very first comprehensive evaluation of the benefits and effectiveness of product stewardship and extended producer responsibility (EPR) activities in Australia.

It is part of a wider research and evaluation project that includes secondary research from publicly available data, case study research and data harvesting.

Over a 12-week period, Dentsu Creative on behalf of the University of Technology Sydney and the Product Stewardship Centre of Excellence, undertook 60 qualitative interviews with stakeholders to develop insights into:

- How the effectiveness and benefits of stewardship are measured and reported
- Perceptions of the benefits of stewardship
- Insights into stakeholder views on how stewardship could be more effective
- Opportunities to advance participation in product stewardship.

Stakeholders each participated in a 30-minute in-depth interview during which they were asked a range of questions relating to their involvement in product stewardship initiatives. Specifically, we asked them to detail their role, key performance indicators used to measure success, funding models, drivers for participation, and any barriers or challenges identified.

1.1 Sample

We created a research sample that covered various perspectives of stewardship. Broadly we classified stakeholders as either **stewardship actors** (involved or influencing scheme design and operation) or **stewardship experts** (academics or international figures in stewardship and EPR).

For example, actors we spoke to included industry associations who oversaw or were developing stewardship collective schemes. We also spoke to scheme operators and service providers, as well as single brand or business initiatives, collective schemes and a number of NGOs and regulators.

We created a tailored discussion guide for each of these two stakeholder groups. The spread of our sample is set out in the table below.

Table One: Classification of Stakeholders Who Participated in this Study

Stakeholder type	Number interviewed
Actors	
• Product stewardship organisations	13
• Industry associations	9
• Organisations in sectors with operational initiatives	6
• Companies with self-funded initiatives	8
• Service providers to initiatives	6
• Regulators for co-regulated initiatives	7
• Local Government Associations	2
Experts	
• Policy makers	3
• International experts	3
• Business/professional services providers	3
TOTAL	60

1.2 Discussion Guides

The discussion guides for both stewardship actors and stewardship experts are reproduced in Appendix One. The interviews were broadly based on these guides although the interviewers would depart from the guides to pursue topics of interest that emerged during the interviews.

1.3 Definitions

Product stewardship involving more than one organisation is referred to as “collective schemes.”

Product stewardship activities by individual businesses is referred to as “business initiatives.”

Together these are referred to as “product stewardship initiatives.”

2 Themes and Findings

2.1 Environmental, Social and Economic benefits delivered by stewardship

Product stewardship collective schemes reported a number of hard KPIs and measures to track the benefits and effectiveness of stewardship.

Below we have collated the most common KPIs and how they are expressed, sorted by environmental, social and economic benefits.

2.1.1 Environmental KPIs/Benefits

Environmental benefits, and the key performance indicators used to measure them, range from diverting materials from landfill (e.g. material recovery, product repair and reuse, recycled content in products); preventing waste (e.g. dematerialising packaging); reducing greenhouse gas emissions; conserving natural resources (e.g. substituting virgin materials with recycled materials, using less water and energy).

- Volume collected, recovered or reclaimed (kgs, tonnes, % of estimated annual volume)
- Volume recycled (%)
- Volume repaired or refurbished (number, %)
- Volume destroyed/disposed of safely (tonnes)
- Waste diverted from landfill (tonnes)
- Packaging materials eliminated or reduced (%)
- Green House Gas Emissions avoided (tonnes, %)
- Proportion of recycled/renewal inputs of production (%)
- Water and energy use avoided/reduced (litres, kilowatts)
- Chemicals of concern avoided or reduced in manufacture and emissions

- Valuable resources recovered (volume, %)
- Reduction in greenhouse emissions (coal, gas, chemicals of concern)

2.1.2 Social KPIs/Benefits

Consumer engagement, awareness and participation were the most commonly reported social benefits and KPIs, with limited reporting on job creation benefits. Common social benefits and KPIs are listed below.

- Communication to and education end-users (KPIs: impressions, reach, advertising value equivalent of earned media, education program participants)
- Consumer awareness (KPIs: % awareness, impressions, reach, resource downloads)
- Consumer participation (KPIs: % of market)
- Communication to consumers on how to recycle responsibly
- Best-practice signatories (KPIs: number, compliance rate %)
- Points of presence (KPIs: number/population accessibility rate %)
- Jobs created (headcount, including social enterprise employment- examples below)
- Hours of sustainable employment
- Dollars donated to/raised for charity/community groups/social enterprise
- Engagement with indigenous communities and remote communities
- Hazards avoided (eg reduction in domestic battery fires)
- Refunds paid out (KPIs: \$)

2.1.3 Economic KPIs/Benefits

Economic benefits and KPIs were, as expected, financially based and typically covered revenue (levies collected) and operations (funds invested, grants and contracts awarded).

Common economic benefits and KPIs are listed below.

- Revenue collected (\$)
- Costs avoided/reduced (\$)
- Industry rebates paid out (\$)
- Industry participants (KPI: number, %)
- Grants awarded (\$)
- New markets (\$ value, output)
- Re-manufacturing commodities created (e.g. recycled manufacturing feedstocks)
- Demand for new commodities
- External investment (\$)
- Internal investment (\$, staff headcount)

- Waste processed domestically (tonnes)

Case Study: Benefits from Stewardship in Lubrication Oils

Background

The Product Stewardship for Oil (PSO) Scheme collects levies from oil manufacturers and pays incentives to the recycling industry to encourage the environmentally sustainable management and re-refining of used and recycled oil.

The scheme was introduced in 2001 to increase the amount of used oil recycled in Australia and address environmentally harmful disposal of used lubricant oils.

Since then, the amount of oil that Australia collects and recycles has risen from none to over 320 megalitres of base lubricating oil every year.

Scheme KPIs

- Collection of used oil: (In total, 52.9% of oil levied under the PSO Scheme has been collected compared to a theoretical maximum amount which is generally believed to be around 65%.)
- Reuse and recycling of used oil (volume of re-refined oil by use including low grade burning oil input volume, high-grade burning oil input volume, lubricating oil input volume)
- Establishment of the used oil industry and resulting economic and employment benefits

Scheme Performance

A review of the scheme carried out by Deloitte in 2020 (see <https://www.awe.gov.au/sites/default/files/documents/fourth-product-stewardship-oil-act-review.pdf>) found there has been a shift away from the processing of low-grade burning oils under the PSO Scheme and towards treatment to create high value lubricating oils.

Service providers interviewed for this project cited employment benefits and the creation of a domestic supply chain for lubrication oil as significant benefits from the scheme.

This was confirmed in Deloitte's analysis:

"The sector employs several hundred people, including those in collection and associated industries, and contributes tens of millions of dollars to the economy every year. One study found that the re-refining industry alone employed 88 full-time equivalent positions and contributed \$46.8 million to the Australian economy in 2014-15." (Deloitte: page 47)

Challenges

While this regulated scheme is widely touted as successful stewardship, the scheme has structural issues with funding (i.e. incentives outstripping levy) as identified in the Deloitte report and confirmed in interviews for this project.

The scheme is based on a compulsory levy that is used to fund incentive payments (benefits) to oil recyclers. The benefits are higher for higher grade recycling lubricating oils. As recyclers increase capacity and are recycling to produce more high-grade oil, the benefits paid are outstripping the levy collected. At the same time, recyclers say a fixed price incentive is not keeping up with sharply rising supply chain and labour costs for their businesses.

2.1.4 Reporting Method

Individual business initiatives and collective schemes are very open with the publication and communication of KPIs. Every actor in an individual business initiative and collective scheme we

interviewed had KPIs published on a website and in an annual report of some kind (although some new initiatives were yet to publish their first full year results).

When asked if particular stakeholders or collective scheme members sought different forms of reporting or KPIs, actors reported that once KPIs were set, they were generally accepted as universal and bespoke reporting was not a feature.

For initiatives with a focus on consumer engagement, consumer friendly calculators help individuals calculate the benefits of stewardship. The NSW Return and Earn Container Deposit Scheme website has an interactive impact calculator that allows a consumer to calculate how much water, energy and CO₂ has been saved from their recycling efforts.

Several experts commented that KPIs need to evolve to keep up with consumer product innovation and must focus more on materials used or collected rather than individual consumer units collected.

For example, in e-waste, innovation in flat screen TVs, tablet computers or mobile phones meant one unit counted 10 years ago would contain different weights and types of materials to a unit counted today.

2.1.5 Link between KPIs and Initiative Performance

One international expert observed that KPIs are often set for what is easily measured or what is able to be controlled by the initiative. KPIs often focus on initiative operations, but do not extend to measuring and tracking circularity outcomes (such as downstream use of recycle).

The same expert stated that KPIs tended to be linear economy drivers and not suited to pursuing circularity.

KPIs external to initiatives can support circularity, such as a material guidelines for procurement so that government and business buyers can support circular markets (both sourcing new products that are more suited to circularity or recycled materials).

Experts suggested additional KPIs for impacts on human health and safety and environmental impact.

In the context of regulated collective schemes, the view was expressed by international experts and Australian industry associations that better resourcing was needed for monitoring and compliance to enforce regulations, particularly where rules were set to encourage EPR within industries.

Also, experts suggested recyclers needed to provide the collective schemes' traceability of product throughout the entire loop otherwise it is not true stewardship unless the fate of recycle is known.

2.1.6 Benefits cited beyond reported data

Upstream impacts on supply chains

One major collective scheme, which has a focus on removing harmful ingredients from the manufacture of its product, cited positive upstream impacts on supply chains as a hard to measure but significant benefit.

Scheme members (companies) are required to submit regular audits to prove that their supply chains, particularly where finished materials were imported, complied with raw material requirements and traceability. A successful audit is a condition of scheme membership.

The scheme managers told our researchers this had caused member companies to require more information from their supply chain across Asia on manufacturing processes and raw materials. This was effective in setting a higher standard across the industry and made member companies more mindful about international supply chains.

Collaboration

Businesses participating in collective schemes cited industry collaboration as a benefit. Many cited greater communications between their competitors, industry peers, state-based counterparts, or supply chain partners for the benefit of collective stewardship.

Efficiencies of scale, reduced costs, and examples of what works/does not work were all cited as reasons to share intelligence, even among direct competitors.

While there were commercial limits to data-sharing behaviours, there was sufficient goodwill – at least in the context of product stewardship conversations – to normalise information sharing where commercial interests are not the first priority.

The driver of this behaviour was pragmatic: working together towards circularity was easier for most businesses than individual action.

Community engagement

The state-based container deposit schemes were cited by a number of actors as collective schemes that had a high degree of community engagement.

Engagement was driven by the financial incentive to drop off beverage containers and receive a payment, either to an individual or to a charity.

For example, the NSW Return and Earn scheme offers a service for schools, sports clubs, charities or community groups to apply to be 'donation partners' so their name appears on Reverse Vending Machines.

People returning eligible beverage containers can nominate the donation partner to receive the Return and Earn refund.

This, in turn, served as inspiration for the more recent container collective schemes which have included social KPIs into their initiatives.

2.2 Drivers for Participation

To identify a broader set of benefits from product stewardship, we asked stewardship actors what their drivers were to participate in stewardship.

There was a considerable diversity in factors driving stewardship participation depending on the product or material type, the structure of the industry (whether there were several dominant brands in the industry or not), and whether products and brands were consumer facing.

When we asked industry associations and established collective schemes about the drivers for participation their response focused on the drivers for member businesses and brands. The widely held view was that individual businesses or brands, acting through an industry association or some other collective representative structure, were the primary initiators and drivers of collective stewardship.

Therefore, the drivers for individual businesses or brands, whether they take action as an individual entity or as a collective, are the drivers of product stewardship.

Drivers for participation can be grouped as follows:

Brand reputation: Many actors cited consumer expectations of brands ‘doing the right thing’ and that other brands were pushing stewardship, so it was a competitive necessity to keep up. For individual firms that pursued stewardship, they were often the market leader in terms of innovation and market share and saw stewardship as a way of maintaining their market leadership, even at the expense of free riding in some cases.

To avoid regulation: This was not a strong driver, and a number of actors pointed to the difficulty in getting voluntary collective schemes off the ground as evidence that some industry participants, particularly companies headquartered off-shore, as evidence that firms did not really fear regulation. In fact, many welcomed the prospect of regulation.

Environment, Social and Governance (ESG) policies: ESG policies were cited as strong drivers for larger businesses that reported on their ESG performance to shareholders (listed Australian or global firms) and to stakeholders. ESG drivers and brand reputation are closely intertwined. Many firms make specific ESG commitments at the Board and CEO level that then drive the search for solutions, with stewardship often being part of the mix.

Toxic or dangerous materials: For actors that are in industries or product classes that produce toxic waste in manufacture, or in end-of-life disposal, a genuine desire to reduce environmental impact was cited as a driver. While many collective schemes were dealing with toxic or dangerous materials via voluntary collective schemes, there was a sense that these product classes should be regulated. The need for regulation to support product stewardship of toxic materials was strongly expressed by the experts we spoke to.

Additionally, it is illuminating to note factors that were not cited by actors or experts as drivers. There was no unprompted mention of voluntary accreditation for collective schemes, or the annual Ministers List process, as a driver for participation. However, it should be noted that regulation was cited as somewhat of a driver and that naming on the Ministers list can be precursor to a regulatory response.

2.3 Innovation in Product Stewardship

We asked experts and actors about where they saw current and future innovation in stewardship initiative design and operation, and, in conversations with actors, collected examples of innovation in practice.

2.3.1 Mobile stewardship

The Australian New Zealand Recycling Program (ANZRP) has developed a mobile e-waste processing facility to better service regional and rural areas. The facility fits in a 40-foot shipping container and provides onsite e-waste processing capabilities leading to the stripping of materials and processing of plastics. ANZRP says the mobile facility will help achieve efficiencies of scale that can ultimately lead to reduced processing and handling costs and provide better access to recycling in rural areas.

2.3.2 Individual Business Stewardship Initiatives

Individual businesses funding their own product stewardship initiatives appeared to be highly creative and have an experimental mindset. Most interviewed were motivated by consumer demand and commercial interest, but the organisations making the most headway were those who appeared to have a sincere commitment to environmental responsibility.

Bata Shoe Company of Australia and Apple are two examples of innovation in individual business initiatives:

Gumboots: Bata began recycling their PVC factory reject gumboots, and then pre-worn boots, as a way of managing their waste and associated costs. They undertook independent, rigorous testing to ensure there was no degradation to the finished product and determined boots can be reprocessed up to 10 times. Last year alone, Bata produced over half a million recycled boots for sale through Bunnings and other retailers¹.

Apple Daisy Robot: Apple developed 'Daisy', a disassembly robot designed to take apart iPhones with a higher rate of retrieval with much less damage to the valuable component parts than traditional methods. Daisy can disassemble 200 iPhones per hour and is part of Apple's vision for sustainability and commitment to corporate responsibility². This is an example of product stewardship happening internationally, and Daisy Robot is not yet operational in Australia.

2.3.3 Stewardship-as-a-Service

While collective schemes and individual business initiatives were the focus of the study, one service provider interviewed is offering what is effectively 'stewardship-as-a-service'.

The firm offers a service that will source, purchase and manage the end-of-life of office electronic equipment. The service includes the sourcing and installation of hardware, the maintenance of the equipment during its lifecycle, repairs and upgrades, and once the equipment is unable to be upgraded or repaired, removal, disassembly and recovery of materials for highest value use. This service is offered by a single for-profit firm that has invested to create capability at each of these product management stages.

For-profit firms operating in stewardship bring a different perspective. One service provider told our researchers: *"Schemes are quite good at identifying risks and putting in place measures that handle the risks. But at times, opportunity gets sacrificed along the way."*

The view was that for-profit businesses will innovate to maximise value in a supply chain, while collective schemes, once established, tend to operate with a focus on managing activity against levy income in a set business structure, so opportunity for innovation is stifled.

2.3.4 Green or "E" Modulating Payments

When stewardship experts were asked to nominate examples of innovation in stewardship, modulated payments for scheme participants based on environmental performance were often cited.

Green or e-modulated payment systems incentivise scheme participants to create products that create less cost burden on the scheme (easier to collect, disassemble or recycle), or contain

¹ See <https://thebatacompany.com/beyond-business-as-usual/>

² See <https://www.apple.com/au/newsroom/2018/04/apple-adds-earth-day-donations-to-trade-in-and-recycling-program/>

recycled materials, promoting circularity. If a scheme participant can achieve these types of benefits, they pay less in scheme fees.

Australian experts cited France's eco-modulation policy as an exemplar. French policy offers incentives and penalties for increased or decreased circularity in product design.

Eco-modulation, or fee modulation, is relatively new. Some international experts cited increased administrative burden and cost and complexity as barriers to success. Early assessment of impact in France found that impact on packaging (local manufactured goods) was likely greater than electronic goods where global brands manufacture for a global marketplace, and therefore were not responding to incentives and penalties in a one-country market.

According to international experts, eco-modulated fees and incentives are being considered by several state authorities in the USA.

2.4 Factors Impacting Benefits and Effectiveness

As part of our interviews, we invited participants to talk about issues that were holding back initiatives or businesses from being more effective and delivering greater benefits.

2.4.1 Free riders

For non-regulated collective schemes, free riders were almost universally cited by the initiative operators and by relevant industry associations as a factor negatively impacting effectiveness of collective schemes.

Free riders undermined the financial viability of collective schemes, community, stakeholder and government confidence in the validity (credibility) of collective schemes and the commitment of other firms to join in.

The following characteristics of industries caused free riders to be more prevalent:

Significant e-commerce retailing: Where products could be purchased by an Australian consumer online and dispatched directly from an off-shore warehouse to an Australian household, there was no incentive, interest and probably no knowledge of product stewardship. The e-commerce sales channel was cited often as a major challenge, even for bulky products such as mattresses.

Off-shore headquarters or imported product: It was identified that, where a product is predominately imported, sold through distribution, or the corporate headquarters and decision making is done off-shore, free riding was enabled. Study participants said that these types of businesses were reluctant to engage in stewardship unless it was a regulatory requirement.

Brand not important: In industries where brand is not important or there is low brand recognition with customers (such as low value or commodified goods) then firms are more likely to sit out of stewardship initiatives and free-ride.

2.4.2 Solutions to Free Riding

Participants cited regulation or co-regulation as the only solution where voluntary initiatives, accredited voluntary initiatives and Australian Competition and Consumer Commission (ACCC) authorised initiatives are not able to bring free riders into the scheme.

Another suggestion was for a decision-making framework that allows industries, governments or stakeholders to determine, given a particular set of circumstances, whether a voluntary solution would work, or whether co-regulation is required, ahead of collective scheme development. The desire was to have a framework to make strategic decisions about a collective scheme's form up-front, rather than spend years of effort and expense developing a voluntary scheme that may not achieve its objectives.

2.4.3 Consumer Engagement

Few collective schemes were satisfied with the penetration (expressed as end-of-life collection rate) into consumer markets. Frustration with the level of consumer participation in returning or recycling goods is common – even in well resourced (able to spend on consumer marketing and engagement), well-established collective schemes – in categories including consumer electronics and electrical products.

A view was expressed by an international expert we spoke to, who has a lot of experience in e-waste, that 60% consumer participation or collection rate for most consumer e-waste seemed to be a ceiling, even in a regulated market. Hoarding of recyclable goods, particularly in the case of mobile phones, at home was cited as a problem.

International experts described more than a decade of well-resourced, innovative marketing and engagement in a European market, but collection rates for e-waste still remains stubbornly around the 60% mark.

An Australia-based expert stated that initiatives would never achieve 100% penetration and anything approaching 80% of volume collected was good performance.

Monetary incentives are an effective motivator of consumer engagement in product stewardship schemes, as is evidenced by container deposit schemes (CDS). The rebates offered by container deposit schemes are particularly attractive as, in volume, they can translate into supplementary income streams for individuals and fundraising groups alike. Moreover, several actors reported an evolution in charitable organisations who build CDS collection and sorting capabilities into their business models.

There were other monetary incentives identified through the interviews, including credits for trading-in outmoded or legacy items. An early example of this in Australia is Toyota's cash rebates and discounts for recycling hybrid EV batteries³.

The other element seen to motivate consumers other than environmental consciousness was that of 'convenience'. Convenience is a driver of which CDS coordinators are acutely aware and factor into their overall value proposition. However, there were instances of convenience as a standalone factor, for example, the removal of bulky, toxic or inconvenient goods free of charge.

The free removal of bulky items like mattresses was cited by an actor as an incentive consumers would find attractive.

2.4.4 Funding

³ See <https://www.toyota.com.au/electrified/hybrid/battery-recycling>

Financing structures were cited as a key to collective schemes' success and impact.

Regulated collective schemes that imposed an excise at the point of entry to Australia were cited as being cost efficient because fee collection was almost universal, and cost of collection is low. Revenue collection was predictable, allowing confident budgeting.

For voluntary collective schemes, free riders make financing difficult. If a critical mass of firms within an industry does not participate, then the cost burden for the participants becomes too high (the burden falls upon the few).

For collective schemes that leverage financial incentives for participation (such as container deposit collective schemes) or that have accounted for costs, including collection and processing in the unit price, make life simple for scheme participants.

Likewise, outsourcing stages of the stewardship chain (for instance, logistics) reduces the burden of costs and encourages competition amongst subcontractors.

2.5 Success Factors for industry collective schemes

Stakeholder Engagement

A theme from interviews with experts, both within Australia and internationally, was that all stakeholders within an industry or product class need to be aligned for collective action to be successful.

A common sentiment expressed was, *'everyone needs a seat at the table from day one'*.

The view was that stakeholders need to be heavily engaged in scheme development. Some service providers we spoke to suggested they be involved in collective scheme design and strategy to ensure financial and operational models were efficient (as opposed to being contracted when the collective scheme was operational).

One service provider to collective schemes commented there are downstream "assumptions made" by the stewardship designers that don't always reflect reality.

Specific examples were cited of the calculation of initiative levies not adequately accounting for the cost of collection, sorting, and processing costs of end-of-life cycle material.

Service providers suggested collective schemes need to help actors in supply chains be more aware of each other's priorities.

One service provider believed waste service providers should be more closely involved in initiative design because of the insights and data they bring about end of life waste across a wide range of product classes.

Free Riders

The need to overcome free riders was a critical success factor for voluntary schemes. One international expert expressed the opinion that unless 95% of relevant businesses were involved, then any collective action would not be effective. Australian actors cited 80% participation as the critical mass.

Universally, the international actors we spoke to said regulation was needed for successful product stewardship or EPR. They were mystified as to why Australia prioritised voluntary initiatives over regulation.

Characteristics of successful voluntary collective schemes

Some actors cited industry characteristics as being more conducive to voluntary collective schemes.

An example cited is the Australian telecommunications industry where there are a few dominant network carriers and handset device sales are dominated by a few multi-national brands with significant market share.

These businesses are capable of driving change that shapes the market.

2.6 Voluntary versus Regulation

From our conversation with global experts, Australia is seen as an outlier with a policy and political preference for voluntary collective schemes over regulated collective schemes.

While Australian experts and actors cited voluntary collective schemes being more flexible to address changing market conditions or the needs of participants, there was a pragmatic acceptance that regulation or co-regulation was the best solution in many cases.

One of the issues with regulated collective schemes was the tendency to establish a legislative basis that fixed income, operations and targets. Actors felt that an element of flexibility and responsiveness needed to be brought to regulated collective schemes.

While regulation was recognised as a solution for many problems, lack of enforcement of existing regulation is acknowledged as a major problem. Several industry associations cited lack of enforcement of the *National Environment Protection (Used Packaging Materials) Measure 2011* (Cth) (NEPM) as a drag on action on packaging stewardship.

Some brands paid lip service to their responsibilities under NEPM or used the lack of enforcement as an excuse to do nothing.

2.7 Rural and Remote Access and Service Provision

Adequate servicing of rural and remote communities was seen by local government as a major failing of collective schemes. Regulated collective schemes, as well as voluntary collective schemes, were seen as performing poorly.

The National Television and Computer Recycling Scheme (NTCRS) targets for service delivery were used as an example by local government of how servicing rural and remote Australia was not good enough.

For remote areas, the NTCRS is required to provide at least one service within 200km of every town of 2,000 people or more, once every two financial years.

Collective schemes interviewed believe they are trying to solve the problem, but the reality is service provision to remote communities is enormously costly unless the waste product is small, easily transportable and has some value as recycle.

Abandoned passenger vehicles and whitegoods were nominated as the most problematic waste streams in remote communities. Several voluntary collective schemes we spoke to cited work underway, in collaboration with local government, to provide greater access to materials recovery in rural and remote locations.

Local government suggested more use of reverse logistics *'if we can deliver a new washing machine to a remote community, why can't we collect 10 old washing machines at the same time'* was typical of the sentiment expressed.

Local government said national scheme targets are not effective in engaging states with lower populations spread among remote areas. Resentment exists where levies are paid for by the consumer regardless of points of presence and servicing levels for collections. Participants called for targets that met local needs, not national targets based on population density.

2.8 End Markets for Recyclate

Having established or being able to create viable markets for recyclate from goods collected at end-of-life was cited by actors and experts as important for the viability of initiatives. There are examples of manufacturers or retailers creating buy-back schemes to stimulate demand for recyclate.

The Circular Plastics Australia joint venture (Pact Group, Cleanaway Waste Management Ltd, Asahi Beverages and Coca-Cola Europacific Partners), in Albury, NSW, will recycle 30,000 tonnes of PET each year, converting it to raw material that can be used to produce new beverage bottles plus other food and beverage packaging in Australia.

Cleanaway will provide the plastic to be recycled through its collection and sorting network, Pact will operate the facility and provide technical and packaging expertise, while Asahi Beverages, CCEP and Pact will buy the recycled plastic from the facility to use in their packaging.⁴

3 The Future

3.1 Logistics

Improved logistics for more efficient and effective tracking, collection and recycling or reuse of products was expressed as a priority by initiative operators and experts.

One international expert cited the use of app-based logistics and software to calculate the most efficient locations and routes for collection in major cities. Collection was cited as the most significant cost of operating a scheme.

Local government suggested collective schemes need to consider ways to aggregate material collections in remote areas (that is, material from different initiatives or product classes brought to a central point for collection). Planning for collection along central transit routes (e.g. highways or rail lines) may assist.

Service providers and experts suggested that consolidation of materials within the same class, from across different collective schemes or individual business initiatives, was necessary to make collection and recycling more economically viable.

⁴ <https://www.cocacolaep.com/au/news/2022/ccep-celebrates-official-opening-of-world-class-recycling-plant-in-albury-wodonga-2/>

3.2 Systems Thinking

Several experts and service providers believed the pursuit of circularity required broader systems thinking in Australia.

Service providers felt that the receiving end of the supply chain is not considered well enough by product stewardship designers. The potential to collect, rather than recycle, is often the main driver of collective schemes, and more questions are needed about the entire stewardship loop. The whole of the supply chain needs to collaborate for success.

The comment from one service provider was if there is no market for end use, then there is no point establishing initiatives.

Service providers said recyclers and remanufacturers need to be incentivised to invest in end-use markets.

One of the ways to do this is for collective schemes to incorporate the buy-back of new, recycled products into contracts with original equipment manufacturers (OEMs) thereby creating guaranteed sales.

3.3 Procurement

Product stewardship and circularity should become a priority for procurement departments, who can commit to sourcing recycled products. International experts cited examples in the USA (the State of Minnesota) where recycled content was a consideration in government procurement.

One service provider said consultation between initiative coordinators and recyclers is critical. Recyclers will invest if there is a sound business case for new product classes, for example, mattresses or fire extinguishers.

An Australian based expert said there needed to be more focus on upstream materials selection to enhance recyclability and the worth of recycled materials and the creation of circularity.

3.4 Consolidation and Scale

Experts question how each state has developed its own approach and we don't have a national approach in respect to container deposit schemes.

How these schemes have been established, experts have suggested there might an opportunity for consolidation.

The view of an Australian based expert was that the focus should be on product classes, not products so that sources of materials could be combined to create more volume and value for recyclers.

By having multiple schemes covering a single product class (i.e. hard plastics) there is cost duplication and fragmentation in product supply.

Service providers cited having separate collective schemes for batteries and for e-waste as an example of in-efficiencies when both product categories collected batteries that needed to be safely recycled.

Service providers and Australian experts referenced the European approach to e-waste where 'anything that has a battery or a plug' is handled by a single collective (regulated) scheme.

A comment from a service provider was that *"Australia is littered with product stewardship silos...operating completely independently of each other."*

The universal sentiment from service providers was the collective schemes in Australia focused narrowly on a single product, rather than a product class, creating duplication and replication of resources and systems.

The benefits of broader scope were summed up by an Australian expert:

"You don't spend as much administrative effort trying to get consumers to differentiate one thing from another and they can bring more items in and you get larger volumes to work with and in many instances, these materials are going to the same recyclers the same end users because almost regardless of the electronic item you're talking some metals, some plastics, some circuit boards, some batteries."

An Australian expert said larger more diverse collective schemes that took a wider range of products in a product class would have a broader funding base.

3.5 Circularity by Design

Several Australian-based experts and service providers felt more needed to be done to design for circularity. One said we need stewardship initiatives to re-think beyond end-of-life collection.

One expert said there needs to be minimum standards in waste so that recyclers can produce valuable commodities instead of just bales of returned goods. *"Quality products feed markets for end-products...and...quality throughput and planning supports investor confidence."*

Australian experts wanted to see eco-modulated fees introduced into Australian initiatives to 'push the boundaries' in recyclability and sustainable design. One expert said:

"Recycling often gets too much attention. We talk about circular economy, but then we allow people to just continue recycling and then just call it circular economy. It's not. We need to, we need to better understand how feedstocks or waste materials from one process could be going into another. But because we're overly focused on the product itself, we try and stay within that unit."

Australian and international experts cited the role of procurement departments in government agencies, as change leaders that could set specifications for circular goods, as an initiative that would drive change.

International experts cited the State of Minnesota's environmental preferable purchasing program.

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