

Product
Stewardship
Centre of
Excellence

Investing in Intelligent Regulation

The economic benefits
to government of regulated
product stewardship

White Paper

Kapil Kulkarni, Rose Read and John Gertsakis

December 2024

TABLE OF CONTENTS

Executive Summary	3
Introduction	4
Challenges of balancing circular economy objectives with other government priorities	4
Stimulate and unlock investment	6
Regulation drives private sector investment in all economic conditions	6
Examples and evidence	6
Benefits to Government	7
Efficient investment	8
Well-designed, dynamic regulation encourages balanced investment that drives more positive triple bottom line outcomes and minimises adverse and/or unintended consequences	8
Examples and evidence	8
Benefits to Government	9
Productivity and competitiveness	10
In a low-emissions, nature-positive global marketplace, we need to create, maintain and grow a circular economy in order to remain competitive	10
Examples and evidence	10
Benefits to Government	11
Conclusions and implications for government	12
APPENDIX 1: National Waste Policy Action Plan – Progress Summary Report 2023	13
APPENDIX 2: 25 years of Product Stewardship in Australia – A Review	16



**Product
Stewardship
Centre of
Excellence**

ABOUT THE PRODUCT STEWARDSHIP CENTRE OF EXCELLENCE LIMITED

The Product Stewardship Centre of Excellence (the Centre) is an independent not-for-profit registered charity. The Centre exists to facilitate the avoidance and reduction of waste and create positive environmental and social outcomes through sustainable design, resource conservation reuse, repair, and recycling. The Centre helps businesses, industries, associations and product stewardship organisations to adopt a strong lifecycle approach to deliver their ESG and circular economy objectives.

Email: info@stewardshipexcellence.com.au

Web: www.stewardshipexcellence.com.au

PO Box 7052, Berrima NSW 2577

© Product Stewardship Centre of Excellence – December 2024

Executive Summary

Governments must balance their political and fiscal capital on the breadth of challenges Australia faces and do that in an economically and environmentally responsible way.

To meet environmental targets, governments have many tools available in their toolkit. This paper outlines why regulated product stewardship has strong economic advantages over voluntary approaches and allocating government funding, which is becoming increasingly difficult in the current budgetary environment.

Regulated product stewardship allows government to clearly define producer responsibility across the entire product lifecycle and set environmental and societal outcomes to be delivered in an efficient and timely manner. It provides an effective way for governments to achieve environmental and circular economy objectives including reducing pollution and carbon emissions, conserving resources, avoiding waste and restoring nature. Government regulations can either be mandatory or co-regulation with producers.

Importantly, well-designed product stewardship regulation can also contribute to meeting broader government economic objectives including stimulating investment, driving productivity and competitiveness, improving innovation diffusion and enhancing Australia's competitive advantage.

While there is a diversity of product stewardship schemes in Australia, the majority are unregulated voluntary industry-led schemes that focus on diverting waste from landfill using existing pathways and infrastructure for marginal improvements. These schemes have had little if any impact on upstream interventions such as design for circularity to tackle waste avoidance and prevention head-on. Unregulated approaches also enable free-riding and potential undermining by non-participants, causing competitive disadvantages for participants.

By contrast, well-designed regulated product stewardship schemes (e.g. the national used lubricant oil scheme and state and territory-based container deposit schemes) have been far more effective in conserving resources, preventing pollution and litter, and avoiding waste by bringing about systemic change more extensively and quickly across the product lifecycle. Including changes, from design and production practices and consumer behaviours (household and business), to developing new pathways and solutions to avoid and prevent waste and enhance social well-being.

The evidence in this paper shows why regulated product stewardship is especially effective in:

- **Stimulating investment:** Regulation provides incentives for private sector investment, including in more challenging economic conditions.

- **Ensuring that the investment is efficient:** Well-designed regulation ensures that investment is aligned with the long-term interests of the community, promoting long-run economic efficiency.
- **Driving productivity and competitiveness:** Regulation provides incentives for innovation and technological growth, driving productivity and competitiveness.

Regulation can evoke concerns around industry burden, 'red-tape' and unnecessary intervention. However, the evidence in this paper also shows that well designed regulation can support improved competitiveness in the long run and avoid disadvantaging forward-thinking and acting industry players who see the need for such investment but are deterred by the drawbacks of going it alone.

While voluntary approaches provide some natural and obvious incentives for investment, regulatory approaches provide a more powerful impetus for greater investment at scale and to meet medium to long-term needs. For example, regulated product stewardship enables pooling of industry funds to invest in innovation and technologies that are expected to deliver economic dividends into the future, which would not have been possible with industry players focusing on short-term competition and survival.

If we want private investment to meet our environmental targets, we need smart regulation to create certainty and prevent competitive disadvantage for investment in sustainable outcomes nationwide. The evidence shows that industry can and will benefit from these investments by positioning Australian industry for the global economy of the future.

By looking at long-term whole-of-community objectives, regulation:

- Provides an effective driver to invest
- Avoids imbalances in investment
- Ensures that the investment is efficient over time
- Provides certainty to inform corporate decision-making
- Underpins productivity, competitiveness, and accelerates innovation diffusion providing benefits to the current generation as well as those to come.

Regulation does not need to be onerous or highly prescriptive to harness these benefits. Provided it is well-designed, proportionate, provides an impetus for action and certainty for investment; while balancing triple-bottom line objectives, it will be effective, efficient and position our economy for long run success.

Intelligent regulation also importantly provides a pivotal intervention that can break the current cycle of privatising profits while socialising the true cost of the environmental and human health impacts of products and packaging.

Introduction

The way Australia produces, imports and consumes materials and products currently is unsustainable. This is evidenced by climate change, bio-diversity loss, waste and pollution, recently described as a ‘triple planetary crisis’. Significantly, the main driver of the triple planetary crisis is the way we extract, grow, process and use materials, including fossil fuels, minerals, and biomass.¹

Australia’s importation of goods and services is currently 19.94% of GDP,² contributing to our 2.95 tonnes per capita generation of waste annually.³

According to the National Waste Policy Action Plan – Progress Summary Report 2023 – *It’s our waste it’s our responsibility*,⁴ of the seven targets only the banning on exporting of waste plastic, paper, glass and tyres will be achieved. The six remaining targets below will not be achieved:

- Reduce total waste generated in Australia by 10% per person by 2030
- Achieve an 80% average resource recovery rate from all waste streams by 2030
- Significantly increase the use of recycled content by governments and industry
- Phase-out problematic and unnecessary plastics by 2025
- Halve the amount of organic waste sent to landfill for disposal by 2030
- Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions

See Appendix 1 for summary of status of progress against each target.

Challenges of balancing circular economy objectives with other government priorities

At present, all levels of government in Australia are balancing multiple priorities that place pressure on government’s focus and budget. While governments can and have allocated significant funding into sustainability initiatives, including for example the clean energy transition, there is only so much funding that governments are able to allocate to any given policy priority. Moreover, governments have a responsibility to ensure that policies, programs and investments are aligned with the public interest and growing consumer expectations for producers to provide environmentally improved products and services.

It is against this backdrop that **regulated product stewardship** (see Box 1) offers several advantages over the predominately voluntary approach taken by governments over the past 25 years (See Appendix 2 for Review of 25 years of product stewardship in Australia). Importantly, a regulated approach encourages and drives investment from the private sector with limited budget demands to government, and ensures a level playing field for industry participants to:

- demonstrate their commitment to, and action on operationalising the Polluter Pays principle.
- maximise positive environmental benefit.
- maintain and build industry competitiveness.
- maximise industry-wide participation.
- prevent free riding and minimise competitive disadvantage.
- increase employment opportunities and skills.
- enable improved access to export markets, particularly Europe.
- contribute to managing cost of living impacts; and
- deliver more accessible services to rural and regional areas.

¹ Bruyninckx, H., et. al (2024) Global Resources Outlook 2024: Bend the trend – Pathways to a liveable planet as resource use spikes.

² Australia trade statistics (2022) World Integrated Trade Solution, World Bank. Available at: <https://wits.worldbank.org/CountryProfile/en/AUS>

³ National Waste Report 2022 (2022), Department of Climate Change, Energy, the Environment and Water, p. 16.

⁴ <https://www.dcceew.gov.au/sites/default/files/documents/national-waste-policy-action-plan-progress-summary-report-2023.pdf>

Encouraging and incentivising private investment through regulation is particularly important to counter the expected pullback in spending that accompanies tight economic conditions. Especially when that investment is necessary to maintain Australia's competitiveness and productivity in a global economy that increasingly values low-carbon, waste-free, non-toxic goods and services, and is directly aligned with UNEP's Sustainable Development Goals, especially SDG #12 – Responsible Consumption and Production.

Providing regulatory incentives to facilitate private capital flow into investments of national interest ensures that opportunities that deliver whole-of-society returns should and can still be funded, even in times of budget constraint.

This paper shows why regulated product stewardship is especially effective in:

- **Stimulating investment:** Regulation provides incentives for private sector investment, including in more challenging economic conditions.
- **Ensuring that the investment is efficient:** Well-designed regulation ensures that investment is aligned with the long-term interests of the community, promoting long-run economic efficiency.
- **Driving productivity and competitiveness:** Regulation provides incentives for innovation and technological growth, driving productivity and competitiveness.

Box 1: What is Product Stewardship?

PRODUCT STEWARDSHIP – Producer responsibility across the entire product lifecycle

Authentic product stewardship squarely places responsibility and accountability for the environmental and social impacts of products across their entire lifecycle on producers, brands and retailers. It is not this diluted notion of “shared” roles, which often fails to delineate who owns these impacts, be they solid and hazardous wastes at end of life, carbon emissions, or the specification of unsafe chemicals, finite resources or non-renewable inputs at the design and production stage.

In doing so product stewardship not only shifts the economic burden of the environmental and human health impacts of products away from governments and the broader community to the producer and user, it significantly increases the investment by the private sector driving systemic changes to prevent and reduce waste efficiently and cost effectively.

Figure 1 outlines the product stewardship actions producers and brands can implement to deliver significant positive environmental and social benefits.

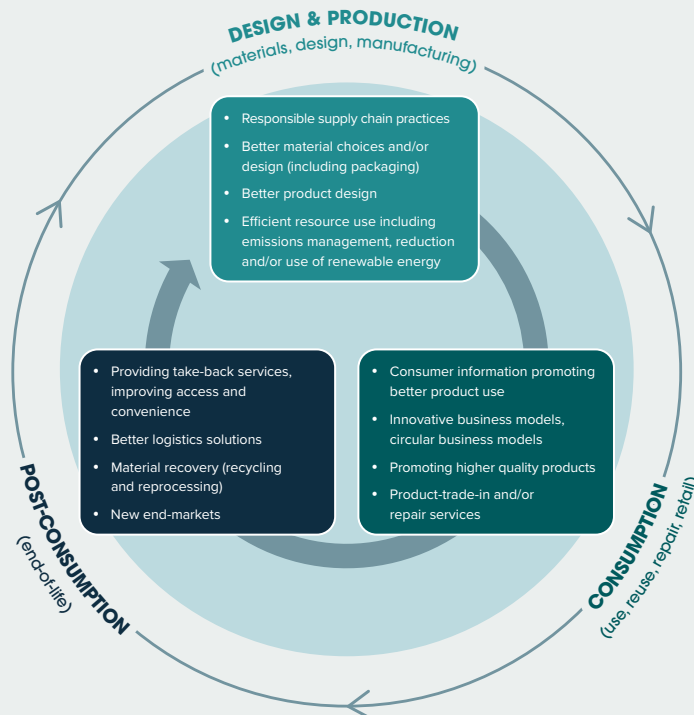


Figure 1: Product stewardship actions across the lifecycle, to foster a circular economy

Stimulate and unlock investment

Regulation drives private sector investment in all economic conditions

Increased private sector investment is a key lever that governments use to stimulate economic growth and improve living standards. Infrastructure investment is an especially strong and established driver of productivity growth, which is essential to living standards over the longer term.

Moreover, infrastructure investment in sectors that position Australia for the transition to a low carbon, nature positive and circular economy is likely to pay higher economic dividends to current and future generations than investment that is either not future-proofed or not at the right scale to benefit from global economic shifts or climate change. It is in that context that government policy needs to focus on creating the right conditions for investment in infrastructure that benefits Australians, today and into the future and helps to ensure targets announced are actually met.

This is not always a straightforward task, especially in the case of shifting to a circular economy and especially when there are challenging economic conditions for many sectors of the economy. This is because when economic conditions are weak, there is greater pressure on firms' balance sheets and investment in sustainability initiatives are often neglected or substantially reduced. For product stewardship, this dampens the momentum for new schemes and reduces ambitions for existing voluntary schemes to invest and act.

Not only is this negative for progress on circular economy goals, it also forgoes the economic benefits of investment, including increased employment and sustained economic growth within the context of responsible prosperity.

Regulation counters these negative forces by creating the conditions for right-sized and future-proofed investment. In the case of product stewardship regulation, it bolsters the business case for investment in the future ready processes and infrastructure to progress on circular economy objectives at scale.

Going further, intelligent regulation adopts and extends the Polluter Pays, and Producer Responsibility principles. This whole of system perspective ensures that investments in individual segments of the recovery value chain have sufficient upstream sources for input, and downstream sources for demand. This stable supply and demand lowers the cost of capital and strengthens the investor risk-return prospects.

Examples and evidence

The correlation between economic conditions and sustainable investment is not unique to product stewardship. For example, tighter economic conditions and supply chain issues held back sustainable investment in 2023.⁵ The irony is that sustainable investment driven through effective policy responses can be a catalyst for long-term growth through innovation – this has been known for many years (OECD, 2009)⁶.

The interest in Product Stewardship has grown rapidly in Australia over the 5 years to 2023, with the drivers of this growth including:

- The tightening of export markets for Australia's waste
- Subsequent government bans on the export of some types of waste
- The Minister's priority list identifying products that the Australian Government intends to regulate if industries do not develop viable voluntary product stewardship schemes
- The Australian Government's National Product Stewardship Investment Fund (NPSIF), which provided funding support for the development of business cases, scheme designs, the implementation of new schemes, and expansion of existing schemes
- Growing consumer awareness and subsequent pressure on producers and retailers to take greater responsibility for the whole-of-life environmental impacts of the products they bring to market and profit from.
- The opportunity to develop on-shore markets for recycling and recovered materials, as well as new repair, refurbishment and remanufacturing services

Despite the 24 NPSIF grants enabling a wide range of scheme investigations, only 11 have developed into fully fledged, national product stewardship schemes (See Appendix 2 for further analysis of NPSIF). As a result, at least seven grant recipients and some established initiatives are calling for regulation to ensure a level playing field in the industry with a view to maximising industry-wide participation and investment so that the environmental benefit and impact reduction can be significantly increased.

5 <https://am.jpmorgan.com/au/en/asset-management/institutional/investment-strategies/sustainable-investing/sustainable-investing-trends-and-insights-2024/>

6 Eco-Innovation in industry. Enabling Green Growth, OECD, 2009, https://www.oecd.org/content/dam/oecd/en/publications/reports/2010/01/eco-innovation-in-industry_g1ghbd93/9789264077225-en.pdf

For example, initiatives related to automotive bodies, car seats, furniture, bedding, mobile telecommunication devices,⁷ clothing, tyres, batteries and agriculture plastics were initially seeking to establish as voluntary schemes, or expand existing voluntary schemes, but are now of the view that regulation is required to progress, finance and implement their scheme designs.

B-Cycle, an established voluntary scheme focused on loose handheld batteries, has recently experienced issues funding scheme activities due to challenging market conditions (refer to Box 2).

By contrast, regulated schemes continued to support investment, delivering triple bottom line benefits. For example, state and territory based Container Deposit Legislation across Australia, complemented by government funding and waste export restrictions, has led to multiple investments in plastic processing capacity across Australia. A prime example is the \$50 million investment in Australia's largest PET processing plant in Albury by Circular Plastics Australia, supported with just \$5 million of government funding.⁸

Benefits to Government

Establishing a business case for the private sector to invest through regulatory certainty reduces pressure on government budgets.

Private investment can be made with or without government support. The expansion in plastic recycling capacity cited above was a direct result of the container deposit legislation together with the following complementary policy mechanisms – export bans on unprocessed plastics, landfill levies and funding from the Recycling Modernisation Fund (RMF), which was matched by state funding. Each complementary policy mechanism targets specific policy objectives and was assessed on its own merits but worked synergistically as a package.

Also, regulation can be proportionate and does not need to be unnecessarily onerous. For example, New Zealand's regulatory framework supports the co-design of schemes by industry and government. This provides flexibility and ownership, and schemes can be designed in a way to provide benefits to industry, such as through the creation of new markets, innovation and the introduction of new technologies and better procurement processes.

This driver to invest arises not just due to the need to meet regulatory requirements, but confidence in the demand that underwrites the investment (e.g. plastic material to justify large capital investments in advanced reprocessing technology). The combination of increased confidence and certainty stimulates and unlocks the required private sector investment.

Box 2: Challenges with funding for the B-Cycle voluntary scheme during challenging market conditions

B-Cycle funding challenges

B-Cycle is the voluntary scheme established by the Battery Stewardship Council (BSC), to fund the transport, sorting and reprocessing of handheld batteries. The levy, 4 cents per equivalent battery unit, is paid by importers based on battery weight and passed on to consumers. The scheme activities are approved by the Australian Competition & Consumer Commission (ACCC).

The scheme had been in development for a long time before finally achieving sufficient industry support to launch as a voluntary scheme. This lead up to establishment was preceded by many activities and attempts at establishing a scheme for batteries, which included:

- Listing as a priority product by the Federal Government in 2013
- Industry research, pilots, financial analysis and a review of regulatory options during 2014-17
- Establishment of the Battery Stewardship Council in 2018
- Research and design activities in 2019
- Confirmation of industry support in 2020.

Following challenging market conditions, the BSC, announced a review of the B-Cycle scheme⁹.

The challenges have included a drop in downstream commodity prices, inflationary pressures and product contamination. The increasing frequency of battery-related fires has more generally heightened the focus on the battery industry. The challenges have contributed to the consideration of a regulatory rule compelling participation across the industry.

7 MobileMuster expanded the scope of their scheme from primarily mobile handset devices to a wider range of mobile telecommunication devices, building on their existing voluntary framework.

8 Circular Plastics Australia is a joint venture by Cleanaway, Asahi Beverages and Coca-Cola Europacific Partners. <https://www.cleanaway.com.au/sustainable-future/cpa-opens-in-albury-wodonga/>.

9 Waste Management Review, May 2024.

Efficient investment

Well-designed, dynamic regulation encourages and enables balanced investment that drives more positive triple bottom line outcomes and minimises adverse and/or unintended consequences.

Efficient investment is that which provides optimal outcomes to society, from a triple or quadruple bottom-line perspective. When markets are complete, have perfect information and have sufficient competition, capital flows to the most efficient investments. In practice, these conditions are rarely present in most markets, with the market for circular economy investment being no exception.

Returning to the notion of right-sized and future-proofed investment in the previous section, voluntary approaches risk leading to outcomes that, while showing that industry is doing something, do not provide optimal outcomes because investment in infrastructure leads to either:

- Processing capacity is not matched with demand, leading to depressed market prices for the output, an over-reliance on export markets and/or stockpiling of the recovered resource
- Collection and processing capacity without the necessary behaviour change needed to ensure quality of resources coming into the recovery value chain
- Missed opportunities to use recovered resources in Australian manufacturing instead of relying on global supply, providing this is justified from a triple-bottom line perspective.

Without a whole-of-system and medium to long term perspective that well-designed regulation can provide, there are likely to be perverse outcomes and unintended consequences.

Voluntary approaches incentivise market participants to do *something*, which demonstrates that industry is acting, but that is not necessarily the optimal or most efficient allocation of resources, nor does it ensure consistency of approach.

It is particularly relevant to note that in the absence of targeted product stewardship regulation, there are few if any checks and balances to ensure the identification and elimination of perverse outcomes and unintended consequences associated with voluntary and/or self-regulated product stewardship schemes or programs. It is a lens that is consistently used by government and others to oppose regulation yet overlooked in relation to voluntary schemes i.e. perverse outcomes and unintended consequences are rarely cited and identified when evaluating or supporting unregulated / voluntary schemes.

Examples and evidence

The economic benefits of environmental regulation have been long studied and documented in relevant literature (e.g. Ambec et al, 2011¹⁰). In their review of evidence for or against the 'Porter Hypothesis', which relates to the potential for environmental regulation to enhance innovation and competitiveness, Ambec et al (2011)¹¹ outline the planks of this hypothesis and identify the theoretical and empirical evidence in support of it.

It should be noted that one of the key planks of the hypothesis, that reduced input use and waste is one mechanism that improves competitiveness, holds true for the key aims of most product stewardship schemes. The other mechanisms include that regulation leads to include:

- Information gathering, which can be used to improve competitiveness
- Reduced uncertainty
- Pressure to motivate innovation and progress
- A levelling of the transitional playing field.

Reduced uncertainty, incentives to innovate and a levelling of the playing field are central to the notion of regulation stimulating efficient investment. Uncertainty is a major impediment to investment and reducing uncertainty and risk leads to lower financing costs and more access to finance. Innovation, which drives productivity, is discussed in the next section.

A levelling playing field is crucial for the Australian economy, which due to its relatively small market size, is dominated by fewer larger players, making it much more difficult for small to medium enterprises (SMEs) to compete.

¹⁰ Environmental Policy, Innovation and Performance: New Insights on the Porter Hypothesis

Paul Lanoie, J  r  my Laurent-Lucchetti, Nick Johnstone, Stefan Ambec. 2011, Journal of Economics & Management Strategy, Volume 20 Issue 3

¹¹ Ibid.

The Circular Economy Ministerial Advisory Group (CEMAG) established by The Hon. Tanya Plibersek MP, Minister for the Environment and Water has identified equity as an important part of the circular economy transition in Australia

In the context of product stewardship, voluntary schemes have experienced the pitfalls of less than efficient outcomes. This has included:

- Tyres: an increase in tyre recovery but a lack of corresponding domestic investment in processes to use the rubber (a lack of corresponding demand)¹²
- Agricultural Plastics: a lack of downstream pathways and processing capacity for material recovered by the agricultural plastics scheme.¹³

On the other hand, regulatory approaches have shown positive results with respect to this benefit.

- Used lubricant oil scheme encouraging re-refining in Australia creating supply chain resilience and regional jobs.
- National Television and Computer Recycling Scheme (NTRCS) increasing recycling from 18% prior to regulation to 70% in 2021-22, establishing a national network of public collection sites and e-waste recycling facilities that are accredited under the Australian Standard 5377:2022 for the *management of electronic and electrical equipment for reuse and recycling* and the domestic product manufacturing using used plastic resin into concrete).
- Container Deposit Schemes encouraging onshore processing, increasing the uptake of recycled plastics, cardboard and aluminium into beverage containers and substituting non-recyclable materials with recyclable and recovered materials.

Benefits to government

Economic efficiency is the bedrock of a well-functioning economy. Efficient investment avoids waste, stranded or underutilised assets, duplication of infrastructure, or obsolete infrastructure. It helps direct investment and create jobs.

The aims of a circular economy align with this concept by ensuring that scarce resources are used as efficiently as possible, designing out waste in production, minimises waste in consumption, and recirculating resources within the economy.

Well-designed product stewardship regulation with complementary and enabling supporting policies (including procurement policies), allows governments to incentivise investments that maximise economic and resource efficiency. That is, investments that deliver public benefits in excess of costs, within resources constraints. This provides co-benefits to government in terms of stimulating economic activity and employment, and in some cases an uplift in tax revenue.

By contrast:

- Voluntary approaches risk a narrow and/or short-term focus
- Fragmented or isolated policies or regulation risk not providing a complete and complementary set of incentives.

The successes of the suite of policy measures supporting container recycling in Australia demonstrate how product stewardship legislation and regulation, complemented with targeting funding, export bans and landfill levies create the conditions for beneficial investment. These investments have been celebrated as success stories by the community, industry and all levels of government.

¹² Some notable exceptions to this include the Victorian RecycleFirst policy which encourages the use of recovered rubber in construction projects and the West Australian Government's commitment to procure recovered rubber for road projects.

¹³ With the exception of PET pathways

Productivity and competitiveness

In a low-emissions, nature-positive global marketplace, we need to create, maintain and grow a circular economy in order to remain competitive.

Australia's major trading partners are moving to a low-emissions, nature positive economic model. Such a model ensures that global environmental issues are addressed using a multi-lateral approach, with human-induced climate change and nature degradation being two key issues being tackled.

In practice, this means that companies will have to pay for the environmental damage associated with the production and consumption of goods they bring to market and get rewarded for reducing impacts. In other words, the environmental externalities of production and consumption will be internalised into markets. Practical measures by our trading partners include:

- The move by the European Union (EU) to apply tariffs to the imports of selected goods from countries with inadequate carbon policies, known as the Carbon Border Adjustment Mechanism (CBAM), set to go into force in 2026
- The EU's plastic fee, applied based on each member country's amount of non-recycled plastic packaging waste produced
- Sustainability disclosure mechanisms for covered organisations relating to climate change impacts, under the Task Force on Climate-Related Financial Disclosures (TCFD), and relating to nature impacts, under the Taskforce on Nature-related Financial Disclosures (TNFD).

The Australian economy has an opportunity to position itself for success in this new economic paradigm. Conversely, the Australian economy faces negative consequences if it does not adapt in a timely manner. Government must play a key role ensuring this transition happens effectively and without delay, as governments have elsewhere such as the EU.

The benefits of ensuring an effective transition go further. The transition provides many opportunities for innovation and research and development (R&D), which ultimately drive productivity and living standards.

However, supporting this transition requires a long-term view, and the embedding of incentives to companies that invest for the long-term. In relation to product stewardship, regulation will do this much more effectively than relying on voluntary approaches, which instead favour a more short-term focus with limited attention to comprehensive circular economy and ESG objectives.

Examples and evidence

It is worth noting that circular economy objectives often include improved economic competitiveness over the medium to long term. A good example of this is the *European Commission Circular Economy Act*, which has expectations that the framework will increase competitiveness, promote economic growth and create jobs, as well as reducing environmental impacts and resource dependency¹⁴. The Act aims to decouple economic growth from resource use.

The Circular Economy Action Plan (CEAP), adopted in March 2020, contains several aspects that specifically relate to competitiveness, which are summarised in Box 3.

A Victorian Government agency – Sustainability Victoria – believes that Australia's international market competitiveness will decline unless the nation also transitions to these new global models. In the article *Collaboration key to circular solutions*¹⁵, Sustainability Victoria's CEO points to Australia's high per capita emissions, and global evidence showing the potential for circular economy measures leading to net economic gains. "*Just a 5% improvement in materials efficiency could boost the Victorian economy by \$6.4 billion*"¹⁶.

It should be noted that Australia's opportunities in this transition are likely to be unique to our comparative advantages in the global marketplace. Australia's National Circular Economy Framework specifically recognises this by recommending that the framework should "*Describe Australia's comparative and competitive advantages. Describe the skills and innovation needs of a circular economy.*" (Circular Economy Ministerial Advisory Group, 2024)¹⁷.

14 Analysing European Union circular economy policies: words versus actions, Martin Calisto Friant, Walter J.V. Vermeulen, Roberta Salomone, 2021, Sustainable Productions and Consumption, Vol 27.

15 <https://www.sustainability.vic.gov.au/news/news-articles/collaboration-is-key-to-a-circular-economy>

16 Ibid.

17 <https://www.dcceew.gov.au/sites/default/files/documents/circular-economy-ministerial-advisory-group-interim-report.pdf>

Box 3: Circular Economy Action Plan aspects that relate to competitiveness

How the Circular Economy Action Plan addresses competitiveness

The European Union's Circular Economy Action Plan aims to transition Europe towards a more sustainable economic model by promoting the circular use of resources, reducing waste, and fostering innovation. Key aspects of the plan are related to competitiveness, including:

1. **Innovation and New Business Models:** The development of innovative technologies and processes enabling reuse, recycling, and remanufacturing, opening access to new market opportunities.
2. **Resource Efficiency:** Reducing dependency on raw materials improves Europe's resilience to adverse economic shocks and reduces production cost.
3. **Market Leadership in Sustainable Products:** Measures to create demand for circular products, supporting European companies to capitalise on the demand for sustainable goods in the global marketplace.
4. **Clear and Predictable Regulations:** By providing a clear regulatory framework, the plan reduces uncertainty for businesses, supporting investment in circular economy practices confidently.
5. **Level Playing Field:** Ensure that all companies, including those outside the EU, adhere to the same circular economy standards when accessing the European market.

There are likely to be many potential opportunities for Australia in future industries, for example in critical minerals, where this aligns with our unique endowments as a country.¹⁸

As Australia expands its framework around producer responsibility, it can draw on the growing body of evidence on what is likely to best support our productivity and competitiveness goals. For example, the link between EPR design, economic output and competitiveness has also been studied in the peer reviewed economic literature (e.g. Forslind, 2009¹⁹; Rodrigues et al, 2016²⁰).

Forslind (2009)²¹ for example uses an Overlapping Generations (OLG) model with endogenous growth to investigate whether funding EPR using a financial guarantee or a pay-as-you-go (PAYG) approach leads to better economic performance. The results show that the former, involving producers effectively insuring against future EPR liabilities, provide better economic outcomes in terms of production levels and production growth. The implication for policymakers is that product stewardship regulation can be implemented in different ways to optimise economic outcomes.

Benefits to government

By encouraging a timely transition to a circular economy, federal and state governments position Australian industry for future success. The benefits linked to competitiveness go beyond economic gains, and include:

- Reduced material-based and greenhouse gas emissions
- Reversal of biodiversity loss
- Restoration of natural capital
- The creation of higher value jobs
- Building a just and healthy society.

These benefits lay the groundwork for a sustainable, resilient and globally competitive economy.

Appropriate regulation will support industry to establish economic models and infrastructure that provide ongoing dividends to future generations. In the absence of regulation and due to the short-term thinking that industry often adopts in times of economic uncertainty, the transition risks being more costly, less effective and much less likely to exploit any first-mover advantages that Australia likely has.

By contrast, future-proofing the economy in this manner is likely see Australian economy take a sound competitive footing into the future.

¹⁸ This could include, for example, onshore battery reprocessing and lithium resource recovery.

¹⁹ "Does the financing of extended producer responsibility influence economic growth?" K.H. Forslind, 2009, *Journal of Cleaner Production*, Volume 17, Issue 2, January 2009, Pages 297-302

²⁰ An Input-Output Model of Extended Producer Responsibility, João F. D. Rodrigues, António Lorena, Inês Costa, Paulo Ribeiro, Paulo Ferrão, 2016, *Journal of Industrial Ecology*, Volume 20, Issue 6

²¹ "Does the financing of extended producer responsibility influence economic growth?" K.H. Forslind, 2009, *Journal of Cleaner Production*, Volume 17, Issue 2, January 2009, Pages 297-302

Conclusions and implications for government

Governments must balance their political and fiscal capital on the breadth of challenges Australia faces and do that in an economically and environmentally responsible way.

To meet environmental targets, governments have many tools available in their toolkit. This paper outlined why regulated product stewardship has strong advantages over voluntary approaches and allocating government funding to address the environmental and social impacts of products and packaging, which is becoming increasingly difficult in the current budgetary environment.

The evidence in this paper shows why regulated product stewardship is especially effective in:

- **Stimulating investment:** Regulation provides incentives for private sector investment, including in more challenging economic conditions.
- **Ensuring that the investment is efficient:** Well-designed regulation ensures that investment is aligned with the long-term interests of the community, promoting long-run economic efficiency.
- **Driving productivity and competitiveness:** Regulation provides incentives for innovation and technological growth, driving productivity and competitiveness.

Regulation can evoke concerns around industry burden, red tape and unnecessary intervention. However, the evidence in this paper shows that well designed regulation can support improved competitiveness in the long run and avoid disadvantaging forward-thinking industry players who see the need for such investment but are deterred by the drawbacks of going it alone.

If we want and need private investment to meet our environmental targets, we need smart regulation to create certainty and prevent competitive disadvantage for investment in sustainable outcomes. The evidence shows that industry can and will benefit from these investments, by positioning Australian industry for the global economy of the future.

While voluntary approaches provide some natural incentives for investment, mandated regulations provide a powerful impetus for investment at scale and to meet long term needs. For example, regulatory product stewardship enables pooling of industry funds to invest in innovation and technologies that are expected to deliver economic dividends into the future, which would not have been possible with industry players focusing on short-term competition and survival.

By looking at long-run whole of community objectives, regulation:



- Provides an effective driver to invest
- Avoids imbalances in investment
- Ensures that the investment is efficient over time
- Provides certainty to inform corporate decision-making
- Underpins productivity, competitiveness, and accelerates innovation diffusion providing benefits to the current generation as well as those to come.

The bottom line is that regulation does not always need to be onerous or highly prescriptive to harness these benefits. Provided it is well-designed, proportionate, provides an impetus for action and certainty for investment; while balancing triple-bottom line objectives, it will be effective, efficient and position our economy for long run success.

Intelligent regulation provides a pivotal intervention that can break the current cycle of privatising profits while socialising the true cost of environmental and human health impacts.



APPENDIX 1:

National Waste Policy Action Plan – Progress Summary Report 2023²² *It's our waste, it's our responsibility*

TARGET	STATUS DECEMBER 2023		FUTURE DIRECTIONS AND SHORT COMINGS
Ban on export of waste plastic, paper, glass and tyres, commencing in the second half of 2030		Nearly all identified wastes are now regulated, and ongoing support to build Australia's infrastructure capacity has been expanded under the Australian Government's Recycling Modernisation Fund	<i>Australia needs to continue to build its capacity to turn these materials into high-value, recycled products that people want and need, and to develop and grow markets for the materials that are recovered. We can support this by encouraging businesses, industries and governments to buy local and to buy recovered resources and offer incentives to support investment. More information about the origin, treatments and movements of recovered materials will also help to build confidence in their consistency and quality.</i>
Reduce total waste generated in Australia by 10% per person by 2030		Waste generation has increased by an estimated 3% per person since 2016-17. <i>The Department's forecasted data for all waste streams indicates the target won't be met</i>	<i>Australians need to rethink how we consume and discard products and materials. More needs to be done to acknowledge over-production and over-consumption with a view to prioritising waste avoidance and encouraging the efficient use, reuse, repair and sharing of products and related services. We also need to design systems, products, places, precincts and built form that support waste avoidance, the conservation and reuse of materials, and new, more responsible patterns of consumption. Government and industry policies, programs and investment need to more directly reflect strong circular economy principles and objectives that are actionable in a timely manner.</i>

²² <https://www.dcceew.gov.au/sites/default/files/documents/national-waste-policy-action-plan-progress-summary-report-2023.pdf>

TARGET	STATUS DECEMBER 2023		FUTURE DIRECTIONS AND SHORT COMINGS
80% average resource recovery rate from all waste streams following the waste hierarchy by 2030		In 2020–21, Australia recovered an average of 63.1% (45.4 million tonnes) of the total waste generated, an estimated increase of 2.2 percentage points since 2016–17. <i>Despite these efforts, estimated forecasts to 2030 show the target may not be met.</i>	<i>Achieving this target will require action across the economy. Areas that can support this include changing consumer confidence in and behaviours towards using recycled materials and products, increasing the uptake of product stewardship approaches, such as designing products with reuse, repair and recyclability in mind, putting in place more efficient and user-friendly collection and recycling services, developing end markets for recycled products and materials, particularly for those that people want and need in Australia and overseas. Government and industry policies, programs and investment need to more directly reflect strong circular economy principles and objectives that are actionable in a timely manner.</i>
Significantly increase the use of recycled content by governments and industry		Work is progressing on sustainable procurement. Governments and industry have demonstrated their commitment to increase the use of recycled materials across the supply chain through a range of initiatives and programs.	<i>To continue to embed sustainable procurement practices into government and industry procurement policies and further work under the National Traceability Framework. Procurement policies and measures need to more directly reflect strong circular economy principles and objectives that are actionable in a timely manner.</i>
Phase-out problematic and unnecessary plastics by 2025		Although there has been considerable work undertaken to prevent problematic and unnecessary plastics across Australia, they remain a challenge. <i>In 2020–21, Australians generated about 2.63 million tonnes of plastic waste, equal to 102kg per person. Of this, around 13% was recovered.</i>	<i>Continued support to improve the capture of plastics and packaging before they find their way into the environment; address chemicals of concern and toxic micro materials used in plastics to ensure a safe circular economy; address the challenges around single-use plastics (particularly for plastic packaging needed for food safety); work with other high-ambition countries to deliver an effective Global Plastics Treaty to end plastic pollution. The opportunity to introduce appropriate import bans on plastics deemed to be problematic and unnecessary would serve to address the challenge at source and ensure higher levels of waste avoidance at the top of the waste hierarchy.</i>

TARGET	STATUS DECEMBER 2023		FUTURE DIRECTIONS AND SHORT COMINGS
Halve the amount of organic waste sent to landfill for disposal by 2030		<p>Preliminary projections suggest the target won't be met by 2030 by 1.3 million tonnes (Figure 5). Changing this trajectory will require significant changes to consumption behaviour and ensuring that organic material destined for landfill is diverted for beneficial uses, such as composting, energy use (or anaerobic digestion), landfill gas capture or direct application of organic waste to land.</p>	<p>Improved support for this target will need Australians to make further changes to their consumption behaviour, such as avoiding food waste and ensuring that organic material destined for landfill is diverted for beneficial uses. Having enough, and reliable, infrastructure that services all areas of Australia to collect and process organic waste will be important to provide long-term support for markets. Consideration of how we can improve the regulation of organic wastes to adopt a more consistent national approach to avoiding poor quality or contaminated organics for reuse will be important. Government and industry policies, programs and investment need to more directly reflect strong circular economy principles and objectives that are actionable in a timely manner.</p>
Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions		<p>Australia has continued to improve the availability of high-quality waste and recycling information. This supports a clearer understanding of how waste moves around Australia, how kerbside recycling is processed and re-used, and how high-value recycled commodities are traded.</p>	<p>Governments will continue to work with industry and non-government entities to further improve and grow our data capability. This includes planned work to more harmonised data nationally so that we can have more accurate, consistent, timely and comprehensive data to support our decisions.</p>

APPENDIX 2:

25 years of Product Stewardship in Australia – A Review

The Australian Government's approach to product stewardship over the past 25 years has primarily been to encourage producers to voluntarily take responsibility for the socio-environmental impacts of their products rather than to regulate producer responsibility,

Prior to 2011 only three product stewardship regulations had been introduced nationally requiring producers to address the environmental impacts of ozone depleting gases, used packaging and oil lubricants.

In 2011 the Australian government created the Product Stewardship Act 2011 which enabled the Minister to establish mandatory and co-regulatory product stewardship regulations, accredit industry led voluntary schemes and list priority products for industry action. When the Act was established the Australian Government introduced a product stewardship regulation for televisions, computers and their accessories. No other mandatory or co-regulatory rules have been introduced since even though the Minister has listed 15 priority products classes.

Rather we have either seen industry led voluntary schemes established (i.e. paint, batteries, tyres, mattresses, and clothing) or state and territory governments regulate (i.e. beverage containers and problematic and unnecessary plastics). Of the five industry funded product stewardship schemes established four (batteries, tyres, mattresses, and clothing) are now advocating for national regulation. This is due to poor producer participation and investment which is significantly limiting their ability to make progress and commercially disadvantaging participating producers.

In 2023 the Australian government committed to introduce product stewardship regulations for photovoltaic systems, small electrical and electronic products and packaging. Progress on both photovoltaic systems and packaging is at least 12 months behind schedule and proposed regulation of small electrical and electronic products has been halted indefinitely.

According to the Product Stewardship Centre of Excellence's 2022 Annual Report on product stewardship activity in Australia there are 83 operational product stewardship initiatives covering 31 product classes (including packaging)²³ of which 69 are voluntary initiatives led by industry or individual business.²⁴ Many of these schemes focus their efforts on diverting waste from landfill using existing pathways and infrastructure for marginal improvements. Few have had little impact on upstream interventions such as design for circularity to tackle waste avoidance and prevention head-on.

The recent study by the UTS Institute for Sustainable Futures at UTS in partnership with the Product Stewardship Centre of Excellence on the effectiveness and benefits of product stewardship found that to be effective in meeting environmental and human health objectives product stewardship schemes needed to demonstrate the following five characteristics²⁵:

1. High levels of industry or business investment and participation achieved through regulation.
2. Clearly defined environmental and social objectives and performance indicators that are measurable and allow for continual assessment of the effectiveness.
3. Good governance that includes clear definition of responsibilities and roles and public reporting requirements to ensure transparency.
4. Use of financial incentives to drive behaviour change of businesses, consumers, repairers, collectors, sorters, and recyclers.
5. Effective marketing and communications to create high awareness and user participation.

An analysis by the Centre of 30 product stewardship regulated and voluntary schemes showed that only the National Oil Product Stewardship Scheme (Product Stewardship for Oil Act) and the six state and territory regulated container deposit schemes demonstrated all five characteristics.

²³ PSCoE 2022 Annual Report – State of play,

²⁴ PSCoE 2022 Annual Report – State of play

²⁵ Evaluating product stewardship benefits and effectiveness Summary Report, UTS Institute for Sustainable Futures and the Product Stewardship Centre of Excellence, May 2023.

Well-established industry led voluntary schemes MobileMuster, Tyre Stewardship Australia (TSA), Drum Muster, B-cycle, Cartridges 4 Planet Ark, Paint Back, Chem Clear, Recycle My Mattress and Fluorocycle, and the co-regulated National Television and Computer Recycling Scheme (RAWR Act), NEPM for Used Packaging and Ozone depleting substances schemes only demonstrated three of the five characteristics.

Some of these schemes lacked high levels of industry participation and investment and suffered from free riding by producers (e.g. TSA, Recycle My Mattress). Others have poorly defined objectives and weak governance structures where responsibilities are unclear or reporting is lacking (e.g. NEPM for Used Packaging, Cartridges 4 Planet Ark). Others fail to adequately promote or engage consumers (e.g. Fluorocycle, NTCRS) or use financial incentives (e.g. MobileMuster, Fluorocycle) to drive the necessary consumer or business behaviour changes.

This predominately voluntary approach to product stewardship by the Australian government over the past 25 has clearly been inefficient and ineffective in addressing the socio-environmental impacts of products in a timely manner.

This is significantly different to that of the Europe Union (EU) where a more defined, integrated and holistic approach has been taken through Member state regulations. The context achieves a uniformity through EU-wide directives and Member state regulations clearly articulating and assigning clear producer responsibilities and environmental objectives. It should be noted that the EU was an early mover on EPR, driven by several member countries facing landfill shortages from the late 1980s and political leadership to abate environmental pollution.

As Australia transitions to a circular economy²⁶, for product stewardship to be effective regulation is essential to clearly define producer responsibilities and socio-environmental outcomes across the entire product lifecycle. This not only maximises the impact of investments from the public and private sector, but it also provides an obvious pathway for producers and governments to operationalise the circular economy; decouples economic growth from resource consumption, environmental impact and waste generation, and reduces the economic burden on government to

- conserve, recover and optimise resource productivity including critical minerals, and finite, non-renewable and virgin resources
- create marketplaces for recovered materials
- reduce solid and hazardous waste going to landfill and reduce illegal disposal
- eliminate or reduce the use of unsafe chemicals and toxic micro materials
- reduce pollution including emissions to air, water and soil
- reduce greenhouse gas emissions
- ensure more sustainable patterns of production and consumption

Furthermore, it can accelerate and 'enhance innovation and competitiveness' subject to the specific context and environmental objectives being pursued.²⁷

NEXT STEPS AND THANK YOU!

Thank you to our co-author Kapil Kulkarni from RPS Consulting for his insights and time in preparing this white paper. Also thanks to Vaughan Levitske, Gayle Sloan, Tim Powell and the team from Tyre Stewardship Australia for their valuable input, peer review and proofing. The Product Stewardship Centre of Excellence would also like to thank Tyre Stewardship Australia for its financial support to enable the Centre to produce this White Paper.

26 <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

27 Ambec A, Cohen Mark A, Elgie S, Lanoie P (2011) *The Porter Hypothesis at 20: Can Environmental Regulation Enhance Innovation and Competitiveness?* pp1-4.



**Product
Stewardship
Centre of
Excellence**