

# CIRCULAR ECONOMY

SUBMISSION TO PRODUCTIVITY  
COMMISSION INQUIRY

NOVEMBER 2024

## ACKNOWLEDGEMENT

Monash University acknowledges and pays respect to the past and present Traditional Custodians and Elders of the lands on which we live and work. We acknowledge First Peoples' connection to sustainable practices on these lands and recognise their leadership, knowledge systems and strength in caring for Country for countless generations. Their knowledges and expertise are critical to achieving Australia's circular economy potential.

Monash is committed to fostering a society that recognises, respects and includes Indigenous peoples, cultures and knowledges and has an embedded commitment to working with First Peoples both in Australia and overseas to support the creation of this society.

## FOREWORD

Monash University is guided by three global challenges, one of which is Climate Change. It requires deep commitment through our education and research to creating a more globally sustainable future. Monash aims to:

- support a better-informed understanding of the nature and impacts of climate change on our environments and lives
- enhance capabilities in our graduates to engage with these impacts in their work and their lives
- create new ideas and solutions about how we might prevent or mitigate detrimental effects and produce enhanced quality in our natural and created environments
- make change now by taking what we already know and showing governments, industry, decision makers and consumers how they can take effective action.

Monash's climate change education and research capabilities are concentrated in the [Monash Sustainable Development Institute](#) (MSDI) and dispersed across specific disciplines such as economics, business management and marketing, healthcare, building design and construction.

MSDI has adopted Circular Economy as one of the six core areas of work, using evidence review, applied research, policy development and capability building to create real world impact. This impact is driven by the newly established Circular Economy Lab. The lab coordinates research and impact from BehaviourWorks, which uses behavioural science to effect change among businesses and industries, and ClimateWorks, a partnership between Monash and the Myer Foundation which seeks to accelerate the net zero transition by bridging the gap between research and climate action. The lab also works closely with the Monash Business School

This response draws on a selection of Monash's existing research, particularly the following reports, projects and research units that are recommended to the Commission to inform its inquiry:

- [Framework for understanding, measuring and communicating waste prevention](#) | prepared by BehaviourWorks for the Department of Climate Change, Energy, the Environment and Water, 2022
- [Behavioural roadmap to circular consumption](#) | Output of the three year BehaviourWorks Consortium
- The [Circular Economy Journey](#) | a partnership between the Monash University Business School Department of Management's [circular economy research unit](#) and the South East Melbourne Manufacturers Alliance (SEMMA), funded by Sustainability Victoria
- [Retail Sustainability Spotlight](#) | an annual survey run by Australian Consumer and Retail Studies at the Monash Business School
- [Wiser Carbon Neutral](#) | a project with the Wiser Healthcare consortium, to assist clinicians and policy makers to decarbonise healthcare and maintain high quality patient care.
- The Monash Faculty of Art, Design and Architecture's [Future Building Initiative](#), which undertakes research to explore human-centric building systems and techniques that support sustainable and resilient building value chains and participates in the Building 4.0 CRC.

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## KEY POINTS

### There is a clear and strong role for government

All of our research indicates that Australia lacks a comprehensive vision and strategy for a circular economy. There are significant barriers within the system that make it challenging or even impossible for businesses to adopt circular practices. Additionally, market uncertainty and consumer beliefs and behaviours slow down the uptake of circular models.

The nature of these challenges and the imperative for circular economy requires a mission-based, systems approach owned by the Commonwealth and co-developed with States/Territories, businesses, peak bodies, consumer groups, households and other social stakeholders to ensure regulation and incentives are proportionate, coherent and effective.

Achieving circularity involves transforming entire systems—ranging from production and consumption patterns to waste management and resource use—rather than making incremental improvements. This deep, cross-sectoral transformation demands coordinated efforts, long-term investment, and breakthrough innovations, all of which are best driven by clear, purpose-driven missions that align stakeholders toward shared, impactful goals.

By linking public investment with long-term societal outcomes, mission-oriented strategies attract private sector buy-in, de-risk investments, and accelerate the scale-up of circular business models and technologies.

Operationalising a mission-oriented approach to the circular economy requires overcoming structural and systematic hurdles and barriers.

- Fragmented governance and regulatory frameworks (including lack of regulation and prohibitive regulation) across industries and regions make it challenging to align policies and create a unified vision. This lack of coherence can slow down the adoption of circular practices.
- Funding constraints and short-term investment cycles limit the ability to finance long-term, high-risk projects necessary for systemic change, as mission-oriented approaches often require sustained financial support and patient capital.
- There are cultural and organisational barriers within industries, where established linear business models and entrenched mindsets may resist the shift toward circularity. Many companies may lack the incentive or the expertise to reimagine their value chains and product lifecycles.
- The lack of cross-sector collaboration and data sharing between stakeholders hinders innovation. Successful mission-oriented approaches depend on interdisciplinary cooperation between academia, government, industry, and civil society, but silos often prevent such collaboration.
- Uncertainty in measurement and impact assessment of circular economy initiatives creates difficulty in tracking progress and demonstrating tangible outcomes, which are key to gaining political and financial support.

### Eight suggested systems settings for an integrated approach to accelerating Australia's circular transition<sup>1</sup>

1. Establish a clear target picture with milestones, review processes, and transparent communication. Assign responsibilities and resourcing across levels of government, allowing tactical freedom.
2. Develop a circular economy industrial & trade strategy. Engage partners in trade partnerships, streamline regulatory frameworks, and seek trade agreements based on joint priorities around global resilient and responsible supply chains.
3. Review existing policies and regulations and develop policies inspired by global best practices. Coordinate closely with international partners. Establish a system of regular evaluations to balance Circular Economy needs, waste hierarchy, and trade considerations.
4. Establish a Circular Economy Standards Board, as a Commonwealth entity, similar to arrangements around building standards, to co-design voluntary standards with States/Territories, consistent implementation.
5. Set up a Circular Production Investment Fund to support circular production and logistics projects in global value chains.
6. Launch a Circular Business Incubator Fund with place-based incubators to support circular startups and new business models, and foster collaboration among ecosystem stakeholders.
7. Adopt circular economy-focused public procurement rules, mandatory for the Commonwealth and recommended for States/Territories. Pilot a detailed approach with the Australian Defence Forces as a lighthouse project for other government areas.
8. Expand product stewardship schemes. Review and strengthen current voluntary schemes, expanding mandatory stewardship to more waste streams beyond oil, televisions and computers, and the announced changes to packaging. Move beyond end-of-life recovery options, to include full extended producer responsibility and prioritise higher-order circular strategies over recycling.

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<sup>1</sup> The full systems setting recommendations including benefits is included in the Appendix.

## There is a clear opportunity for this system to be supported by a Circular Economy Research Mission<sup>2</sup>

Mission-oriented research and innovation approaches are essential to driving meaningful change in policy, practices, and investments. Unlike traditional, incremental advancements, mission-oriented approaches are purpose-driven and focus on solving specific, grand challenges—such as reducing waste, decarbonizing industries, or creating sustainable material flows.

By aligning research, innovation, and policy efforts around clear, ambitious goals, and working in consortias with diverse partners and user groups, this approach fosters systemic change across sectors. It encourages cross-disciplinary collaboration, accelerates technological breakthroughs, and creates the necessary momentum for widespread adoption of circular economy practices.

Government could facilitate research and innovation in a circular economy via coordinated policy reforms, targeted financial mechanisms, and fostering a culture of collaboration and innovation across sector

### 1. Create a National Circular Economy R&D mission with SMART Targets

The government should establish a coordinated national R&D strategy focused specifically on advancing circular economy goals. This strategy should set clear, ambitious targets for reducing resource use, increasing product lifespan, and advancing recycling technologies. By aligning funding priorities, research agendas, and policy frameworks around these targets, the government can ensure that R&D efforts are streamlined and focused on the most impactful areas. This would also help bridge gaps between academia, industry, and policy, ensuring that research outputs translate into practical solutions.

### 2. Increase Long-term Investment in Circular Economy R&D and Innovation

To drive breakthroughs in circular technologies, materials science, and industrial processes, the government should offer sustained financial support for R&D. This includes expanding grants, innovation funds, and tax incentives for research institutions and companies conducting circular economy-focused R&D. Additionally, public-private partnerships could be fostered to de-risk investment in experimental technologies and long-term research that may otherwise struggle to attract private funding. By guaranteeing stable, long-term funding, the government can accelerate the pace of innovation in key areas such as resource recovery, eco-design, and circular supply chains.

### 3. Encourage Collaborative R&D and Knowledge Exchange Across Sectors

The government should promote greater collaboration between research institutions, industry, and other stakeholders by establishing R&D mission hubs and innovation networks dedicated to circular economy challenges. These platforms would encourage cross-disciplinary partnerships, enabling researchers, businesses, and policymakers to co-develop new technologies, processes, and business models. The government could also incentivise open data sharing and collaborative research initiatives, ensuring that breakthroughs in circular economy R&D are widely disseminated and quickly scaled. By fostering a culture of collaboration, the government can help translate cutting-edge research into practical applications that benefit the broader economy.

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<sup>2</sup> Monash has been one of the frontrunner universities globally in exploring how to operationalise mission-oriented approaches in university and research settings. The publication [University-led mission-oriented research and innovation framework](#) (April 2024) shows the benefits and opportunities of working in mission-oriented ways to 'crowd in' investment and partners, co-design research questions, and bridge the research-translation-impact divide.



## DISCUSSION

### BARRIERS

#### Consumers

There are a number of barriers that prevent consumers from considering engaging in the circular economy. These include:

- Lack of awareness of and access to opportunities
- Pervasive consumption advertising
- Higher prices of emerging circular goods and services
- Cultures of ownership and convenience
- Lack of social norms and social proof
- Inertia and existing habits.

There are also barriers that hinder even motivated consumers who attempt to engage in the circular economy. The *Household Innovation and the Transition to the Low Waste City* ARC Discovery project<sup>3</sup> engaged with households to set their own low waste experiments to implement over a six-week period. The participants were highly motivated and eager to reduce their waste impact. Yet even they faced significant challenges and found it very difficult. The participants' experiences highlight that changing practices requires a significant investment of time, effort, research and money.

#### Businesses

Various Monash research projects have engaged with businesses to understand the full set of barriers to adoption of circular economy models. Three key finalised projects are:

- [Framework for understanding, measuring and communicating waste prevention](#). Prepared by BehaviourWorks for the Department of Climate Change, Energy, the Environment and Water in 2022. A project to investigate methods for measuring waste prevention, to feed into Australia's national waste reporting, and in particular, support tracking of progress against Target 2 of the National Waste Policy & Action Plan to reduce total waste generated in Australia by ten per cent per person by 2030.
- [Behavioural roadmap to circular consumption](#). A program of the three-year BehaviourWorks Consortium to transform systems of production and consumption to achieve a significant reduction in Australia's material consumption levels.
- The [Circular Economy Journey](#), a partnership between Monash University and the South East Melbourne Manufacturers Alliance (SEMMA) and funded by Sustainability Victoria. A project to: establish the extent of relevant circular economy practices in manufacturing businesses in Melbourne's south east; identify and develop practical approaches for adoption of circular economy strategies and practices; identify barrier and challenges to adopting those approaches, and develop strategies to overcome them.

The results of these three projects suggest that soft or behavioural barriers (i.e. perceived demand, organisational inertia and lack of collaborative capacity) are the primary upfront barriers for Australian businesses to consider adopting circular economy practices. 'Hard' (system) barriers like regulation, supply chains and technology became more significant barriers as committed businesses attempted (and then often failed) to implement specific solutions. They are discussed below.

#### Systemic (hard) barriers

Lack of consumer demand. Consumer concerns related to the quality and durability of recycled, repaired and repurposed items (as well as any negative stigma associated with them); an unwillingness to pay the (perceived) higher prices for such goods and services; a distrust of the CE credentials of products (including a lack of accurate measures and indicators that convey such information to the consumer); a reluctance to breaking existing consumption habits. This lack of consumer demand and interest was reported from both the consumer and business perspective.

Economic. Business lack of resources for high costs, especially when compared to linear business models; the availability and low costs of virgin materials (creating unfair competition); longer return on investment timeframes (putting the business at risk); costs associated with greater administrative burdens resulting from engaging in horizontal and vertical CE business relationships simultaneously; costs related to the separation, recycling and repair of materials (which are exacerbated by product designs and collection services that do not facilitate such processes). Such barriers are of particular concern and relevance to SMEs.

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<sup>3</sup> <https://www.monash.edu/arts/social-sciences/household-innovation-and-the-transition-to-the-low-waste-city/about>

Organisational leadership and culture. Lack of knowledge about CE business opportunities, input streams, partners and technological innovations; lack of data and evidence that demonstrate compelling business cases for CE business models; risk aversion to changing current business processes that have a track-record of working, combined with unknown returns of adopting CE business models within highly competitive business markets; poor environmental/social culture within businesses (e.g. where businesses do not see waste, environmental pollution, and resource scarcity as pressing concerns); an unwillingness to experiment or pilot new initiatives, or only incrementally.

Regulatory frameworks. Regulation, taxes and incentives that continue to favour linear business models and create an uneven playing field; outdated procurement policies that do not support circular economy approaches; greater administrative burden/red-tape linked to circular economy/green business activities (e.g. the reuse of waste); the absence or the slow development of industry standards by government.

Linear supply chain. Lack of standards, traceability and quality assurances (e.g. contamination) of circulated materials in the supply chain; impacts on brand image if other businesses in the supply chain do not perform (leading to mistrust within the supply chain); availability (and credentials of) potential supply chain partners; the need to create additional coordination, contracting, licensing, communication and distribution processes and channels within the supply chain; competing goals of different businesses; intellectual property concerns with third-party access to products.

Technologies. Absence of information-sharing platforms describing potential circular economy input streams, partners, and technologies; lack of infrastructure and innovation to support the roll-out of circular economy business models at scale (e.g. equipment for collecting, sorting, processing, and recovering material); low levels of technical expertise within private and public institutions (e.g. resource recovery infrastructure, circular economy product design and business models); challenges of integrating innovations and technological solutions across multiple businesses in the supply chain.

#### Behavioural (soft) barriers

Skills gap. Lack of experience (required knowledge and skills); disconnect between macro CSR/ ESG frameworks and practical operational practices; inability to construct business case

No imperative to change. No intrinsic motivation; no consumer pressure; no competitive pressure; no internal staff drive

Disadvantages. Upfront costs involved; competitive disadvantage

Fear. Lack of precedent (justifying / defending the decision); fear of failure; previous bad experience

Active resistance to change. Individual gatekeepers (procurement professionals); entrenched opposing practices

Entrenched practices. Head office control; formal policy prioritising other criteria; trained up the wrong way / wrong skills

External factors. Lack of portals and a singular, authoritative point of information; lack of supply options; higher cost relative to 'traditional' linear model

## SECTOR OPPORTUNITIES

Australia's shift towards a circular economy presents significant opportunities both for Australia and the wider region. Apart from the considerable environmental benefits, there is growing evidence that 'going circular' generates material economic value. The Australian economy can gain topline advantages (e.g. by offering new circular products, exporting recycles and staying competitive for an increasingly green global customer base), bottom line advantages (e.g. through higher resource productivity and better access to green finance) and mitigate risks (e.g. pre-empting more stringent global regulations and reducing the reliance on material imports, especially around critical minerals).

More research is required to validate the relationships between circular consumer behaviours and the activities of other actors in the system, to investigate the consumption role of businesses and other organisations in greater detail.

### Consumption

The research by BehaviourWorks to develop the *National Waste Prevention Framework* and *Roadmap to Circular Consumption* analysed a range of barriers that prevent individual and organisational consumers from *considering* circular consumption behaviours to present a way forward for policymakers, industry leaders, entrepreneurs and advocates, based upon behavioural science and systems thinking.

The top three recommended actions were

1. Promote borrowing instead of buying new
2. Promote second hand instead of new
3. Work upstream to ensure products are built to last

Desired behaviour	Consumption behaviour change required	Potential for government intervention
Borrow / rent item or service	Focus new behaviour change efforts on enabling and encouraging individual and organisational consumers to borrow or rent items from existing options	Build into government procurement
Source item second-hand	Continue and expand behaviour change efforts to mainstream 'buying second-hand instead of new' for individual consumers and explore scalable practices for organisational consumers	Mandate standards for quality, warranties, labelling, etc.
Buy item built to last		Mandate minimum design/import standards and adopt eco-labelling scheme Publish expected minimum lifetimes for key manufactured products at different price points and incorporate into consumer guarantees
Buy item made from circled materials		Mandate standards for quality and warranties
Keep (re)using item		Consider incentives and disincentives through tax system
Repair item		Mandate 'right to repair' Consider incentives and disincentives through tax system
Pass products on or back		Require take-back options in extended producer responsibility schemes

### Consumer trends and the opportunity for Ecolabelling

[ACRS \(Australian Consumer and Retail Studies\)](#) is a research and insights consultancy operating out of the Monash Business School, specialising in retail and consumer behaviour research. They undertake surveys and other research into the shopping preferences and behaviours of consumers, including trends, and topical issues.

For the last three years they have run an annual Sustainability Spotlight survey, which now enables review of preferences and behaviours over time. There has been remarkable consistency in results over the last three years, with only small movements that indicate consumers might:

- be more interested in durability of product
- be less interested in the carbon emissions associated with a product
- be less willing to buy repairable products
- be more likely to use own shopping bags, recycle waste and take public transport
- be less likely to value ethically and locally produced products

The 2024 report noted that over half of surveyed sustainable<sup>4</sup> shoppers personally decide a product is sustainable based on if the packaging or product is recyclable.

The use of eco-labelling, particularly of expected lifetime (durability) of all products, and repairability rating for certain product categories is an opportunity to increase circularity adoption. BehaviourWorks' [research into eco-labels](#) as part of the Waste Collaboration<sup>5</sup> found that eco-labels tend to provide information and/or purchase 'nudges' to already convinced 'green' audiences. Importantly, while eco-labels may raise awareness and create intentions to purchase more sustainable products, they will not necessarily translate to purchases.

Eco-labels can be more influential on business, though in this case labels themselves are only a visual signifier of an underlying scheme, and it is mostly the scheme characteristics that matter, including:

- the intention/objectives of the scheme should be clear and commonly valued

<sup>4</sup> Sustainable shoppers are individuals who look for sustainable products

<sup>5</sup> BehaviourWorks waste collaboration project, product labelling stream: <https://www.behaviourworksaustralia.org/major-project/waste-circular-economy-collab-stream2-effectiveness-of-product-labelling-schemes>



- criteria need to be trustworthy (accurate and defensible) and transparent
- visible information is needed at key decision points for both consumers and producers
- behaviour change beyond a niche of businesses/consumers with aligned values requires a level playing field with traditional/linear products plus some form of disruption to existing habits.
- substantial change in outcomes will only occur with sufficient market penetration.

However, in the absence of mandatory labelling requirements, there is little evidence that eco-labelling will lead to substantial market shifts/penetration. To make a real difference:

1. Labelling schemes must be trustworthy and transparent, involving accurate and defensible product evaluations based on agreed criteria and methods.
2. Product labelling criteria must be associated with tangible environmental credentials that distinguish them from other products (otherwise, any differences between certified and non-certified products may be marginal at best).
3. Information on the labelling schemes must be disseminated and visible to consumers and producers, particularly at key decision-making moments (e.g., points of sale; start of a new production process).
4. Consumers and producers must understand and value the intention and objectives of labelling schemes to encourage informed (and potentially different) production, purchasing and post-purchase choices. This means that labelling schemes must appeal to a multitude of consumer and business values.
5. Labelling schemes must be implemented in conjunction with other policy tools (e.g., mandatory labelling, competing product restrictions, procurement standards, taxes/subsidies). By themselves, labelling schemes are unlikely to make any impact on consumption or production decisions beyond those who are already environmentally-inclined.
6. Labelling schemes and certified products must achieve sufficient market penetration to remain sustainable and viable. It is therefore important for government to establish an appropriate circular labelling scheme, and mandate eco-labelling of durability and repairability.

The research also included some experimentation to investigate the circular economy characteristics that are most valued by consumers (and could be highlighted through eco-labels), and consumer willingness to pay a price premium for them. It found that price was the most important attribute in product purchase decisions. This highlights the significance of complimentary policy tools levelling the playing field, e.g. internalising costs of virgin materials. Consumers were willing to pay more for products with CE attributes, but only to an extent and dependent on the attribute itself. For example, consumers were willing to pay \$43.81 more for a pair of jeans that last five years, than for jeans that last one year. When price was removed as a factor, durability or product lifetime labelling was the most desirable circular characteristic (above recycled content, repairability, and recyclability), though all attributes had some consumer appeal<sup>6</sup>.

## Commodities

### Risks

Australia's position as a major exporter of raw materials, particularly iron ore, places it at the centre of global supply chains. This has been a cornerstone of economic stability, but evolving international developments pose both significant risks and opportunities for Australia, particularly within the context of circular economy policies.

- Declining demand from key markets, in particular China. The domestic construction slump has significantly weakened its traditional appetite for raw materials. Concurrently, it is consolidating its supply chains globally, seemingly with little regard for environmental or social standards. For example, China is ramping up its mining capacity in resource-rich regions like Africa, such as the Simandou project in Guinea, which may reduce reliance on Australian imports. This puts pressure on Australia's iron ore sector, as China may increasingly favour cheaper or more strategically aligned sources of supply.
- Regulatory drivers and international circular economy standards. International circular economy policies are placing increasing pressure on companies to comply with sustainable production methods. The EU, for instance, is focusing on resource efficiency, product lifespan extension, and closed-loop material use, which may soon become trade preconditions. Other regions, including the US and parts of Asia, are also moving toward similar standards. If Australian exports fail to meet these evolving regulatory requirements, they may face barriers to entry in key markets. Products that are seen as wasteful or produced with high environmental costs could be subject to tariffs or outright rejection
- International trends indicate a move away from traditional, linear production models in favour of circular, regenerative systems. Australia's current reliance on exporting raw materials could expose it to economic risks if these global shifts are not adequately accounted for.

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<sup>6</sup> Further information about specific consumer and business drivers/barriers to use of eco-labels is contained in the online Policy Highlights summary [https://drive.google.com/file/d/19nV758qJYK7BXQUTtU1ZC4-Cr1FtXb\\_w/view](https://drive.google.com/file/d/19nV758qJYK7BXQUTtU1ZC4-Cr1FtXb_w/view)

## Opportunities

The opportunity is to reposition commodity exports and develop new trade relationships with countries pursuing sustainability solutions.

- Critical minerals for green industries, (e.g. lithium, cobalt, nickel) to industries focusing on green technologies, such as electric vehicle production or renewable energy systems, positioning itself as a partner in these new value chains.
- Green hydrogen. European and Asian countries are increasingly looking towards hydrogen as a means to decarbonise industrial processes. Australia, with its vast solar resources, is well-positioned to become a global leader in green hydrogen production and exports, providing renewable energy solutions to countries with fewer natural resources.
- Green steel. Countries in Europe and North America are signalling strong demand for green steel, driven by carbon pricing and sustainability commitments. With the right investments in technology and circular production models, Australia could position itself as a key exporter of green steel to environmentally conscious markets. This aligns with both circular economy principles and global decarbonization goals, potentially unlocking new opportunities in sectors like automotive, construction, and heavy manufacturing

By developing industries around material recovery, recycling, and sustainable design, Australia can create new revenue streams while reducing dependence on volatile commodity markets.

By leveraging its expertise, capital, and access to potentially low-cost renewable energy (solar) Australia can develop a resilient, responsible, global supply chain aligned with circular economy principle, to serve customers seeking high standards of environmental responsibility, such as green steel and hydrogen production.

## Manufacturing

BehaviourWorks' research for the *Roadmap to Circular Consumption* undertook deep analysis, using a systems approach<sup>7</sup> to understand and prioritise actions according to their long-term ability to transform Australia's systems and production and consumption towards circularity. Analysis of the top 15 most influential behaviours revealed the following system transformation opportunities

### 1. Mandatory minimum design/import standards

Ensuring products are built to last is fundamental to the transition to a circular economy, because it underpins the majority of circular business models and responsible consumption practices. Durability is both essential to, and incentivises adoption of, business models centred around sufficiency, product-as-a-service/leasing/hiring, and take-back of products at end-of-use. It is also essential to the post-purchase responsible consumption behaviours of Keeping in use as long as possible, Making do with existing, Repairing instead of replacing, and Passing on instead of disposing.

Mandatory standards are necessary because analysis of barriers to voluntary business and consumer adoption of products 'built to last' are significant and form a negative feedback loop in the economy. Mandatory eco-design standards have been shown to work in Europe. They are in the process of being extended and provide a good template for Australia to learn from and build on.

### 2. Mandatory Extended Producer Responsibility

Incorporating reuse and repair in extended producer responsibility approaches, and mandating these approaches requires shifting from Australia's end-of-life collection 'product stewardship' model that typically funds third-party collection, to full extended producer responsibility approaches.

Extended producer responsibility puts the onus on the producer to:

- ensure there is an appropriate end-of-use/life channel for returning products or their components back into the circular economy, including prioritising designing for existing appropriate channels rather than establishing new/niche channels
- prioritise reuse/repair at end-of-use over recycling at end-of-life in designing products and collection/return systems
- provide take-back schemes for unwanted product
- pay costs for any public end-of-life collection services
- build the cost of end-of-life management into the upfront product prices.

### 3. Prioritise durability and repairability in procurement (mandate for govt, recommend for corporate)

Provision of durability / free extended or lifetime warranties and repairability/upgradeability in corporate and government procurement are priorities because of the major influence on supply that such large demand signals can have. This opportunity includes developing policies & process to prioritise durability, repairability and return of items at end-of-use/life, including potentially shifting to functional/outcome specifications, rather than specific goods or services. A focus on organisational procurement was found to have a much greater transformation potential than focusing on changing individual/personal purchasing behaviour.

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<sup>7</sup> MICMAC social network analysis metric

#### 4. Producer/Retailer buy-back or take-back schemes

Voluntary buy-back and take-back schemes by the producer and/or retailer have incredible potential to not only divert manufactured goods from landfill, but also to incentivise better design, reuse/resale, repair and dis/reassembly, and in last cases, recycling of returned products. As well as improving producer/retailer and consumer practices, take-back schemes can encourage collection service-providers to triage and salvage reusable, repairable and disassemble goods and return to producers/retailers instead of sending for recycling/landfill.

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#### Spotlight - Textiles

Research of the [MSDI Circular Economy Textiles project](#) has identified seven pathways to transition of the Australian fashion and textile sector to one that is responsible and sustainable:

1. reduce overall consumption of resources across the product lifecycle
2. ban the destruction of fashion and textile 'finished goods'
3. invest in education on responsible and sustainable industry practices
4. accelerate government sustainable procurement
5. incentivise the use of recycled, non-virgin materials
6. increase and regulate textile transparency, traceability and verification
7. increase support for the development and execution of clothing Extended Producer Responsibility (EPR)<sup>8</sup>.

As a major exporter of wool and cotton fibre, (with textiles exports of about \$7b annually) Australia could be a world leader in both ambition and achievement for the fashion and textile sector. International bodies are moving, and there is momentum building within the Australian sector for bold leadership and collective action. Designers, manufacturers and producers, retailers, consumers, reuse and recycling parties are already either engaged with, or signalling for change. The highly globalised fashion and textiles market comprises millions of producers and billions of consumers across the world placed along linear value chains in which there is limited reuse or recycling and little consideration is given to the value of resources, the environmental impact of practices, or the amount of waste generated. Textiles are an innovative and valuable resource material which should be listed alongside and prioritised with others such as food and organics, plastics, glass, paper and tyres. In Australia, the fashion and textile sector comprises diverse and disparate group of stakeholders who sit across a multi-tiered, pre- and post-consumer system. Transitioning the sector will involve all players, although there will be differing degrees of roles and responsibilities, relating to the activation pathway.

The exemplary EU Strategy for Sustainable and Circular Textiles encourages business uptake via a coherent framework and a vision for the transition of the textiles sector. Its goal is that by 2030, textile products placed on the EU market are long-lived and recyclable, and largely made of recycled fibres, free of hazardous substances and produced in respect of social rights and the environment. The strategy further notes that: "Consumers benefit longer from high quality affordable textiles, fast fashion is out of fashion, and economically profitable re-use and repair services are widely available. In a competitive, resilient and innovative textiles sector, producers take responsibility for their products along the value chain, including when they become waste. The circular textiles ecosystem is thriving, driven by sufficient capacities for innovative fibre-to-fibre recycling, while the incineration and landfilling of textiles is reduced to the minimum."<sup>9</sup>

Extended Producer Responsibility (EPR) assigns to producers financial and/or physical responsibility for products they bring to market, including their end-of-life processes, to ensure products are recycled, or repurposed responsibly<sup>10</sup>. EPR policies incentivise waste prevention at the source, promote beyond-scope eco-design, and support public recycling and materials management goals. To strengthen work currently being undertaken to scale the newly established voluntary National Clothing Product Stewardship Scheme, ("Seamless")<sup>11</sup> further government support is needed to ensure EPR policies are developed in line with core circularity principles of waste prevention, product life extension, and recycling at scale. We also endorse the introduction of a levy on all textile products brought to market. These funds will assist in resourcing the infrastructure needed for the recycling and reusing of textile products. While it may be appropriate to begin with voluntary participation, this should be regularly reviewed with an option of moving to a mandatory system to ensure participation targets are achieved.

Incentivising extension of the Use Phase of fashion and textiles with producers, retailers and consumers presents an immense opportunity for emissions reduction. For example, using a piece of clothing nine months longer can reduce its associated CO2 emissions by 27 per cent, its water use by 33 per cent, and its waste by 22 per cent<sup>12</sup>. Options include:

- Increasing public awareness of the impacts of fashion and textile production on resources via targeted education campaigns encouraging repair, reuse and reduced consumption
- Incentivising circular business models and consumer practices, including textile reuse, repair, or re-purpose.

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<sup>8</sup> Boulton, J., McCallion, A., & Dechrai, I. (2022). Textiles: A transitions report for Australia identifying pathways to futureproof the Australian Fashion and Textile industry. Monash University.

[https://www.monash.edu/\\_\\_data/assets/pdf\\_file/0006/3059394/MSDI\\_Circular\\_Economy\\_Textiles\\_Transitions\\_Report.pdf](https://www.monash.edu/__data/assets/pdf_file/0006/3059394/MSDI_Circular_Economy_Textiles_Transitions_Report.pdf)

<sup>9</sup> [https://environment.ec.europa.eu/strategy/textiles-strategy\\_en](https://environment.ec.europa.eu/strategy/textiles-strategy_en)

<sup>10</sup> OECD. (2022b). Extended producer responsibility. <https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm>

<sup>11</sup> The Australian Fashion Council launched Seamless, Australia's National Clothing Product Stewardship Scheme in 2024, with a plan to create clothing circularity by 2030. <https://ausfashioncouncil.com/program/seamless/>

<sup>12</sup> McKinsey & Company. (2020). Fashion on Climate: How the fashion industry can urgently act to reduce its greenhouse gas emissions. <https://www.mckinsey.com/~media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf>

## Building and construction

The Monash Future Building Initiative (FBI)<sup>13</sup> undertakes research into industrialised building, focusing on good design to achieve better buildings. They work with industry partners to develop high quality, efficient and human-centred creative solutions to building challenges including climate and affordability. Participating in the Building 4.0 CRC they have led and collaborated on a range of projects and have developed methods to assess the life cycle environmental impacts of transitioning from traditional to industrialised building practices. This work includes:

- the creation of multi-regional embodied GHG emissions datasets for integration into design automation platforms, facilitating informed environmental decision-making in customer-facing housing configuration web apps.
- Thorough comparative life cycle assessment (LCA) to quantify and benchmark the environmental benefits of various construction technologies, including mass timber flooring solutions, steel production methods and construction systems including tapered portal frame structures, and material upcycling and reutilisation.
- material flow analysis (MFA) to quantify waste reduction from off-site manufacturing of residential solutions, for example demonstrating a 26 per cent reduction in material waste intensity through offsite timber construction. These results are being used to assess the potential impacts of adopting upcycling technologies at the state level.

The Australian Building Codes Board (ABCB) is collaborating with Building 4.0 CRC to develop a guide for Modern Methods of Construction (MMC) to supplement the National Construction Code. This addresses regulatory barriers limiting the adoption of industrialised building, which is a key enabler of circular building practices in the built environment. These efforts align with recent regulatory changes in New South Wales, introducing embodied carbon requirements for new developments. The Monash Future Building Initiative has developed methods to assess environmental and economic impacts of various technology adoption scenarios using Environmentally-Extended Input-Output (EEIO) analysis and is advancing more comprehensive, less ambiguous approaches to quantify building circularity.

## Healthcare and clinical practice

Monash researchers participating in the Wiser Healthcare collaboration are investigating overdiagnosis and overtreatment for certain illnesses and disorders, including cancer, cardiovascular disease and musculoskeletal disorders. They are focused on transforming clinical practices through direct action and policy. An emerging area of research is [Wiser Carbon Neutral](#). Healthcare accounts for about seven per cent of Australia's carbon footprint, and within this footprint about 60 per cent is derived from clinical practices, tests and treatments. In many cases certain types of test have been found to be of little or low value.

A randomised controlled trial with more than 2,000 "high-requesting" general practices, used individualised audits to provide feedback to more than 3,000 GPs advising of their higher order rate of musculoskeletal testing compared to other GPs (i.e. requesting diagnostic imaging for patients). Over the 12 months of the trial, this intervention led to a statistically significant reduction in the overall rate of imaging requests per 1,000 consultations compared with the control group of GPs<sup>14</sup>.

Further, in mid-2024 BehaviourWorks undertook a rapid review of sustainable healthcare systems for the Transitions to Sustainable Health Systems consortium to develop a decarbonisation roadmap.

There are limited opportunities for reuse and recycling of medical products due to infection control requirements, and this suggests the opportunities for reduction rely on technical innovations, for example to reduce gases in anaesthetics and asthma inhalers, and use different input materials in single-use trays (currently mostly synthetic plastics), packaging and sterilising.

There are also opportunities to save by avoiding unnecessary and reducing low value care, such as described in the case study about imaging test requests, where the solution was simply writing directly to GPs to educate them about testing rates.

Practitioners are by nature risk averse and need to be convinced of the benefits. A recent systematic review of 21 healthcare studies (trials, time series and before/after studies) found that while 20 of the studies favoured clinician intervention (i.e. via treatment or testing) the evidence was uncertain, meaning that the intervention may not have had a justifiable beneficial outcome.

There is opportunity to undertake more of these types of investigations and interventions. At the moment there is a lack of baseline measures in the Australian context, therefore the full extent and nature of the problem is not properly quantified or understood.

The findings were grouped into four areas of intervention, presented on the next page.

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<sup>13</sup> For more information on their capability and research in sustainable and resilient building value chains, refer to <https://www.monash.edu/mada/future-building-initiative/projects/environment-and-resources>

<sup>14</sup> Effect of an Individualized Audit and Feedback Intervention on Rates of Musculoskeletal Diagnostic Imaging Requests by Australian General Practitioners, A Randomized Clinical Trial, 2022 Denise A O'Connor, et al, <https://pmc.ncbi.nlm.nih.gov/articles/PMC9449798/>

Area	Interventions and outcomes
Buildings, transport and energy	Optimising heating, ventilation and air-conditioning (HVAC) systems, transitioning to light-emitting diode (LED) lighting, and incorporating renewable energy sources significantly reduce environmental impacts Promoting low-emission vehicles and telehealth lowers the carbon footprint of healthcare operations.
Procurement, waste and circular economy	Using reusable equipment and reducing consumables in surgical settings decreases both carbon footprints and costs Recycling, waste segregation, reuse, and reprocessing are essential for minimising the environmental impact of healthcare services
Models of care, prevention and remote care and telemedicine	Reducing low-value care and implementing behaviour change initiatives effectively lower greenhouse gas emissions and waste Virtual consultations and digital health interventions reduce travel-related emissions and improve healthcare access, offering both environmental and economic benefits
Governance, implementation, and monitoring and evaluation	Leadership and policy are critical for achieving sustainability goals, emphasising the need for systemic strategies and comprehensive policy frameworks. More rigorous monitoring, evaluation, and reporting are necessary to inform policy and identify evidence gaps, ensuring the long-term success of sustainability initiatives.

Access full report at: [https://www.monash.edu/data/assets/pdf\\_file/0005/3727724/MSDI-ERS-Rapid-Review-of-Sustainable-Healthcare-Interventions-Jun24-web.pdf](https://www.monash.edu/data/assets/pdf_file/0005/3727724/MSDI-ERS-Rapid-Review-of-Sustainable-Healthcare-Interventions-Jun24-web.pdf)

## GOVERNMENT

### Australia

- Lack of overarching strategic policy. While some State/Territory governments have recently developed circular economy policy frameworks, there is an opportunity for the Australian Government to set an overarching strategic context for circular economy. This should build on the work of the Australian Government's Circular Economy Ministerial Advisory Group (CEMAG) and adopt a single categorisation of policy levers, which can be replicated at other scales. The policy framework should include meaningful targets and metrics to measure progress towards a circular economy.
  - For example, the EU has established targets such as doubling the economy's level of circularity; reducing greenhouse gas emissions by 55 per cent; increasing municipal waste recycling by 60 per cent and reducing landfill waste by 10 per cent by the 2030s.
- Heavy reliance on voluntary & collaborative approaches. Many circular economy initiatives in Australia, to date, have targeted downstream issues of waste and recycling and relied heavily on voluntary approaches, such as industry codes of practice and industry standards. Examples include the Australian Packaging Covenant and voluntary product stewardship approaches under the Recycling and Waste Reduction Act 2020 (Cth). These approaches have made important gains building coalitions of support with industry, raising awareness in the community, and directing significant funding to new technology in support of circularity. However, because they are not universal or mandated, progress has also been slow and piecemeal, and Australia is on track to miss its 2025 targets of 100 per cent of packaging being reusable, recyclable or compostable; 70 per cent of plastic packaging being recycled or composted; and 50 per cent of average recycled content included in packaging.

### Prohibitive regulation – unprocessed waste export bans

One area where existing federal regulation hinders the transition to circular economy is current waste export bans, contained in the Recycling and Waste Reduction Act 2020. Certain waste materials are banned from export unless they have been processed into value-added materials, such as cleaned and sorted plastics, or processed glass cullet. This interferes with Australia's ability to participate in global circular economy supply chains and to attract circular business onshore.

The banned materials are:

- Unprocessed glass waste (from January 2021)
- Mixed plastics (from July 2021)
- Used tyres (December 2021)
- Single polymer or resin plastics (July 2022)
- Paper and cardboard, unless processed into a value-added material (from July 2024)



Exporters need a permit from the Australian Government and must comply with specific requirements and standards to ensure that exported materials are indeed value-added.

The restrictions are part of Australia's broader environmental and waste management strategy. The goal is to promote domestic recycling industries, reduce reliance on overseas processing, and mitigate environmental harm from waste exports. As an incentive, the government provides support and investment for infrastructure development and innovation in recycling technologies to grow the domestic recycling industry.

Nonetheless, it is a significant barrier for the CE transition in Australia.

Circular Economy models heavily rely on waste material streams between supply chain actors, e.g., waste collector - recycling plant - chemical processing - component manufacturing - end product assembly. Given the Australian economy's limited size and scant manufacturing base, this requires collaboration with international suppliers. However, many of the necessary material flows do not meet current "processed materials" standards and are therefore banned. This leads to a lack of investment in product-to-product and upcycling models and stockpiling of end-of-life materials.

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#### Case study of waste ban regulation prohibiting circular practices – Circular Technologies

European start up Circular Technologies and Australian business partners, planned to invest in five processing facilities in Victoria, to enable product-to-product circularity for footwear. Despite support by Sustainability Victoria, Invest Victoria, and a European Embassy they were not able to obtain export licences. Australia does not have a significant shoe manufacturing industry so there is no domestic market for the resulting recycled materials. Without commercially viable options for selling its raw materials, the initiative could not develop a viable business plan and Circular Technologies walked away from investing in Australia.

The solution is to adjust export policies, via:

- Conditional permits that allow the export of certain recycled and remanufactured materials and components under strict environmental, reporting, and tracing standards.
- Trade agreements with neighbouring countries to establish common rules and regulations that enable regional circular supply chains.
- Strategic value chains around circular materials and green industries with long-term allies that have advanced environmental standards through
  - Bilateral Agreements and MOUs
  - Regulatory Cooperation and Standards Harmonization, incl. Mutual Recognition Agreements (MRAs) and process of mirroring regulations and standards deemed adequate, e.g., with the EU
  - Joint Research and Innovation Programs.

#### An integrated, multi-lever approach to policy setting and regulation

There are many different policy levers to support the shift to a circular economy, and they should be integrated and coordinated.

This has been recognised by leading jurisdictions in circular economy policy development and implementation – including the European Union (EU), and many of its member states – which have developed a wide range of policy approaches under the umbrella of an overarching strategic policy. Given the systemic change required to shift away from a linear model, individual initiatives lacking integration with other policy instruments, have proven less effective.

The initial discussion paper of CEMAG also recognised that a circular economy must be supported by a wide range of policy approaches, including regulation, investment and information / behavioural change.

While there are different methods of categorising and classifying different policy levers, there is clear value in aligning on a single policy lever categorisation for Australia. Accordingly, we propose six categories of policy lever to support a circular economy:

- Policy – Statements which set out objectives, targets and strategic direction for circular economy policy, and which outline how different measures will achieve these objectives.
- Direct Regulation – Formal rules developed, administered, and enforced by government. Direct regulation can prohibit harmful activities and products which cause unacceptable waste or pollution, or otherwise set standards and conditions for activities and products to minimise resource use, waste and pollution. Standards and conditions can target inputs, processes and outputs in production and services. Principles-based approaches to direct regulation can allow flexibility and provide space for innovation in meeting desired goals.
- Taxes, Tariffs, and Subsidies – Market mechanisms used to price the negative social and environmental externalities of resource-intensive, wasteful or polluting activities and products, and to value and reward more circular activities.
- Investment and Procurement – Government incentives to facilitate and steer the development of a circular economy, through industry grants and research funding. Circularity requirements can also be built into government procurement criteria.

- Information Instruments – Product labelling, product certification schemes and corporate and investor reporting requirements that provide information on key measures of circularity including resource efficiency, product sustainability and options for re-use, repair and recycling.
- Voluntary & Collaborative Approaches – Voluntary best practice standards for activities and products to minimise waste and pollution and increase resource efficiency. Industry is directly involved in developing, overseeing and monitoring the uptake of standards.

### Public policy settings

The key finding from the BehaviourWorks *Roadmap* analysis was that regulatory approaches will be crucial to accelerating the transition to a circular economy, and that overreliance on voluntary/enabling approach will stagnate necessary improvements. The most system-transforming regulatory changes required are:

- Mandating minimum design/import standards relating to product lifetimes
- Mandating true extended producer responsibility schemes, including the prioritisation of reuse and repair over recycling, in the highest prioritise
- Mandating government circular procurement policies that prioritise higher-order circular strategies, specifically ‘built to last’ criteria such as durability, flexibility, repairability and upgradeability.

As CEMAG has observed, there is an important role for regulation in strengthening standards for product design and manufacture in line with circular economy goals. Leading international jurisdictions frequently employ direct regulation targeting product manufacturers to achieve circular economy goals. This includes setting standards for product durability, reusability, repairability, recyclability, and energy efficiency and mitigating risks of dangerous chemical in products and processes; including for priority products, and packaging.

The full range of actions by Government discussed in the *Roadmap* research are shown below, ordered by their system transformation potential.

Most important	Next important	Important
Mandate minimum design / import standards that extend / maximise product lifetimes	Promote buying item built to last	Promote borrowing / renting
Mandate Extended Producer Responsibility that privileges Reuse / Repair	Mandate minimum recycled content	Promote buying item from circular materials
Mandate internal circular product procurement policies across Government	Mandate eco-labelling	Promote extended use, maintenance, upgrades
Mandate end-of-life product stewardship	Mandate ‘right to repair’	Promote sourcing second-hand
	Promote repair	Research new business models and support adoption
	Provides tax incentives for repair	Research and support industrial symbiosis
	Provide funding / support for community repair services	Mandate internal circular material procurement policies
		Provide / support ‘libraries of things’ (LGAs)

Other business policy opportunities include:

- Alignment of information instruments with international developments. Mandatory corporate sustainability reporting and sustainable finance taxonomies are widely recognised as important tools to drive improved corporate sustainability performance. When well-designed, these tools can focus company attention on opportunities to increase resource efficiency and minimise environmental harms as waste and pollution. Importantly, these tools also allow third parties, particularly investors, to use this information to inform their capital allocation and corporate engagement, and, in turn, to report transparently themselves on their portfolio alignment with sustainability goals. While the Australia Government has introduced mandatory climate risk reporting and is supporting the development of a sustainable finance taxonomy, there are immediate opportunities to broaden the scope of this reform to also include the circular economy, in line with international best practice.
  - For example, the EU Corporate Sustainability Reporting Directive requires large European companies (and non-EU companies that operate in the EU market) to report according to European Sustainability Reporting Standards. This includes a circular economy standard, which addresses resource inflows, outflows and waste. The EU Sustainable Finance Taxonomy includes an objective to transition to a circular economy and requires companies to report on whether their activities align with this objective by explaining how their activities address circular design criteria and production, circular use, circular value recovery and other matters.
- A greater role for taxation measures within an integrated policy framework. Taxation reform is widely seen as a necessary consideration in almost all circular economy initiatives in other jurisdictions and it is a powerful tool to

increase the efficacy of other policy levers noted above. Circular economy initiatives depend on extending resource utilisation or making resource repurposing more cost-effective and/or otherwise appealing than resource extraction and waste. Current Australian tax settings penalise circular economy activities, which are generally labour intensive, as opposed to use of raw materials and energy, which is undertaxed. This creates a strong disincentive for the shift to a circular economy. Addressing the structural components of labour and raw material taxation, by reducing income tax rates in conjunction with positive tax measures on raw material use and non-recyclable content to support the tax base can help to address these disincentives. For example, a reduction in income tax rates could be undertaken as part of a reconsideration of the current tax mix, whereby the current GST rate of 10% which is relatively low, by international standards, could be increased. The current 'GST-free' category could be used to encourage the goods and services that are considered necessary to promote the circular economy (e.g. repair).

- User recommendations. The *Household Innovation and the Transition to the Low Waste City* ARC Discovery project included a household participatory workshop to discuss policy implications of the research. Participants called for greater support from governments including: legislating end-of-life producers responsibility, banning/discouraging polluting products, financial incentives to consumers and producers, reporting requirements for producers, improving recycling infrastructures, market creation for recycled products, stimulating innovation in product design, changing adjacent legislations, improving information provision and product labelling, supply chain approaches and multi-level policy alignments.

### A Taxation policy pathway to Circular Economy

A team from Monash Business School's Green Lab and the Monash Sustainable Development Institute are undertaking a research project to explore taxation policy pathways to support Circular Economy in Australia. This project involves a review of CE-focused taxation measures employed in leading jurisdictions around the world, and a program of empirical research to test their applicability to an Australian context. Preliminary findings in this project suggest that there are a range of taxation measures which should be considered for adoption in Australia including:

- Zero rated (GST-free) GST treatment for reuse and repair initiatives
- Income tax offsets to encourage uptake and investment in the circular economy
- Increased Research & Development incentives for circular economy, particularly waste
- Accelerated depreciation for circular economy investments
- Extended Product Responsibility taxes, tariffs and subsidies to encourage importer and manufacturer support for circular economy.

Tax measures	Description	Examples
<b>Taxes on income, profits and capital gains</b>		
Government revenue received from taxes assessed on the actual or presumed incomes or profits of individuals and companies from all sources	<p>The existing Personal Income Tax (PIT) and Corporate Income Tax (CIT) system can be used to provide tax breaks, investment credits and rebates, including through:</p> <ul style="list-style-type: none"> <li>– Income tax credits based on: <ul style="list-style-type: none"> <li>▪ Recycled content</li> <li>▪ Extended Producer Responsibility (EPR) design criteria</li> </ul> </li> <li>– Increase in Research and Development (R&amp;D) tax incentives for CE activities</li> <li>– Accelerated depreciation on CE investments</li> <li>– Rebates for purchasing CE products (such as EVs in US) or deposit return schemes</li> </ul>	<p>Netherlands: CIT reductions for environmental investments</p> <p>China: Subsidies through tax system for recycling industries</p> <p>China: Income tax holidays for using recycled materials</p> <p>Australia: Research &amp; Development Tax Incentive</p> <p>Canada: Clean Technology Investment Credit</p> <p>Australia: Renewable Energy Tax Incentive</p>
<b>Taxes on Provision of Goods and Services</b>		
General taxes on products consisting of sales tax and goods and services tax levied regardless of whether domestic or imported and imposed at any stage of production or distribution.	<p>Taxing the use of resources at stages of manufacture to incentivise resource conservation is a central CE approach and can be achieved by:</p> <ul style="list-style-type: none"> <li>– Differential consumption tax treatment – exempt 3R (reduce, reuse, recycle) activities from GST or create a tiered tax structure to reflect resources consumed at each stage</li> <li>– Environmental (Pigou) taxes based on non-renewable resources consumed</li> </ul>	<p>Sweden: VAT reduced rate for repair industries</p> <p>China: VAT reduction on goods using 30%+ recycled content</p> <p>Belgium: Reduced VAT for repair</p> <p>Netherlands: Reduced VAT</p>

- Import tariffs and customs duties for EPR to recover cost of recycling e.g. Battery Stewardship Scheme
- Export taxes on waste to encourage domestic recycling and waste disposal

**Taxes on the Use of Goods and Performance of Activities**

Taxes on production for the issuance of a licence or permit not commensurate with the cost of the function of government and ensures recognition of ownership, or that activities are legally performed.

Taxation can be directed to capture negative externalities, including waste and lack of circularity:

- Pollution and emissions taxes or cap and trade systems
- Waste disposal taxes
- Resource extraction taxes, royalties and resource rent taxes

France: Tax by vehicle weight

Italy: Supermarket waste tax

Spain: Plastics tax

Denmark: Taxes on extraction or use of natural resources

United Kingdom: Landfill taxes

London: Road congestion taxes

**Taxes on Employers' Payroll and Labour Force**

Taxes payable by enterprises assessed either as a proportion of the wages and salaries paid, or as a fixed amount per person employed.

Reducing payroll and other taxes can help address the labour-intensiveness of CE measures. This could include exemptions for industries whose prime focus is on the 3Rs.

Netherlands: Payroll tax deduction for green R&D work

Australia: Electric Vehicles (EVs) excluded from Fringe Benefits Tax

**Taxes on Property**

Taxes that are levied for the ownership or use of immovable property such as land taxes, municipal rates, fire levies, etc.

CE involves retaining resources, as much as possible, in a closed 'loop' system. The cost of transportation of end-of life resources to the point of recycling can be an obstacle. Reducing land taxes in CE enclaves could help to shorten the loop.

China: Eco-Industrial Parks tax breaks

Singapore: Clean Tech Park

Canada: Georgetown Clean Tech Park

**MONITORING PROGRESS AND MEASURING IMPACT**

BehaviourWorks' *Framework for understanding, measuring and community waste prevention*, prepared for DCCEEW, identified several approaches to measuring circular activity of organisations and consumers, and at a range of scales. Existing ABS business surveys can be used to measure the changes in activity of businesses that provide circular goods and services (ANZSIC subdivisions 66 Rental & Hiring and 94 Repair & Maintenance and ANZSIC class 4273 Antique and used goods retailing), in turn acting as a proxy of economy-wide circularity. Metrics include the number of businesses, amount/volume of transactions, revenue, number of employees, etc, and household expenditures.

Further, it recommended regular national and state/territory reporting of the following:

**Number and size of businesses**

ABS Count of Australian Business Entries and Exits

Annual count and employee numbers (range) for businesses "Operating at end of financial year (Total)" for businesses in ANZSIC:

- subdivision 66 Rental & Hiring, categories 661 and 663
- subdivision 94 Repair & Maintenance, categories 941, 942 and 949
- subdivision 42 Other Store-Based Retailing, class 4273 Antique & Used Goods

**Value of products and services**

ABS System of National Accounts Input-Output Tables

Supply, Intermediate use, Household final consumption expenditure

- IOPG 6601 (excluding 66200010, 66400010, 66401980)
- IOPG 9401 (excluding 94120010, 94991980)
- IOPG 9402 (excluding 94991980)

**Household expenditure**

Average weekly household spending

Manually filter for relevant hire and repair HEC codes, e.g.

- Repair: 060301 (clothing/shoes), 080106 (household durables), 120203 (recreational/educational equipment), etc
- Hire 060301 (clothing/shoes), 080107 (household durables), 120202 (recreational/educational equipment), etc

- Other ABS data** More detailed breakdowns / categories of businesses and employees could be obtained from
- BLADE – Business Longitudinal and Analysis Data Environment
  - LEED – Linked Employee Dataset
- Civil sector activity could be obtained from the National Accounts Non-profit institutions satellite account
- Other sources** National Waste Prevention Framework’s Housing Activity Questionnaire, to be undertaken on a biennial basis, with one or more of the Business Activity Question Sets integrated into existing national and state business collections.

It was also recommended that the next revision to ANZSIC updates subdivisions 42 Other Store-Based Retailing and 43 Non-Store Retailing to enable a finer categorisation of second-hand retailing

Since that publication, we note the ABS has assumed responsibility for the Commonwealth Measuring What Matters Framework, in which Circular Economy metrics presented as part of the Sustainable theme.



## APPENDIX

SETTINGS FOR AN INTEGRATED SYSTEMS APPROACH TO ACCELERATE CIRCULAR TRANSITION  
UNDERSTANDING THE CIRCULAR ECONOMY JOURNEY OF VICTORIAN BUSINESSES  
WASTE PREVENTION IN MANUFACTURING AND CONSUMPTION

## Settings for an integrated systems approach to accelerate circular transition

Business & economic outcomes	Environmental outcomes	Social outcomes	Uptake and monitoring	Prioritisation	Incorporation of Aboriginal and Torres Strait Island knowledges
<b>1. Establish a clear target picture with milestones, review processes, and transparent communication. Assign responsibilities and resourcing across levels of government, allowing tactical freedom</b>					
Milestones enhance predictability, enabling businesses to invest strategically in circular innovations. Economic outcomes include increased efficiency and value retention within supply chains	Aligning milestones with biodiversity, climate goals, and waste reduction targets enables more effective water, land, and air quality management.	Transparent communication builds public trust. Clear resourcing and responsibility create job opportunities at various governmental levels	Gradual adoption, beginning with high-profile sectors. Monitor performance through annual progress reviews, tracked against environmental and economic metrics.	Sectors with the highest impact on waste reduction, resource efficiency, and local job creation	Incorporate Indigenous governance models and consultation frameworks to ensure that traditional land management practices are respected, to protect cultural and intellectual property
<b>2. Develop a Circular Economy Industrial &amp; Trade Strategy, engage partners in trade partnerships, streamline regulatory frameworks, and seek trade agreements based on joint priorities around global resilient and responsible supply chains</b>					
Boosts Australia's competitive advantage in global value chains. Businesses will face initial compliance costs but benefit from streamlined regulations and access to resilient, low-risk supply chains.	Supports climate resilience by reducing resource extraction and waste. Global supply chains will be more sustainable, minimising biodiversity and habitat destruction.	Creates sustainable employment opportunities in trade-related industries. More resilient supply chains reduce the social vulnerability of communities dependent on these industries	Measured through trade volumes in circular goods, the uptake would be driven by international agreements and the incentives provided for compliance.	Sectors that can quickly or are actively building momentum to transitioning to circular supply chains, such as electronics, textiles, and plastics.	Engage Aboriginal and Torres Strait Islander experts in discussions on sustainable resource management, and traditional practices that align with circular economy principles
<b>3. Review existing policies and regulations and develop policies inspired by best European practices. Coordinate closely with international partners. Establish a system of regular evaluations to balance Circular Economy needs, waste hierarchy, and trade considerations</b>					
Unlocks growth in sectors focused on waste management and resource recovery, reducing operational costs tied to compliance and waste disposal.	Facilitates better resource prioritisation for reducing high-value waste streams, contributing to climate goals, and preserving biodiversity.	Lowers business barriers and fosters job creation in waste management and resource recovery industries, enhancing social equity.	Allows regular evaluations of policy effectiveness and export potential. Metrics could include waste recovery rates and economic value generated from recovered materials.	High-value waste streams with export potential and high economic and environmental impact such as e-waste and plastic.	Engage Indigenous communities in the co-design of regulations for high-value waste streams that intersect with traditional lands, ensuring the protection of cultural heritage and ecosystems
<b>4. Establish a Circular Economy Standards Board, as a Commonwealth entity, similar to arrangements around building standards, to co-design voluntary standards with States/Territories, consistent implementation</b>					
Reduces regulatory complexity for businesses, leading to cost savings. Standards also create opportunities	Enable effective monitoring of circular practices, such as resource recovery and	Enhances social equity by ensuring consistent, fair regulations nationwide, benefiting	Standards could be voluntary initially but scaled up based on compliance metrics, such as the	Sectors with fragmented regulation or inconsistent	Collaborate with Indigenous knowledge holders to develop standards that reflect sustainable

for businesses to differentiate themselves by demonstrating compliance

emissions reduction, improving environmental outcomes

communities and fostering local jobs.

number of businesses adopting CE standards

performance in circular practices.

use of land and natural resources, ensuring cultural respect and ecological stewardship

**5. Set Up a Circular Production Investment Fund to support circular production and logistics projects in global value chains**

Access to capital accelerates the adoption of circular production practices, reducing costs associated with raw material procurement. This drives innovation and competitive advantage

Promotes circular production processes, reducing waste and emissions while preserving ecosystems

Job creation in green technologies and innovation hubs, particularly in rural or economically disadvantaged areas, enhances social equity

Funding disbursements should be tied to clear circularity outcomes, measured by reducing virgin resource use and waste production

Focus initially on sectors with high economic potential, such as renewable energy, sustainable packaging, and electric vehicles.

Invest in Indigenous-led circular ventures, ensuring their traditional knowledge and practices are protected and utilised in sustainable production

**6. Launch a Circular Business Incubator Fund with place-based incubators to support circular startups and foster collaboration among ecosystem stakeholders**

Incubators lower barriers to entry for startups, stimulating entrepreneurship and creating new market opportunities, reducing costs and promoting innovation.

Incubators can drive technological solutions that significantly reduce resource use and waste, improving air and water quality.

Fosters inclusive growth, with incubators supporting Indigenous and minority-owned businesses. Creates job opportunities in circular sectors, enhancing local economies.

Success can be tracked by the number of startups launched and their subsequent impact on reducing resource use or waste.

Prioritise regions with a strong entrepreneurial ecosystem or areas needing economic revitalisation.

Establish incubators with programs specifically for Indigenous entrepreneurs, ensuring their cultural heritage and ecological knowledge are integral to the business models they develop

**7. Adopt CE-Focused Public Procurement Rules, mandatory for the Commonwealth and recommended for States/Territories. Pilot a detailed approach with the Australian Defence Forces as a lighthouse project for other government areas.**

Procurement rules create a stable demand for circular products, lowering costs for businesses that adopt circular practices early

Public sector demand for circular goods sets a strong example for the private sector, driving emissions reductions and resource efficiency.

Job creation in circular product supply chains, especially if linked to local production, enhances community development

Pilot programs like the Australian Defence Forces could serve as test cases, measuring compliance, cost savings, and environmental impact.

Target sectors with large government procurement volumes, such as construction, healthcare, and defence.

Incorporate procurement standards that prioritise Indigenous-owned suppliers and products that integrate sustainable land use practice.

**8. Expand Product Stewardship Schemes: Review and strengthen current voluntary schemes, expanding mandatory stewardship to more industries beyond oil**

Expanding stewardship programs lowers raw material costs for businesses by incentivising recycling and reuse while creating new revenue streams

Stewardship programs reduce waste, improving land and water quality by diverting products from landfill

Increased engagement in stewardship programs can lead to better waste management systems, job creation, and improved community health

Scheme expansion can be measured through participation rates, waste recovery volumes, and product lifecycle analyse

Focus first on industries with a clear potential for resource recovery, such as electronics, construction, and textiles.

Engage Indigenous communities in stewardship programs related to land conservation and resource recovery, ensuring their ecological practices are respected and preserved.

## Understanding the circular economy journey of Victorian businesses

In 2022, the Monash Business School produced interviews with Victorian circular economy businesses, as part of a project in partnership with the South East Melbourne Manufacturers Alliance for Sustainability Victoria. It aimed to understand the status of circular economy adoption in Victoria's manufacturing sector.

The 25 businesses were categorised as either:

- a business with circular economy built-in from inception
- a business using 'waste' as a resource
- a business adopting circular economy into a linear business model.

### CIRCULAR ECONOMY BUSINESSES STUDIED, BY CATEGORY

Company	Industry and business operation
<b>Circular economy from inception</b>	
A.BCH	Textiles – circular fashion
Biersal Brewery	Food – brewing
BuildFit	Manufacture/Construction – validating waste into public infrastructure
Close the Loop	Sustainable/CE solutions – takeback, recovery and reuse programs
Grainstone	Food – advanced ingredients
Precious Plastic Melbourne	Plastics – machines for repurposing/recycling plastic waste, and manufacture of projects from recycled plastic
Retub	Plastics – single-use plastic reduction
Smart Recycling	Recycling and pallets – waste transformation to pallets and building products
BXB Technologies	CE park – proposed Circular Economy Park in Hastings
Textile Recyclers Australia PL	Textiles – Upcycling and recycling of clothes
Unpackaged Eco	Cleaning and personal care products – zero waste shopping
Upparel	Textiles – clothes and textile upcycling
<b>Waste as resource</b>	
Casafico	Building materials – waste processed into building products
Egans Asset Management	Furniture – sustainable office furniture
IM Group	Automotive/mechatronics – remanufactured components
Interface	Textiles – Reentry carpet take back program provides End of First Life (EOFL) solutions through reuse and processing new products
Road Maintenance PL	Construction – road construction using plastic waste and old types
<b>Adoption of circular economy into linear business model</b>	
Arrow MPS	Mechanics – machines developed for circular solutions
Busy Bee Brushware	Brushware – manufacture of industrial brushware
Fortress Resistors	Electronics – Design and manufacture of power resistors
Integra Systems	Engineering – product development and manufacture
Jardan	Furniture – manufacture
Sensient Technologies	Food – colourings and flavours
Successful Endeavours	Electronics – design and manufacture
WE-EF Lighting	Electronics – manufacturing of high-quality lighting

The analysis found common drivers, benefits, success factors and barriers, providing insight to the range of aspects required to commence and succeed in the circular economy. In particular, the dominant driver was vision and values of the owner/manager, where circularity was seen as a method for achieving sustainability.

## COMMON ELEMENTS OF CIRCULAR ECONOMY BUSINESSES STUDIED

Element	Internal	External
Adoption drivers	Owner/manager values New business opportunities Cost reduction	Customer demand Competitive distinction Push from government
Benefits	Upscale themselves Economic reward Better culture	Marketing and branding Better product Improved local supply
Critical success factors	Top level leadership Viable business model Digitalisation	Collaboration with suppliers Knowledge sharing Changing the mindset of suppliers and customers
Barriers	Competing priorities Investment constraints Operating costs	Capturing waste streams Social stigma No centralised information platform Policy – lack of policy support, outdated legislation, difficulty in getting grants

The interviewees made recommendations for other businesses seeking to adopt circular economy practices:

- Update process vision to build circularity (including repurposing, or recycling) into the product
- Extend circularity to the Supply Chain Level
- Redesign the business model - Take a systems approach and build circularity into the whole supply chain.
- Be part of circular economy value chain and ensure that there is financial viability to the business model.
- Ensure visibility by being transparent and genuine, and demonstrate to others what you do in the Circular Economy space
- Communicate your Understanding of circular economy value creation to help other people understand the value of what they are contributing to
- Be an active contributor to circular economy ecosystems through networks of like-minded communities and engage with others on circular economy best practices.

Further analysis of three of the businesses, which all used wood, found that circular economy adoption practices occurred because of the soft factor driver of the leaders' values, vision and openness to innovation, which, in a regulatory void, eventually overcame hard-factor barriers of process development, supply chain capability and customer behaviours at end of product life.

Collaboration across the supply chain including with other value capture companies is essential. A next-generation program was co-designed with local government, businesses and business associations to raise awareness of Circular Economy principles and practices and facilitate adoption, noting that they might have different drivers. These next-generation participants reported an average waste reduction of 29 per cent, which translated to an annual decrease of more than 1.2 metric tons of waste per full time equivalent employee. Crucially, for programs to lead to immediate improvement, they must be matched to businesses and be tailored to the specific business context.



### Waste prevention in manufacturing and consumption

Research undertaken by BehaviourWorks to produce the *Roadmap to Circular Consumption* engaged with over 110 Australian circular economy stakeholders across the public, private, civil and research sectors, to identify specific opportunities aimed at narrowing and slowing resource loops in production and consumption (i.e. reducing demand for materials and products, and extending the useful life of products and components), to increase resource productivity and reduce material consumption. (refer chart over page).

Insight into *organisational* consumption and disposal practices was very limited, compared to individual consumers, despite greater scale. Individual consumers contribute 18 per cent of Australia's overall waste generation, while commercial/industrial waste accounts for 27 per cent of Australia's total waste. Greater understanding of organisational consumption is an opportunity to circularity transformation.

Core Consumption Behaviours

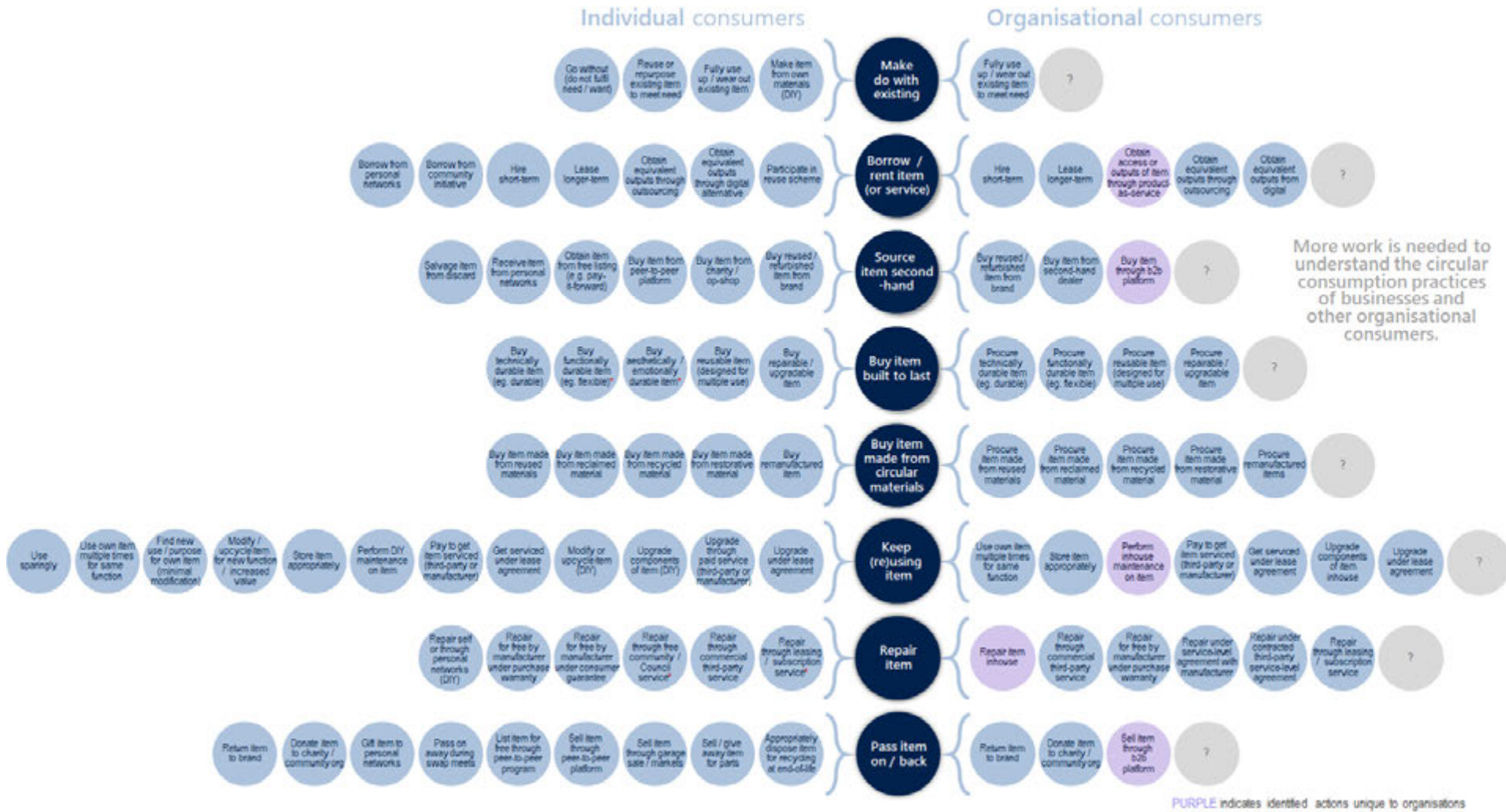
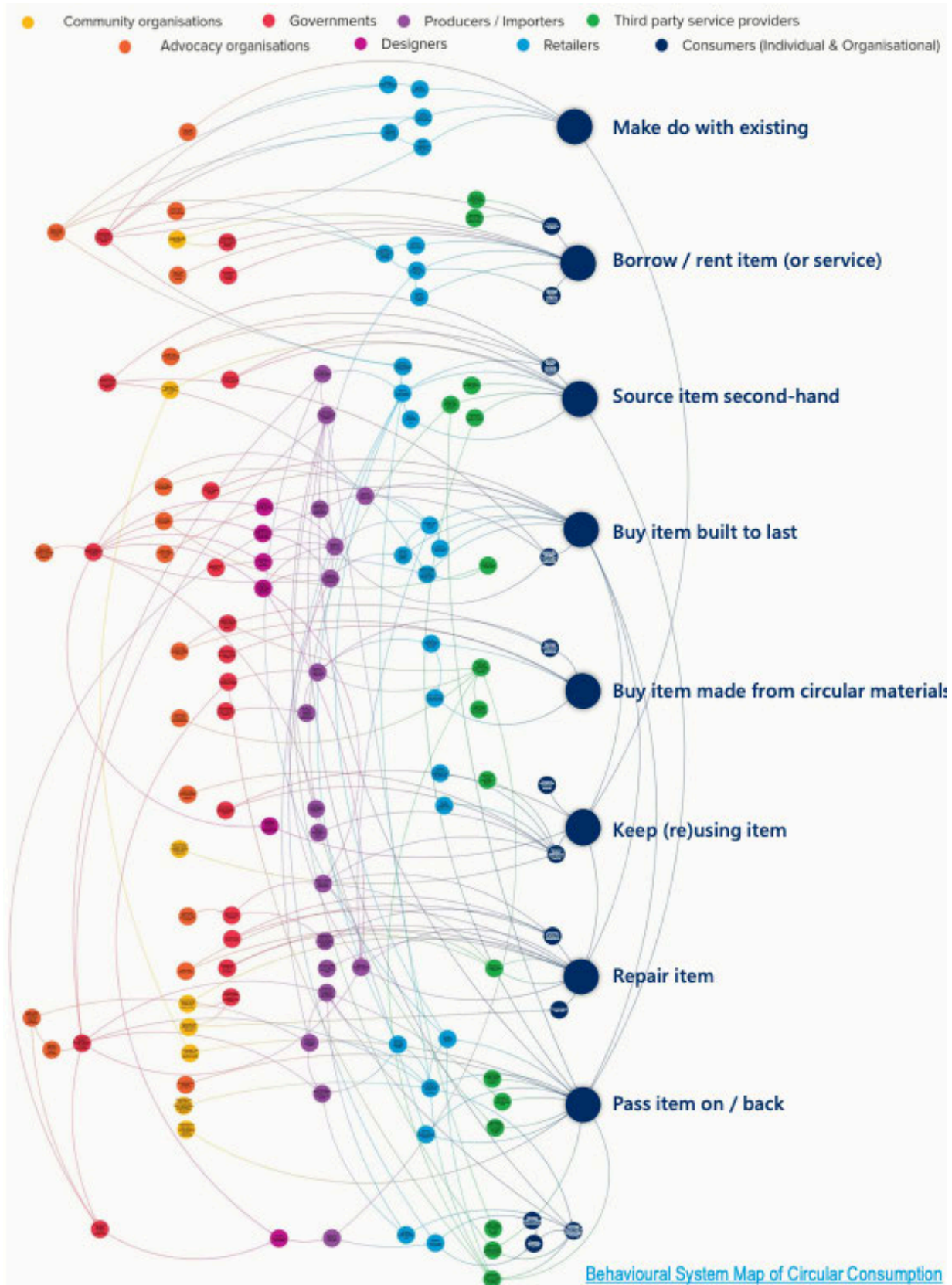


Chart reproduced from: Macklin J, Jungbluth L & Borg K (2023) Behavioural roadmap to circular consumption, p11. Prepared for the Responsible Consumption Mission collaboration. BehaviourWorks

Beyond simple consumer opportunities, the *Roadmap* research included governments, designers, producers/importers, retailers, third-party service providers, and the community/civil sectors. In total, 129 ideal circular practices (opportunities) were identified (and are listed over the page). The dynamics between these opportunities are presented in an [interactive system map](#) (screenshot below) in the Roadmap showing which user behaviours are contingent on, or enabled by up- and down-stream actions, and which business actions require compliance by consumers to produce circular outcomes, and which do so independent of user behaviours.





## Behaviours that contribute to circular consumption, and their system influence

A total of 129 behaviours were identified and included in the [online Behaviour System Map](#). These behaviours are presented here according to actor, ordered by their relative 'system influence' score (in brackets). The 20 with the highest system influence are in purple. Those without measurable system influence are shown in grey. (An influence score of zero does not mean the behaviour has no impact on material footprint.)

### Consumers

- Pass products on or back for next use when no longer wanted (0.238)
- Responsibly dispose / drop off / take back items for disassembly / recycling (0.203)
- Buy item built to last (0.176)
- Buy item that is recyclable (0.138)
- Repair item that has broken or underperforms (0.031)
- Learn repair skills (0.013)
- Make do with existing / without acquiring an(other) item (-)
- Borrow / rent item (or access through service) instead of acquiring an(other) item (-)
- Source item second-hand instead of buying new (-)
- Buy item made from circular materials (-)
- Continue using item (as is, or with changes) for extended time (-)
- Lend own item to others (-)
- Perform maintenance on item to increase longevity (-)
- Store item well to increase longevity (-)
- Organisational consumers**
- Prioritise durability / extd warranties / reparability in procurement (0.461)
- Prioritise recyclability in procurement (0.288)
- Prioritise renting over purchase in procurement (-)
- Prioritise purchasing secondhand over new in procurement (-)
- Prioritise circular materials in procurement (-)

### Designers

- Design item to be affordably repairable / upgradable (0.292)
- Design item to be durable (technically, functionally, emotionally) (0.257)
- Design item for multiple / flexible use (0.191)
- Design software that is upgradable (0.191)
- Design item for recyclability (0.134)
- Standardise design for accessories (eg. universal charging, etc) (-)

### Producers

- Voluntarily participate in EPR (0.332)
- Build costs of recycling / disposal into product prices (0.317)
- Make item built to last (Producers) (0.274)
- Provide digital passports for products (0.221)
- Import items built to last (Importers) (0.208)
- Make item recyclable (Producers) (0.193)
- Recover parts / components for repair or remanufacture (0.111)
- Repair / refurbish broken used products (0.111)
- Provide free extended / lifetime warranties (0.098)
- Provide parts, tools, instructions, information (0.047)
- Honour warranties for products repaired by third parties (0.031)
- Build in self-diagnosis tools to detect faults (Producers) (0.013)
- Provide free / paid repair services (0.013)
- Establish industrial symbiosis arrangements (-)
- Make item using circular materials (Producers) (-)
- Onsell working used products (-)
- Provide maintenance / upgrade services (-)
- Repair, recondition, refurbish and resell returned goods (-)

### Retailers

- Provide 'true' buy-back or take-back schemes or incentives (0.376)
- Voluntarily participate in EPR (0.332)
- Sell item built to last (0.306)
- Sell item that is recyclable (0.285)
- Take old item when delivering new (0.214)
- Provide / sponsor dedicated resale platforms (0.162)
- Advertise item built to last (0.126)
- Offer free extended / lifetime warranties (0.126)
- Provide info on circular credentials (eg. expected lifetime, spare parts, etc) (0.126)
- Adopt business model involving reselling item (-)
- Adopt new business models around retaining ownership (-)
- Adopt new advertising models (eg. avoid seasonal, sales, etc) (-)
- Adopt 'sufficiency' business models (-)
- Advertise borrowing options (-)
- Advertise item made from circular materials (-)
- Advertise second-hand item (-)
- Offer item through leasing / PaaS (-)
- Offer less / better products (-)
- Offer return / swap schemes (-)
- Price for 'everyday' value instead of end-of-season sales (-)
- Promote classic pieces over seasonal trends (-)
- Provide info on maintenance and life extension at point of sale (-)
- Provide maintenance / upgrade services (-)
- Resell working used products (-)
- Sell item made from circular materials (-)
- Take back products (-)

### Third party service providers

- Provide testing / certification (0.164)
- Collect / salvage items and pass on / onsell for repair / reuse (0.162)
- Provide cleaning / data wiping assurance / services (0.162)
- Provide delivery + logistics services (0.162)
- Provide peer-to-peer sales platforms (0.162)
- Take old item when delivering new (0.162)
- Collect / salvage components and pass on / onsell for refurbishment (0.076)
- Provide repair services (0.013)
- Collect / salvage item and onsell for material recycling (-)
- Collect / salvage item and pass on / onsell for repair / reuse (-)
- Collect waste material from the environment (-)
- Provide cleaning services (-)
- Provide facilitated peer-to-peer sharing services (-)
- Provide maintenance / upgrade services (-)
- Provide peer-to-peer sharing platforms (-)
- Sort and mechanically recycle / reprocess materials (-)

### Community sector

- Partner with business to accept unsold items (Op shops / Community groups) (0.257)
- Accept donations of goods from businesses (Op shops / Community groups) (0.162)
- Accept donated goods from households for resale (Op shops) (0.162)
- Provide repair education (Repair cafes) (0.016)
- Provide free repair services (Repair cafes) (0.013)
- Expand to include maintenance & upgrades (Repair cafes) (-)
- Sell secondhand goods (Op shops) (-)
- Provide 'libraries of things' (-)

### Environment / Civil society organisations

- Advocate for privileging Reuse / Repair in Extended Producer Responsibility (0.723)
- Advocate for mandatory minimum design / import standards (0.667)
- Advocate for mandatory end-of-life product stewardship (0.438)
- Rate reparability of products (0.206)
- Promote passing on (0.162)
- Promote buying item built to last (0.126)
- Rate durability of products (0.126)
- Advocate for mandatory 'right to repair' (0.039)
- Promote repair (0.029)
- Advocate for new circular business models (-)
- Promote 'making do' (-)
- Promote borrowing / renting (-)
- Promote buying item from circular materials (-)
- Promote extended use, maintenance, upgrades (-)
- Promote peer-to-peer sharing (-)
- Promote sourcing second-hand (-)
- Collect waste material from the environment (-)

### Government

- Governments mandate minimum design / import standards that extend / maximise product lifetimes (1.000)
- Mandate Extended Producer Responsibility that privileges Reuse / Repair (0.635)
- Mandate internal circular product procurement policies across Government (0.391)
- Mandate end-of-life product stewardship (0.302)
- Promote buying item built to last (0.126)
- Mandate minimum recycled content (0.091)
- Mandate eco-labelling (0.082)
- Mandate 'right to repair' (0.034)
- Promote repair (0.029)
- Provides tax incentives for repair (0.029)
- Provide funding / support for community repair services (0.022)
- Promote borrowing / renting (-)
- Promote buying item from circular materials (-)
- Promote extended use, maintenance, upgrades (-)
- Promote sourcing second-hand (-)
- Research and support adoption of new business models (-)
- Research and support industrial symbiosis (-)
- Mandate internal circular material procurement policies (-)
- Provide / support 'libraries of things' (Councils) (-)

Chart reproduced from: Macklin J, Jungbluth L & Borg K (2023) [Behavioural roadmap to circular consumption](#). Prepared for the Responsible Consumption Mission collaboration, BehaviourWorks

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