Australian Government
Productivity Commission

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Australia's circular economy: unlocking the opportunities

Inquiry report overview

No. 107 | 22 August 2025

The Productivity Commission acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to their Cultures, Country and Elders past and present.

About us

The Productivity Commission (PC) is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long-term interest of the Australian community.

The PC's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

For more information, visit the PC's website: www.pc.gov.au

ISSN 1447-1337 (online)
ISSN 1447-1329 (print)
ISBN 978-1-74037-816-1 (online)
ISBN 978-1-74037-815-4 (print)

An appropriate reference for this publication is:
Productivity Commission 2025, *Australia's circular economy: unlocking the opportunities*, Inquiry report no. 107, Canberra

Publication enquiries:
Phone 03 9653 2244 | Email publications@pc.gov.au

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Full report available from https://www.pc.gov.au

Overview

Key points

- **A circular economy aims to meet human needs with fewer and more sustainable materials, reducing the environmental impacts and costs of economic activity.**
  - Circular activities include designing products to use less materials, extending product lifespans via reuse and repair, and recycling and recovering materials to reduce waste.
  - The benefits of circularity include more efficient use of the planet's finite stock of natural capital to support economic and productivity growth; reduced harms to the environment, climate and biodiversity; and improved social outcomes such as health, amenity and intergenerational equity.
  - Some circular activities reduce materials use in ways that simultaneously benefit the economy, the environment and society. Others have trade-offs, such as lowering materials use but increasing carbon emissions (for example, if recycling requires transporting waste long distances).

- **Despite some uptake of circular economy opportunities in Australia, overall progress has been slow.**
  - Barriers to adopting circular economy opportunities include high costs; prescriptive, outdated or inconsistent regulations; coordination challenges and difficulties diffusing circular innovations; and limited practical information on circular opportunities.

- **Circular economy-related policies in Australia are in early stages of development, but in several areas are evolving rapidly.**
  - Government policies related to materials productivity have traditionally focused on recycling. However, governments are increasingly focusing on earlier stages of the product life cycle.
  - All levels of government have recently increased focus on policies that foster circular practices and reduce materials use. For example, actions already underway include reducing regulatory barriers to prefabricated housing and recognising the carbon benefits of biomethane in Australia's carbon reporting system.

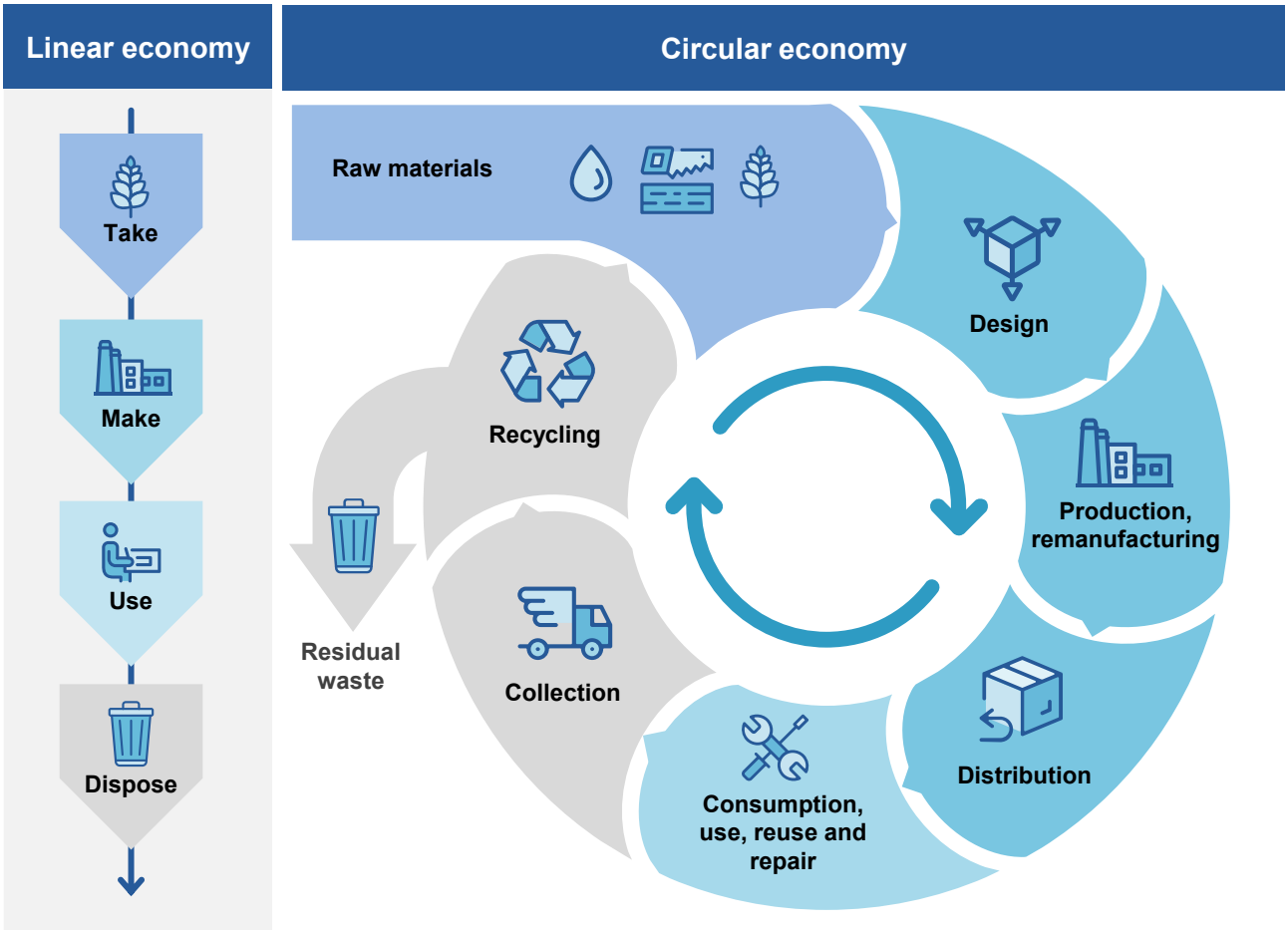
- **The Productivity Commission recommends governments take further action to improve materials productivity in ways that benefit the economy and environment across three broad areas:**
  - streamlining and harmonising regulations to encourage businesses to adopt innovative technologies and practices, while protecting the environment and human health
  - strengthening obligations for businesses that supply products with high-risk or high-value waste streams, such as small electronics or small-scale solar photovoltaic systems, through product stewardship
  - promoting circular activities and innovation through programs and services that facilitate coordination, collaboration and capacity building.

- **The Australian Government should develop an outcomes framework that connects each circular economy policy action to its related economic, social and environmental goals. This will support effective implementation, monitoring and evaluation of circular economy reforms**.
  - The Australian Government should use the outcomes framework to identify areas lacking metrics or data – such as sectors targeted for circular design policies – and develop a metrics and data collection strategy to close these key data gaps.

A circular economy uses materials in more sustainable and efficient ways. Economies have typically adopted a linear 'take, make, use, dispose' model: raw materials are extracted, transformed into products, consumed, then disposed of as waste. By contrast, a circular economy aims to meet human needs with fewer materials, reducing the environmental impacts and costs of economic activity.

Circular economy activities can occur throughout the product life cycle and include: designing products to use less materials (narrowing material loops); extending the time that products are consumed via reuse and repair (slowing material loops); and recycling and recovering materials (closing material loops) (figure 1). A more circular economy can be a more productive economy. With circular economy practices, we can more efficiently use the planet's finite stock of natural capital to support our growing population and economy. They can also reduce the harms to the environment, the climate and biodiversity associated with producing and consuming things. This in turn has benefits for society, such as better health and amenity, and fairer outcomes between generations, including by conserving resources and protecting environmental assets to support future economic activity.

Figure 1 – Comparing the circular and linear economies



Circular economy practices are not new in Australia. For tens of thousands of years, Aboriginal and Torres Strait Islander people have held deep cultural, social, environmental, spiritual and economic connections to Country. These knowledges and practices have sustained the health of Country. Some governments have policies that promote the application of Aboriginal and Torres Strait Islander knowledges and support participation in circular economy opportunities in ways that benefit communities and respect cultural and

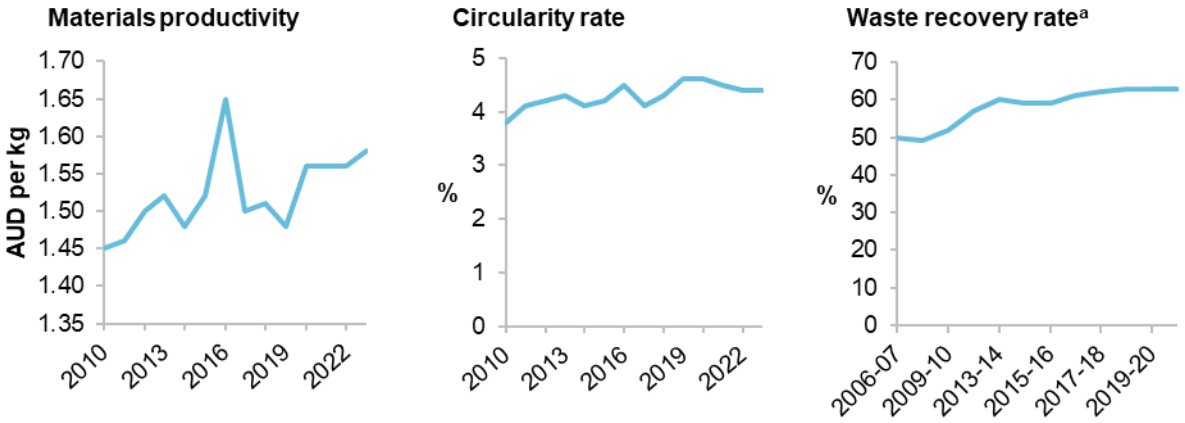
intellectual property rights. However, in practice, governments have some way to go on enabling true partnerships to achieve these aims and to enable economic development opportunities.

Australia's progress towards a more circular economy

Australia's materials productivity, circularity rate and waste recovery rate have increased slightly over the past decade, but progress has been slow (figure 2).[1] Australia's materials productivity of US$1.10 per kg lags the OECD average of US$2.50, but this is largely due to the dominance of materials-intensive sectors in the Australian economy. Materials productivity within sectors in Australia is on par with other OECD countries such as Japan, the Netherlands and Canada. This illustrates the limitations of relying on aggregate metrics based solely on the total weight of materials used and consumed to identify opportunities to improve materials productivity and effectively measure progress.

Conventional productivity measures often do not fully reflect the important role of materials in the Australian economy. For example, the Australian national accounts focus on labour, capital and multifactor productivity and do not explicitly report on materials productivity. Also, Australia's productivity measures typically do not capture the major impact that the depletion of natural capital (such as minerals, water and biodiversity), or its capacity to provide ecosystem services, can have on future growth.

Figure 2 – Circular economy indicators in Australia



a. Waste recovered for recycling, reuse or energy; data unavailable for 2007-08, 2011-12 and 2012-13.

Some households and businesses have adopted circular practices for financial or commercial reasons. For example, households can save money by repairing or reusing objects until the end of their life rather than replacing them (slowing loops). And businesses can reduce their input and waste disposal costs by designing and manufacturing products that use less materials (narrowing loops). Households and businesses weigh these potential savings against the costs of circular practices, such as repair costs or the time and investment needed to change production processes or business models.

Households and businesses have also incorporated sustainable practices into their activities out of concern for the environment and future generations, and in response to changing societal expectations. A 2024

[1] Materials productivity is the amount of economic value (measured by GDP) generated per unit of materials used (measured by the weight of domestic materials consumption). The circularity rate is the proportion of non-virgin or recycled materials used against overall materials used. The waste recovery rate is the proportion of waste that is diverted from landfill and reused, recycled or used in waste to energy activities.

consumer survey found that 96% of respondents engaged in at least one sustainable practice in the last three months, though price and quality continue to be the top drivers of purchases. Ninety-seven per cent of the ASX100 companies reported on their sustainability performance in 2024 and climate-related financial disclosures have been mandatory for large companies since January 2025.

Circular economy-related policies in Australia are in early stages of development, but in several areas are evolving rapidly. Most governments have recently introduced, and are continuing to develop, policies and reforms that promote greater circularity in different parts of the economy.

All levels of government have policies that support the circular economy.[2] Broadly, the Australian Government is responsible for: national legislation, strategies and policy frameworks including international commitments (such as climate change); tax settings; research and development; international trade; and matters of national environmental significance. It also provides national leadership on initiatives that span jurisdictions or industries. State and territory governments have responsibilities for: waste management and resource recovery; infrastructure development and essential service delivery; environmental policy; and the enforcement of environmental regulations. Local governments provide waste management services, manage local infrastructure and promote awareness among residents (such as how to correctly sort waste). All levels of government provide financial incentives for circular activities through means such as direct funding or sustainable procurement policies.

Government policies related to materials productivity have traditionally focused on recycling. However, governments are increasingly focusing on earlier stages of the product life cycle, implementing policies that reduce materials use or its impacts on the environment. Many of these initiatives are still in their early stages. At a strategic level, the Australian Government's 2024 *Australia's Circular Economy Framework* seeks to prompt action across the whole product life cycle and highlights the important role of national policy leadership in Australia's transition to greater circularity.

Addressing barriers to circularity

Households and businesses can face barriers to taking up circular practices. Some circular practices are costly to adopt, requiring investment in new technology, paying for different inputs or transport, or increasing the scale of operation. A lack of information, or prescriptive, outdated or inconsistent regulations can also prevent businesses from implementing more circular practices. Further, many circular economy activities require coordination between and across businesses, governments, community groups and households. Without this, it can be difficult to build connections between relevant stakeholders and share knowledge about best practice.

Governments can support progress by ensuring regulations adequately protect the environment and human health without discouraging businesses from adopting newer or less widespread technologies and practices. Governments can also provide information and help stakeholders to coordinate. However, governments should also be mindful that some circular practices come with trade-offs. For example, even with the right

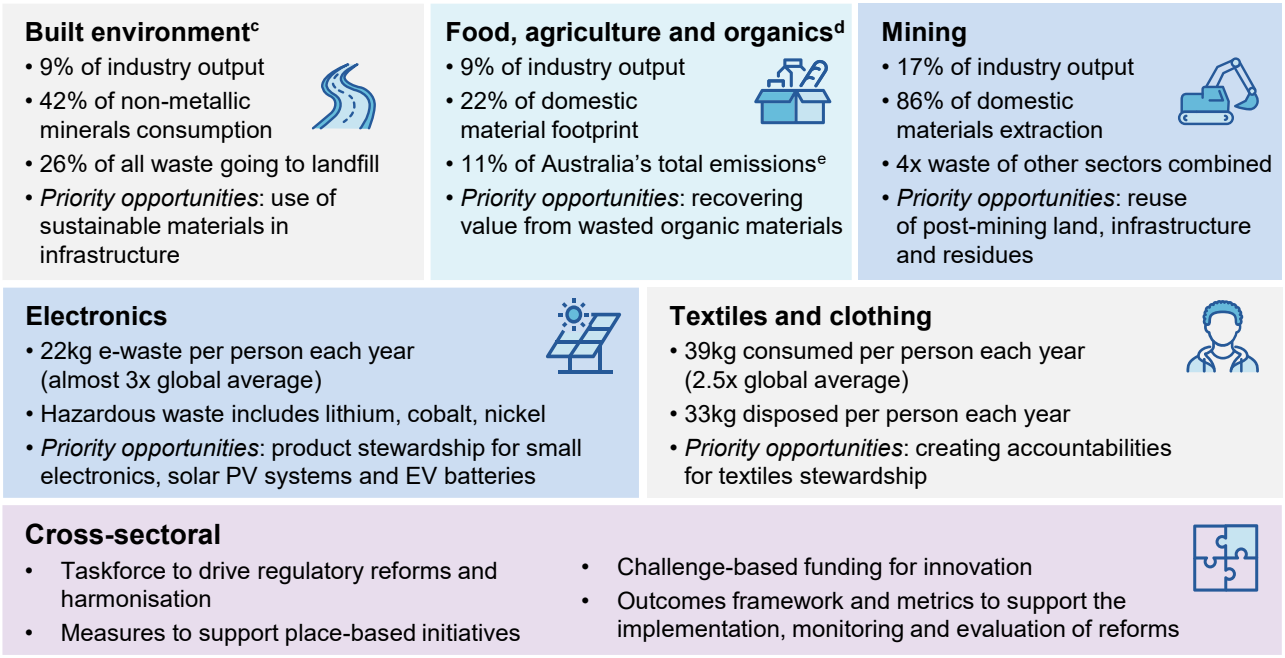
[2] Some policies directly target materials use and waste, such as waste levies on landfill. Others are aimed at reducing environmental impacts more generally and encourage greater circularity where goals are complementary, including climate change policies (such as the Renewable Energy Target, Safeguard Mechanism, Australian Carbon Credit Unit Scheme, Capacity Investment Scheme and New Vehicle Efficiency Standard), water policy (such as the National Water Initiative) and sector-specific policies (such as in construction and mining). Several of these policies aim to put a price on the environmental costs associated with waste or, more generally, on emissions and other impacts.

government policies in place, some circular opportunities may still be too costly for businesses and households to take up.

The Productivity Commission identified opportunities to improve materials productivity in ways that benefit the economy and environment in five sectors: built environment; food, agriculture and organics; mining; electronics; and textiles and clothing. These opportunities were identified based on the environmental and economic significance of the materials involved and how readily they can be applied in Australia and driven or implemented by government (figure 3). Some of these opportunities also relate to the delivery and management of essential service sectors such as water and energy.

The PC also identified opportunities that span multiple sectors across the economy: a taskforce to drive regulatory reforms and harmonisation; challenge-based funding for innovation; measures to support place-based initiatives; and an outcomes framework and metrics to support the implementation, monitoring and evaluation of circular economy reforms. These are relatively low-cost, high-impact initiatives and changes that could help enable circular economy activities across a range of contexts.

Figure 3 – Priority opportunities explored in this report[a,b]



a. Statistics show contribution and impacts in Australia. **b.** Industry output statistics are industry value added for 2023-24. **c.** Built environment statistics are for the construction sector. **d.** The food, agriculture and organics sector is comprised of the following subsectors: agriculture; aquaculture; forestry and logging; fishing, hunting and trapping; agriculture, forestry and fishing support services; food product manufacturing; beverage and tobacco product manufacturing; grocery, liquor and tobacco product wholesaling; food retailing; and food and beverage services. **e.** Emissions statistics are for direct (scope 1) emissions.

The PC's recommendations seek to complement existing government activities. During this inquiry, governments have taken action to reduce regulatory barriers to prefabricated housing, recognise the carbon benefits of biomethane in Australia's carbon reporting system and increase transparency in business sustainability through mandatory climate-related financial disclosures. They have also undertaken reviews. For example, the Recycling and Waste Reduction Act Review has been tasked with making recommendations to improve the efficiency and impact of the Act in addressing current and future circular economy needs, resource recovery and waste challenges.

This report also reiterates recommendations from previous PC reports that would promote greater circularity. For example, the PC's Right to Repair inquiry recommended competition, consumer protection and intellectual property reforms to increase consumers' ability to access competitive repair services for products such as cars, agricultural machinery and small electronics.

This report also identifies ongoing and future policy opportunities and challenges for further government attention.

Streamlining regulations to encourage circular activities

Circular economy opportunities span multiple sectors, locations and processes. Businesses pursuing these opportunities are often affected by many regulations such as health, environmental and planning rules.

Regulations can protect us from adverse outcomes and engender community trust. But some regulations and policies favour linear processes or limit the adoption of circular practices. Updating these would level the playing field for newer or less widespread technologies and practices that improve materials productivity.

Governments should pursue opportunities to streamline regulations and encourage business to adopt innovative technologies and practices in three areas.

- **Reducing overly restrictive standards and specifications relating to infrastructure construction.** This could provide access to lower cost, better performing and more sustainable materials**.** The benefits could be significant. In the next four years alone, investment in future public infrastructure is expected to total $270 billion and efficient net zero transition policy developments are likely to present opportunities for less emissions intensive construction materials. Australian governments need to form a definitive, consistent position on which standards or specifications are too conservative or outdated, and where changes will have the biggest impact. To this end, the Australian, state and territory governments should set up a working group to undertake a staged stocktake and assessment of standards and specifications, including Australian Standards and state infrastructure technical specifications. The assessment should shortlist changes to standards and specifications that could significantly increase the uptake of sustainable materials in infrastructure without compromising safety. These may include replacing prescriptive standards and specifications with performance-based criteria or harmonising standards and specifications across states and territories.[3]
- **Reforming uncertain and restrictive regulations governing the production and use of materials derived from wasted organic material (such as biochar and compost).** This could reduce reliance on virgin materials in applications such as fertilisers and result in environmental and/or economic benefits from nature regeneration. The Australia New Zealand Biochar Industry Group estimates that Australia has an annual biochar production potential of up to 30 million tonnes by 2050, up from a domestic production of approximately 20,000 tonnes in 2020. However, regulatory gaps create substantial uncertainty for biochar users and investors and are limiting uptake. State and territory governments should develop dedicated regulatory pathways that outline the requirements for organic waste to transition into saleable materials, beginning with biochar.
- **Revising regulations affecting mine closure and transition to make it easier to repurpose mined land and infrastructure for a broader range of uses (such as clean energy projects), and to reuse**

[3] Reforming standards and specifications for infrastructure would build on reforms already underway to reduce regulatory barriers to prefabricated construction. The PC has previously estimated that these reforms could contribute $2.9–5.7 billion to GDP by reducing build times and costs. Removing barriers to prefabricated construction could improve materials productivity through on-site waste reduction and enabling design for disassembly, which can make it easier to repair and refurbish dwellings.

mining residues. With around 240 Australian mines expected to end their economically productive life between 2021 and 2040, the economic, social and environmental benefits of greater flexibility in the repurposing of mined land, infrastructure and residues could be substantial.[4] To enable innovative post-mining land uses that have broader benefits for the community, state and territory governments should review their regulatory frameworks and processes that guide mine closure and transition. The reviews should identify processes that could better accommodate repurposing mined land and infrastructure without compromising broader regulatory objectives. A recent NSW parliamentary inquiry into beneficial and productive post-mining land use made similar recommendations for NSW mines.

Reducing (and where possible avoiding) unnecessary inconsistencies in regulations across jurisdictions promotes circularity by reducing costs for businesses operating across state and territory borders. Different settings for different jurisdictions can be justified where local environments, activities and preferences differ. But in other cases, jurisdictional regulations could be harmonised – particularly where the differences between states and territories are definitional or administrative, rather than substantive or relating to outcomes. Harmonising administrative requirements reduces the regulatory burden on businesses with national operations and reduces frictions for businesses deciding where or whether to expand.

Examples of potentially unnecessary inconsistencies in standards and regulations across states and territories include:

- differences in specifications on allowable content for recycled materials in infrastructure construction projects, even where standards are based on the same data and industry standards. For example, New South Wales's specification for allowable recycled crushed glass as granular base and subbase in road pavement is 10%, whereas in Victoria it is 5–10% for granular base and 15–50% for granular subbase
- inconsistent waste classifications, including for organics, e-waste and products made using recycled waste. For example, over 20 different regulations govern the classification, transport and management of plastic waste in Australia.

A taskforce to drive regulatory reforms and harmonisation

To support the transition to a circular economy, the Australian Government should set up a Circular Economy Regulatory Reform Taskforce with state and territory governments. While governments are already harmonising some regulations, a taskforce with dedicated resources and ministerial authorisation would strengthen governments' capacity to reform and harmonise regulations where it would have the largest benefits. To operate effectively, the taskforce should meet regularly, respond to emerging issues, consider circular economy issues from a range of portfolios, and make regulatory reform recommendations that balance broader government objectives and specific regulatory outcomes.

States and territories are considering developing their own product stewardship schemes in the absence of a national scheme. For example, New South Wales has committed to introducing Australia's first state-based, mandatory product stewardship framework for battery products, including small electronics, and some states and territories are considering similar legislation. Without coordination across jurisdictions, these state-based efforts risk further fragmenting the regulatory environment. The taskforce would enable governments to agree on a core set of design features that provide consistency, such as consistent definitions of product scope, clear performance targets for collection and recovery, nationally aligned compliance standards, nationally transferable scheme registration requirements, and shared data and reporting requirements. This

[4] For example, the former Rhonda Colliery mine in Lake Macquarie, New South Wales is being transformed into a motor park and tourist destination. The NSW Government indicated that this will create more than 450 jobs during construction and 229 permanent roles.

would reduce the risk of problems associated with misaligned state action that have arisen from other schemes (such as container deposit schemes).

Product stewardship for high-risk, high-value products

Regulated product stewardship schemes require businesses who make, sell or import products to contribute to the cost of activities that reduce waste throughout the product life cycle (such as redesigning products and funding infrastructure to enable recycling or reuse). However, given the costs of establishing, operating and complying with regulated product stewardship schemes, they should be reserved for products with particularly high-risk and/or high-value waste streams, and only proceed where there is analysis demonstrating they would have net benefits.

There is mounting evidence the Australian Government should progress a national product stewardship scheme for small-scale solar photovoltaic (PV) systems. Australia's clean energy transition is rapidly increasing the amount of waste from electronic products, such as solar PV systems and electric vehicle (EV) batteries, and creating an emerging issue for resource recovery and environmental management. The Australian Government has commissioned analysis that estimates a national product stewardship scheme for small-scale solar PV systems could have a net economic benefit, in present value terms, of $7.3 billion. The Australian Government should also analyse the net benefits of national product stewardship for EV batteries.

The fast growth in small electronics in Australia and problems associated with incorrect disposal (such as fire risks) also requires urgent attention. New South Wales and other states are progressing state-level product stewardship schemes for battery products including small electronics. Given this, the Australian Government should assist and work with jurisdictions to develop and implement a national framework that ensures a consistent approach to small electronics product stewardship across states and territories.

For products with less hazardous waste streams and where recent international policy and standard developments could drive increased circularity of products supplied to Australia, the (current) balance of costs and benefits may not justify immediately introducing a regulated approach to product stewardship. Governments should still, however, support the transition to a circular economy for these products through graduated measures, monitoring international policy and market developments, and by improving the evidence base. For example, the Australian Government should introduce enhanced monitoring and public transparency measures to create greater accountability for textiles businesses to reduce waste and improve materials productivity.

Coordination, collaboration and capacity building

Coordination and collaboration across business, community groups and government (such as exchanging materials, knowledge and learnings) are often vital to realising circular economy opportunities. However, individual organisations (particularly small to medium sized businesses) can face difficulties building these connections, due to lack of knowledge, time or funds. They can also face challenges navigating complex regulatory processes across several levels and departments of government.

Government can help facilitate this coordination, lowering coordination costs for an individual business. Not only does this support the uptake of circular economy practices, it also creates opportunities for businesses to diversify their production processes and build capability in sustainable practices.

This report recommends three ways for governments to improve coordination, collaboration and capacity across business, community groups and government, and facilitate the transition to a circular economy.

Establish a challenge-based grant program focused on the circular economy

Circular economy innovation often requires collaboration and partnerships between businesses from different sectors, as well as governments, researchers and the community. A challenge-based grant program could help businesses, government and researchers across sectors and disciplines coordinate their efforts. Mission-oriented or challenge-based innovation aligns research, innovation and policy around clear, ambitious goals and encourages cross-disciplinary collaboration. To ensure the program offers value for money and facilitates whole-of-economy change, the program should seek solutions that lower barriers to circular practices from across the supply chain and have broader public benefits (such as developing reuse opportunities for solar PV systems). Challenge-based programs in the United States and United Kingdom have successfully stimulated innovation and delivered value for money.

Facilitate place-based initiatives

Place-based initiatives enable coordination, address distance challenges and support businesses to develop and share new ideas. For example, local businesses can use their neighbours' byproducts as material inputs for their own production and learn from each other about innovative circular practices. They can also help governments tailor policies to the specific circumstances of a place and engage the local community as active participants in development and implementation. [5]

State and territory governments should facilitate place-based initiatives by providing guidance and resources, such as templates, to assist local governments developing circular economy plans. They should also fund a pilot for circular economy transition brokers. These brokers would help build the circular economy knowledge and capability of local governments and small to medium sized organisations in ways that are tailored to their context, and help them navigate government processes, such as regulatory approvals. Transition brokers would work in partnership with Aboriginal and Torres Strait Islander people to embed valuable knowledge in place-based circular economy practices and support Aboriginal and Torres Strait Islander people and businesses to lead circular economy activities.

In regions that are expected to experience mine closures, state and territory governments should develop land transition plans that identify the mined land, infrastructure and residues that will become available as mines close and how they can best be used. They should develop these land transition plans, well prior to the point of closure, in partnership with Aboriginal and Torres Strait Islander people and local communities.

Introduce and expand services that build connections between and within government and industry to enhance the impact of government sustainable procurement policies

Knowledge gaps and a lack of experience can discourage industry from using recycled and other sustainable materials in infrastructure. Contractors and asset owners are sometimes unaware of what sustainable alternative materials are available. They may lack confidence about the quality or performance of these materials and can tend to rely on familiar materials to avoid uncertainty affecting their focus on other delivery objectives (such as quality or speed).

To promote industry confidence in sustainable infrastructure materials, state and territory governments with commitments to major infrastructure projects should introduce or expand support services. These services should include dedicated personnel as facilitators that work with suppliers, contractors and asset owners to increase uptake of sustainable materials. Facilitators should provide education about the uses of sustainable

[5] 'Place' does not have a universal definition. To be practical for circular economy policy interventions, the PC defines a 'place' as either one local government area or a cluster of local government areas that are interconnected through their communities, and economic, social and environmental interactions.

materials in projects, assist in navigating regulatory or technical obstacles to using sustainable materials, and connect suppliers of sustainable materials with potential customers. These types of services have proven successful in Victoria, which is the main jurisdiction to offer them. Since its inception in 2019, the ecologiQ program has supported the Victorian Government's Recycled First policy to incorporate 3.4 million tonnes of recycled materials in major public infrastructure, with numerous participants highlighting its effectiveness.

Implementing reforms and monitoring progress

Circular economy policy in Australia is still in its early stages. For some reform areas, the issues are relatively well known and the supporting evidence base for designing reforms is relatively well developed. In these areas, full implementation should progress. For other reform areas, including those in which future opportunities for policy change arise, governments will need to undertake further work to better understand how to design policy changes to have the greatest net benefits.[6] Governments should gather additional information to understand and, where possible, quantify the benefits of intervention options. This can be done through, for example, life cycle analyses or bespoke impact studies. In some cases, a staged approach to policy implementation is preferred, to monitor policy implementation or assess how the impacts of recent international policy actions on supply chains affect Australian markets.

The Australian Government should develop an outcomes framework that connects each circular economy policy action to its related economic, social and environmental goals. This will help governments implement, monitor and evaluate circular economy reforms. For example, removing restrictive regulations could promote circular activities and innovation across the product life cycle, and improve environmental, economic and social outcomes. This may in turn help to achieve circular policy goals, such as circular economy targets (figure 4). The development of the outcomes framework will enable the inclusion of government actions that promote the transition to a circular economy. A starting point could be to include, for example, actions from the National Waste Policy, actions to end plastic waste and actions recommended in this report, but the ultimate scope will depend on the targets and outcomes that are chosen.

The outcomes framework will create a common strategic vision. It will ensure that progress is aligned across all governments and that agencies are clear on the outcomes policies should be achieving. It will also enable governments to identify and collect the data necessary to monitor circular economy policies, promoting transparency, accountability and ongoing improvements.

The Australian Government should use the outcomes framework to identify and fill gaps in data or measurement, such as in markets or sectors where there are policies aimed at encouraging businesses to incorporate circular design principles in product design.

To ensure actions are sequenced effectively across all levels of government, the report includes an indicative phased timeline to guide the implementation of its recommendations, with separate timelines for the Australian Government, state and territory governments, and local governments.

[6] For example, further work is required to determine trial locations for place-based transition brokers and further work is required to determine the specific standards that impede the use of recycled materials in infrastructure.

Figure 4 – Illustrative example of an outcomes framework

Government action	Activities and outcomes	Environmental, economic and social benefits	Impact on circular economy targets
Regulatory reform *Example*: Conduct a stocktake and reform standards and specifications limiting sustainable materials use in infrastructure	**Innovation** is unlocked through prompting a rethink of sustainable materials applications Increased use and exchange of **sustainable materials** Increased **recycling** activity from increased demand for recycled materials	Reduced **greenhouse gas emissions** by using materials with lower embodied carbon **Increased net value** extracted from previously wasted materials Over time as markets develop, the **price of sustainable materials reflects the full costs and benefits** relative to virgin materials	Increased **circularity rate** through increased secondary materials use Reduced **materials footprint** from reduced domestic demand for raw materials Increased **materials productivity and recovery rate** through increased recycling and production of recycled materials

Recommendations

Built environment

Recommendation 2.1
Perform a stocktake and assessment of standards and specifications limiting uptake of sustainable materials in infrastructure to enable regulation streamlining

To promote the fit for purpose use of sustainable materials in infrastructure, Australian, state and territory governments should establish a working group to undertake a staged stocktake and assessment of standards and specifications (including in Australian Standards and state infrastructure technical specifications). The stocktake should start by focusing on standards and specifications related to infrastructure types that use the most virgin materials (such as roads and bridges) or materials with the largest life cycle environmental impact (such as concrete). Drawing on the stocktake, the assessment should:

- identify and catalogue unnecessarily conservative and prescriptive standards and specifications relevant to infrastructure construction and maintenance that constrain the use of sustainable materials
- assess latent industry demand and local supply availability for the identified sustainable materials, to determine the extent to which these standards or specifications are constraining their use
- evaluate the feasibility of reducing these barriers by transitioning from prescriptive to performance-based approaches and/or harmonising standards and specifications across jurisdictions (without compromising safety), aligning with existing work being undertaken by organisations such as Austroads
- recommend a shortlist of changes to standards and specifications based on their expected impact on the uptake of sustainable materials and their associated productivity and environmental benefits.

Drawing on the assessment findings, governments should consider reforms to streamline standards and specifications (for example, through the Infrastructure and Transport Ministers' Meeting) and progress those reforms in collaboration with standards and specifications bodies (such as Standards Australia and Austroads). The Australian Government should consider whether certain reforms could be progressed through national competition policy.

Recommendation 2.2
Introduce or expand support services for suppliers, contractors and asset owners of major infrastructure projects to promote industry confidence in sustainable materials

To promote industry confidence in using sustainable materials in infrastructure, state and territory governments with commitments to major infrastructure projects should introduce or expand support services whereby dedicated facilitators work with suppliers, contractors and asset owners to:

- educate them about the use of sustainable materials in infrastructure, including addressing a lack of information or confidence about using sustainable materials and highlighting opportunities to use sustainable materials
- overcome regulatory or technical obstacles to using sustainable materials in specific projects
- connect suppliers of sustainable materials or products with potential customers (such as contractors and asset owners).

State and territory governments could tailor the scale and scope of these services to their own context including environmental objectives, projected infrastructure expenditure, recycling infrastructure and access to sustainable materials.

Food, agriculture and organics

Recommendation 3.1
Develop clearer regulatory processes to realise the economic and environmental benefits of reusing wasted organic materials

To help realise the economic and environmental benefits of reusing wasted organic materials, state and territory governments should develop dedicated regulatory pathways that outline the requirements for organic waste to transition into saleable materials, beginning with biochar.

In developing dedicated regulatory pathways, governments should:

- clearly outline the requirements for a waste-derived material to be transported, sold, applied to land or used as a livestock feed supplement (including source materials and contamination thresholds)
- balance the risks of processing organic waste streams with the economic and environmental benefits of recovering value from wasted organic materials.

Governments should complement these pathways by changing energy from waste regulations to distinguish between processes such as gasification and pyrolysis to produce biochar and conventional energy from waste processes (such as incineration), where this is not already done.

Mining

Recommendation 4.1
Update regulatory and planning frameworks to enable repurposing of post-mining land, infrastructure and mining residues to increase benefits for the community

To enable repurposing of post-mining land, infrastructure and mining residues that has the greatest net benefits for the community:

- State and territory governments should develop land transition plans for regions and communities that are experiencing or are soon to experience significant mining transition. These plans should assess the sites that will become available and establish priority future beneficial uses for them in partnership with Aboriginal and Torres Strait Islander people and the broader community.
- State and territory governments should review and amend or augment the regulatory frameworks and processes that guide mine closure and transition, to facilitate the development of innovative post-mining land uses where they are of net benefit. The review should include relevant provisions in mining, environmental, health and safety and planning legislation, and associated regulations and policies.
- The Australian Government should update national guidance for leading practice mine closure and transition, incorporating environmental, social and economic considerations. The guidance should establish best practice methodologies and set expectations for mining companies to partner with Aboriginal and Torres Strait Islander people, local communities and local governments, sharing decision-making to determine transition outcomes that offer net benefits to the community.

Electronics

Recommendation 5.1
Develop and implement a national framework to ensure consistent approaches to small electronics product stewardship across states and territories

To reduce the risk of differences in product stewardship arrangements across states and territories imposing costs on industry (without commensurate benefits to safety or the environment), the Australian, state and territory governments should develop a national framework to ensure consistent approaches to small electronics product stewardship across jurisdictions.

The Australian Government should assist and work with jurisdictions to develop and implement the framework based on state and territory governments' requirements. The Australian Government's role should include assisting state and territory governments to resolve regulatory and legislative roadblocks (both Commonwealth and state and territory), providing policy or technical guidance, and facilitating interjurisdictional discussions and ensuring progress and agreement.

Under the framework, states and territories should agree on the key design features that their respective product stewardship scheme for small electronics will include and align on, such as:

- consistent definitions of product scope
- clear performance targets for collection and recovery
- nationally aligned compliance standards
- nationally transferable scheme registration requirements
- shared data and reporting requirements.

Governments should develop the framework within six months.

The Circular Economy Regulatory Reform Taskforce (recommendation 7.1) could provide the forum for interjurisdictional cooperation and collaboration.

Recommendation 5.2
Establish a national product stewardship scheme for small-scale solar photovoltaic (PV) systems and investigate a national product stewardship scheme for electric vehicle (EV) batteries

The Australian Government should urgently establish a national product stewardship scheme for small-scale solar PV systems under Commonwealth legislation.

For EV batteries, the Australian Government should analyse the costs and benefits of national product stewardship, including different implementation models.

National leadership is needed to address the growing waste management risks associated with these products and avoid the problems associated with misaligned state action that have arisen or could arise for other schemes.

Textiles and clothing

Recommendation 6.1
Enhance monitoring and public transparency measures to create greater accountability for textiles businesses to reduce waste and improve materials productivity

To create greater accountability for textiles businesses to reduce waste and improve materials productivity, the Australian Government should introduce enhanced monitoring, public reporting and transparency measures.

This should include setting a clear, time-bound process for governments to consider introducing regulated product stewardship schemes for textiles and clothing if the sector does not meet expectations regarding reduced waste and improved materials productivity.

- Within the next six months, the Australian Government should establish criteria and timelines for assessing industry progress and publish conditions for considering regulatory intervention.
- The government should work with industry to enhance publicly available information for tracking progress towards performance targets, which may include the percentage of businesses participating in voluntary stewardship arrangements or making equivalent efforts to reduce waste and improve materials productivity through circular activities.
- After two years, if voluntary progress against performance criteria is insufficient, the government should commission analysis of regulatory models, including cost-benefit analysis, and implement the most appropriate regulatory pathway. It should ensure the analysis is completed within the next three years.

Cross-sectoral arrangements

Recommendation 7.1
Establish an intergovernmental taskforce to drive regulatory reforms and harmonisation related to the circular economy

The Australian Government, in partnership with state and territory governments, should establish a Circular Economy Regulatory Reform Taskforce to align and adjust new and existing regulations affecting the uptake of circular economy opportunities. The taskforce should:

- task the Australian Government with the lead on assessing regulation for key issues
- take a cross-portfolio approach to circular economy issues
- recommend regulatory reforms in accordance with the principle of regulatory stewardship
- meet regularly and be responsive to issues both emerged and emerging
- be adequately resourced, authorised and accountable
- make regulatory reform recommendations to Ministers in a transparent and timely way, and report on their implementation.

Recommendation 7.2
Develop place-based circular economy plans and pilot place-based circular economy transition brokers

Local governments should identify circular economy opportunities relevant to their area. To realise these opportunities, they should develop place-based plans and/or integrate actions into their other plans and budgetary processes (such as service, infrastructure or community development plans). Plans should be co-designed with Aboriginal and Torres Strait Islander people, local businesses and communities to develop self-determined outcomes. Plans should be evaluated and refreshed every three years.

State and territory governments should provide local governments with information and guidance for developing their place-based circular economy plans.

State and territory governments should pilot in-place circular economy transition brokers, with evaluation and potential extension within three years. Outcomes should be measured against set criteria and published to enable cost-benefit analysis regarding future program expansion. Transition brokers would:

- work with small to medium sized businesses and community organisations to build their circular economy knowledge and capability, including how to increase the circularity of their organisation, to facilitate networking opportunities to foster collaboration, partnerships and knowledge sharing and to assist them in navigating government processes
- partner with Aboriginal and Torres Strait Islander people to embed valuable knowledge in place-based circular economy practices and establish opportunities for Aboriginal and Torres Strait Islander people and businesses to lead circular economy initiatives
- support local governments to develop place-based circular economy plans
- be supported to operate as a network, providing the opportunity for knowledge sharing and capability building.

Recommendation 7.3
Establish a challenge-based grant program to support the adoption and diffusion of circular innovations

The Australian Government should establish a challenge-based grant program to foster innovation and support adoption and diffusion of innovative solutions in the circular economy. The program should consider challenges identified by industry and the community. Key features of the program design include:

- challenges posed by industry and community to target solutions that provide public benefit and address circular economy issues across the supply chain
- dispersing funds in at least two stages, with a first expressions of interest stage to test feasibility
- pairing grant recipients with relevant industry partners to foster collaboration and tailor solutions
- a selection panel with industry and government expertise to adjudicate potential challenges and applications for each stage.

An independent evaluation of the program should occur within three years.

Strategic reform approach

Recommendation 8.1
Implement the suite of recommendations from the PC's Right to Repair inquiry

The Australian, state and territory governments should implement the full suite of recommendations from the PC's Right to Repair inquiry. The Australian Government should publish a formal response to that inquiry that indicates a timeline and workplan for implementing these reforms.

Recommendation 8.2
Develop an outcomes framework to help guide implementation, monitoring and evaluation of government actions to promote a circular economy

The Australian Government should develop an outcomes framework that connects each circular economy policy action to its related economic, social and environmental goals. This will assist governments to implement, monitor and evaluate these policy actions.

Measuring Australia's circular progress

Recommendation 9.1
Develop metrics to enable effective monitoring, evaluation and reporting of government actions to promote a circular economy

The Australian Government should:

- use an outcomes framework (recommendation 8.2) to identify areas lacking metrics or where data gaps exist, such as markets or sectors where there are policies aimed at encouraging businesses to incorporate circular design principles in product design
- develop a metrics and data collection strategy that prioritises filling key gaps, based on considerations such as the significance of the opportunity (in terms of economic and environmental benefits) and the extent to which existing data systems capture relevant data
- establish and oversee arrangements for monitoring, evaluation, reporting and improvement.