



Opportunities in the circular economy

Call for submissions

The PC has released this paper to assist individuals and organisations to prepare submissions. It contains and outlines:

- the scope of the inquiry
- the PC's procedures
- matters about which the PC is seeking comment and information
- how to make a submission.

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.

The Productivity Commission

The Productivity Commission (the 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.

Further information on the Productivity Commission can be obtained from the PC's website (www.pc.gov.au).

Call for submissions

The PC has released this paper to assist individuals and organisations to prepare submissions to the inquiry. It contains and outlines:

- the scope of the inquiry
- the PC's procedures
- matters about which the PC is seeking comment and information.

Participants should not feel that they are restricted to comment only on matters raised in this paper. The PC wishes to receive information and comment on issues which participants consider relevant to the inquiry's terms of reference.

Key study dates

Receipt of terms of reference	23 August 2024
Due date for submissions	1 November 2024
Release of interim report	February 2025
Final report to Government	August 2025

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About this inquiry

The Australian Government has asked the Productivity Commission (the PC) to undertake an inquiry into Australia’s opportunities in the circular economy to improve materials productivity and efficiency in ways that benefit the economy and the environment. Attachment A includes the inquiry’s terms of reference.

There has been progress on circular economy policy at all levels of government, and the inquiry will coincide with several other processes in circular economy policy development.

- In 2022, all Australian environment ministers agreed to work with the private sector to design out waste and pollution, keep materials in use, and foster markets to achieve a circular economy by 2030 (Environment Ministers Meeting 2022).
- The Circular Economy Ministerial Advisory Group (CEMAG), which provides advice to the Australian Government on the transition to a more circular economy, will release a final report in 2024. An interim report was published in April 2024 recommending that the PC further investigate how resource efficiency supports economic growth and productivity (CEMAG 2024, p. 9).
- The Australian Government is committed to publishing its *National Circular Economy Framework* by the end of 2024, led by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

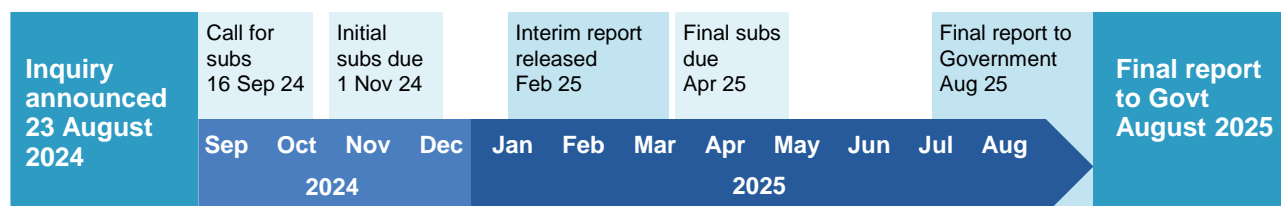
This call for submissions provides an introduction to the key issues that the PC anticipates exploring in the inquiry, and questions that we are seeking further information about from stakeholders.

How you can contribute

The PC is interested in hearing from a wide range of participants, including all levels of Australian government (national, state and territory, and local), businesses, technical and subject matter experts, Aboriginal and Torres Strait Islander people, and the community more broadly. The PC welcomes comments and evidence on any part of the terms of reference, as well as any of the information requests set out in this call for submissions, or any other issues related to this inquiry.

Participants are asked to make submissions by **1 November 2024** (figure 1). Your contribution does not need to be a formal document and we welcome views through the comments section on our website. Neither does your contribution need to address issues from an economy-wide perspective – it can focus on evidence regarding a particular product, business, sector, material or part of the supply chain. We also welcome submissions relevant to this inquiry that were developed for other review processes.

Figure 1 – Key steps to the inquiry



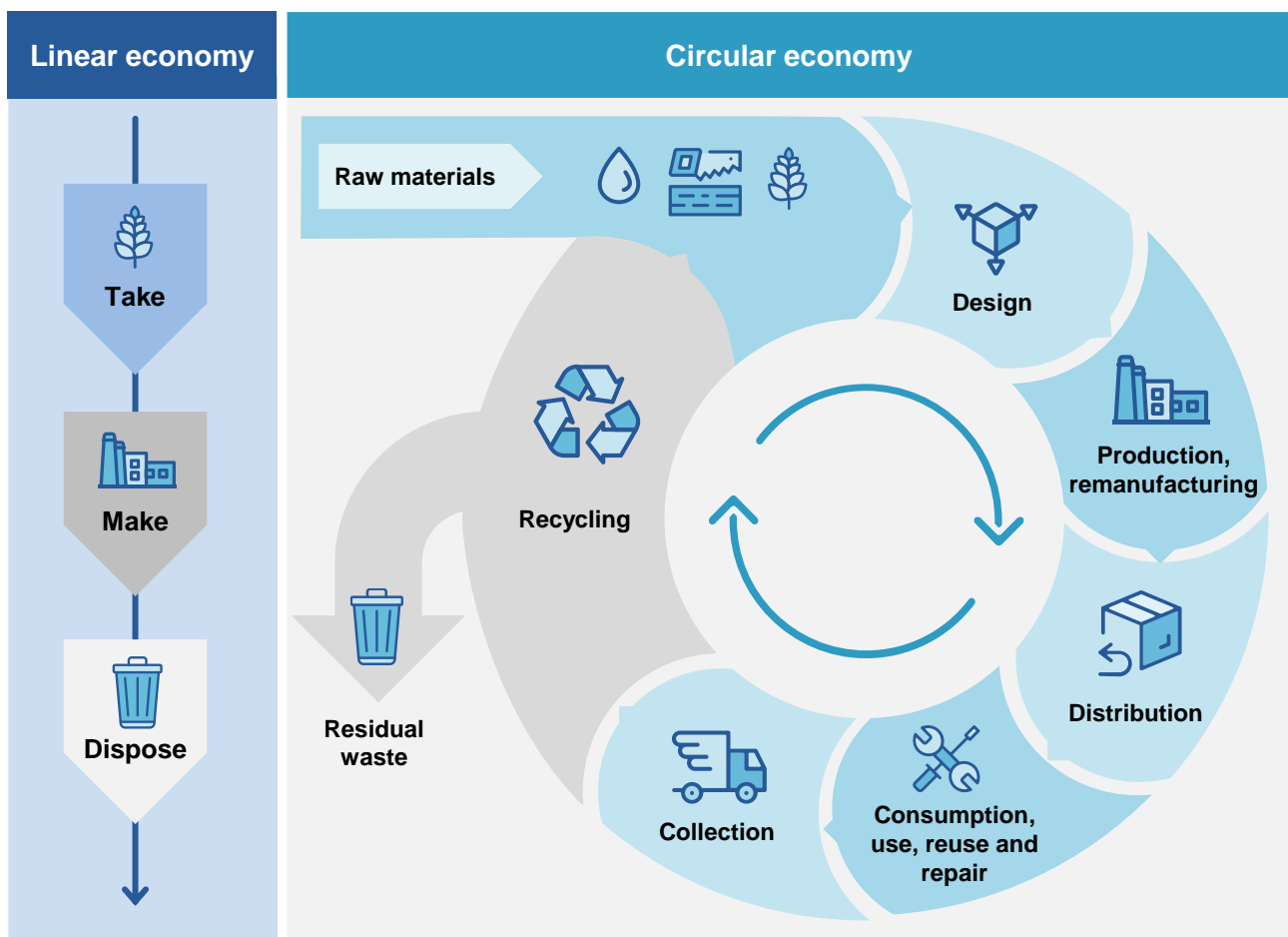
The PC will release an interim report in **February 2025** for public feedback. By registering your interest on the project webpage, you will receive updates. Details of the PC’s consultation process can be found on our website (www.pc.gov.au/circular-economy). The PC will provide a final report to Government in **August 2025**.

What is circularity and what can it achieve?

What is the ‘circular economy’?

Typically, economic activity has a linear relationship with materials: raw materials are extracted, transported, transformed into products, consumed, and then disposed of as waste. By contrast, a circular economy aims to meet human needs with fewer materials, by keeping products in use for longer (figure 2).

Figure 2 – Comparing the circular and linear economies



Source: Adapted from CSIRO (nd).

Circular economy theories acknowledge the limitations of traditional approaches to waste management and highlight the alternative activities that businesses, consumers and governments could be taking across the product lifecycle. By minimising virgin materials use and reducing waste from value chains, a more circular economy aims to reduce negative environmental impacts – such as greenhouse gas emissions, pollution, and biodiversity loss.

Circular economy activities are often considered in the context of the 9Rs framework (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle and Recover) (Potting et al. 2017, p. 5), or through the concepts of narrowing loops (e.g. reducing the demand for materials), closing loops (e.g. using materials multiple times), slowing loops (e.g. extending useful product life), or nature regeneration (e.g. using non-toxic materials and regenerating ecosystems) (McCarthy et al. 2018, p. 15; Konietzko et al. 2020, p. 2)

What can the circular economy achieve?

This inquiry will consider the circular economy through the lens of materials productivity and efficiency.¹ In this context, the circular economy aims broadly to ‘decouple’ materials use from economic growth and broader wellbeing, thereby minimising the impact of human activity on the environment.

Circular activities can improve economic, environmental and social outcomes. While these are distinct aspects of welfare and wellbeing, they are also linked. For instance, improving the quality of the environment can contribute to health and amenity in society. Improving the design and manufacturing of products can improve quality of life for consumers, reduce waste in the environment, and reduce costs of replacement and production. A key task for this inquiry will be to identify activities that improve both economic and environmental outcomes.

Circular economy activities can also incur costs or unintended consequences. In some instances, different aspects of welfare may not be aligned. For example, some activities could:

- reduce materials waste while incurring economic or social costs (such as where more circular production processes increase prices or reduce the accessibility of products)
- result in competing environmental costs and benefits (for example, an activity may be energy-intensive but prevent biodiversity loss).

Impacts may also vary between the short and long terms, such as where costs are immediate but benefits accrue over a much longer time horizon.

In evaluating circular economy policies it will be important to consider any such trade-offs. While there may be scope for Australia’s economy to become more circular, decisions about *how* this is achieved will have broad implications.

What progress is being made in Australia?

Some businesses and industries are already reducing their materials use in ways that meet commercial, environmental and social objectives. Australian governments have also adopted various circular economy policies (box 1). The PC welcomes examples where circular economy activities have been successfully pursued, ideally with detailed information on the type and scale of benefits, costs and other impacts.

Despite progress towards a more circular economy, Australia consumes more materials on a per person basis and has lower materials productivity than most advanced economies (OECD 2022). While this may suggest scope for Australia to improve, it can be difficult to compare economies with different structural characteristics. This is because materials use depends on country specific factors such as population density, distances between places, and the types of goods and services produced domestically. Australia is

¹ Materials productivity is the relationship between economic output and materials use (estimated by GDP divided by annual materials consumption in kilograms). Materials efficiency is the relationship between the total amount of input materials that gets used to produce useful output (Eskins et al. 2017, p. 41). Similar to the OECD (2024a), we define ‘materials’ as including metals, non-metallic minerals (industry and construction minerals), fossil fuels and biomass (such as wood and food). This is distinct from the definition of ‘resources’, which includes energy and water resources alongside materials, and gives rise to the related ideas of resources productivity and efficiency. Our inquiry will focus on materials.

a raw materials exporter, and our population is significantly geographically dispersed, which means that the potential level of circularity for Australia, and how to best achieve it, will be different to other economies.

Box 1 – Examples of efforts towards increasing circularity in Australia

Some Australian businesses have already incorporated more circular activities into their production processes.

- Improved **product design** can reduce materials use. In some cases, building a more durable or repairable product is consistent with a business's commercial objective to maximise profit – such as vehicles and machinery that are valued for their long life (and often marketed with long warranties).
- In some sectors, valuable materials are **extracted from waste products**. For example, polyester and cellulose are recovered from textiles and clothing, and minerals from tailings are recovered in the mining sector.
- Many sectors in Australia have schemes or programs for **using recycled material**. These range from turning recycled plastics into gravel for road construction to using agricultural waste to produce fertilisers or energy.

In Australia, governments at all levels have policies and programs in place to support circular economy activities. At the national level, these include the *National Waste Policy*, *National Waste Action Plan*, *Recycling Modernisation Fund*, *National Plastics Plan*, *National Food Waste Strategy*, *Environmentally Sustainable Procurement Policy and Reporting Framework*, and various product stewardship schemes. At the state and territory level, many governments have single-use plastic bans and waste management strategies. At the local level, many councils have waste-sorting behaviour campaigns and promote reusable products (e.g. nappies) to their local residents.

While many of the policies and programs currently in place focus on minimising waste at the end of a product's life, there has recently been more emphasis on opportunities to reduce materials use along all parts of the production process of goods and services.

As part of our inquiry, the PC will consider how best to measure progress on the circular economy and what Australia's potential might be in progressing to a circular economy. Australia currently tracks two headline circular economy metrics focused on waste: waste generation per person and the resource recovery rate (CEMAG 2024, p. 16). More broadly, the OECD has a circular economy monitoring framework that includes about 100 indicators (OECD 2024b, pp. 32–34). The PC will consider the purposes for measuring the circular economy (such as to assess progress of policies, or for international comparisons) and, in this context, which indicators are most appropriate and relevant for Australia.



Information request 1

Circular economy success stories and measures of success

The PC is seeking views and information on the following.

- Australian case studies of circular economy activities already occurring, which may involve narrowing loops (e.g. reducing the demand for materials) closing loops (e.g. using materials multiple times) slowing loops (e.g. extending useful product life) or regenerating (e.g. using non-toxic materials and regenerating ecosystems). Information would be particularly welcome on:
 - how these activities affected business and economic outcomes (including costs), environmental outcomes (including waste and pollution) and social outcomes
 - levels of uptake
 - reasons why businesses, consumers and communities adopted circular economy activities
 - the effectiveness and costs of these activities (such as from project evaluations, participant surveys).
- Australia's overall potential to move to a more circular economy, as well as how best to monitor progress and measure success.

Where are the priority opportunities for Australia?

The PC has been asked to identify opportunities to improve materials productivity and efficiency, consider the broader impacts of adopting these opportunities, and propose a set of priority actions to improve circularity. These opportunities could be economy-wide, within sectors, at the product level and at different segments of the supply chain or product life cycle.

A CSIRO report highlighted five industries with the most potential to advance the circular economy: mining, construction, manufacturing, agriculture and waste management (Schandl et al. 2024, p. 4). CEMAG's interim report identified the built environment as a sector primed with circular economy opportunities and the food system and resource sector as areas for further investigation (CEMAG 2024, p. 25,30). The PC is keen to hear about opportunities within (but not limited to) these industries to minimise materials use, implement more circular processes and reduce environmental impacts.

Overall, there is likely to be a wide scope of circular economy opportunities across the Australian economy. This inquiry will seek to prioritise those activities with the greatest benefits across economic, environmental and social outcomes. As such, the PC would welcome submissions outlining practical examples where there is significant potential to move to a more circular economy, ideally with detailed information on the type, scale and timing of benefits, costs and other impacts. The PC is particularly interested in circular economy opportunities that both reduce materials use and improve other outcomes, such as increasing productivity and economic growth, or achieving cost-efficient emissions reduction.

International circular economy developments may also present opportunities and risks for Australia. Opportunities may arise due to overseas innovations that could be adopted in Australia. However, not all overseas innovations will suit the Australian economy, due to, for example, our population density or industry structures (discussed above). Risks may also arise from overseas regulations affecting exports of Australian

goods and services, such as more restrictive product standards. The PC would welcome feedback on the opportunities and risks for Australia that arise from international trends and policies.



Information request 2

Priority opportunities to progress the circular economy

The PC is seeking views and information on the following.

- Opportunities in Australia to improve environmental and economic outcomes through greater adoption of circular economy activities. These may relate to sectors, products or supply chain segments, and involve narrowing loops (e.g. reducing the demand for materials), closing loops (e.g. using materials multiple times), slowing loops (e.g. extending useful product life) or regenerating (e.g. using non-toxic materials and regenerating ecosystems). Information would be particularly welcome on:
 - how these opportunities could affect business and economic outcomes (including costs), environmental outcomes (including biodiversity, climate and water, land and air quality), and social outcomes
 - feasible levels of future uptake or adoption in Australia
 - how their effects could best be monitored or measured, and how opportunities could be prioritised
 - how Aboriginal and Torres Strait Islander knowledges could be valued, in ways that protect Indigenous cultural and intellectual property, to identify and develop these opportunities.
- Analysis of which circular opportunities provide the greatest scope to improve environmental and economic outcomes in Australia and why, including information on:
 - metrics used to inform this analysis
 - modelling or analysis relating to the potential benefits and costs of implementing specific circular economy opportunities at the sector, product or supply chain segment level (including, but not limited to, life cycle assessments or cost-benefit assessments)
 - the distribution of benefits and costs, and whether they will occur in the short, medium or long term.
- Information on specific opportunities and risks for Australia resulting from international developments, including circular economy policy. These may include developments that:
 - affect Australian exports, such as by opening or creating new markets, or by placing regulatory requirements on the design and production processes of Australian exports
 - affect Australian imports, such as changes to production methods internationally, or developments in international markets
 - innovative processes that could be adopted in Australia.



What is needed to enable further progress?

Making the most of Australia's circular economy opportunities will require action from a range of decision makers, including businesses and consumers. People may pursue circular economy opportunities – or be concerned about them – for a variety of reasons (figure 3). One reason may be that they have different approaches to change and dealing with risk and uncertainty. Another may be that moving to a circular

economy could have different implications for different groups in terms of how costs, benefits or other impacts are distributed.

These factors can explain what has driven recent moves to a circular economy and, equally, why some opportunities have not yet been harnessed. In some cases, people need more information, assurance or momentum. In others, government policy can play a role in aligning incentives or addressing trade-offs.

Figure 3 – Reasons for participation and concerns in the circular economy

 Businesses	 Consumers and individuals
Reasons for participation	
<ul style="list-style-type: none"> • Potential to reduce production costs, increase sales or better access finance • Care for the environment and/or social licence to operate • Meeting environmental, social and governance (ESG) targets, principles and/or regulated requirements 	<ul style="list-style-type: none"> • Care for personal and community wellbeing, the environment and/or broader social outcomes • Potential to save money through circular activities (e.g. reuse and repair) • Potential to consume better quality products and services
Potential concerns	
<ul style="list-style-type: none"> • Upfront investment costs and/or redundancy of existing assets • Potential to increase production costs or reduce sales • Significant change to business models • Lack of broader collaboration and coordination through supply chains, across or between sectors 	<ul style="list-style-type: none"> • Requirement for more effort, time or cost • Scepticism that actions would make a difference without broader collaboration • Actual or perceived trade-off between circular products and quality or safety (e.g. packaging) • Wariness that a business is overstating their product's sustainability, or 'greenwashing'

What hurdles and barriers exist?

The PC is interested in identifying barriers to progress on circular economy activities. These could include:

- insufficient information (e.g. businesses and households are unaware of the potential for materials to be recycled or reused)
- regulations that hinder circular economy approaches (e.g. building or other standards that discourage alternative, more circular approaches)
- coordination challenges within an industry or across sectors (because coordination would be costly, or viewed as anti-competitive)
- when the price paid for a product does not reflect overall costs to the environment or society (potentially encouraging, for example, new purchases instead of using a product for its maximum life).

Some barriers may be common across sectors, such as limitations in technology, costs or the challenges presented by distance. In other cases, barriers could differ by sector, product or supply chain segment. For

example, while certain types of skills² will be necessary across the workforce to transition to a more circular economy, some sectors may have gaps in sector- or product-specific specialised skills.



Information request 3 Hurdles and barriers to a circular economy

The PC is seeking views and information on the following.

- The main reasons businesses and consumers have not adopted circular economy practices to date, including (but not limited to):
 - costs
 - attitudes (including about risk)
 - regulatory constraints
 - lack of information or resources
 - lack of coordination.

What action should governments take?

The need for, extent and staging of government action will depend on the specific opportunity or barrier, the expected benefits, costs and risks of government action, and the likelihood of success. In some instances, minimal government action may be the most effective approach, such as where there are already strong reasons for businesses and consumers to participate in the circular economy of their own accord. In other cases, greater government action may be required to overcome the barriers discussed above.

Government actions to support a more circular economy could include:

- regulation (e.g. mandating circular production processes or setting standards for recycled products)
- financial incentives (e.g. to subsidise more circular activities or provide grants for related research)
- education or information provision (e.g. sharing information on circular activities or data on product repairability)
- facilitating collaboration (e.g. to support the diffusion of circular practices from leading businesses to others, or the practical application of relevant university research in industry)
- planning (e.g. urban or regional development, or precincts).

Some circular economy activities or policies may result in a reallocation of resources across the economy. Governments should therefore consider the overall costs and benefits of circular economy activities, including both direct and indirect implications, and in both the short and long term.

² CSIRO identified a greater need for 'both "hard" skills (engineering and digital capability) and "supporting" skills (such as design, circular business models and regulatory understandings)' (Schandl et al. 2024, p. 14).



Information request 4 Governments' role in the circular economy

The PC is seeking views and information on the following.

- The extent to which policy or regulatory changes (national, state and territory, or local; or for specific sectors, products or supply chains segment level) could better enable the pursuit of circular economy activities. This may include:
 - financial incentives
 - information provision
 - regulatory changes (e.g. approval processes, standards and codes, mandatory reporting, competition and consumer regulation, chemicals regulation) and co-regulatory approaches
 - education and training
 - facilitating collaboration
 - planning, and urban and regional development.
- The extent to which current policies or regulations hinder the pursuit of circular economy activities. Specific examples of how current settings are acting as barriers would be welcome.
- The benefits, costs, risks and implementation issues associated with current or potential policy or regulatory changes that aim to address barriers to circular economy activities.
- What actions governments could take to facilitate Aboriginal and Torres Strait Islander roles in progressing the circular economy, including in drawing on Indigenous knowledges in policy design in ways that recognise and protect Indigenous cultural and intellectual property.

References

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A. Terms of reference

I, the Hon Jim Chalmers MP, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, hereby request that the Productivity Commission undertake an inquiry into Australia's opportunities in the circular economy to improve materials productivity and efficiency in ways that benefit the economy and the environment.

A.1 Background

A circular economy is an economic strategy that maintains the value of materials for as long as possible and ensures materials are used efficiently across all phases of their life cycle. In October 2022, Australia's Environment Ministers committed to accelerate the transition to a circular economy by 2030.

International studies suggest that a more circular economy supports higher economic growth and productivity, including by increasing materials productivity (how much output is produced per unit of raw input). Australia currently has the fourth lowest rate of materials productivity in the OECD. We generate US\$1.20 of economic output for every kg of materials consumed, which is under half the OECD benchmark of US\$2.50.

The Minister for the Environment and Water's Circular Economy Advisory Group has also identified commercial, regulatory, information and other barriers to achieving a more circular economy, and opportunities for Australia to improve economic and environmental outcomes through greater materials productivity and efficiency.

However, there is currently limited analysis of these matters, including the relative importance of these opportunities and how they should be measured and realised.

A.2 Scope of the inquiry

In this inquiry, the Productivity Commission is to investigate and report on:

- The potential scope to lift Australia's materials productivity and efficiency, and the best metrics to measure this opportunity and improvements made.
- Priority circular economy opportunities for Australia, including identification of the sectors, products or supply chain segments:
 - where Australia has the greatest potential to improve materials productivity/efficiency in ways that can strengthen economic outcomes, such as productivity, economic growth, economic diversity and capability
 - where other countries have made the greatest progress towards circularity, and the risks and opportunities associated with these developments in international markets for Australia
 - where cost-efficient emissions reduction could be achieved by improving materials productivity and reducing waste.
- Barriers to enhanced materials productivity and prospective approaches to addressing them, including but not limited to:
 - place based circular economy activities (e.g. industrial precincts and others enabled by urban planning and development)

- regulatory frameworks, and other mechanisms that influence businesses' and consumers' decisions on materials purchasing, use and replacement or the competitiveness of circular economy initiatives
- policy actions that are achievable over the near and medium term
- policy actions that could be progressed by Commonwealth, state and territory, and local governments, including improvements to existing national policy frameworks.

The Commission's findings will inform policymaking regarding strengthening Australian circular economy. Accordingly, recommendations made by the Commission should, where relevant and appropriate, include an assessment of implementation feasibility and risk.

A.3 Process

The Commission should engage with relevant stakeholders and experts, including the state and territory governments, to identify opportunities and constraints in this area.

The Commission should provide an interim report within 5 months of receipt of these Terms of Reference and provide a final report to government within 12 months of the receipt of this Terms of Reference.

The Hon Jim Chalmers MP
Treasurer

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