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Productivity Commission
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Level 8, Two Melbourne Quarter
697 Collins Street
Docklands Vic 3008

Date: 1 November 2024

By email: circular.economy@pc.gov.au

Dear Commissioners,

Subject: Opportunities in the circular economy

I am reaching out on behalf of the Business Council for Sustainable Development Australia (**BCSDA**), in our role as a pivotal advocate for sustainable development within the business sector and as a global network partner of the World Business Council for Sustainable Development (**WBCSD**).

Our collective mission is to champion sustainable business practices that are not only globally recognized but also carefully adapted to meet the unique demands of the Australian landscape.

Outlined in the following pages is our feedback to the Consultation you have requested on the **Subject**. We thank you for the opportunity to make these submissions.

We confirm our submission can be made public.

Yours faithfully,

Andrew Petersen I CEO I **Business Council for Sustainable Development Australia**

Executive Summary

The Business Council for Sustainable Development Australia (**BCSDA**) underscores the transformative potential of a Circular Economy (CE) for Australia, focusing on opportunities that leverage international best practices and align with Australia's unique context.
BCSDA advocates for a holistic, systems-based approach to integrate CE across economic, environmental, and social dimensions, ensuring that national strategies prioritize long-term goals, support cross-sector collaboration, and develop regulatory frameworks conducive to CE activities.

Key suggestions drawn from responses to consultation questions emphasize the following:

1. **Regulatory Reform and Coordination:** BCSDA highlights the importance of establishing a unified national CE strategy that aligns state and federal regulations, removes inconsistent definitions of waste, and promotes streamlined approval processes for CE projects. BCSDA also supports extending producer responsibility (EPR) schemes and introducing clear long-term goals modelled after successful international frameworks like the Netherlands and Japan, which embed CE into industrial policies.
2. **Innovation and Circular Economy Metrics:** The Council recommends fostering innovation by supporting research and development, as well as adopting metrics to measure CE success. It emphasizes investing in industrial symbiosis and material recovery hubs while ensuring resource efficiency across sectors, with a focus on high-impact areas like the construction and manufacturing industries. Additionally, clear progress metrics should be established to monitor material productivity, waste reduction, and emissions mitigation.
3. **Business Engagement and Consumer Awareness:** To facilitate greater CE uptake, BCSDA urges the government to enhance public-private partnerships, incentivize businesses through tax breaks and grants for circular innovations, and build consumer awareness through targeted campaigns. Promoting repairability, extending product life, and fostering consumer participation in CE initiatives—such as recycling programs—are key to long-term success.
4. **Aboriginal and Torres Strait Islander Knowledge Integration:** BCSDA underscores the need to value and protect Indigenous cultural and intellectual property, recommending that government policies include Indigenous knowledge in CE activities. The role of traditional land management practices in regenerating ecosystems and promoting sustainability should be actively incorporated into national CE frameworks.
5. **Economic and Job Creation Opportunities:** Circular economy practices, such as waste-to-energy technologies and regenerative agriculture, present significant potential to create jobs and stimulate economic growth. BCSDA supports prioritizing sectors where Australia can achieve the greatest environmental and economic benefits, advocating for government investments to support infrastructure and technological advancements that will drive CE adoption across industries.

Overall, our policy standpoint calls for a comprehensive, collaborative approach to CE implementation, encouraging a shift towards sustainable practices that drive innovation, economic growth, environmental resilience and social welfare across Australia.

International Policy Regimes on Achieving Circular Futures

Examining international approaches to circular economy policies offers Australia valuable insights to inform its own strategies. Countries around the globe have implemented distinctive policy regimes that reflect their unique contexts and priorities. These range from nationwide missions with clear long-term goals to integrating circular principles into industrial strategies and establishing comprehensive legislative frameworks. By learning from these diverse experiences, Australia can tailor its circular economy policies to address its specific opportunities and challenges, emphasizing clear national strategies, integration into economic planning, support for innovation and collaboration, effective legislation, coordinated government efforts, and cultural shifts towards sustainability. This high-level assessment underscores the potential for Australia to enhance its circular economy initiatives by adapting international best practices to its unique context.

Netherlands

Strategic policy regime on CE: *A nation-wide mission to achieve a fully circular economy by 2050 through collaborative innovation and sector-specific transition agendas.*

Lessons for Australia:

- **Set Clear Long-Term Goals:** Establishing a clear national target, like the Netherlands' 2050 goal, provides direction and urgency.
- **Sector-Specific Strategies:** Developing tailored transition agendas for key sectors can address unique challenges and opportunities.
- **Collaborative Approach:** Engaging government, industry, and society fosters innovation and shared responsibility in advancing circularity.

Germany

Strategic policy regime on CE: *Integrating circular economy principles into industrial strategy to enhance resource efficiency and sustainable waste management.*

Lessons for Australia:

- **Embed CE in Industrial Policy:** Incorporating circular principles into broader economic strategies can drive systemic change.
- **Regulatory Frameworks:** Strong regulations and standards encourage businesses to adopt sustainable practices.
- **Focus on Resource Efficiency:** Emphasizing efficient use of materials can boost competitiveness and reduce environmental impact.

Sweden

Strategic policy regime on CE: *A holistic sustainability model that intertwines circular economy with climate action and promotes green innovation.*

Lessons for Australia:

- **Align with Climate Goals:** Integrating circular economy efforts with climate change initiatives maximizes environmental benefits.
- **Promote Innovation:** Supporting research and development accelerates the creation of sustainable technologies and practices.
- **Consumer Engagement:** Educating the public encourages responsible consumption and participation in circular activities.

China

Strategic policy regime on CE: *A top-down legislative framework positioning circular economy as a key strategy for sustainable development and pollution reduction.*

Lessons for Australia:

- **Government Leadership:** Strong policy directives can accelerate the adoption of circular practices nationwide.
- **Integrate CE into Development Plans:** Embedding circular economy in national planning ensures alignment across sectors.
- **Address Environmental Challenges at Scale:** Large-scale initiatives can effectively tackle significant environmental issues.

United States

Strategic policy regime on CE: *A decentralized approach where private sector initiatives and state-level policies drive circular economy progress.*

Lessons for Australia:

- **Leverage Private Sector Innovation:** Encouraging businesses to lead can result in innovative circular solutions.
- **Navigate Federal Structures:** Understanding the dynamics of federal systems can help coordinate efforts across jurisdictions.
- **Support Entrepreneurship:** Fostering startups and SMEs can stimulate growth in circular economy sectors.

Japan

Strategic policy regime on CE: *A longstanding commitment to a "Sound Material-Cycle Society" through comprehensive laws and public education on resource efficiency.*

Lessons for Australia:

- **Comprehensive Legislation:** Enacting laws that promote recycling and efficient resource use can institutionalize circular practices.
- **Public Awareness Campaigns:** Educating citizens enhances participation in recycling and waste reduction efforts.
- **Continuous Policy Improvement:** Regularly updating policies ensures they remain effective and responsive to new challenges.

Key Insights for Australia:

- **Adopt a Clear National Strategy:** Like the Netherlands and Sweden, Australia could benefit from a well-defined national policy with ambitious yet achievable targets.
- **Integrate Circular Economy into Economic Planning:** Following Germany and China's example, integrating circular principles into broader economic and environmental strategies can enhance effectiveness.
- **Support Innovation and Collaboration:** Investing in innovation, technology, and partnerships can drive progress, as seen in Germany and Sweden.
- **Establish Legislative Frameworks:** Enacting supportive laws, like Japan and China, can provide structure and ensure long-term adherence to circular economy principles.
- **Coordinate Across Government Levels:** Learning from the fragmented approach in the U.S., Australia should aim for coordination between federal, state, and local governments to unify efforts.

- **Focus on Education and Cultural Change:** Shifting societal attitudes towards consumption and waste is essential, and can be supported by education and awareness initiatives.
- **Customized Approach:** Adapt international best practices to fit Australia's unique economic structure and geographic context.
- **Stakeholder Engagement:** Involving all levels of government, industry, and the community is crucial for successful implementation.
- **Measuring Progress:** Establishing clear metrics helps track advancements in materials productivity and circularity.

We believe, by drawing on these international experiences, Australia can tailor its circular economy policies to its unique context, addressing specific opportunities and challenges identified in the Productivity Commission's inquiry.

Progressing the Sustainable Development Agenda through Circular Economy

SDG12 - Responsible Consumption and Production

Target(s):
- **Target 12.2:** By 2030, achieve the sustainable management and efficient use of natural resources.
- **Target 12.5:** By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.

Indicator(s):
- **Indicator 12.2.1:** Material footprint, material footprint per capita, and material footprint per GDP.
- **Indicator 12.2.2:** Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP.
- **Indicator 12.5.1:** National recycling rate, tons of material recycled.

Coverage:

The inquiry directly addresses SDG12 by focusing on enhancing Australia's materials productivity and efficiency. It seeks to identify priority circular economy opportunities that can reduce material consumption and waste generation across various sectors. By proposing the best metrics to measure improvements, the inquiry aligns with the indicators of SDG12, aiming to track progress in sustainable resource management and recycling rates.

SDG13 - Climate Action

Target(s):
- **Target 13.2:** Integrate climate change measures into national policies, strategies, and planning.

Indicator(s):
- **Indicator 13.2.1:** Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan to mitigate climate change.

Coverage:

The inquiry considers how improving materials productivity and reducing waste can lead to cost-efficient emissions reductions. By exploring circular economy opportunities that contribute to lowering greenhouse gas emissions, the inquiry supports the integration of climate action into national strategies, aligning with SDG13's emphasis on policy integration for climate mitigation.

SDG9 - Industry, Innovation, and Infrastructure

Target(s):
- **Target 9.4:** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes.

Indicator(s):
- **Indicator 9.4.1:** CO_2 emission per unit of value added.

Coverage:

The inquiry aims to identify sectors and supply chain segments where Australia can enhance materials efficiency to strengthen economic outcomes. By addressing barriers to adopting circular economy practices and promoting innovation in industrial processes, the inquiry aligns with SDG9's goal of sustainable industrial development and resource efficiency improvements.

SDG8 - Decent Work and Economic Growth

Target(s):

- **Target 8.4:** Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation.

Indicator(s):

- **Indicator 8.4.1:** Material footprint, material footprint per capita, and material footprint per GDP.
- **Indicator 8.4.2:** Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP.

Coverage:

The inquiry's focus on lifting Australia's materials productivity and efficiency to strengthen economic outcomes directly supports SDG8. By seeking ways to decouple economic growth from material consumption and environmental impact, the inquiry contributes to sustainable economic growth and promotes higher resource efficiency, in line with SDG8 targets.

SDG11 - Sustainable Cities and Communities

Target(s):

- **Target 11.6:** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

Indicator(s):

- **Indicator 11.6.1:** Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated.

Coverage:

The inquiry considers place-based circular economy activities, such as industrial precincts enabled by urban planning and development. By addressing waste management and promoting sustainable practices within cities and communities, the inquiry aligns with SDG11's aim to reduce the environmental impact of urban areas through improved waste management strategies.

SDG17 - Partnerships for the Goals

Target(s):

- **Target 17.16:** Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources.
- **Target 17.17:** Encourage and promote effective public, public-private, and civil society partnerships.

Indicator(s):

- **Indicator 17.16.1:** Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks.
- **Indicator 17.17.1:** Amount of United States dollars committed to public-private partnerships.

Coverage:

While not explicitly stated, the inquiry's emphasis on collaboration between Commonwealth, state and territory, and local governments, as well as engagement with businesses and consumers, reflects the spirit of SDG17. By identifying policy actions and regulatory frameworks that require coordinated efforts, the inquiry supports the development of partnerships essential for implementing a circular economy.

We appreciate that the inquiry comprehensively covers several key SDGs related to sustainable development, particularly focusing on responsible consumption and production (SDG12), climate action (SDG13), sustainable industry and innovation (SDG9), sustainable economic growth (SDG8), and sustainable cities (SDG11). By addressing the potential to enhance materials productivity and efficiency, identifying priority opportunities, and proposing policy actions to overcome barriers, the inquiry aligns with multiple targets and indicators of these SDGs. The findings and recommendations aim to inform policymaking that not only strengthens Australia's circular economy but also contributes to achieving broader sustainable development objectives.

BCSDA/WBCSD and its Global Network Partners' Leading Work on Circular Economy

BCSDA, along its global network partners like WBCSD, have made significant strides in advancing sustainable packaging policies and promoting a circular economy. Through comprehensive frameworks such as the Global Circularity Protocol (GCP) and SPHERE, we have provided essential tools for measuring circularity, fostering eco-design, and enhancing accountability. This work supports businesses in aligning with global sustainability standards, driving innovation, and improving packaging recyclability, all while reducing environmental impact. Our efforts play a crucial role in shaping more sustainable, circular

packaging systems worldwide. In this regard the following publications provide invaluable insights to inform Australia's Reform of packaging regulation.

The Global Circularity Protocol (GCP)

Offers critical insights for the *Reform of Packaging Regulation* by providing a global, standardized framework for measuring and reporting circularity, addressing key gaps in accountability and policy alignment that hinder the transition to a circular economy. The GCP emphasizes resource efficiency and circular business models, both essential for achieving the goals set out in the packaging reform consultation, such as improving recyclability and reducing environmental impact. Additionally, the GCP's focus on harmonizing global metrics and encouraging policy realignment can help ensure that businesses comply with the proposed packaging regulations while fostering innovation and cross-sector collaboration, enhancing the overall sustainability of packaging systems.

The Circular Transition Indicators (CTI) v1.0, v2.0, v3.0 and v4.0

As businesses strive to align with net-zero and nature-positive goals, they face the challenge of consistently and reliably measuring their circular performance. The Circular Transition Indicators (CTI), now in its fourth edition, provide a solution with a universal and quantitative framework designed by businesses for businesses. CTI helps companies assess their circularity, quantify the environmental benefits of their initiatives, and enhance their reporting capabilities to satisfy investor and regulatory demands. Additionally, CTI guides businesses in identifying practical steps to optimize resource use, reduce waste, and maximize their circular potential, thereby advancing their sustainability objectives. This framework, developed by the World Business Council for Sustainable Development, is made accessible under the CC BY-ND 4.0 license, ensuring broad usability and adherence to standards.

Preparing the Road to Circular Economy Reporting

Provides valuable insights for the *Reform of Packaging Regulation* consultation by focusing on the Corporate Sustainability Reporting Directive (CSRD) and how circular economy performance can be measured and reported using the Circular Transition Indicators (CTI) framework. It offers a structured methodology to assess resource use, waste management, and material flows, aligning with the reform's goals of enhancing packaging recyclability and reducing waste. The report emphasizes data transparency, accountability, and measurable progress, which can help companies comply with regulatory standards while transitioning to a more circular economy—elements critical for informing the Australian packaging regulation reform.

The SPHERE Framework Implementation Guide

Provides a valuable perspective for the consultation on the *Reform of Packaging Regulation* by offering structured principles and methodologies to optimize sustainability across packaging lifecycles. It focuses on minimizing environmental impacts, enhancing circularity, and ensuring compliance with modern sustainability standards. The guide emphasizes eco-design and portfolio analyses to address trade-offs in packaging choices, a method that complements the regulatory goals of reducing waste, increasing recyclability, and improving packaging's overall sustainability performance as discussed in the *Reform of Packaging Regulation*. By integrating the SPHERE framework, stakeholders in the consultation can better evaluate the environmental impacts of packaging options and make informed, data-driven decisions to meet national and international sustainability goals.

The *Enabling Corporate Plastics Disclosure*

This publication provides valuable insights for the *Reform of Packaging Regulation* consultation by proposing a comprehensive plastics protocol that standardizes corporate plastic reporting, target setting, and accountability measures. This protocol is designed to improve transparency across the entire plastic value chain, ensuring companies can assess and disclose their plastic footprint, circularity, and pollution impact. Its focus on harmonized metrics and disclosure aligns well with the reform's objectives of improving recyclability, reducing plastic waste, and promoting a circular economy for packaging, offering companies a structured framework for compliance and progress tracking. This publication emphasizes the need for global alignment on plastic management and reporting, which is critical for the success of the proposed packaging regulations.

BCSDA's high level view on the transformative potential of CE for Australia's sustainable development

The Business Council for Sustainable Development Australia (BCSDA) recognizes the transformative potential of the Circular Economy (CE) for Australia's sustainable development. While we acknowledge that the Productivity Commission's current mandate from the Treasurer Hon Jim Chalmers MP focuses on improving materials productivity and efficiency within specific sectors and supply chain segments, we believe a broader, systemic approach is crucial for the CE to achieve its full potential.

Embracing a Holistic, Systems-Based Approach

To truly benefit the economy, environment, and society, the CE must be integrated across all facets of sustainability:

- **Economic Sustainability**: Enhancing productivity and fostering economic growth through innovative business models and efficient resource use.
- **Environmental Sustainability**: Reducing waste and emissions, conserving resources, and protecting biodiversity by keeping materials in use longer.
- **Social Sustainability**: Promoting equitable access to resources, creating sustainable jobs, and engaging communities in sustainable practices.

Focusing solely on materials productivity risks overlooking the interconnectedness of these elements and may lead to unsustainable outcomes.

Addressing Limitations in the Current Inquiry Scope

The current inquiry emphasizes specific opportunities and barriers within a limited framework. To advance informed policy and strengthen Australia's circular economy, it is essential to:

1. **Integrate Social Considerations**: Policies should address social impacts, ensuring that CE initiatives contribute to social well-being and equity.
2. **Develop Comprehensive Metrics**: Establish metrics that capture economic, environmental, and social progress to accurately measure improvements and guide decision-making.
3. **Encourage Cross-Sector Collaboration**: Facilitate cooperation between industries, governments, and communities to overcome barriers and promote systemic change.
4. **Adopt International Best Practices**: Learn from countries that have made significant progress in circularity, adapting successful strategies to the Australian context.
5. **Assess Implementation Feasibility and Risks**: Evaluate the practicality of proposed actions, considering long-term benefits and potential challenges.

Advancing Informed Policy for Sustainable Development

Incorporating a systemic, integrated view of the CE is instrumental for its success in Australia. This approach ensures that:

- **Economic, Environmental, and Social Goals Are Aligned**: Creating policies that simultaneously advance productivity, environmental conservation, and social welfare.
- **Sustainability Objectives Are Met**: Ensuring that CE initiatives contribute meaningfully to sustainable development rather than producing isolated or short-term gains.
- **Australia Becomes a Global Leader in Circularity**: Positioning the nation at the forefront of sustainable innovation and competitiveness in international markets.

The BCSDA advocates for a comprehensive approach to the Circular Economy that extends beyond materials productivity and efficiency. By adopting a holistic, systems-based perspective, Australia can unlock the full potential of the CE, driving transformative change that benefits the Australian economy, the environment, and society as a whole.

Responses to the Specific Consultation Questions

Information request 1 - Circular economy success stories and measures of success

The PC sought 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.*

BCSDA Response

Australia has been progressively adopting circular economy principles to enhance materials productivity and efficiency. Our analysis explores notable Australian case studies across various sectors, assessing their economic, environmental, and social impacts, and discusses Australia's potential to further embrace circular economy practices.

Australian Case Studies of Circular Economy Activities

1. **Narrowing Loops: Reducing the Demand for Materials**
   Case Study: *Planet Ark's 'Cartridges 4 Planet Ark' Program*

- **Description:** A national program encouraging businesses and consumers to recycle used printer cartridges to reduce the demand for virgin materials.
- **Economic Outcomes:** Since 2003, over 50 million cartridges have been recycled, saving costs associated with landfill disposal and reducing the need for raw materials in manufacturing new cartridges (Planet Ark, 2021).
- **Environmental Outcomes:** Diverted more than 10,000 tonnes of waste from landfill, reducing pollution and conserving natural resources.
- **Social Outcomes:** Enhanced public awareness about recycling and sustainability practices.
- **Level of Uptake:** High participation with over 4,000 collection points nationwide, including partnerships with major retailers like Officeworks and Australia Post.
- **Reasons for Adoption:** Corporate social responsibility, cost savings on waste disposal, and consumer demand for sustainable practices.
- **Effectiveness and Costs:** Effective waste reduction with program costs shared among manufacturers, retailers, and Planet Ark.

2. **Closing Loops: Using Materials Multiple Times**

   Case Study: Container Deposit Schemes (CDS)
   - **Description:** Initiatives like 'Return and Earn' in New South Wales incentivize recycling by offering monetary returns for beverage containers.
   - **Economic Outcomes:** Creation of over 700 jobs in recycling and logistics, and reduction in local government spending on litter cleanup (NSW EPA, 2020).
   - **Environmental Outcomes:** More than 5 billion containers returned since inception in 2017, leading to a 44% reduction in drink container litter.
   - **Social Outcomes:** Fundraising opportunities for community groups and charities, fostering community engagement.
   - **Level of Uptake:** Widespread public participation with over 600 return points across NSW.
   - **Reasons for Adoption:** Financial incentives for consumers, environmental benefits, and legislative support.
   - **Effectiveness and Costs:** Highly effective in increasing recycling rates; operational costs are offset by unredeemed deposits and material resale.

3. **Slowing Loops: Extending Useful Product Life**

   Case Study: The Bower Reuse & Repair Centre
   - **Description:** A non-profit organization in Sydney offering repair services and workshops to extend the life of household items.
   - **Economic Outcomes:** Provides affordable repair services, saving consumers money and reducing the demand for new products (The Bower, 2022).
   - **Environmental Outcomes:** Diverts approximately 200 tonnes of goods from landfill annually, reducing waste and resource consumption.
   - **Social Outcomes:** Offers community education programs, enhancing skills and promoting a culture of repair over disposal.
   - **Level of Uptake:** Increasing patronage with community workshops often fully booked.
   - **Reasons for Adoption:** Cost savings, environmental consciousness, and interest in skill development.
   - **Effectiveness and Costs:** Effective in waste reduction with operational costs supported by service fees, grants, and donations.

4. **Regenerating: Using Non-Toxic Materials and Regenerating Ecosystems**

   Case Study: Interface's ReEntry Carpet Recycling Program
   - **Description:** Interface Australia recycles used carpet tiles into new products, utilizing non-toxic materials and sustainable processes.
   - **Economic Outcomes:** Reduces raw material costs and enhances brand value, contributing to increased market share (Interface, 2021).
   - **Environmental Outcomes:** Diverted over 1,000 tonnes of carpet from landfill annually, significantly cutting down on waste and associated emissions.
   - **Social Outcomes:** Positions the company as a sustainability leader, influencing industry practices and consumer choices.
   - **Level of Uptake:** Adopted by major corporations and government agencies seeking sustainable flooring solutions.
   - **Reasons for Adoption:** Corporate sustainability goals, regulatory compliance, and customer demand for eco-friendly products.
   - **Effectiveness and Costs:** Successful in closing the material loop with investments yielding long-term economic and environmental benefits.

5. **Agriculture Sector: Regenerative Farming Practices**

   Case Study: Carbon Positive Australia
   - **Description:** An organization promoting regenerative agriculture to restore ecosystems and improve soil health.

- **Economic Outcomes:** Farmers adopting these practices have reported improved crop yields and reduced input costs (Carbon Positive Australia, 2021).
- **Environmental Outcomes:** Enhanced carbon sequestration, improved biodiversity, and reduced soil erosion.
- **Social Outcomes:** Strengthened rural communities through sustainable land management and educational programs.
- **Level of Uptake:** Growing interest among farmers, supported by government grants and incentives.
- **Reasons for Adoption:** Long-term land productivity, environmental stewardship, and access to carbon markets.
- **Effectiveness and Costs:** Effective in environmental restoration with costs mitigated by increased productivity and potential revenue from carbon credits.

Australia's Overall Potential to Move to a More Circular Economy

Strengths:

- **Resource Availability:** Abundant natural resources and waste materials offer raw inputs for recycling and remanufacturing industries.
- **Innovation Capacity:** Strong research institutions and innovative businesses capable of developing new circular technologies and models.
- **Policy Momentum:** Government commitment evidenced by initiatives like the National Waste Policy Action Plan 2019 and investment in recycling infrastructure.

Opportunities:

- **Manufacturing Sector Transformation:** Embracing circular principles can revitalize manufacturing, promoting local production and reducing reliance on imports.
- **Job Creation:** Potential to create up to 50,000 new jobs in recycling, repair, and remanufacturing sectors (ACOR, 2020).
- **Export Potential:** Developing expertise in circular technologies and services for export to other countries transitioning to circular economies.

Challenges:

- **Infrastructure Needs:** Investment required to develop nationwide recycling and remanufacturing facilities.
- **Regulatory Harmonization:** Need for consistent regulations across states to facilitate nationwide adoption of circular practices.
- **Behavioural Change:** Encouraging consumers and businesses to prioritize sustainability over convenience or short-term cost savings.

Monitoring Progress and Measuring Success

Key Metrics:

1. **Material Footprint Reduction:**
   - **Definition:** Total amount of raw materials extracted to meet final consumption demands.
   - **Target:** Reduce Australia's material footprint per capita by 15% by 2030.
2. **Resource Productivity Improvement:**
   - **Definition:** GDP generated per unit of domestic material consumption.
   - **Benchmark:** Aim to reach the OECD average of US$2.50 per kg.
3. **Waste Reduction Targets:**
   - **Municipal Waste:** Reduce household waste generation per capita.
   - **Industrial Waste:** Decrease waste generated per unit of industrial output.
4. **Recycling and Recovery Rates:**
   - **Goal:** Achieve an 80% average recovery rate from all waste streams by 2030, as outlined in the National Waste Policy.
5. **Greenhouse Gas Emissions Reduction:**
   - **Measurement:** Emissions avoided through recycling and circular activities.
   - **Contribution:** Align with national targets under the Paris Agreement.
6. **Economic Indicators:**
   - **Circular Economy Employment:** Track jobs created in relevant sectors.
   - **Investment Levels:** Monitor public and private investment in circular economy initiatives.
7. **Innovation and Patents:**
   - **Metric:** Number of patents filed related to circular technologies and processes.
8. **Consumer Behaviour:**
   - **Awareness Levels:** Surveys assessing public understanding of circular economy concepts.
   - **Participation Rates:** Engagement in recycling programs and use of sustainable products.

Implementation Strategies:

- **Data Collection:** Enhance data quality and availability through coordinated efforts between government agencies, industry bodies, and research institutions.
- **Reporting Frameworks:** Establish standardized reporting mechanisms, such as annual circular economy progress reports.
- **International Benchmarking:** Compare Australia's performance with leading countries like the Netherlands and Japan to identify best practices.
- **Stakeholder Collaboration:** Foster partnerships among government, industry, academia, and communities to drive collective action.

BCSDA believes, Australia's journey towards a circular economy is marked by successful initiatives that demonstrate the viability and benefits of circular practices. These case studies reveal positive impacts on economic growth, environmental conservation, and social well-being. By capitalizing on its strengths and addressing challenges, Australia has significant potential to enhance materials productivity and achieve a more sustainable and prosperous economy. Implementing robust measures to monitor progress will be crucial in ensuring continued advancement and realizing the full benefits of a circular economy.

Information request 2 - Priority opportunities to progress the circular economy

The PC sought 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 knowledge 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.*

BCSDA Response

<u>Opportunities in Australia to Enhance Environmental and Economic Outcomes through Circular Economy Activities.</u>

We believe, Australia stands at a pivotal point where adopting circular economy principles can significantly improve both environmental and economic outcomes. By transitioning from a traditional linear economy to a more sustainable circular model, Australia can reduce waste, conserve natural resources, and stimulate economic growth. Our analysis explores opportunities across various sectors, products, and supply chain segments, focusing on narrowing, closing, slowing, and regenerating loops. It also examines the potential impacts on business, environmental, and social outcomes, the feasibility of adoption, monitoring strategies, prioritization of opportunities, and the integration of Aboriginal and Torres Strait Islander knowledge.

Opportunities in Sectors, Products, and Supply Chain Segments

1. **Narrowing Loops: Reducing the Demand for Materials**

   Sector Focus: Construction Industry

   - **Opportunity:** Implementing sustainable building designs and materials to reduce raw material consumption.
   - **Implementation:** Utilizing prefabrication, modular construction, and lightweight materials.

- **Impact:** Potential reduction of material use by up to 30% (Australian Sustainable Built Environment Council [ASBEC], 2018).

Business and Economic Outcomes:

- **Cost Savings:** Reduced material costs and waste disposal fees.
- **Productivity Gains:** Improved efficiency through streamlined construction processes.
- **Market Competitiveness:** Enhanced reputation and market share for sustainable builders.

Environmental Outcomes:

- **Biodiversity Protection:** Less resource extraction reduces habitat disruption.
- **Climate Impact:** Lower greenhouse gas emissions from material production.
- **Land and Air Quality:** Reduced pollution from manufacturing processes.

Social Outcomes:

- **Job Creation:** New roles in sustainable design and engineering.
- **Community Well-being:** Healthier living environments for occupants.

2. **Closing Loops: Using Materials Multiple Times**

Sector Focus: Manufacturing and Recycling

- **Opportunity:** Establishing industrial symbiosis networks where waste from one process becomes input for another.
- **Implementation:** Creating resource recovery hubs and facilitating material exchanges between industries.
- **Impact:** Potential to divert up to 7 million tonnes of waste from landfills annually (Commonwealth Scientific and Industrial Research Organisation [CSIRO], 2020).

Business and Economic Outcomes:

- **Revenue Streams:** Monetizing waste products.
- **Cost Reduction:** Savings on raw materials and waste management.
- **Innovation Incentives:** Encouraging development of new technologies.

Environmental Outcomes:

- **Waste Reduction:** Decreased landfill usage and associated environmental hazards.
- **Resource Conservation:** Preservation of finite resources.

Social Outcomes:

- **Employment Opportunities:** Growth in recycling and remanufacturing sectors.
- **Community Engagement:** Increased public participation in recycling programs.

3. **Slowing Loops: Extending Useful Product Life**

Product Focus: Electronics and Appliances

- **Opportunity:** Promoting repairability and durability in consumer electronics.
- **Implementation:** Enforcing Right to Repair legislation and encouraging modular design.
- **Impact:** Could extend product lifespans by 50%, reducing e-waste significantly (Productivity Commission, 2021).

Business and Economic Outcomes:

- **After-Sales Services:** New revenue from repair services and parts.
- **Brand Loyalty:** Enhanced customer satisfaction and retention.
- **Market Differentiation:** Positioning as sustainable product leaders.

Environmental Outcomes:

- **E-Waste Reduction:** Decrease in hazardous waste entering the environment.
- **Resource Efficiency:** Lower demand for raw material extraction.

Social Outcomes:

- **Consumer Savings:** Reduced need for frequent replacements.
- **Skill Development:** Training in repair and maintenance professions.

4. **Regenerating: Using Non-Toxic Materials and Regenerating Ecosystems**

Supply Chain Segment Focus: Agriculture and Food Systems

- **Opportunity:** Adopting regenerative farming practices and sustainable packaging.
- **Implementation:** Integrating organic farming, compostable packaging, and waste-to-energy systems.
- **Impact:** Potential to sequester up to 10 million tonnes of CO_2 annually (Climate Works Australia, 2020).

Business and Economic Outcomes:

- **Yield Improvement:** Enhanced soil health leads to better crop productivity.
- **Market Access:** Meeting consumer demand for sustainable products.
- **Risk Mitigation:** Resilience against climate change impacts.

Environmental Outcomes:

- **Biodiversity Enhancement:** Improved habitats through ecosystem restoration.
- **Water Quality:** Reduced runoff and pollution.
- **Air Quality:** Lower emissions from chemical fertilizers and pesticides.

Social Outcomes:

- **Food Security:** Sustainable practices ensure long-term food supply.
- **Rural Development:** Strengthening local communities and economies.

Feasible Levels of Future Uptake in Australia

- **Government Support:** With policies like the National Waste Policy Action Plan and investments exceeding $100 million in recycling infrastructure, Australia is poised for significant uptake (Department of Agriculture, Water and the Environment [DAWE], 2021).
- **Industry Commitment:** Major corporations, including Woolworths and Coles, have pledged to reduce packaging and waste, indicating strong industry momentum.
- **Consumer Trends:** Surveys show that 78% of Australians are willing to purchase sustainable products, suggesting high consumer acceptance (Australian Consumer Association, 2022).
- **Projected Adoption Rates:**
    - **Construction:** Sustainable practices could reach 60% adoption by 2030.
    - **Manufacturing and Recycling:** Industrial symbiosis could involve 50% of major manufacturers by 2028.
    - **Electronics:** Right to Repair policies could see 70% of electronics designed for repairability by 2025.
    - **Agriculture:** Regenerative practices could be adopted by 40% of farms by 2030.

Monitoring, Measurement, and Prioritization of Effects

Monitoring Strategies:

- **Key Performance Indicators (KPIs):** Establish sector-specific KPIs such as waste reduction rates, material reuse percentages, and lifecycle assessments.
- **Data Collection:** Utilize the National Waste Report framework to collect consistent data across states and territories.
- **Reporting Mechanisms:** Annual sustainability reports from businesses and consolidated national reports.

Measurement Tools:

- **Material Flow Analysis (MFA):** Track the flow of materials through the economy.
- **Environmental Impact Assessments (EIA):** Evaluate the environmental consequences of projects.
- **Social Return on Investment (SROI):** Measure the social benefits relative to the investment cost.

Prioritization Criteria:

1. **Environmental Impact:** Focus on activities with the highest potential for reducing greenhouse gas emissions and conserving biodiversity.
2. **Economic Viability:** Prioritize opportunities with strong business cases and potential for job creation.
3. **Social Benefits:** Emphasize initiatives that improve community well-being and equity.
4. **Feasibility:** Assess the technical and logistical practicality of implementation.
5. **Scalability:** Consider the potential for widespread adoption and replication.

Valuing Aboriginal and Torres Strait Islander Knowledge

Integration Strategies:

- **Collaborative Partnerships:** Engage Indigenous communities in co-designing circular economy projects.
- **Cultural Respect:** Ensure practices align with Indigenous cultural values and land management traditions.
- **Intellectual Property Protection:** Implement agreements that safeguard Indigenous knowledge and provide fair compensation.

Opportunities:

- **Land Management:** Applying traditional ecological knowledge in regenerative agriculture and conservation efforts.
- **Sustainable Practices:** Incorporating Indigenous methods of resource use that emphasize sustainability and balance.
- **Economic Participation:** Supporting Indigenous-led enterprises in sectors like bush food production and eco-tourism.

Case Study:

- **The Kimberley Land Council's Ranger Program**
    - **Description:** Indigenous rangers manage land using traditional practices.
    - **Outcomes:** Improved biodiversity, reduced wildfire incidents, and strengthened cultural ties.
    - **Recognition:** The program has been credited with reducing CO_2 emissions by 40% in managed areas (Kimberley Land Council, 2020).

We believe, Australia has significant opportunities to enhance environmental and economic outcomes through the adoption of circular economy activities. By focusing on key sectors like construction, manufacturing, electronics, and agriculture, and integrating Indigenous knowledge, the nation can achieve sustainable growth. Feasible adoption levels are promising,

supported by government policies, industry initiatives, and consumer willingness. Effective monitoring and prioritization will be crucial in realizing these opportunities and ensuring long-term benefits for the economy, environment, and society.

Circular Opportunities Providing the Greatest Scope to Improve Environmental and Economic Outcomes in Australia

Australia's shift towards a circular economy presents substantial opportunities to enhance environmental sustainability while driving economic growth. Our analysis identifies key circular economy opportunities that offer the greatest potential for improving environmental and economic outcomes in Australia. It discusses the metrics used to inform this analysis, examines modelling related to potential benefits and costs, and assesses the distribution of these impacts over time.

Key Circular Economy Opportunities

The following circular economy opportunities are identified as having significant potential in Australia:

1. **Sustainable Management of the Built Environment**
2. **Resource Recovery and Recycling in the Manufacturing Sector**
3. **Regenerative Agriculture Practices**
4. **Waste-to-Energy (WtE) Technologies**
5. **Extended Producer Responsibility (EPR) and Product Stewardship Schemes**

1. Sustainable Management of the Built Environment

Why This Opportunity Is Significant

The construction and demolition (C&D) sector is one of the largest waste generators in Australia, accounting for approximately 44% of the nation's waste (Department of Agriculture, Water and the Environment [DAWE], 2020a). Sustainable practices in this sector can significantly reduce material consumption and environmental impacts.

Metrics Used

- **Material Recovery Rate**: Percentage of C&D waste materials recovered and reused.
- **Embodied Carbon Reduction**: Decrease in greenhouse gas emissions associated with building materials.
- **Lifecycle Cost Savings**: Reduction in costs over the building's lifecycle due to energy efficiency and material durability.

Modelling and Analysis

- **Life Cycle Assessment (LCA)**: Studies show that using recycled materials and designing for deconstruction can reduce a building's embodied energy by up to 30% (Sustainability Victoria, 2018).
- **Cost-Benefit Analysis (CBA)**: Initial higher costs for sustainable materials can be offset by long-term savings in energy and maintenance.

Benefits and Costs

- **Environmental Benefits**: Reduced resource extraction, lower landfill use, decreased emissions.
- **Economic Benefits**: Long-term cost savings, job creation in recycling and sustainable construction sectors.
- **Costs**: Higher upfront costs for sustainable materials and technologies, need for workforce upskilling.

Distribution Over Time

- **Short Term**: Investment in sustainable materials and training.
- **Medium Term**: Operational cost savings from energy efficiency.
- **Long Term**: Environmental benefits and reduced maintenance costs.

2. Resource Recovery and Recycling in the Manufacturing Sector

Why This Opportunity Is Significant

Manufacturing consumes significant raw materials and energy. Implementing resource recovery can enhance material efficiency and reduce environmental impacts.

Metrics Used

- **Material Efficiency Improvement**: Increase in output per unit of material input.
- **Waste Reduction**: Decrease in manufacturing waste sent to landfill.
- **Economic Value of Recovered Materials**: Revenue generated from recycled materials.

Modelling and Analysis

- **Input-Output Modelling**: The Centre for International Economics estimated that improving material efficiency could increase GDP by up to $24 billion by 2030 (Australian Industrial Transformation Institute [AITI], 2018).
- **CBA**: Investments in resource-efficient technologies can yield a return on investment within 2-5 years due to material cost savings.

Benefits and Costs

- **Environmental Benefits**: Lower resource depletion, reduced emissions.
- **Economic Benefits**: Cost savings, increased competitiveness, new market opportunities.
- **Costs**: Capital investment in new technologies, potential disruption during implementation.

Distribution Over Time

- **Short Term**: Capital expenditure and potential downtime.
- **Medium Term**: Realization of cost savings and efficiency gains.
- **Long Term**: Sustained economic and environmental benefits.

3. Regenerative Agriculture Practices

Why This Opportunity Is Significant

Agriculture accounts for around 13% of Australia's greenhouse gas emissions (DAWE, 2020b). Regenerative practices can enhance soil health, increase biodiversity, and sequester carbon.

Metrics Used

- **Soil Organic Carbon Levels**: Indicator of soil health and carbon sequestration.
- **Biodiversity Measures**: Species richness and ecosystem resilience.
- **Agricultural Productivity**: Crop yields and livestock health.

Modelling and Analysis

- **LCA**: Studies indicate that regenerative practices can sequester up to 3 tonnes of CO_2 per hectare annually (Lorenz & Lal, 2016).
- **Economic Modelling**: Improved soil health can increase yields by 10-20%, leading to higher profitability (Rodale Institute, 2014).

Benefits and Costs

- **Environmental Benefits**: Carbon sequestration, improved water retention, enhanced biodiversity.
- **Economic Benefits**: Increased yields, reduced input costs for fertilizers and pesticides.
- **Costs**: Transition costs, need for farmer education and training.

Distribution Over Time

- **Short Term**: Investment in training and possible initial yield reductions.
- **Medium Term**: Improved soil health leading to increased productivity.
- **Long Term**: Enhanced resilience to climate variability, sustained economic gains.

4. Waste-to-Energy (WtE) Technologies

Why This Opportunity Is Significant

WtE technologies provide a solution for non-recyclable waste while generating energy, contributing to renewable energy targets and reducing landfill use.

Metrics Used

- **Energy Generation**: Megawatt-hours (MWh) produced from waste.
- **Landfill Diversion Rate**: Percentage of waste diverted from landfills.
- **GHG Emissions Reduction**: Tonnes of CO_2 equivalent avoided.
- **Modelling and Analysis**
- **CBA**: Infrastructure Victoria found that WtE facilities could deliver net economic benefits by reducing landfill costs and generating energy (Infrastructure Victoria, 2020).
- **Emission Modelling**: WtE can reduce GHG emissions by offsetting fossil fuel energy generation (European Commission, 2017).

Benefits and Costs

- **Environmental Benefits**: Reduced landfill methane emissions, energy recovery from waste.
- **Economic Benefits**: Energy sales, job creation in facility construction and operation.
- **Costs**: High capital costs, potential community opposition due to environmental concerns.

Distribution Over Time

- **Short Term**: Significant capital investment.
- **Medium Term**: Energy generation begins, operational revenues.
- **Long Term**: Ongoing waste management and energy benefits.

5. Extended Producer Responsibility (EPR) and Product Stewardship Schemes

Why This Opportunity Is Significant

EPR schemes encourage manufacturers to design products for longevity, reuse, and recyclability, reducing waste at the source.

Metrics Used

- **Product Recycling Rates**: Percentage of products recycled at end-of-life.
- **Design for Environment (DfE) Adoption**: Number of companies implementing DfE principles.
- **Reduction in Hazardous Waste**: Decrease in hazardous materials used and disposed.

Modelling and Analysis

- **CBA**: The Productivity Commission estimated that national EPR schemes could lead to net benefits by reducing waste management costs and environmental impacts (Productivity Commission, 2006).
- **Material Flow Analysis**: Shows potential for significant reductions in material throughput.

Benefits and Costs

- **Environmental Benefits**: Reduced waste generation, lower environmental contamination.
- **Economic Benefits**: Innovation in product design, potential cost savings from material efficiency.
- **Costs**: Compliance costs for producers, possible price increases for consumers.

Distribution Over Time

- **Short Term**: Implementation of schemes, redesign of products.
- **Medium Term**: Market shift towards sustainable products.
- **Long Term**: Reduced waste management costs, environmental benefits.

Metrics Used to Inform the Analysis

The analysis uses a combination of environmental, economic, and social metrics:

- **Environmental Metrics**: GHG emissions, resource consumption, waste generation, biodiversity indices.
- **Economic Metrics**: GDP contribution, cost savings, investment returns, job creation.
- **Social Metrics**: Health impacts, community well-being, employment distribution.

These metrics are applied using tools such as LCA, CBA, and economic modelling to quantify benefits and costs accurately.

Modelling and Analysis of Potential Benefits and Costs

Life Cycle Assessment (LCA)

- **Purpose**: Evaluate environmental impacts throughout the product lifecycle.
- **Application**: Assessing the environmental benefits of sustainable building materials.

Cost-Benefit Analysis (CBA)

- **Purpose**: Compare total expected costs against total expected benefits.
- **Application**: Evaluating the economic viability of WtE facilities.
- **Economic Modelling**
- **Purpose**: Predict economic outcomes based on various scenarios.
- **Application**: Estimating GDP growth from increased material efficiency in manufacturing.

Example: Sustainable Construction

- **Costs**: Higher upfront investment in materials and design.
- **Benefits**: Energy savings of up to 25% over the building's life, reduced maintenance costs (International Energy Agency [IEA], 2019).
- **Net Present Value (NPV)**: Positive NPV over 20 years when factoring in energy savings and increased property value.

Distribution of Benefits and Costs Over Time

Short Term (0-2 years)

- **Costs**: Capital investments, transition expenses, potential disruptions.
- **Benefits**: Job creation during implementation, immediate waste reduction.

Medium Term (2-5 years)

- **Costs**: Ongoing operational expenses.
- **Benefits**: Realization of efficiency gains, cost savings begin to offset initial investments.

Long Term (5+ years)

- **Benefits**: Sustained economic benefits, significant environmental improvements, societal acceptance.
- **Costs**: Reduced as initial investments have been amortized.

We think the circular economy opportunities identified—sustainable built environment practices, resource recovery in manufacturing, regenerative agriculture, WtE technologies, and EPR schemes—offer substantial potential to improve Australia's environmental and economic outcomes. By utilizing appropriate metrics and robust modelling, the benefits and costs of these opportunities can be effectively assessed, guiding policymakers and industry stakeholders in prioritizing and implementing these initiatives for maximum impact over time.

Opportunities and Risks for Australia Arising from International Developments in Circular Economy Policy

We believe, the global shift towards a circular economy presents both opportunities and risks for Australia. As countries worldwide implement policies to promote sustainable production and consumption, Australia's export and import markets are impacted. We explore how international developments in circular economy policy affect Australian exports and imports and identifies innovative processes from abroad that could be adopted domestically. It includes specific details, statistics, and industry insights to provide a comprehensive understanding of the implications for Australia.

Impact on Australian Exports
Opportunities

1. **Access to New Markets for Circular Products**
    - **Growing Demand for Sustainable Goods**: International markets, particularly in the European Union (EU) and Asia, are experiencing increased consumer demand for sustainable and circular products. This opens new avenues for Australian exporters specializing in such goods.
        - **Example**: The global market for recycled metals is projected to reach USD 1.2 trillion by 2025 (Grand View Research, 2020). Australian companies like Sims Metal Management can capitalize on this demand.
    - **Trade Agreements Encouraging Sustainability**
        - **Regional Comprehensive Economic Partnership (RCEP)**: Includes provisions that promote environmental sustainability, potentially easing market access for Australian circular products in Asia-Pacific countries (DFAT, 2020).

Risks

1. **Regulatory Requirements on Exported Goods**
    - **EU's Circular Economy Action Plan**
        - **Product Design Requirements**: The EU's plan includes stricter regulations on product durability, reparability, and recyclability (European Commission, 2020). Australian exporters to the EU must comply with these standards, which may require adjustments in production processes.
        - **Impact on Sectors**: Sectors like electronics, textiles, and automotive parts could face increased compliance costs.
    - **Carbon Border Adjustment Mechanism (CBAM)**
        - **Carbon Pricing**: The EU's CBAM imposes a carbon price on imports based on their embedded emissions (European Commission, 2021). Australian exporters of emissions-intensive goods like steel and aluminium may face additional costs.
            - **Case Study**: Australia's aluminium exports to the EU were worth AUD 482 million in 2020 (Australian Bureau of Statistics [ABS], 2021). Compliance with CBAM could affect competitiveness.
2. **Loss of Market Share to Competitors**
    - **Countries Advancing Circular Practices**
        - **China's Circular Economy Initiatives**: China's rapid adoption of circular economy models may enhance the competitiveness of its exports, potentially displacing Australian products in key markets (World Economic Forum, 2021).

Impact on Australian Imports

Opportunities

1. **Access to Innovative Technologies and Processes**
    - **Importing Advanced Recycling Technologies**
        - **Chemical Recycling Technologies**: Technologies developed in countries like Japan and Germany can process mixed plastic waste more effectively (Ellen MacArthur Foundation, 2019). Importing these technologies can improve Australia's recycling capabilities.
    - **Adoption of International Best Practices**
        - **Industrial Symbiosis Models**: Denmark's Kalundborg Symbiosis is a leading example of industrial symbiosis, where waste from one industry serves as a resource for another (Kalundborg Symbiosis, 2020). Australia can learn from and adopt similar models.

Risks

1. **Increased Competition from Imports with Improved Circularity**
    - **Foreign Products with Enhanced Sustainability**
        - **Consumer Preference Shift**: Imported goods that adhere to circular economy principles may be favoured by Australian consumers over domestic products lacking such attributes.

    - **Impact on Local Industries**: Domestic producers may lose market share if unable to compete on sustainability credentials.

2. **Changes in International Production Methods Affecting Supply Chains**
    - **Supply Chain Disruptions**
        - **Resource Scarcity**: International moves towards resource efficiency may reduce the availability of certain raw materials for import, affecting Australian industries reliant on them.
        - **Example**: Restrictions on rare earth element exports by countries like China could impact Australia's electronics and renewable energy sectors (U.S. Geological Survey, 2021).

Innovative Processes Adoptable in Australia

1. **Extended Producer Responsibility (EPR) Schemes**
    - **International Example**: The EU's Waste Electrical and Electronic Equipment (WEEE) Directive mandates producers to manage end-of-life electronics (European Commission, 2012).
    - **Potential Adoption in Australia**: Implementing similar EPR schemes can reduce e-waste and promote recycling industries.
        - **Current Status**: Australia has a National Television and Computer Recycling Scheme, but expansion to other products could enhance circularity (Department of Agriculture, Water and the Environment [DAWE], 2020).
2. **Industrial Symbiosis Networks**
    - **International Example**: Sweden's Hammarby Sjöstad integrates waste, energy, and water systems for urban sustainability (City of Stockholm, 2020).
    - **Potential Adoption in Australia**: Developing eco-industrial parks where industries collaborate to use each other's waste streams.
        - **Case Study Opportunity**: The Kwinana Industrial Area in Western Australia could further develop symbiotic exchanges (Kwinana Industries Council, 2019).
3. **Circular Business Models**
    - **Product-as-a-Service Models**
        - **International Example**: Philips offers lighting as a service, retaining ownership of equipment and ensuring efficient use (Philips, 2018).
        - **Potential Adoption**: Australian companies could implement similar models in sectors like manufacturing and consumer goods.
4. **Advanced Recycling Technologies**
    - **Chemical Recycling**
        - **International Example**: Japan's advancements in converting plastic waste back into oil and other chemicals (Japan Chemical Innovation Institute, 2020).
        - **Potential Adoption**: Investment in chemical recycling facilities can address Australia's plastic waste challenges.
5. **Digital Platforms for Circularity**
    - **International Example**: The Netherlands' Excess Materials Exchange connects businesses to trade surplus materials (Excess Materials Exchange, 2021).
    - **Potential Adoption**: Developing Australian platforms to facilitate material exchanges between industries.

Specific Opportunities and Risks

Affecting Australian Exports

Opportunities

- **Sustainable Wine Production**
    - **Market Demand**: European consumers increasingly prefer sustainably produced wines.
    - **Australian Advantage**: Wineries adopting sustainable practices can access premium markets.
        - **Example**: The Australian Wine Industry has Sustainability Frameworks in place (Wine Australia, 2020).

Risks

- **Agricultural Exports Facing Stringent Standards**
    - **EU Farm to Fork Strategy**: Emphasizes sustainability in food production, potentially imposing strict standards on imports (European Commission, 2020b).
    - **Impact**: Australian agricultural exporters may need to adapt practices to meet these standards.

Affecting Australian Imports

Opportunities

- **Access to Sustainable Consumer Goods**
    - **Eco-Friendly Products**: Importing goods with lower environmental footprints can meet domestic consumer demand.

Risks

- **Dependency on Imports for Critical Materials**
    - **Supply Chain Vulnerabilities**: Reliance on imports for critical components like lithium-ion batteries could pose risks if international policies restrict exports.
    - **Solution**: Developing domestic capabilities in critical materials production.

Innovative Processes for Adoption

Circular Procurement Policies

- **International Example**: The Netherlands mandates circular procurement in government contracts (Government of the Netherlands, 2016).
- **Potential in Australia**: Federal and state governments could adopt similar policies to drive demand for circular products and services.

Food Waste Reduction Initiatives

- **International Example**: France's law prohibiting supermarkets from discarding unsold food, instead requiring donation (French Government, 2016).
- **Potential Adoption**: Australia could implement policies to reduce food waste, supporting the National Food Waste Strategy goal to halve food waste by 2030 (DAWE, 2017).

We observe that the international developments in circular economy policies present a mix of opportunities and risks for Australia. By proactively adapting to global regulatory changes, leveraging new market opportunities, and adopting innovative practices from abroad, Australia can enhance its economic resilience and environmental sustainability. Collaboration between government, industry, and other stakeholders is crucial to navigate these changes effectively.

Information request 3 - Hurdles and barriers to a circular economy

The PC sought 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.*

BCSDA Response

In our view, the transition to a circular economy in Australia presents significant environmental and economic benefits. However, adoption by businesses and consumers has been limited due to various hurdles and barriers. We examine the main reasons hindering the widespread implementation of circular economy practices in Australia, focusing on costs, attitudes (including risk perceptions), regulatory constraints, lack of information or resources, and lack of coordination. The insights provided are enriched with specific details, statistics, and industry perspectives to offer a comprehensive understanding of the challenges faced.

1. **Costs**

High Initial Investment and Operational Costs

- **Capital Expenditure**: Implementing circular practices often requires significant upfront investment in new technologies, equipment, and processes. For example, transitioning to renewable energy sources or investing in recycling infrastructure can be costly for businesses (Sustainability Victoria, 2018).
- **Economies of Scale**: Smaller businesses may lack the financial capacity to absorb these costs, as they cannot leverage economies of scale enjoyed by larger corporations (Australian Industry Group [Ai Group], 2019).
- **Return on Investment (ROI) Uncertainty**: Businesses may be hesitant due to the uncertain or long-term nature of returns on investment in circular initiatives. For instance, the payback period for energy-efficient equipment may extend beyond acceptable business timelines (ClimateWorks Australia, 2020).

Cost Competitiveness of Linear Models

- **Lower Costs of Virgin Materials**: In some cases, virgin materials are cheaper than recycled alternatives due to subsidies or market prices, making it economically unfavourable for businesses to use recycled inputs (Australian Council of Recycling [ACOR], 2019).
- **Externalization of Environmental Costs**: Traditional linear models often do not account for environmental degradation costs, making them appear more cost-effective compared to circular models that internalize these costs (Productivity Commission, 2006).

2. **Attitudes and Risk Perception**

Resistance to Change and Innovation

- **Cultural Inertia**: Established business practices and consumer habits favour linear consumption patterns. Changing these ingrained behaviours requires significant effort and motivation (Centre for Sustainable Resource Consumption, 2019).
- **Perceived Risks**: Businesses may perceive circular practices as risky due to uncertainties in market demand, supply chain reliability, and regulatory changes (KPMG Australia, 2020).

Lack of Awareness and Understanding

- **Consumer Awareness**: A survey indicated that only 34% of Australian consumers are familiar with the concept of a circular economy (Planet Ark, 2017). This lack of awareness reduces consumer demand for circular products and services.
- **Business Knowledge Gaps**: Some businesses lack understanding of circular economy principles and their potential benefits, leading to hesitation in adopting new models (Australian Chamber of Commerce and Industry, 2019).

3. **Regulatory Constraints**

Inconsistent and Complex Regulations

- **Variability Across Jurisdictions**: Australia's federal structure results in differing regulations across states and territories, creating complexity for businesses operating nationally (Waste Management and Resource Recovery Association of Australia [WMRR], 2020).
- **Regulatory Barriers**: Certain regulations inadvertently hinder circular practices. For example, strict waste classification laws can make the reuse of materials legally challenging (Environmental Justice Australia, 2018).

Lack of Supportive Policies and Incentives

- **Insufficient Incentives**: There is a perceived lack of government incentives to encourage circular practices, such as tax breaks or subsidies for using recycled materials (Green Industries SA, 2019).
- **Policy Uncertainty**: Inconsistent policy signals, such as changing renewable energy targets or waste export bans, create uncertainty that discourages long-term investment in circular initiatives (Australian National University [ANU], 2020).

4. **Lack of Information or Resources**

Limited Access to Data and Technology

- **Data Gaps**: Businesses often lack access to reliable data on material flows, waste generation, and recycling rates necessary to make informed decisions (Commonwealth Scientific and Industrial Research Organisation [CSIRO], 2019).
- **Technology Barriers**: Access to advanced technologies required for circular processes, such as sophisticated recycling or remanufacturing equipment, is limited, especially for small and medium-sized enterprises (SMEs) (Manufacturing Australia, 2020).

Skill and Knowledge Shortages

- **Workforce Skills Gap**: There is a shortage of professionals with expertise in circular economy practices, hindering the ability of businesses to implement such models effectively (TAFE Directors Australia, 2019).
- **Educational Resources**: Limited availability of educational programs and training focused on circular economy principles contributes to the skills gap (UNESCO-UNEVOC, 2020).

5. **Lack of Coordination**

Fragmented Supply Chains

- **Siloed Operations**: Businesses often operate independently without collaboration across the supply chain, making it challenging to implement circular practices that require coordination, such as product take-back schemes (Circular Economy Victoria, 2020).
- **Market Fragmentation**: The recycling and waste management industry is highly fragmented, with numerous small operators, leading to inefficiencies and inconsistencies in service provision (PwC Australia, 2018).

Limited Industry Collaboration

- **Competition over Collaboration**: Competitive pressures may discourage businesses from sharing information or collaborating on circular initiatives that could benefit the broader industry (Australian Competition and Consumer Commission [ACCC], 2019).
- **Lack of Platforms for Cooperation**: There is an absence of established networks or platforms to facilitate collaboration among businesses, government, and other stakeholders (National Waste and Recycling Industry Council [NWRIC], 2020).

Additional Factors

Technological Limitations

- **Innovation Challenges**: Developing new technologies suitable for circular processes can be resource-intensive and risky, deterring investment (Innovation and Science Australia, 2017).
- **Infrastructure Deficits**: Inadequate infrastructure for recycling and waste management, particularly in regional areas, limits the feasibility of circular practices (Regional Development Australia, 2019).

Market Barriers

- **Demand Uncertainty**: Unpredictable demand for recycled or remanufactured products makes it difficult for businesses to justify investments (Clean Energy Finance Corporation [CEFC], 2020).
- **Quality Perceptions**: Consumers may perceive recycled or remanufactured products as inferior in quality, affecting market acceptance (Consumer Action Law Centre, 2018).

Overall, the adoption of circular economy practices in Australia is impeded by a combination of financial, attitudinal, regulatory, informational, and coordination barriers. Addressing these challenges requires a multi-faceted approach involving government policy intervention, industry collaboration, investment in education and infrastructure, and efforts to shift consumer attitudes. By overcoming these hurdles, Australia can move towards a more sustainable and economically beneficial circular economy.

Information request 4 - Governments' role in the circular economy

The PC sought 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 knowledge in policy design in ways that recognise and protect Indigenous cultural and intellectual property.*

BCSDA Response

On the extent to which policy or regulatory changes could better enable the pursuit of circular economy activities

BCSDA believes, the transition to a circular economy presents a significant opportunity for Australia to enhance environmental sustainability while driving economic growth. Government policies and regulatory frameworks at the national, state and territory, and local levels play a crucial role in enabling businesses and consumers to adopt circular economy practices. Our analysis explores how various policy and regulatory changes can better facilitate the pursuit of circular economy activities in Australia, focusing on financial incentives, information provision, regulatory changes, education and training, facilitating collaboration, and planning and urban development.

1. **Financial Incentives**

Role of Financial Incentives

Financial incentives are powerful tools that governments can use to encourage businesses and consumers to adopt circular economy practices. They can help offset the initial costs associated with transitioning to more sustainable models and make circular options more economically attractive.

Policy Measures

- **Tax Incentives and Subsidies**: Offering tax credits, deductions, or reduced rates for businesses investing in circular economy initiatives can stimulate investment. For example, providing tax incentives for companies that utilize recycled materials in manufacturing or invest in waste reduction technologies.
- **Grants and Funding Programs**: Governments can establish grant programs to support research and development in circular technologies, pilot projects, and the scaling of successful initiatives.

Industry Insights and Examples

- **Recycling Modernisation Fund**: The Australian Government established the $190 million Recycling Modernisation Fund (RMF) to generate $600 million in recycling investment and drive a billion-dollar

transformation of Australia's waste and recycling capacity (Department of Agriculture, Water and the Environment [DAWE], 2021a).
- **Impact on Business Outcomes**: Financial incentives reduce the financial barriers for businesses, leading to increased investment in recycling infrastructure, innovation in product design for recyclability, and the creation of new markets for recycled materials.

Statistics
- **Job Creation**: The RMF is expected to create over 10,000 jobs in the recycling and remanufacturing industry (DAWE, 2021a).

2. Information Provision

Importance of Information Provision

Providing accurate and accessible information is essential to educate businesses and consumers about the benefits of the circular economy, available opportunities, and best practices.

Policy Measures
- **Public Awareness Campaigns**: Governments can launch campaigns to raise awareness about waste reduction, recycling programs, and the importance of sustainable consumption.
- **Data Sharing Platforms**: Developing centralized platforms where businesses can access information on material flows, recycling facilities, and circular economy resources.

Industry Insights and Examples
- **National Waste Report**: The Australian Government publishes the National Waste Report, providing comprehensive data on waste generation and management, which helps stakeholders make informed decisions (DAWE, 2020a).
- **Australian Circular Economy Hub (ACE Hub)**: Supported by the Australian Government, the ACE Hub serves as a knowledge-sharing platform to promote circular economy principles and connect stakeholders (Planet Ark, 2021).

Statistics
- **Consumer Awareness**: A survey found that 58% of Australians are willing to change their purchasing habits to reduce environmental impact, highlighting the potential impact of effective information provision (Nielsen, 2019).

3. Regulatory Changes

Role of Regulatory Changes

Regulations can mandate or encourage circular practices, set standards for products and processes, and remove barriers that hinder circular economy activities.

Policy Measures
- **Extended Producer Responsibility (EPR)**: Implementing EPR schemes holds producers accountable for the entire lifecycle of their products, encouraging them to design for durability and recyclability.
- **Standards and Codes**: Establishing standards for recycled content in products, packaging regulations, and waste management practices.
- **Streamlining Approval Processes**: Simplifying the approval processes for recycling facilities and circular economy projects to reduce administrative burdens.
- **Competition and Consumer Regulation**: Adjusting regulations to promote sharing economy models and collaborative consumption without breaching competition laws.

Industry Insights and Examples
- **Product Stewardship Act 2011**: Australia's legislative framework for product stewardship encourages manufacturers to take responsibility for the environmental impact of their products (DAWE, 2021b).
- **Single-Use Plastics Ban**: States like South Australia and Queensland have implemented bans on certain single-use plastics, reducing waste and encouraging the use of reusable alternatives (Green Industries SA, 2021; Queensland Government, 2021).

Statistics
- **Waste Reduction**: South Australia's container deposit scheme has achieved beverage container return rates of up to 76%, significantly reducing litter and promoting recycling (Green Industries SA, 2020).

4. Education and Training

Importance of Education and Training

Building knowledge and skills related to the circular economy is essential for workforce development and fostering innovation.

Policy Measures
- **Curriculum Integration**: Incorporating circular economy principles into educational curricula at all levels to raise awareness and build competencies.

- **Vocational Training Programs**: Developing training programs focused on skills needed in recycling, remanufacturing, and sustainable design.
- **Professional Development**: Offering workshops and courses for professionals to upskill in areas relevant to the circular economy.

Industry Insights and Examples

- **TAFE Programs**: Technical and Further Education (TAFE) institutions offer courses on sustainability and environmental management, preparing students for careers in the circular economy (TAFE NSW, 2021).
- **Collaborations with Industry**: Partnerships between educational institutions and industry can ensure that training programs meet current and future skills needs.

Statistics

- **Skills Demand**: A report by the National Skills Commission identified sustainability and environmental skills as emerging areas of demand in the Australian labor market (National Skills Commission, 2020).

5. Facilitating Collaboration

Role of Collaboration

Collaboration among government, industry, academia, and communities is crucial for sharing knowledge, resources, and fostering innovation.

Policy Measures

- **Public-Private Partnerships (PPPs)**: Encouraging PPPs to invest in circular economy projects and infrastructure.
- **Industry Clusters and Networks**: Supporting the formation of industry clusters where businesses can collaborate on waste reduction and resource efficiency.
- **Stakeholder Engagement Platforms**: Creating forums for stakeholders to discuss challenges, share best practices, and co-develop solutions.

Industry Insights and Examples

- **Circular Economy Business Innovation Centre (CEBIC)**: Established by Sustainability Victoria, CEBIC facilitates collaboration between businesses, researchers, and government to accelerate circular economy initiatives (Sustainability Victoria, 2021).
- **Industrial Symbiosis**: The Western Australian Government supports industrial symbiosis projects in Kwinana, where businesses share resources and by-products, reducing waste and costs (Kwinana Industries Council, 2020).

Statistics

- **Resource Savings**: Industrial symbiosis in Kwinana has resulted in savings of over $100 million per year and significant reductions in waste and emissions (Kwinana Industries Council, 2020).

6. Planning, Urban and Regional Development

Impact of Planning on Circular Economy

Urban and regional planning can integrate circular economy principles to create sustainable communities, optimize resource use, and reduce environmental impacts.

Policy Measures

- **Circular City Strategies**: Developing city-wide plans that incorporate circular economy objectives into urban development.
- **Zoning and Land Use Policies**: Designating areas for recycling facilities, repair hubs, and resource recovery centres.
- **Incorporating Circularity in Building Codes**: Updating building codes to encourage the use of sustainable materials, modular construction, and design for deconstruction.

Industry Insights and Examples

- **City of Melbourne's Circular Economy Plan**: The City of Melbourne has developed a plan to transition to a circular economy by 2030, focusing on waste reduction, sustainable buildings, and supporting circular businesses (City of Melbourne, 2021).
- **Precinct Development**: The Tonsley Innovation District in South Australia is a leading example of integrating circular economy principles into regional development, fostering innovation and sustainable practices (Renewal SA, 2020).

Statistics

- **Economic Growth**: The circular economy in Australia could deliver $23 billion in GDP growth by 2025 through improved material efficiency and waste reduction (PwC Australia, 2020).

In our view, policy and regulatory changes at all levels of government are instrumental in enabling the pursuit of circular economy activities in Australia. Financial incentives can alleviate the economic barriers to adoption, while information provision raises awareness and informs decision-making. Regulatory changes can mandate sustainable practices and remove obstacles, and education and training are essential for developing the necessary skills and knowledge. Facilitating collaboration among stakeholders amplifies efforts and fosters innovation, and strategic planning in urban and regional

development integrates circular principles into the fabric of communities. By implementing these measures, governments can accelerate the transition to a circular economy, yielding significant environmental, economic, and social benefits.

On the extent to which current policy or regulatory changes hinder the pursuit of circular economy activities

We believe, current policies and regulations at national, state, and local levels can inadvertently hinder the adoption and expansion of circular economy practices. Our analysis examines the extent to which existing policies and regulations act as barriers to circular economy activities in Australia, providing specific examples, industry insights, and relevant statistics to illustrate these challenges.

Regulatory and Policy Barriers to Circular Economy Activities

1. **Inconsistent and Fragmented Regulatory Frameworks**
   Barrier Description:
   Australia's regulatory landscape is characterized by a complex mix of federal, state, and local regulations that often lack harmonization. This inconsistency creates confusion and compliance difficulties for businesses operating across different jurisdictions, hindering the implementation of circular economy practices.
   Specific Examples:
   - **Waste Classification and Definitions:** Each state and territory has its own definitions and classifications for waste and recyclable materials. For instance, what is considered a "resource" in one state may be classified as "waste" in another, leading to legal and logistical challenges in transporting and processing materials across borders (Australian Industry Group [Ai Group], 2020).
   - **Case Study:** A recycling company attempting to transport processed organic waste from New South Wales (NSW) to Queensland faced regulatory hurdles due to differing waste classifications, resulting in increased costs and delays (Waste Management Review, 2020a).

   Industry Impact:
   - **Operational Inefficiencies:** Businesses incur additional administrative costs to navigate varying regulations, which can discourage investment in recycling and resource recovery initiatives.
   - **Statistics:** According to the Waste Management and Resource Recovery Association of Australia (WMRR), inconsistent regulations contribute to an estimated 15% increase in operational costs for waste management businesses operating nationally (WMRR, 2021).
2. **Regulatory Definitions Impeding Resource Recovery**
   Barrier Description:
   Rigid regulatory definitions often categorize by-products and secondary materials as waste, even when they have potential for reuse or recycling. This classification subjects these materials to stringent waste management regulations, discouraging their recovery and reuse.
   Specific Examples:
   - **Fly Ash Utilization:** Fly ash, a by-product of coal combustion, can be used as a supplementary cementitious material in concrete production. However, regulatory classifications of fly ash as waste in certain jurisdictions impose additional handling and transportation requirements, limiting its reuse (Ash Development Association of Australia [ADAA], 2021).
   - **Industry Impact:** The reuse rate of fly ash in Australia is approximately 43%, significantly lower than countries like the United States, where reuse rates exceed 60% (ADAA, 2021).
3. **Lack of Economic Incentives and Market Signals**
   Barrier Description:
   Current policies may fail to provide sufficient economic incentives to promote circular economy practices. In some cases, subsidies and financial incentives favour linear economic models, such as virgin material extraction, over recycling and resource recovery.
   Specific Examples:
   - **Mining Subsidies:** Government incentives for mining operations, including fuel tax credits and exploration subsidies, can make virgin materials cheaper than recycled alternatives (The Australia Institute, 2020). This undermines the competitiveness of recycled materials in the market.
   - **Landfill Levies Variability:** Disparities in landfill levies across states create uneven economic pressures to divert waste from landfills. For example, Western Australia (WA) has a landfill levy of $70 per tonne, while Tasmania has no levy, reducing the economic motivation to recycle in regions with lower or no levies (Environmental Protection Authority WA, 2021; Department of Agriculture, Water and the Environment [DAWE], 2020a).

   Industry Impact:
   - **Market Imbalance:** The cost advantage of virgin materials over recycled ones discourages manufacturers from using recycled content, limiting demand for recycled materials.
   - **Statistics:** The recycling rate for plastics in Australia is only 13%, partly due to the cost competitiveness of virgin plastics (DAWE, 2020b).
4. **Standards and Specifications Limiting Recycled Materials Use**

Barrier Description:
Strict or outdated standards and specifications can restrict the use of recycled materials in products and infrastructure, even when these materials meet performance requirements.

Specific Examples:

- **Road Construction Materials:** Some state road authorities have conservative specifications that limit the use of recycled aggregates and plastics in road construction (Infrastructure Sustainability Council [ISC], 2021). This inhibits the uptake of innovative materials like recycled plastic asphalt.
- **Case Study:** A trial of recycled plastic in asphalt by the City of Melbourne demonstrated performance comparable to traditional materials, yet broader adoption is hindered by regulatory hesitancy (City of Melbourne, 2020).

Industry Impact:

- **Underutilization of Materials:** Valuable recycled materials remain unused or are downcycled, leading to missed opportunities for resource efficiency.
- **Statistics:** Australia produces approximately 2.5 million tonnes of waste glass annually, with only about 57% being recycled, often due to limited end-market demand influenced by regulatory specifications (Australian Packaging Covenant Organisation [APCO], 2021).

5. **Insufficient Extended Producer Responsibility (EPR) Schemes**

Barrier Description:
Current EPR schemes in Australia are often voluntary or lack stringent targets, resulting in limited effectiveness in reducing waste and promoting product stewardship.

Specific Examples:

- **Product Stewardship for Oil Scheme:** While the scheme aims to encourage the recycling of used oil, participation rates have stagnated, and illegal dumping remains an issue due to insufficient enforcement and incentives (Australian National Audit Office [ANAO], 2020).
- **E-Waste Management:** Despite the National Television and Computer Recycling Scheme (NTCRS), e-waste recycling rates are low, with only 50% of end-of-life televisions and computers recycled in 2019-2020 (DAWE, 2020c).

Industry Impact:

- **Environmental Harm:** Ineffective EPR schemes lead to increased landfill waste and environmental pollution.
- **Statistics:** Australia generated 539,000 tonnes of e-waste in 2019, with significant amounts not properly recycled (DAWE, 2020c).

6. **Barriers to Repair and Reuse Activities**

Barrier Description:
Legal and practical obstacles hinder repair and reuse initiatives, contributing to a throwaway culture and increased waste generation.

Specific Examples:

- **Lack of Right to Repair Legislation:** Australia does not have comprehensive right to repair laws, limiting access to repair information, tools, and spare parts for consumers and independent repairers (Productivity Commission, 2021).
- **Warranty Restrictions:** Manufacturers may void warranties if products are repaired by third parties, discouraging consumers from seeking repair options (Choice, 2020).

Industry Impact:

- **Reduced Product Lifespan:** Consumers are more likely to replace products rather than repair them, increasing waste.
- **Statistics:** An estimated 88% of major household appliances discarded in Australia are sent to landfill, with repair rates declining (Australian Bureau of Statistics [ABS], 2019).

7. **Planning and Zoning Regulations**

Barrier Description:
Planning and zoning regulations can impede the development of recycling and resource recovery infrastructure by imposing restrictive land-use classifications or lengthy approval processes.

Specific Examples:

- **Facility Siting Challenges:** Proposals for new recycling facilities often face delays or rejections due to zoning restrictions and community opposition, partly stemming from outdated perceptions of waste facilities (Waste Management Review, 2020b).
- **Case Study:** A proposed advanced recycling facility in Victoria faced significant planning hurdles, delaying its development and limiting regional recycling capacity (Sustainability Victoria, 2021).

Industry Impact:

- **Infrastructure Deficit:** Insufficient recycling infrastructure leads to reliance on landfill disposal or export of waste materials.
- **Statistics:** Australia exported approximately 4.4 million tonnes of waste in 2018-2019, highlighting the need for domestic processing capacity (DAWE, 2020a).

8. **Lack of Support for Circular Business Models**

Barrier Description:

Current regulatory frameworks may not adequately support innovative circular business models, such as product-as-a-service or sharing economy platforms, due to misalignment with existing laws.

Specific Examples:

- **Taxation Issues:** Businesses offering leasing or sharing services may face unfavourable tax treatments compared to traditional sales models, discouraging adoption (Australian Taxation Office [ATO], 2021).
- **Regulatory Compliance Costs:** Small businesses and start-ups pursuing circular models may be disproportionately burdened by compliance costs related to consumer protection, product liability, and safety standards (StartupAUS, 2020).

Industry Impact:

- **Innovation Stifling:** Potentially transformative circular business models struggle to scale, limiting their impact on reducing waste and resource consumption.

Our analysis suggests that current policies and regulations in Australia present significant barriers to the adoption and expansion of circular economy activities. Inconsistent regulatory frameworks, restrictive waste classifications, lack of economic incentives, stringent standards limiting recycled materials use, ineffective EPR schemes, obstacles to repair and reuse, planning and zoning challenges, and insufficient support for innovative business models collectively hinder progress towards a circular economy.

Addressing these barriers requires coordinated policy reforms, including harmonizing regulations across jurisdictions, revising waste definitions to facilitate resource recovery, implementing stronger economic incentives, updating standards to reflect recycled materials' capabilities, enhancing EPR schemes, enacting right to repair legislation, streamlining planning processes, and supporting innovative business models. By overcoming these obstacles, Australia can accelerate its transition to a circular economy, yielding substantial environmental, economic, and social benefits.

<u>On the Benefits, Costs, Risks, and Implementation Issues Associated with Policy and Regulatory Changes Addressing Barriers to Circular Economy Activities in Australia</u>

We believe, governments at all levels play a pivotal role in facilitating this transition by implementing policies and regulatory changes that address existing barriers. Our analysis explores the benefits, costs, risks, and implementation issues associated with current and potential policy and regulatory changes aimed at promoting circular economy activities in Australia. The discussion is enriched with specific details, statistics, industry insights, and accurate references.

1. **Extended Producer Responsibility (EPR) Schemes**

Policy Overview

Extended Producer Responsibility schemes hold manufacturers accountable for the entire lifecycle of their products, particularly end-of-life management. In Australia, existing EPR schemes include the National Television and Computer Recycling Scheme and the Australian Packaging Covenant.

Benefits

- **Waste Reduction**: EPR schemes can significantly reduce waste by promoting recycling and proper disposal. For example, the National Television and Computer Recycling Scheme has recycled over 290,000 tonnes of e-waste since its inception in 2011 (Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2023a).
- **Resource Recovery**: Encourages the recovery of valuable materials, reducing the need for virgin resources.
- **Innovation**: Drives manufacturers to design products that are easier to recycle or have longer lifespans.

Costs

- **Compliance Costs**: Producers may face increased costs associated with redesigning products, setting up take-back programs, and reporting.
- **Administrative Burden**: Government agencies incur costs to monitor compliance and enforce regulations.

Risks

- **Cost Pass-Through**: Producers might pass increased costs to consumers, leading to higher prices.
- **Market Distortions**: If not designed properly, EPR schemes could disadvantage smaller businesses due to economies of scale favouring larger producers.

Implementation Issues

- **Regulatory Consistency**: Variations in EPR regulations across states can create confusion. Harmonizing regulations is essential.
- **Infrastructure Requirements**: Adequate recycling and processing facilities are needed to handle the increased volume of returned products.

Industry Insights

- **Packaging Industry**: The Australian Packaging Covenant Organisation (APCO) aims for 100% reusable, recyclable, or compostable packaging by 2025 (APCO, 2020). Meeting this target requires significant industry collaboration and investment.

2. **Right to Repair Legislation**

Policy Overview

Right to Repair legislation aims to give consumers and independent repairers access to the necessary tools, parts, and information to repair products, extending their lifespan.

Benefits

- **Waste Reduction**: Extends the life of products, reducing the volume of waste sent to landfills.
- **Consumer Savings**: Enables consumers to repair products at a lower cost rather than purchasing new ones.
- **Job Creation**: Supports local repair industries and creates employment opportunities.

Costs

- **Implementation Costs**: Manufacturers may need to adjust their business models, potentially incurring costs to provide spare parts and documentation.
- **Intellectual Property Concerns**: Manufacturers may need to protect proprietary information while complying with repair provisions.

Risks

- **Safety and Quality**: Improper repairs could lead to safety risks or subpar product performance.
- **Liability Issues**: Manufacturers may face increased liability if products are improperly repaired by third parties.

Implementation Issues

- **Regulatory Clarity**: Clear guidelines are needed to balance consumer rights with manufacturer protections.
- **Enforcement Mechanisms**: Establishing effective enforcement to ensure compliance without overburdening businesses.

Industry Insights

- **Electronics Sector**: The Productivity Commission's 2021 report on the Right to Repair highlighted strong consumer demand for repair options, but also noted concerns from manufacturers about safety and intellectual property (Productivity Commission, 2021).

3. **Harmonization of Waste Definitions and Regulations**

Policy Overview

Aligning waste definitions and regulations across states and territories to create a consistent national framework.

Benefits

- **Operational Efficiency**: Simplifies compliance for businesses operating nationally, reducing administrative burdens.
- **Facilitates Resource Recovery**: Easier movement of recyclable materials across borders enhances recycling rates.

Costs

- **Transition Costs**: Governments and businesses may incur costs in updating systems, training, and modifying operations.
- **Regulatory Overhaul**: Significant effort required to coordinate between jurisdictions.

Risks

- **Implementation Delays**: Achieving consensus among states may be time-consuming.
- **Unintended Consequences**: Uniform regulations may not account for regional differences, potentially disadvantaging certain areas.

Implementation Issues

- **Intergovernmental Collaboration**: Requires strong coordination through bodies like the National Federation Reform Council.
- **Stakeholder Engagement**: Involving industry, environmental groups, and communities is crucial to develop practical regulations.

Industry Insights

- **Waste Management Sector**: The Waste Management and Resource Recovery Association of Australia (WMRR) advocates for harmonization to reduce confusion and promote investment in the sector (WMRR, 2022).

4. **Financial Incentives and Subsidies**

Policy Overview

Providing financial incentives such as grants, tax credits, or subsidies to support circular economy initiatives.

Benefits

- **Stimulates Investment**: Encourages businesses to invest in recycling infrastructure, sustainable product design, and innovative technologies.
- **Accelerates Adoption**: Reduces financial barriers, particularly for small and medium-sized enterprises (SMEs).

Costs

- **Fiscal Impact**: Government expenditure increases, potentially impacting budgets.
- **Dependency Risk**: Businesses may become reliant on subsidies, affecting long-term sustainability.

Risks

- **Market Distortions**: Incentives could favor certain industries or technologies over others, leading to inefficiencies.
- **Misallocation of Funds**: Without proper oversight, funds may not achieve desired outcomes.

Implementation Issues

- **Program Design**: Ensuring that incentives are well-targeted and deliver measurable benefits.
- **Monitoring and Evaluation**: Establishing robust mechanisms to assess the effectiveness of funded initiatives.

Industry Insights

- **Recycling Modernisation Fund**: The Australian Government's $190 million fund aims to upgrade recycling infrastructure, expected to generate over $600 million in investment and create 10,000 jobs (DCCEEW, 2023b).

5. Updating Standards and Specifications

Policy Overview

Revising standards and specifications to allow and encourage the use of recycled materials in products and infrastructure.

Benefits

- **Market Development**: Increases demand for recycled materials, supporting recycling industries.
- **Environmental Gains**: Reduces reliance on virgin materials, lowering environmental impacts.

Costs

- **Research and Testing**: Updating standards may require significant research to ensure performance and safety.
- **Industry Adjustment**: Manufacturers and builders may need to adjust processes and retrain staff.

Risks

- **Quality Assurance**: Ensuring that recycled materials meet performance requirements is critical to maintain safety and reliability.
- **Resistance to Change**: Stakeholders may be hesitant to adopt new standards without clear evidence of benefits.

Implementation Issues

- **Stakeholder Collaboration**: Involving industry experts, regulators, and researchers in the standard-setting process.
- **Phased Implementation**: Gradually introducing changes to allow industries time to adapt.

Industry Insights

- **Construction Industry**: Incorporating recycled materials like crushed concrete in road bases is gaining acceptance, but broader use requires updated specifications (Infrastructure Sustainability Council, 2022).

6. Enhancing Product Stewardship Programs

Policy Overview

Strengthening product stewardship programs to ensure producers take responsibility for the environmental impacts of their products throughout the lifecycle.

Benefits

- **Waste Minimization**: Encourages design for durability, repairability, and recyclability.
- **Resource Efficiency**: Promotes the recovery of materials, reducing the need for virgin resources.

Costs

- **Program Administration**: Establishing and managing stewardship programs involves administrative costs.
- **Compliance Costs**: Producers may face increased costs to meet stewardship obligations.

Risks

- **Competitive Disadvantages**: Domestic producers may be disadvantaged if imported products are not subject to the same requirements.
- **Free-Rider Problem**: Producers who do not participate can undermine the effectiveness of programs.

Implementation Issues

- **Regulatory Enforcement**: Ensuring all producers comply, including importers.
- **Stakeholder Engagement**: Collaboration with industry is necessary to design practical and effective programs.

Industry Insights

- **Battery Stewardship Scheme**: Launched in 2022, the scheme aims to achieve a 90% recycling rate for batteries by 2030 (Battery Stewardship Council, 2022).

7. Addressing Planning and Zoning Barriers

Policy Overview

Reforming planning and zoning regulations to facilitate the development of recycling and resource recovery facilities.

Benefits

- **Infrastructure Expansion**: Eases the establishment of facilities needed for circular economy activities.
- **Economic Growth**: Creates jobs and stimulates investment in local communities.

Costs

- **Regulatory Changes**: Amending planning laws involves administrative efforts and potential legal challenges.
- **Community Concerns**: Local opposition may arise due to perceptions about waste facilities.

Risks

- **Environmental Impacts**: Poorly planned facilities could have negative local environmental effects.
- **Social Resistance**: NIMBY (Not In My Back Yard) attitudes may hinder implementation.

Implementation Issues

- **Community Engagement**: Early and transparent consultation with communities to address concerns.
- **Environmental Safeguards**: Ensuring facilities meet high environmental standards.

Industry Insights

- **Case Study**: The development of the Eastern Creek Energy from Waste facility in NSW faced significant delays due to planning and community challenges (NSW Government, 2021).

We think policy and regulatory changes are essential to overcome barriers to circular economy activities in Australia. While these changes offer substantial benefits, including waste reduction, resource efficiency, economic growth, and environmental protection, they also entail costs, risks, and implementation challenges. Careful policy design, stakeholder engagement, and effective implementation strategies are crucial to maximize benefits and mitigate risks. By addressing these factors, governments can facilitate a smoother transition to a circular economy, aligning environmental objectives with economic prosperity.

<u>On the Government Actions to Facilitate Aboriginal and Torres Strait Islander Roles in Advancing the Circular Economy</u>

BCSDA highly appreciates this concern from PC. We believe, the inclusion of Aboriginal and Torres Strait Islander peoples in progressing the circular economy is essential for both the recognition of their deep connection to the land and the incorporation of their sustainable practices. Indigenous knowledge offer valuable insights into resource management, conservation, and sustainable living, which are integral to the circular economy paradigm. Governments can play a pivotal role in facilitating Indigenous participation while ensuring the protection of Indigenous Cultural and Intellectual Property (ICIP). Our analysis explores specific actions that governments could take, enriched with industry insights.

1. Incorporating Indigenous Knowledge into Policy Design

Action: Governments should actively involve Aboriginal and Torres Strait Islander peoples in the co-design of circular economy policies, ensuring that Indigenous knowledge are respectfully integrated.

Benefits:

- **Enhanced Sustainability:** Indigenous land management practices, such as traditional fire management, promote biodiversity and reduce environmental degradation (Hill et al., 2020).
- **Cultural Recognition:** Acknowledge the value of Indigenous contributions and fosters mutual respect.

Implementation:

- **Engagement Frameworks:** Develop frameworks for meaningful consultation, adhering to the principles of Free, Prior, and Informed Consent (FPIC) as outlined in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (United Nations, 2007).
- **Policy Advisory Roles:** Establish Indigenous advisory committees to guide policy development.

Industry Insight:

- **Case Study:** The **North Australian Indigenous Land and Sea Management Alliance (NAILSMA)** collaborates with governments and Indigenous communities to integrate traditional knowledge in environmental management (NAILSMA, 2021).

2. Protecting Indigenous Cultural and Intellectual Property (ICIP)

Action: Implement legal frameworks that recognize and protect ICIP rights, preventing unauthorized use and ensuring that benefits from the use of Indigenous knowledge are shared equitably.

Benefits:

- **Ethical Use of Knowledge:** Prevents exploitation of Indigenous knowledge and ensures respect for cultural heritage.
- **Economic Opportunities:** Enables Indigenous peoples to benefit economically from their intellectual property.

Implementation:

- **Legislation:** Enact laws that specifically protect ICIP, such as sui generis legal systems.
- **Protocols and Guidelines:** Develop protocols for the use of Indigenous knowledge in research and commercial activities (Terri Janke and Company, 2018).

Industry Insight:

- **Indigenous Knowledge Systems Lab:** The CSIRO has established this lab to work with Indigenous communities, ensuring protection and appropriate use of ICIP in scientific research (CSIRO, 2020).

3. Supporting Indigenous-led Enterprises in the Circular Economy

Action: Provide targeted funding, capacity-building programs, and business development support to Indigenous-led enterprises engaged in circular economy activities.

Benefits:

- **Economic Empowerment:** Promotes self-determination and economic independence for Indigenous communities.
- **Sustainable Practices:** Indigenous businesses often incorporate sustainable methods aligned with circular economy principles.

Implementation:

- **Grants and Financial Support:** Establish funding programs specifically for Indigenous enterprises.
- **Business Incubators:** Create incubators and accelerators focused on Indigenous startups in sustainability sectors.

Industry Insight:

- **Case Study: Bawurra Foundation**, an Indigenous social enterprise, uses digital platforms to preserve and share Indigenous knowledge, aligning with circular economy principles by promoting knowledge sustainability (Bawurra Foundation, 2021).

4. Facilitating Partnerships and Collaboration

Action: Encourage and support partnerships between Indigenous communities, industry, and research institutions to co-develop circular economy solutions.

Benefits:

- **Knowledge Exchange:** Combines traditional knowledge with scientific expertise for innovative solutions.
- **Capacity Building:** Enhances skills and resources within Indigenous communities.

Implementation:

- **Collaborative Projects:** Fund joint initiatives that involve Indigenous participants in circular economy projects.
- **Networking Platforms:** Establish forums for stakeholders to connect and share best practices.

Industry Insight:

- **Project Example: The Indigenous Firesticks Initiative** collaborates with government agencies and scientists to apply traditional fire management, reducing bushfire risks and enhancing ecosystem health (Firesticks Alliance, 2020).

5. Incorporating Indigenous Land Management Practices

Action: Integrate Indigenous land and resource management practices into environmental policies and programs aimed at sustainability and circularity.

Benefits:

- **Environmental Stewardship:** Indigenous practices contribute to biodiversity conservation and ecosystem restoration.
- **Climate Change Mitigation:** Techniques like cool burning can reduce carbon emissions (Russell-Smith et al., 2013).

Implementation:

- **Policy Inclusion:** Recognize and incorporate traditional practices in land management policies.
- **Joint Management Agreements:** Facilitate co-management of protected areas with Indigenous communities.

Industry Insight:

- **Savanna Burning Projects:** Implemented under the Emissions Reduction Fund, these projects involve Indigenous rangers using traditional burning practices to reduce greenhouse gas emissions (Commonwealth of Australia, 2021).

6. Ensuring Representation in Decision-Making Bodies

Action: Include Aboriginal and Torres Strait Islander representatives in governmental committees and boards related to the circular economy and environmental management.

Benefits:

- **Inclusive Governance:** Ensures that Indigenous perspectives are considered in policy decisions.
- **Better Outcomes:** Diverse inputs lead to more effective and culturally appropriate policies.

Implementation:

- **Mandated Positions:** Reserve seats for Indigenous representatives in relevant bodies.
- **Capacity Building:** Provide leadership training to support effective participation.

Industry Insight:

- **Example:** The **Indigenous Advisory Committee** advises the Minister for the Environment under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), ensuring Indigenous involvement in environmental decisions (Department of Agriculture, Water and the Environment [DAWE], 2021).

7. Education and Awareness Programs

Action: Develop educational initiatives to promote understanding of Indigenous knowledge and their relevance to the circular economy among policymakers, industry, and the broader community.

Benefits:

- **Cultural Appreciation:** Enhances respect for Indigenous cultures and contributions.
- **Knowledge Integration:** Facilitates the incorporation of traditional practices into mainstream approaches.

Implementation:

- **Curriculum Development:** Include Indigenous perspectives in educational curricula at all levels.
- **Public Campaigns:** Promote awareness through media and community events.

Industry Insight:

- **Initiative: Aboriginal Carbon Foundation** provides training and accredits carbon farming projects, blending Indigenous knowledge with carbon market mechanisms (Aboriginal Carbon Foundation, 2021).

8. Legal Recognition and Enforcement of Indigenous Rights

Action: Strengthen legal mechanisms that recognize Indigenous land rights and ensure that any use of Indigenous lands for circular economy projects is subject to consent and benefit-sharing agreements.

Benefits:

- **Rights Protection:** Upholds Indigenous peoples' rights over their lands and resources.
- **Equitable Development:** Ensures that Indigenous communities benefit from projects on their lands.

Implementation:

- **Native Title Act Compliance:** Ensure projects comply with the Native Title Act 1993 provisions.
- **Benefit-Sharing Agreements:** Negotiate agreements that provide economic and social benefits to Indigenous communities.

Industry Insight:

- **Mining Sector Practices:** Some mining companies have established agreements with Indigenous communities that include provisions for environmental management and cultural heritage protection (Minerals Council of Australia, 2020).

Overall, in BCSDA's view, both Commonwealth and State governments have a critical role in facilitating the involvement of Aboriginal and Torres Strait Islander peoples in progressing the circular economy. By incorporating Indigenous knowledge into policy design, protecting ICIP, supporting Indigenous enterprises, fostering partnerships, and ensuring representation, governments can create a more inclusive and sustainable circular economy that respects and benefits from the rich cultural heritage of Indigenous Australians.

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