Towards a Circular Australia

A Playbook for Australian CEOs, Organisations & Ecosystem Partners

March 2024

CLIMATE LEADERS COALITION

An initiative of THE B TEAM *Australasia*

Acknowledgement of Country

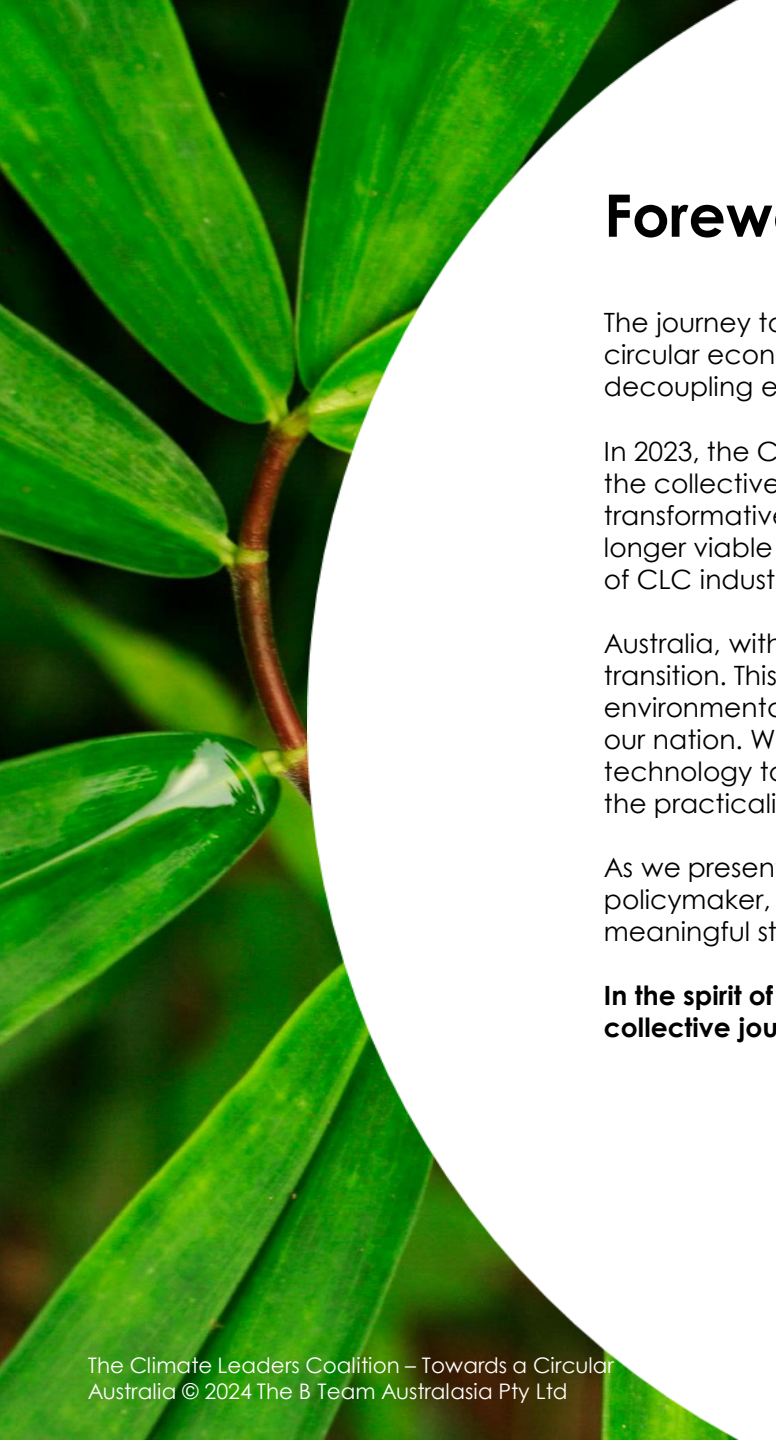
The CLC Circular Economy Deep Dive acknowledges the traditional owners of country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

We welcome, include, value and respect everyone.

We celebrate diversity in all forms.

"For most Indigenous communities, reusing, repurposing and recycling materials is not a newly discovered concept but rather a **way of life**. By keeping **nature and equity** at the heart of development, these communities were always aware that our resources are limited and must be taken care of."

- Australian Circular Economy Hub, 2023



Foreword from the Climate Leaders Coalition

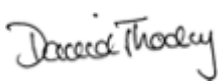
The journey towards achieving net zero goals is crucial in our fight against climate change, and the concept of the circular economy is a key part of this journey. It is a transformative approach that redefines growth by gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system.

In 2023, the Climate Leaders Coalition launched a Circular Economy Deep Dive to understand the opportunity and the collective action required to transform the way we do business. "Towards a Circular Australia" is testament to this transformative journey, born from a collective realisation that the traditional linear model of 'take-make-waste' is no longer viable for our planet or our economy. This playbook is an amalgamation of insights, experiences, and the spirit of CLC industry leaders who are supporting the transition to a Circular Economy in Australia.

Australia, with its unique biodiversity, rich resources, and innovative spirit, stands at the forefront of this crucial transition. This playbook captures the essence of what circularity means in the Australian context – it is not just an environmental or economic strategy, but a holistic approach that intertwines with the cultural and social fabric of our nation. We have gathered learnings from diverse industries, ranging from agriculture to manufacturing, and from technology to waste management. These learnings are not just narratives; they are a blueprint for action, reflecting the practicalities and challenges of embedding circular principles in business models.

As we present this playbook, our hope is that it serves as a catalyst for change. Whether you are a business leader, a policymaker, or an individual passionate about sustainability, this playbook offers the tools and inspiration to take meaningful steps towards a more circular and sustainable future for Australia.

In the spirit of circularity, where every end is a new beginning, let this playbook be the start of a new chapter in our collective journey towards a resilient, prosperous and circular Australia.



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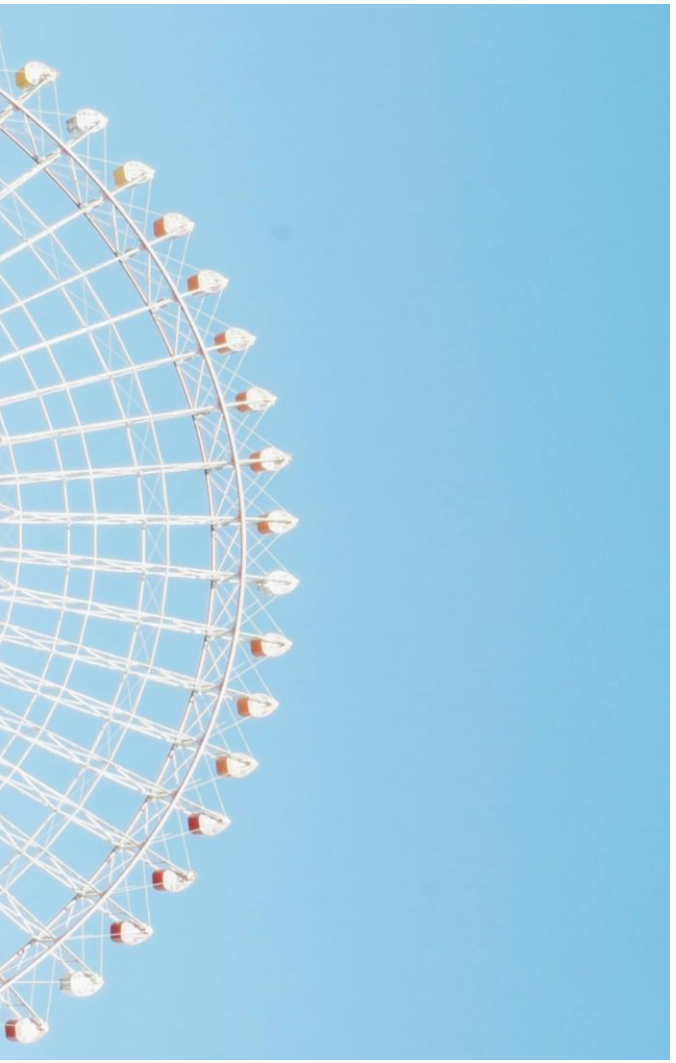


Executive Summary

The transition to a Circular Economy (CE) presents a significant opportunity for Australia. By systematically changing how resources and materials are used, we can reduce greenhouse gas emissions (estimated 45% reduction of total global GHG emissions)[1], eliminate waste and pollution, build more resilient supply chains and unlock economic opportunity (GDP increase of $23 billion by 2025, $210 billion by 2047-2048)[2].

However, Australia also faces a unique set of conditions ahead of a shift to a circular economy such as lack of manufacturing capabilities, export-orientated economy and vast geography, that make this transition more challenging. The Circular Economy in Australia is a complex, interconnected web that touches every aspect of how we live our lives & operate our businesses across every industry. The voice of the industry is clear: a step-change is needed to transition our 'take-make-waste' economy and to meet the 1.5˚C target set out in the Paris Agreement.

The purpose of this playbook is to establish circular economy foundations and showcase their real-world integration within industry value chains. The document outlines the shared definition of circular economy in Australia, the three principles of circularity, and the four must haves that enable successful circular initiatives. Those are then applied to redesign three value chains to demonstrate potential impact and tangible actions required by eco-system players: Soft Plastics Packaging, Perishable Food, and Sustainable Aviation Fuel. **Through this we hope to inspire members of the Climate Leaders Coalition and galvanise collective action necessary for such transformative change.**

"Waste is only waste if we waste it"

Sandra Martínez,
CEO Nestlé Oceania,
CLC Circular Economy Co-Sponsor on behalf of Deep Dive Members

"Collaboration is needed now for a Circular Australia"

Leah Weckert,
CEO Coles,
CLC Circular Economy Co-Sponsor on behalf of Deep Dive Members

CEO and Executive Team Call to Action

Explore the potential of circular economy to mitigate greenhouse gas emissions, waste and pollution in your sector

Integrate circular principles in your organisational strategy and product development

Explore various forms of impact and collaboration within the ecosystem

Relevant section of the playbook

- The Global Landscape and Opportunity
- Australian Context
- Getting Started on Circularity
- Building Circular Fluency
- Application to Three Value Chains
- Circularity in Practice

**The necessary tools and frameworks are readily available.
The time for decisive action is now.**

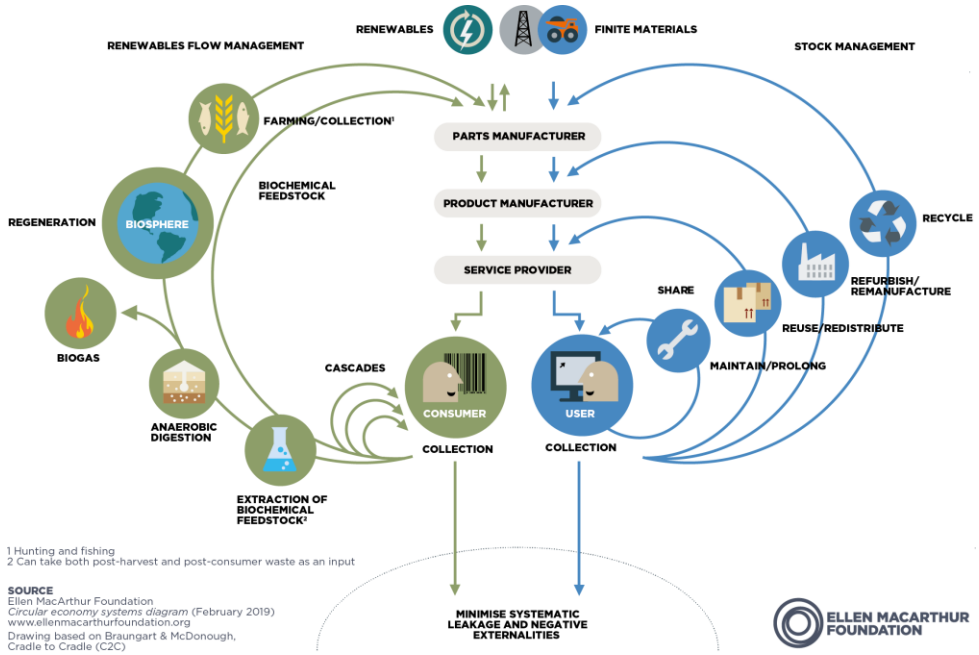
The Global Landscape and Opportunity

These frameworks are not only environmental strategies but also economic models that are increasingly being adopted by businesses, governments, and organisations globally.

How to think about circularity based on globally adopted frameworks

Globally accepted circularity frameworks focus on sustainable practices and resource efficiency, embracing the principles of reducing waste, reusing materials, and recycling resources to minimise environmental impact.

1 **The Butterfly Diagram:** A model designed by the **Ellen MacArthur Foundation**, visualising the flow of materials in a circular economy, distinguishing between technical and biological cycles.



2 **Ellen MacArthur Foundation's Three Principles of a Circular Economy:** One of the most prominent circularity frameworks, advocating for a shift away from the traditional linear economy (take, make, use, dispose) towards a circular model. It emphasises designing out waste, keeping products and materials in use, and regenerating natural systems.

3 **The Cradle-to-Cradle Design Framework:** Developed by William McDonough and Michael Braungart, this framework encourages the creation of products with positive environmental and health impacts. It focuses on safe materials, renewable energy, water stewardship, and social fairness.

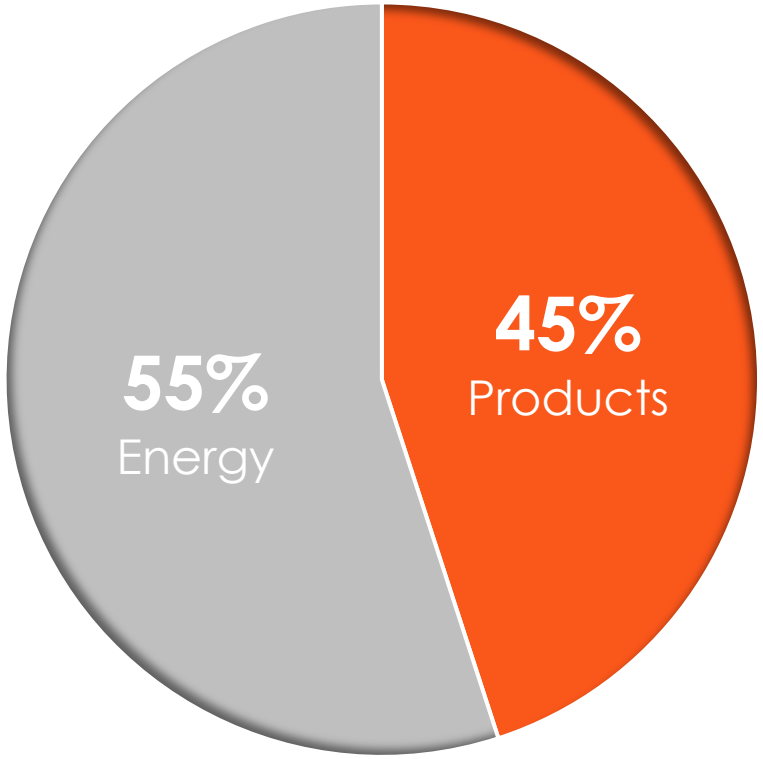
4 **The 9Rs of Sustainability:** This broader framework includes Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle and Recover. It's a comprehensive approach that encourages changes in both production and consumption patterns.

5 **Zero Waste Framework:** Promoted by organisations like the Zero Waste International Alliance, it aims to reduce waste to the bare minimum, encouraging the redesign of resource life cycles so all products are reused.

NOT EXHAUSTIVE

Transitioning to a Circular Economy can help address 45% of total global greenhouse gas emissions

Global GHG Emissions[1]

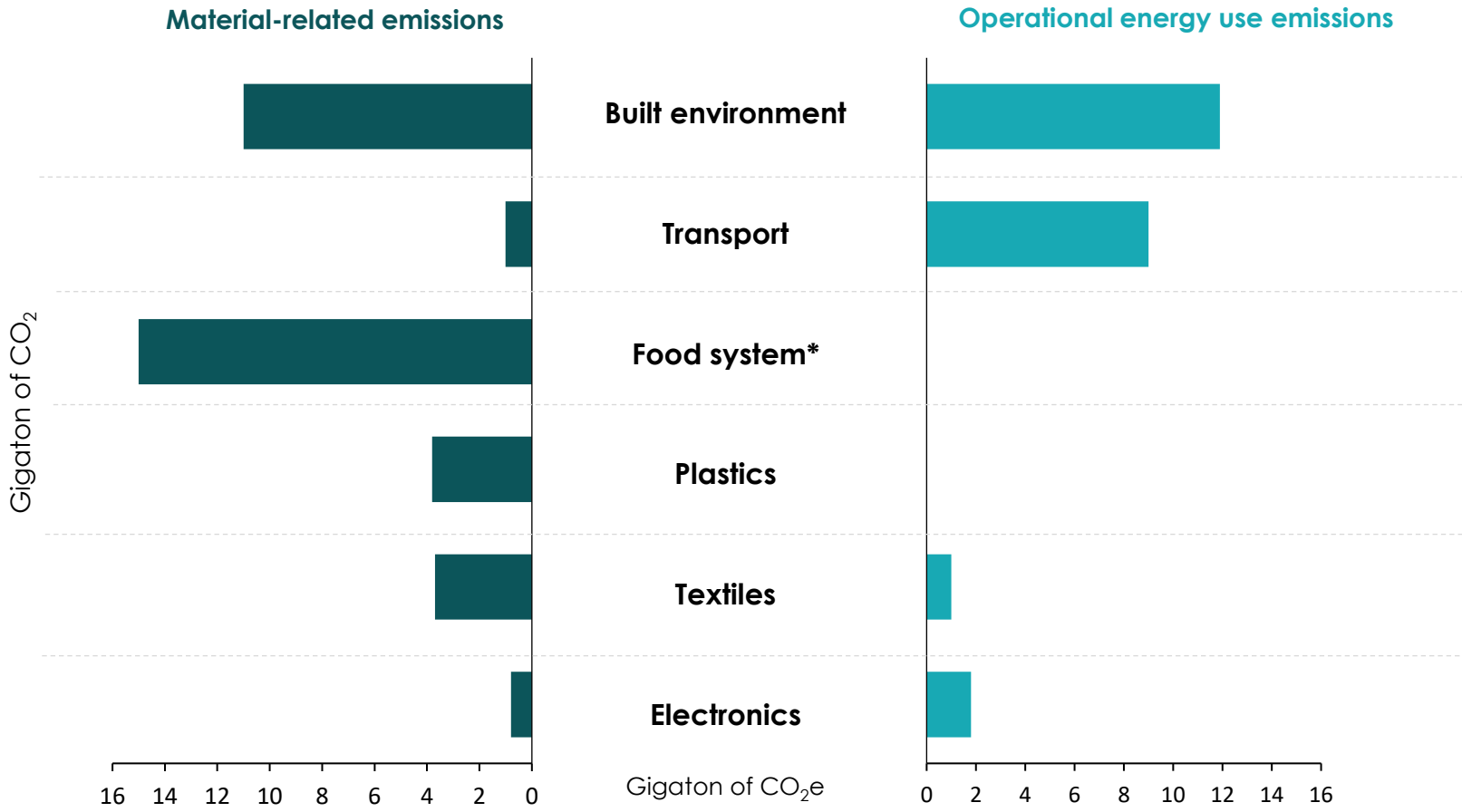


*"**Today's efforts** to combat climate change have **focused mainly** on the critical role of **renewable energy** and energy-efficiency measures.*

***However, meeting climate targets will also require tackling the remaining 45% of emissions associated with making products…** The circular economy can contribute to completing the picture of emissions reduction by transforming the way we make and use products."[1].*

Identifying top circular strategies enables targeted interventions to minimise GHG emissions associated with material and operational energy use across sectors.

The Global Opportunity by Sector: World Resources Institute and PACE[3] have identified circular economy strategies with the highest projected GHG reduction potential



Top circular strategies for GHG reduction[3]

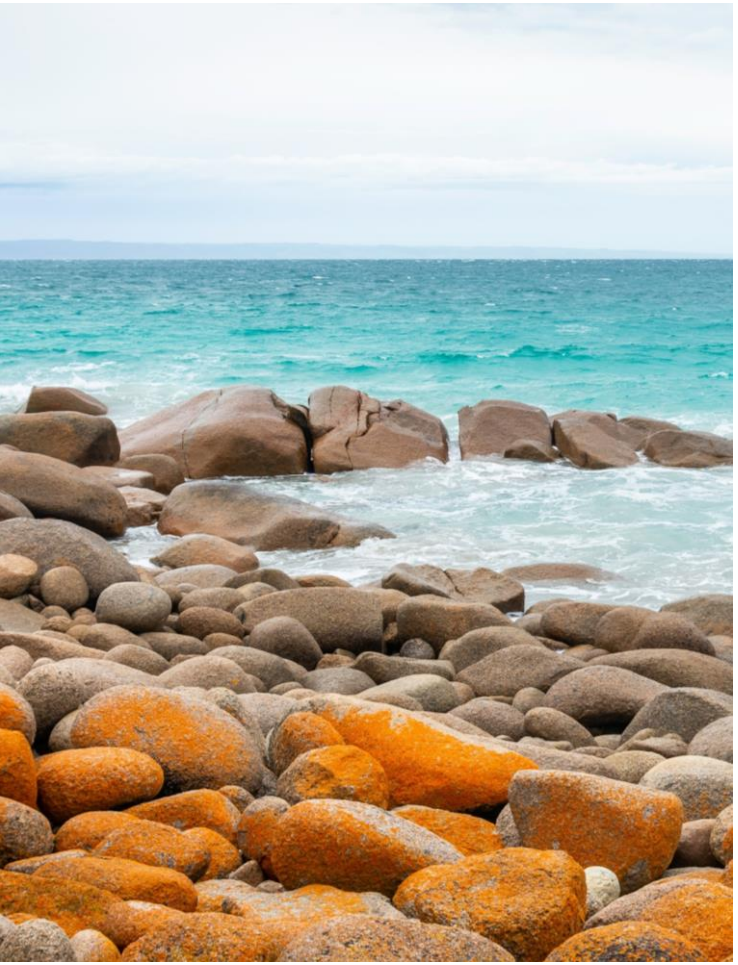
- **Built environment**
  1. Reduce floor area
  2. Material-efficient building design
  3. Improve recycling
- **Transport**
  1. Car-sharing, ride-sharing
  2. Smaller and lighter vehicles
- **Food system***
  1. Reduce food loss and waste
  2. Productive use of food waste
- **Plastics**
  1. Eliminate unnecessary plastics
  2. Reduce single-use plastics
  3. Recycling (mechanical)
- **Textiles**
  1. Keep textiles in use for longer
  2. Recycling
- **Electronics**
  1. Recycling
  2. Keep products in use for longer

Note:
Dark green dots indicate that a strategy decreases materials-related emissions. Light green dots indicate that a strategy decreases operational energy use emissions.

*Another key strategy to reducing GHG emissions in the food sector is **advancing regenerative food systems at scale.**

Australian Context

Anchoring to a shared definition helps us align to a common vision, fostering alignment of business strategies and driving collaborative and collective effort for the benefit of Australia.



A Shared Definition of the Circular Economy in Australia

The Circular Economy is a way for CLC members to **systematically change how resources and materials are used** in order to:

- Find additional ways to reduce greenhouse gas emissions (*meeting climate targets will require tackling 45% of emissions associated with making products*)[1]
- Eliminate waste and pollution
- Build more resilient supply chains and unlock economic opportunity ($210 billion boost in Australia's GDP by 2047-2048)[2]

Developing a Circular Economy can be achieved through **rethinking business models** based on shared value, the decentralisation of systems where needed and the inclusion of broader stakeholder groups.

The Circular Economy in Australia is a complex, interconnected web that touches every aspect of how we live our lives & operate our businesses across every industry.

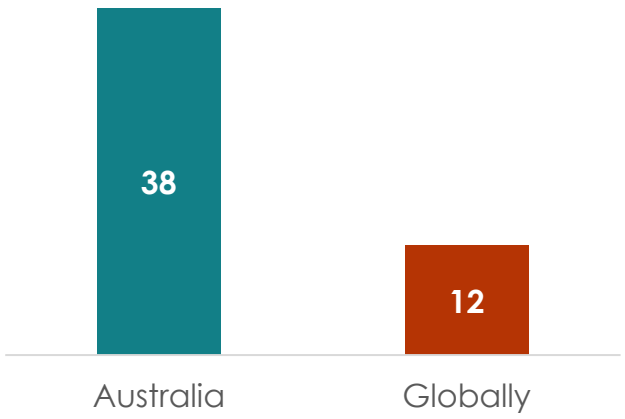
The system is defined by the ecosystem of players and how they work as a collective to eliminate waste & pollution, circulate products and materials at their highest value and contribute towards regenerating Australia's natural environment. It is a system that can transform our way of life today for the better, by the many.

The circular transition will help to continuously build and rebuild overall system health in the economy, with Australia standing to benefit substantially.

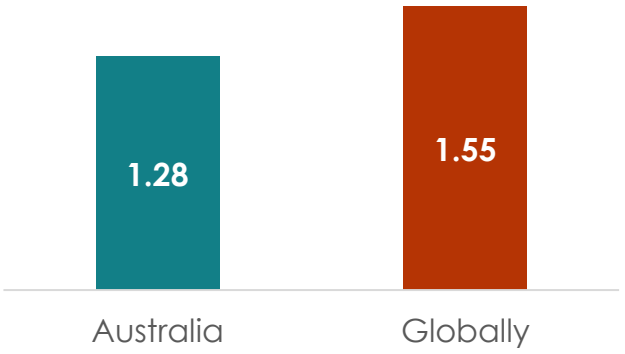
Transition to a Circular Economy through addressing material consumption and productivity and redefining waste can yield significant economic benefits for Australia

As a high-income nation, Australia's material consumption ratio significantly exceeds the global average, yet its material productivity remains behind.[4]

Material Consumption (tonnes/capita)



Material Productivity (USD/kg)



Australia holds a significant opportunity to transform its economy through a conscious shift in consumption patterns towards more sustainable practices, by enhancing material productivity and utilizing resources more efficiently and effectively and redefining waste as a valuable resource, integral to the creation of new products within a circular economy.

Australia stands to gain a substantial **economic benefit from transitioning to a circular economy**, with estimates from KPMG[2] suggesting Australia could gain:

$210 billion

Boost in GDP

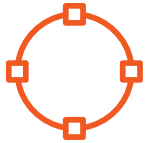
and

17,000

FTE jobs

By 2047-48 through this transition.

However, Australia faces a unique set of pre-conditions that will need to be addressed[5]



Lack of interconnected infrastructure & investment roadmap

Nascent CE government policy & support

Global isolation and vast geography

Lack of manufacturing capabilities

Growing public awareness & engagement

Export-orientated economy

The voice, rights & knowledge of First Nations People

Delicate & diverse ecosystems

For CLC members, there is a significant appetite for collective action on Circularity[6]

We need to be looking beyond the organisation, to industries and communities to scale the CE.

Coles, Brooke Donnelly

We need to shift the focus from the single-use mindset to realise the opportunities that come from keeping commodities within our economy in the circular model.

Fortescue, Holly Knight

The shift to a circular economy begins with responsible design, the phase in which 80% of environmental impacts are determined.

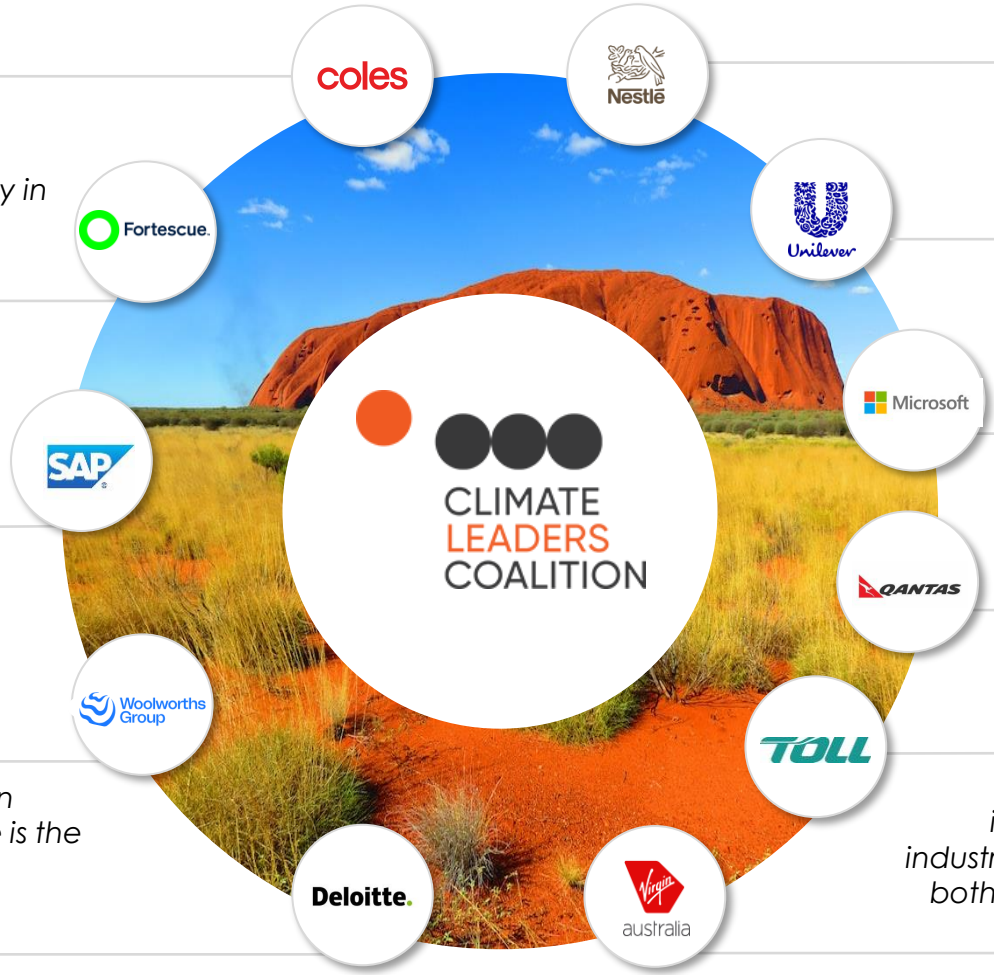
SAP, Mark Anderson

The sustainability cause and driving circularity is bigger than individual companies and we need to pursue collective action.

Woolworths, Bel Quince

The decoupling of growth from the use of virgin materials is fundamental. The economic piece is the pinch point for Australian Businesses.

Deloitte, Jill Riseley



We're dependent on being able to deliver CE within our own market.

Nestle Oceania, Martin Brown

For a circular economy to be effective, it needs to make commercial sense for operators across the value chain.

Unilever, Brooke Sprott

No matter how well Microsoft design a device or data center, if there's no supporting ecosystem circularity does not happen.

Microsoft, Rik Irons-Mclean

The key role for government is seeing the value for the economy that an individual (organisation) cannot take advantage of.

Qantas, Graeme Potger

Data info from 3rd party suppliers is crucial, you need the visibility.

Toll, Carol Liu

System thinking and recognising the interconnectedness between companies and industries is necessary to achieve outcomes that are both good for businesses and for the environment.

Virgin Australia, Fiona Walmsley

Getting Started on Circularity

These principles are foundational to an economy that is both restorative and regenerative by design, enabling the establishment and continuation of economic system health.

Three principles of a Circular Economy & application to Australia

The *Ellen Macarthur Foundation's* three principles of a Circular Economy are broadly cited throughout Australian and global governing bodies & policy groups.[7]

Eliminate waste and pollution

We must focus on design to eliminate the concept of waste. As a nation, we must strive to minimise landfill waste and maximise resource recovery concurrently.

Circulate products & materials at their highest value

We must start designing with the end in mind. A re-configuration of material value is required alongside a nation-wide education campaign highlighting the importance of collection and sorting practices at an individual, organisational and household level.

Regenerate nature

Regenerating nature remains an untapped element in Australia's circular economy. While it is currently achieved as a by-product of circular solutions, it must be integrated into the core of the system. Regenerative agriculture, farming and design practices must be at the heart of how key sectors in Australia operate. This integration is crucial for the protection, restoration, and flourishing of Australia's diverse and delicate ecosystems.

We must embed circular principles into business practice to foster collaborative action, drive innovation, and instigate cultural shifts to enable successful CE initiatives.

The 'Four Circular Must Haves'

CE Deep Dive interviews, workshops and surveys revealed essential capabilities that enable successful circular economy initiatives. [8]

1

Integration of CE Principles into Business and ESG Strategy

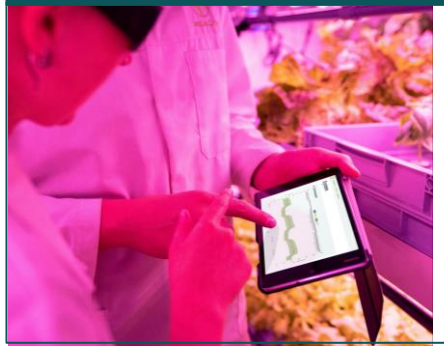
Integrate CE principles into commercial models & ESG strategy with a clear GHG emissions impact to ensure business viability & climate impact.

2

Collective Action & Stakeholder Management

Collaboration with ecosystem partners on a systems, industry & community level. This must be paired with an economic incentive to transition, supported by a regulatory model.

3



Enabling Technologies & Design Innovation

Quality data is needed to take accurate action, foster ecosystem collaboration and account for materials and products throughout their entire lifecycle.

4

Engagement with and Changes to Human Behaviour

Education on the Circular Economy and feedback to the customer on purchasing impact, enabling a shift in human behaviour and driving circular preferences.

Deep dive follows on pages 19 – 21

Incorporating Circular Transition Indicators within a measurement framework ensures that progress to circularity is tracked, quantified, and set to a global standard.

Circular Must Have #1: Integration of Circular Principles into Business and ESG Strategy

To accelerate the transition to circular, activities must be aligned to GHG emission reduction & related KPIs . **The Circular Transition Indicators** have been developed by the World Business Council for Sustainable Development (2023)[9]

Close the Loop

How might we close the loop on our material flows?

Measured by:
% material circularity
% water circularity
% renewable energy

Optimise the Loop

How might we make the loop as efficient as possible?

Measured by:
% critical material
% recovery type
Actual lifetime
Onsite water circulation

Value the Loop

How might we demonstrate the business value of circularity?

Measured by:
Circular material productivity
CTI revenue

Impact of the Loop

How might we acknowledge the benefits of circularity?

Measured by:
GHG impact
Nature impact

"The circular economy requires a neutral, scalable and open digital backbone to enable and accelerate transformation, designed with shared-value in mind. This should not only provide new commercial opportunities, but be measurable to show progress."
– Rik Irons-Mclean, Worldwide Sales Enablement Lead Sustainability, Microsoft

Circular Must Have #3: Enabling Technologies & Design Innovation (1 of 2)

Digitalisation is accelerating the transition to a circular economy [6]

Circular economies pre-date digital technology. Arguably, technological advances of the past century exacerbated linearity, optimising for and locking supply chains into ever faster and more efficient take-make-use-dispose models.

However, today's fast-evolving digital technologies are now enabling transformative shifts toward new circular business models at scale.

They are already significantly changing the way we create, deliver and capture value, and in parallel, decoupling resource use from economic growth – common examples include:

- platform businesses for asset sharing,
- consumer and industrial product service-systems, and
- second-hand digital marketplaces.

A neutral, scalable, and open digital backbone can enable and accelerate the circular economy, designed with shared-value in mind.

Key data and technology capabilities underpin the transition to circular economy [6]

Data

Data capture technologies via sensors, computer vision, connectors, APIs

Data transmission technologies to move data and enable multi-party comms - Wi-Fi, cellular etc

Secure data storage and sharing technologies - cloud, digital platforms, blockchain/distributed ledger, big data

Data analysis technologies at speed and scale - artificial intelligence, machine learning, big data analytics

Data intelligence – modelling and simulation, prediction, optimisation – Digital Twins etc

ESG specific data – carbon, water, waste, LCA

Technology

IoT / Internet of Things – data capture, translation, movement

Data Lakes/big data – storage at scale

Data exchange platforms to allow multi-party collaboration

Digital Twins – historical, real-time views, modelling and prediction, optimisation services

AI/ML – traditional/applied, generative

Visibility and Trust – Blockchain/tokenization, smart tagging/labelling validation, transparency

Cloud core platforms that interface with edge/on-prem – scale, multiparty collaboration

ESG monitoring, measurement and reporting platforms

Circular Must Have #3: Enabling Technologies & Design Innovation (2 of 2)

Technology capabilities that enable collaboration are central to scaling circular economy systems[6]

We recognise that today's enterprise systems often create challenges – siloed systems, point-to-point connections, limited collaboration across partners, and limited visibility. But collaborative, circular economy models require organisations to get better at sharing data between each other and across their supply chain.

To collaborate and build towards a circular economy, key enabling capabilities will be required such as:

A neutral digital backbone
to bring multi parties and scenarios/tech together

Continuous 'many to many' interoperability
and data/information exchange with anywhere access

Platform openness, common tools, and standardisation
to ease collaboration and ensure fairness

Cybersecurity and data governance
Including data protection, identity protection, system protection

Trustworthy data exchange and transparency
essential data, business process and logic, transactions, and trust as shared and neutral components

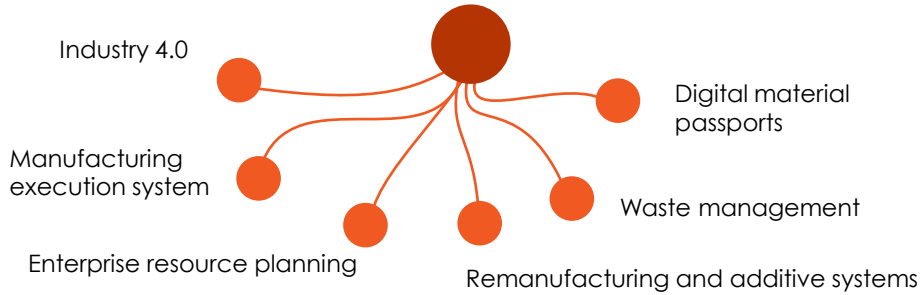
CE and digital skillsets
to design, build, operate this type of system

Measurement systems
for carbon, water, waste

Organisations can apply technologies individually, or in combination[6]

A **systems thinking approach** can be taken to understand the complex relationships, interdependencies and feedback loops between technology and enabling systems.

Example enabling technology systems



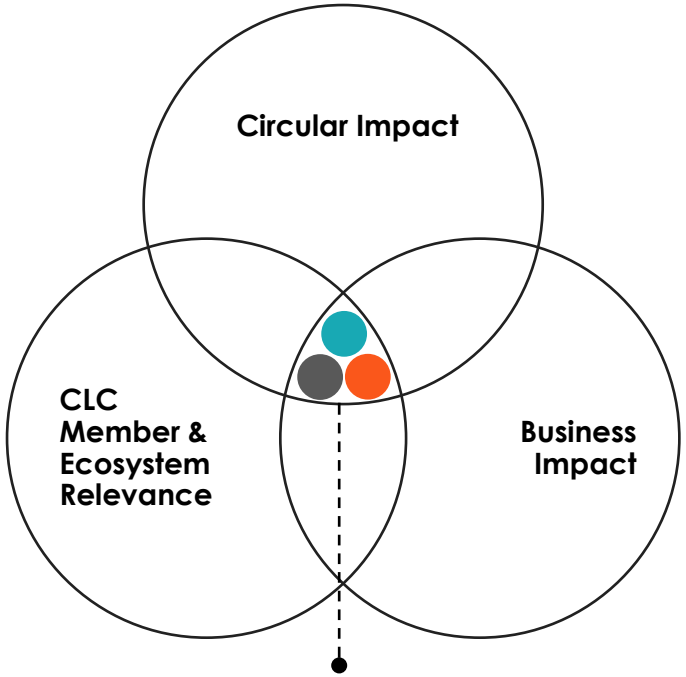
Applications of technology relevant to the circular economy case studies elaborated in this publication could include creating **digital twins of packaging to understand recoverability, recyclability, tax/compliance impacts and the value of shifting to more circular design**, and machine learning-enabled **forecasting models to match food production to demand, reducing losses and waste**.

Just putting technology solutions of top of existing business process and operations, however, does not lead to a successful circular economy. To understand their full potential, consider technology and data early in the design process – to inform the art of the possible, to explore the opportunities they unlock – and consider their ability to slow, narrow, or close the loop of material flows across every stage of the product lifecycle, value chain and market ecosystem.

Application to Three Value Chains

Value Chain Focus:
Soft Plastics Packaging, Perishable Food & Sustainable Aviation Fuel (SAF)

	Focus Area Overview	GHG Impact
Soft Plastics Packaging	Reimagine the soft plastic packaging value chain, with a particular focus on the connection between upstream design and downstream collection.	**The plastics value chain currently contributes to 3.3%[10] of global GHG emissions** and is projected to reach 15% of the global carbon budget by 2050.
Perishable Food	Reimagine the perishable food value chain, from farm to table to end-of-life disposal with a focus on the totality of the food system.	**Food waste contributes 6-8%[11]of global human related GHG emissions**. In Australia, it accounts for ~3% of annual GHG emissions.
Sustainable Aviation Fuel	Understand the circular nature of SAF production and use with a focus on the collective action required to establish a local industry.	**The aviation sector generates ~ 3%[12] of the world's total carbon emissions**. Jet fuel demand in Australia is projected to increase by 75% from 2023 to 2050[13].



Focus Areas of the Circular Economy Deep Dive are at the intersection of 3 key areas.

"Collection loss requires a whole of market design solution from design to recovery paired with economic incentive to transition."
– Martin Brown, GM Nestlé Oceania

Soft Plastics Packaging Value Chain: Present state in Australia

Overview

The linear soft plastics packaging value chain in Australia is a complex system, deeply embedded in the country's manufacturing, retail, and waste management industries. Traditionally, this chain has followed a linear model: plastics are produced, used, and then disposed of, often ending up in landfills or as environmental pollutants.

This model is increasingly seen as unsustainable, given the rising concerns about plastic waste and its impact on the environment.

Key Considerations for Australia:

1. **The system is not going to evolve naturally** because of consumer demand or a technology breakthrough. An intervention is needed that forces the adoption of a circular model, only then will losses across the value chain reduce.
2. **Community will be at the heart of change** – there are 537 local governments across Australia to bring along the journey to help drive change.
3. Upstream design & integration of recycled materials is key to **increasing demand of recycled packaging**.

Design

At present, material design is driven by shelf life, cost & performance efficiency. Circular design principles must be embedded at the start of the value chain to reduce virgin plastic consumption and ensure packaging reduction, re-use & recyclability.

A product's design influences as much as 80% of its environmental impact, according to the European Commission[14].

Sourcing → **Manufacturing** → **Distribution**

The linear stages of sourcing, manufacturing, and logistics in the soft plastics packaging industry in Australia currently results in the excessive consumption of non-renewable resources and energy. Further, these processes generate considerable waste and emissions, as the system lacks mechanisms for efficient use and reuse.

Product Use → **Collection/ Sorting/ Recycling**

Soft plastics packaging use, reuse, collection and recycling is a critical step in the linear value chain that is not designed for circularity in Australia.

According to the Australian Food and Grocery Council (AFGC), **~487,000 tonnes of soft plastic packaging waste was generated in Australia** from 2019-2020.

Only 4% was recycled, with the remaining 96% sent to landfills.[15]

End-of-life Disposal

The linear system in Australia's packaging industry fails to circulate plastics effectively because it primarily focuses on single-use and disposal. This approach leads to a significant accumulation of plastic in landfills and waterways because the plastics themselves are not designed to re-enter the production cycle.

"We need to make it easy for people to recycle soft plastics and encourage them to choose products and packaging with recycled content."– Brooke Sprott, Head of Sustainable Business & Communications, Unilever

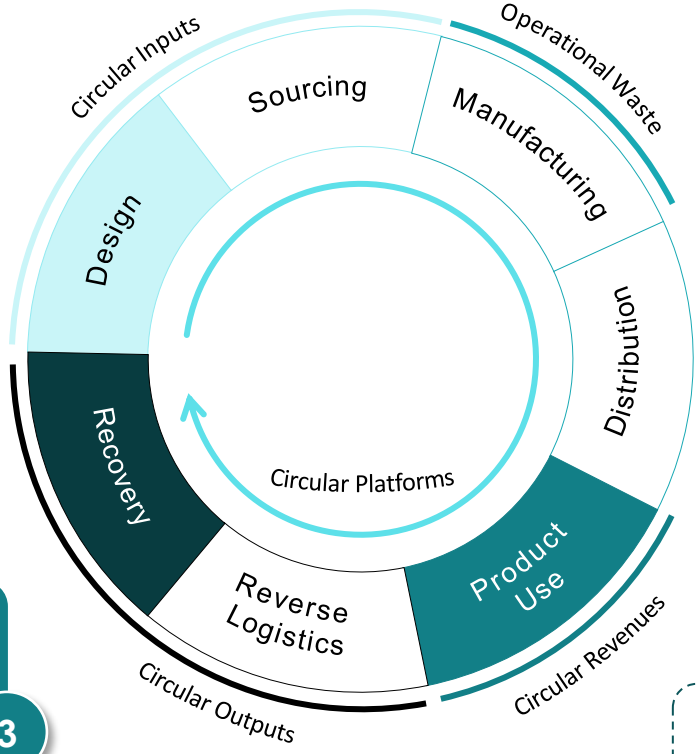
'Collective Action Levers' to transition to a circular future for Soft Plastics Packaging in Australia

To create a circular future for soft plastics packaging in Australia, **5 'Collective Action Levers'** have been identified:[17]

Circular design standards to increase recyclability and avoid unnecessary packaging, including enforced use of recycled content in packaging and homogenous polymers. **1**

Investment in optimised collection, sortation & recycling infrastructure to increase feedstock for recycling and recovery. **2**

By **embracing reuse**, demand for new soft plastics can be significantly reduced, thereby lowering production and the consequent environmental footprint. A shift towards reuse will require systemic change, including the support of businesses and government policies that encourage and facilitate reusable alternatives. **3**



Visual from Accenture's Circular Advantage[16]

4 **Nation-wide policy, regulation & incentive schemes** to reward circular behaviour and support a sustainable transition away from linear processes.

5 **End to End accountability** through material traceability and data visibility across the entire value chain.

System change of the overall plastics value chain is estimated to decrease the GHG emissions by: **↓25%** relative to BAU by 2040.[18] Soft plastics packaging is an important part of this opportunity.

"We aim to contribute to a more resilient and equitable food system, free of hunger and waste."
- Bel Quince, GM Sustainability – Planet, Woolworths

Perishable Food Value Chain: Present state in Australia

Overview

The perishable food value chain in Australia, encompassing the journey of food from farm to table, is predominantly linear, lacking circularity.

This linear approach, emphasising short-term efficiency over sustainability, leads to considerable resource wastage and environmental impact, underscoring the need for a systemic shift towards a more sustainable, circular model in the perishable food sector.

Key Considerations for Australia:

1. **Consumer Behaviour and Education**: A significant portion of food waste occurs at the consumer level due to over-purchasing, poor storage, and misunderstanding of food labels such as 'best before' dates. Educating consumers on food management will be essential to reducing food waste in Australia.

2. **Agricultural Practices:** Implementing sustainable farming methods, such as crop rotation and regenerative agriculture, can enhance soil health and reduce the reliance on chemical inputs. Healthier soil leads to stronger, more resilient crops, which can reduce the amount of produce lost to disease and pests.

Production

The first stage involves the production of perishable goods such as fruits, vegetables, dairy, and meat. Australian farms are highly efficient, but they often prioritise yield and economic returns over sustainability.

Australian agriculture accounts for 55% of Australia's land use as of 2023 according to the Department of Agriculture, Fisheries and Forestry.[19]

Processing → **Packaging**

Once harvested or produced, perishable goods undergo processing and packaging. In Australia, packaging is often designed for convenience and long shelf life, using materials that are not always recyclable, biodegradable or compostable. Additionally, processing often involves significant energy and water usage, with limited reuse or recycling of these resources.

Distribution → **Retail**

The distribution system is designed to be fast and efficient to minimise spoilage, but it often relies on fossil fuel-based transportation. Moreover, retail practices informed by consumer sentiment, such as the emphasis on aesthetic standards for produce, can lead to significant food waste.

Consumption

At the consumer level, the lack of awareness about sustainable practices, inadequate storage facilities at home, and a culture of over-purchasing contribute to high levels of food wastage.

70% of Australia's food waste in 2021 was edible. Milk, vegetables, fruit, wine & beer are responsible for the greatest mass of food waste.[20]

Waste Management

Finally, the disposal of perishable goods and their packaging often ends in landfill, contributing to greenhouse gas emissions. Although there are composting and bioenergy facilities, their use is not widespread enough to significantly impact the overall waste from perishable goods in Australia.

"Consumers need to value the role of food and understand the negative impact of wasting food from both an emissions and resource perspective. "
– Brooke Donnelly, GM Sustainability Coles

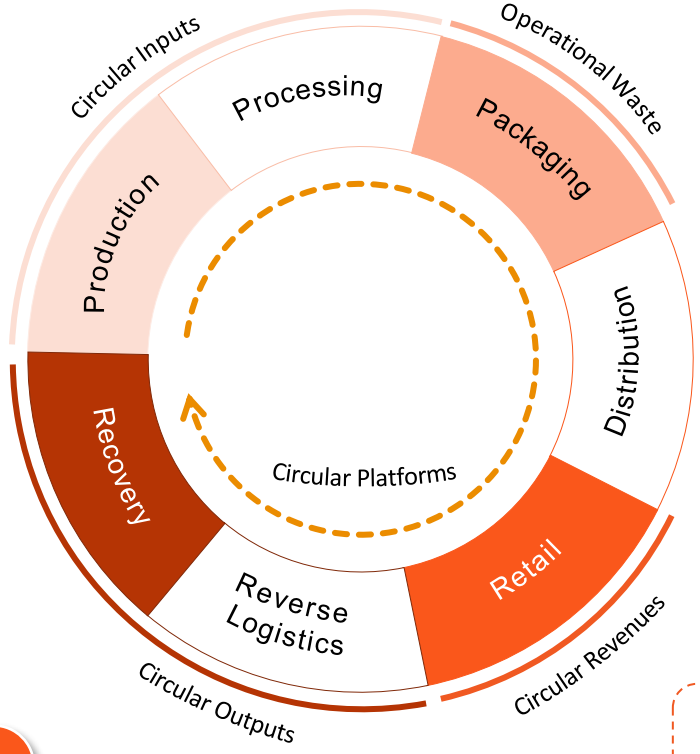
'Collective Action Levers' to transition to a circular future for Perishable Food in Australia

To create a circular future for the perishable food value chain in Australia, **5 'Collective Action Levers'** have been identified:[17]

Widespread regenerative and sustainable agriculture practices paired with a commitment from all industry players to align crop production with market demand. **1**

Collaboration between manufacturers, brand owners, retailers and policy makers **to design and utilise packaging** that extends the shelf life of perishable items and can either be circulated again or composted. **2**

Food Labelling & Consumer Education on circular consumption by providing simple and actionable options for consumers to use and recover their food. Consistent narrative and visuals are key. **3**



Visual from Accenture's Circular Advantage[16]

Increase adoption of B2B food distribution platforms along the value chain, such as *Yume* to provide organisations with readily available and scalable alternatives to landfill. Platforms must cater for all geographies – beyond capital cities. **4**

Data visibility & tracking across the value chain to identify waste hotspots, with a joint focus on ordering, stock management & inventory controls that optimise circularity. **5**

Elimination of food waste and composting could reduce annual GHG emissions of the food system by: **↓15%** by 2050.[1]

"For a long haul, end of the line carrier such as Qantas, SAF represents the single most important lever for us to directly reduce our emissions and meet our Net Zero by 2050 commitment." - Graeme Potger, Head of Sustainable Aviation Fuel, Qantas

A domestic SAF industry presents a shared opportunity for Australian businesses

The Opportunity

Australia has a significant opportunity to develop a commercially viable domestic Sustainable Aviation Fuel (SAF) industry. A domestic SAF industry will offer transformative opportunities for Australian businesses, across industry as well as provide liquid fuel security for the country.

*'Global aviation requires close to 1 billion litres of jet fuel every single day… decarbonising that is imperative, and **a trillion-dollar opportunity over the next 25 years**'*
- Dr. Jesco Neuenburg, Global Travel & Aviation Sustainability Lead Accenture

The Facts

90%

Australia **imports** 90% of liquid fuels through long supply chains that are susceptible to disruption.[22]

45%

of **Australia's** current **energy needs** are met by liquid **fossil fuels.**[22]

↑75%

Australian jet fuel **demand** is projected to increase by 75% from 2023 to 2050.[21]

$10b

The domestic **opportunity** equates to $10 billion of fuel at production costs in 2025.[21]

What is SAF

SAF is an umbrella term that encapsulates a range of alternative, non fossil derived fuels. SAF is produced using renewable or low-carbon feedstocks rather than fossil sources.

It is certified in accordance with international standards, safe, and a direct fuel replacement that can be used with all existing aircraft and infrastructure. Based on some estimates, SAF can **reduce CO2 emissions by 60% - 100% on a lifecycle basis**[6] (factoring in the carbon intensity of its production).

Benefits Across Industry

The production and use of SAF can assist companies **who wish to reduce their Scope 3 liability** that arises from air travel undertaken by their employees. In addition, there are sector specific benefits:

Mining & Heavy Industry
SAF is a co-product with other fossil fuel replacements, such as **renewable diesel.**

Retailers/Brand Owners
Environmental benefits can be reaped by **profiting from organic waste**; a feedstock for SAF.

Technology
New blockchain and cross-industry technologies are required to track and trace SAF production & use.

Logistics/Transport
Renewable diesel provides decarbonisation **options for road transport, remote power generation and heating.**

Financial Services
Significant capital investment is required to fund the development of additional production infrastructure.

Waste Management
New revenue streams for waste management companies who provide feedstocks for domestic SAF production can be realised.

Collective action is crucial to solve for the complexities we face in establishing a domestic SAF industry in Australia

What's in it for Australia?

Enhanced liquid fuel security and supply chain resilience by reducing reliance on imports

Local availability of SAF will support **Sustainable Tourism**
Economic co-benefits through the creation of new regional jobs (where biomass is located) and development of local industries

Opportunity to become **Asia-Pacific leader** in sustainable fuels

Reality Check: The Challenges

Current Lack of Enabling Policies
There is a global race that has started to establish and scale a SAF / renewable fuel sector. Without prioritisation and a holistic suite of supportive policies, Australia will be left behind.

Overcoming the Green Premium
Fuel typically makes up ~30% of a carrier's cost base. Currently, SAF costs 2 – 4X more than conventional jet fuel.[23]

Building SAF Literacy
Current knowledge of the purpose and benefits across industry of SAF is extremely low.

Securing Feedstock Supply
Minimising feedstock supply risk in terms of quantity, quality, and price.

SAF Activity in the Australian Market:

Joint Media Release by Catherine King MP & Chris Bowen MP - June 2023

The Australian Renewable Energy Agency (ARENA) will invest $30 million to support development of domestic SAF production from agricultural feedstocks.[24]

BP Press Release - February 2023

The Kwinana Renewable Fuels project plans to produce SAF and biodiesel from bio feedstocks by 2026. Feedstocks include used vegetable oils, animal fats and other biowaste products, sourced domestically or imported.[25]

Jet Zero Australia interview with Qld Dept. of Infrastructure, Local Government & Planning - *May 2023*

We're looking at 100 full-time people directly and indirectly employed & about 1000 people involved in the construction & development of the project.[26]

Global Investments:

The following companies have made significant investments in developing the global and/or Australian SAF industry:

Circularity in Practice

Example pockets of circularity emerging amongst CLC members

Waste Diversion from Landfill

- 4-year long program
- Diversion rate now at 84% as of FY23
- Program sees waste collected, sorted and then funneled into different streams e.g., food rescue & composting
- Underpinned by a strong sustainability culture & wide-spread education piece

KIT KAT Wrapper

- Proof of potential project to produce food grade recycled plastic by partners in the Australian packaging value chain to inspire investment in a domestic circularity solution
- KIT KAT now transitioned to 90% recycled plastic using mass balance

Sustainable Aviation Fuel

- Investing in the current & future potential of SAF; an inherently collaborative & circular mechanism
- Feedstock collaboration is helping to forge new connections across industry & reimagine traditional value chains

Circular Packaging

- Aspiring to 60% recycled content for Own Brand packaging by 2025
- Supporting circular thinking with 49% average recycled content in own brand primary and secondary packaging
- Partnership with PACT, SaveBoard and others who are building recycling factories to increase recycled content capacity in Australia

Mine Material Flow Research

- Undertaking detailed material flow analysis at one mine site
- Reviewing procurement strategies and identifying recycling opportunities within supply chains
- Introducing reusable food containers at operational mine sites, preventing up to 20,000 single-use plastic containers a day from ending up in landfill and providing a tangible example of the circular economy in action to our employees

SAP Responsible Design and Production

- System change begins when each business is equipped with the insight that helps change how materials are used in each market
- SAP Responsible Design and Production calculates extended producer responsibility (EPR) obligations, plastic taxes, and corporate commitments to help businesses optimise material choices, reduce fees, and reduce risks coming from unforeseen regulatory costs and non-compliance
- The solution further provides intelligence that allows businesses to monitor, measure, and act, in order to eliminate waste, circulate materials and regenerate natural systems

Reuse of Hangers & Packaging

- Toll contacted organisations and local charities needing plastic hangers before seeking recycling partners
- Toll identifies over-packaged SKUs, advising customers to request supplier reduction

Concentrated Laundry Liquid

- Omo Dilute at Home Refill
- Diluted with water by the consumer at home into an existing 2L bottle
- Uses 50% less plastic and 70% water in production

In Depth Case Study: Sustainable Aviation Fuel

Qantas is investing in the current and future potential of sustainable aviation fuel; an inherently collaborative mechanism that harnesses the power of the Circular Economy. In addition to reducing emissions and maximising circulation, Qantas-led initiatives in the domestic SAF industry are restoring nature within WA's Wheatbelt and offering opportunities across a broad range of industries.

Standout Enablers – 'Circular Must Haves'

Integration of CE Principles into Business and ESG Strategy

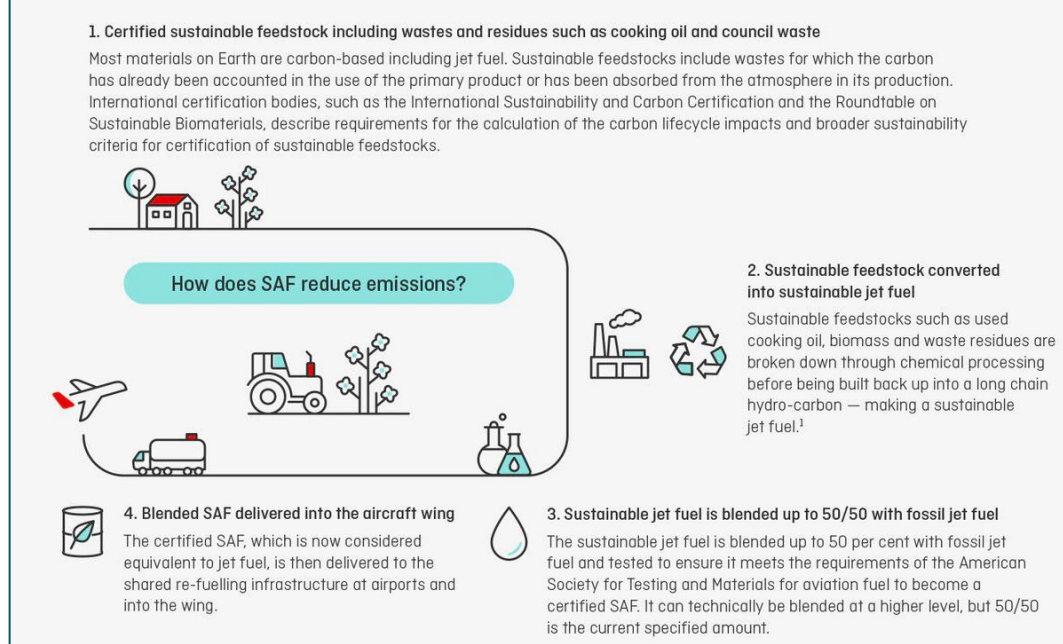
- **Qantas has pledged to be the leader in Australia's domestic SAF industry** and have carried this throughout their business and sustainability strategy
- Qantas have set targets to reach **10% SAF** in overall fuel mix by 2030, increasing to **60% by 2050**
- Qantas in partnership with Airbus has committed to invest **US$200 million** to kickstart a domestic SAF production industry

Collective Action & Stakeholder Management

- A broad range of stakeholders are required to successfully build the domestic SAF industry
- **Qantas founded the SAF Coalition to drive collective action on a domestic SAF industry** and provide organisations with actionable levers to reduce GHG emissions
- **Feedstock collaboration** is helping to forge new connections across industry and reimagine traditional value chains

SAF Diagram – Circularity in Action

GHG Emissions and Lifecycle of SAF[27]



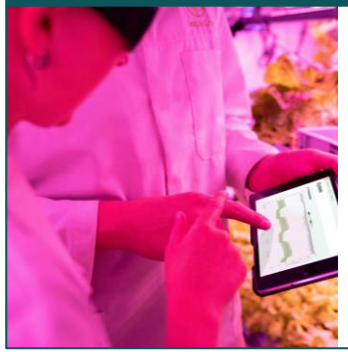
In Depth Case Study: Waste Diversion from Landfill

coles

Waste is a major environmental concern Australia-wide and a complex problem to solve for. By harnessing the power of technology & implementing a wide-reaching sustainability education program for all employees, Coles successfully diverted 84% of waste in FY23 away from landfill, with an FY25 target of 85%.

Standout Enablers – 'Circular Must Haves'

Enabling Technologies & Design Innovation



- Every Coles store has a **dashboard providing waste metrics and insights**
- Provides a **high-level view of progress** across all stores, allowing management to spot areas in need of more support
- Requires a strong foundation of **reliable data, tracking tools and reporting** to be successful

Engagement with and Changes to Human Behaviour

- Every Coles store conducts **sustainability huddles**. The huddle centers around waste separation, sorting and quality checks
- Enabled by **continuous employee engagement** across all stores and distribution centers
- Waste management has become **ingrained into store routine** and performance
- Consciously building in a behaviour research approach into consumer sustainability initiatives, e.g., Swap-a-box which allows shoppers to pick up their Click & Collect orders in a reusable box, carrying up to 16kg of items and reused up to 30 times

Waste Diversion Results – Circularity in Action

Reducing food waste[28]

Food relief

Unsold, edible food donated

SecondBite

17,571 tonnes

(equivalent to more than 35 million meals[2]) donated to SecondBite

FOOD BANK

2,223 tonnes

(equivalent to more than four million meals[3]) donated to Foodbank

Farmer program

36,534 tonnes

Fruit, vegetable and bakery products to farmers and wildlife organisations

Goodman Fielder bread return

4,381 tonnes

tonnes of surplus Coles Own Brand bread used as a component in stock and pet food

Organic waste services

34,165 tonnes

Converted into nutrient-rich compost

Footnotes:
2- SecondBite uses the conversion of total kilograms donated multiplied by two to determine equivalent meals.
3- Foodbank uses the conversion of total kilograms donated divided by 0.555 to determine equivalent meals

Building Circular Fluency

"Democratising 'Circular economy fluency' is at the heart of re-skilling employees, the C-suite and boards."
– Sally Coldrick, Accenture Net Zero Lead

Democratising Circular Fluency

Want to Learn More? Start Here:

Watch:
The Circular Economy Imperative
- *Presented by the WEF. Perspectives of leaders across business, academia, policy and civil society as they explain the concept of the circular economy*

Read:
UNEP Circularity Platform
- *Understanding of the circularity concept and how it contributes to promoting sustainable consumption and production patterns*

The Future of Packaging in the Circular Economy
- *A 2023 report by SAP & Accenture*

Breaking the Plastic Wave
- *A comprehensive assessment by Systemiq of pathways towards stopping ocean plastic pollution*

Listen:
The Circular Economy Show Podcast
- *Presented by the Ellen Macarthur Foundation*

100 Climate Conversations
- *Featuring 100 visionary Australians, taking effective action to respond to climate change*

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Towards a Circular Australia

‘One In, All In’ to drive radical change to power the shift from linear to circular.

CLIMATE LEADERS COALITION

An initiative of THE B TEAM *Australasia*