

STATE OF CIRCULARITY IN AUSTRALIA

Perspectives from the field



AUSTRALIAN
CIRCULAR
ECONOMY
HUB
PLANET ARK

IN COLLABORATION WITH



ACKNOWLEDGEMENTS

Planet Ark and the Australian Circular Economy Hub (ACE Hub) are deeply grateful to our **Technical Supporters** for their commitment to the development of this report and for their work in **enabling the transition to a circular economy in Australia**. The report has been a year-long process of co-creating using collaboration as the guiding principle, delivering an invaluable resource of the state of circularity in Australia from a range of perspectives.

Thank you to those who have shared their stories with the teams to develop the findings in this report. We are so grateful for your contribution.

RESEARCH AND AUTHORSHIP

ThinkPlace – Sneha Prasad, Faye Sakura, Liz Adcock and Jesse Newman

thinkstep-anz – Sally Kasner and Nicole Sullivan

Edge Environment – Jenni Philippe, Hrefna Bjorg Gylfadottir and Dana Katie King

Point Advisory/ERM Group – Michelle Wilson, Ben Sichlau, Reanna Willis and Connie Ho

MRA Consulting – Katherine Dodd, Catherine Smith and Masa Vahldiek

PROJECT MANAGEMENT ADVISORY

Thinkable Partners – Vikram Varma

ACE HUB TEAM CONTRIBUTORS

Dr Nicole T Garofano

Jane Horvath

Claire Laws

Liam Taylor

Tamanna Wadhvani

Sarah Wiecek

ABOUT THE ACE HUB

Planet Ark Environmental Foundation is an Australian not-for-profit organisation that established the ACE Hub to facilitate the transition away from the take-make-use-dispose linear economic model to a regenerative circular economy in Australia.

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Australian Government

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The views expressed in this report are those of the authors of each corresponding chapter and do not necessarily represent those of the ACE Hub or Planet Ark. The recommendations presented in this report may be further considered by relevant organisations.

FOREWORD

**THE HON. TANYA PLIBERSEK MP
MINISTER FOR THE ENVIRONMENT
AND WATER**

The *State of Circularity in Australia* is an important report on an urgent subject.

Thanks to organisations like Planet Ark and the Australian Circular Economy Hub, waste policy is now a topic of public debate. Research like this deepens our knowledge, enriches our national conversation, and ultimately improves our policy.

It's clear that a single use model is not sustainable. Humanity is currently using nature almost twice as fast as our planet has capacity to regenerate. In Australia, it's even more stark.

If everyone lived like us, we would need four and a half Earths to sustain ourselves.

In our linear economy, we take resources, make them into something, then dispose of them in landfill. But there's a different model available to us – a circular model – where we use better design and better systems to keep our materials cycling, use after use, to reduce our environmental footprint.

“Humanity is currently using nature almost twice as fast as our planet has capacity to regenerate.”

When people hear ‘circular economy’, they may think of waste and recycling, but it's much broader than that. More than seventy percent of environmental impacts are locked in at the design stage, before a consumer ever purchases a product, and well before we even consider its disposal or reuse.

At the recent Environment Ministers' Meeting, all Australian Environment Ministers

committed to working with the private sector and industry to design out waste and pollution, keep materials in use, and foster markets to achieve a circular economy by 2030.

We've been making progress towards these goals, as this report shows, but we must do more to prevent waste, improve product design, and build more efficient production processes.

A circular economy will be good for the environment, but it will also be good for our economy. Australia can be a global leader in technology, innovation, design, materials and processes. And by taking the lead, we can create good local jobs using extraordinary Australian creativity. Keeping waste out of landfill supports jobs at three times the rate of dumping it.

Collaboration is essential to achieving these collective goals. No single organisation, area, region or country can transition alone. Governments need to take the lead with procurement, regulation and public education. And businesses need to be bold in their design, production and product management decisions.

The circular economy is an opportunity for Australia, and our Government is determined to seize it. As Minister for the Environment and Water, I will work closely with you in our mission to build a prosperous, dynamic, sustainable country.



The Hon. Tanya Plibersek MP
**Minister for the Environment
and Water**

FOREWORD

CHRIS JEFFREY
CEO, BINGO INDUSTRIES

I'd like to congratulate Planet Ark's Australian Circular Economy (ACE) Hub and its Technical Supporters on the development of this important report.

State of Circularity: Perspectives from the field makes a number of recommendations, the most important of which is the need for collaboration. Australia's successful transition to a circular economy requires the support of all stakeholders, with governments at all levels having a critical role to play.

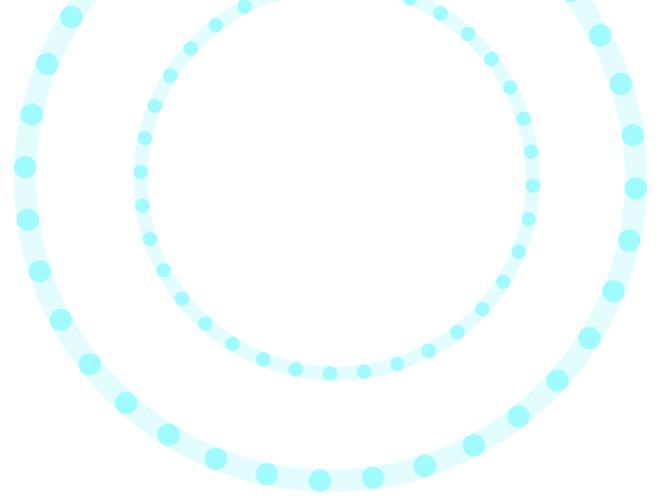
At BINGO, we support building and infrastructure projects by delivering recycled materials from our broad range of ECO Products. Whilst this range sells well, the development of long-term, sustainable end markets for recycled products is a necessity to increase supply. Bold moves by governments to mandate the procurement of these materials in their funded projects will help to foster these markets that can further a circular economy in Australia.

BINGO has been investing in recycled materials markets over the last five years, spending in excess of \$1 billion on advanced recycling infrastructure and assets. This includes a \$150 million investment in MPC2, our state-of-the-art recycling facility at our Eastern Creek Ecology Park. Our aim is to maximise the diversion of waste from landfill and achieve our vision of a waste-free Australia.

BINGO has been a proud supporter of the ACE Hub since its inception, and we're excited to be playing an important role in Australia's transition to a circular economy.



Chris Jeffrey
Chief Executive Officer
BINGO Industries



FOREWORD

ABIGAIL FORSYTH
MANAGING DIRECTOR, KEEPCUP

We are enormously proud of the cultural shift that KeepCup has helped drive in moving people from discard to reuse. When we started in 2009, we thought single-use coffee cups would long be a thing of the past. We have learned many lessons about the entrenched commercial interests that drive the linear economy and what it takes to generate cultural change.

This report highlights operational and systemic change is needed to really shift the dial and it must be guided by principle, not fiscal policy. Government has a vital role in setting baselines for responsibility for carbon impact, product stewardship, waste disposal and environmental protection. Bans on extraction of virgin materials and problematic and unnecessary waste will accelerate innovation.

The Australian Circular Economy Hub continues to build a community and support resourcing of material streams to inspire cultural change and commercialise a regenerative vision of Australia. There is so much opportunity and so much to be done.



Abigail Forsyth
Managing Director
KeepCup

EXECUTIVE SUMMARY

In Australia, circular economy adoption is still relatively new. The Australian Circular Economy Hub (ACE Hub) is facilitating the transition to national circular economy adoption, by connecting networks of actors through a range of activities that focus on education, collaboration, support, leadership and measurement. Activities such as the launch of the ACE Hub Portal, the development of an Australian circular economy marketplace, education and knowledge sharing events, and research (including this report) are some examples of such facilitation.

This report is an example of collaboration in action. Chapters are authored by ACE Hub Technical Supporters, who have tapped into their industry experience to identify key areas of opportunity and real-world case studies that can inspire collaboration and build confidence around the transition to a circular economy.

The purpose of this inaugural *State of Circularity in Australia: Perspectives from the field* report is to inform and inspire action towards increased adoption of circular economy business models and thinking in Australia. With circular economy adoption in its relative infancy in Australia, the report provides foundational perspectives for both industry and government to enable progress towards circularity. Future ACE Hub *State of Circularity in Australia* reports will build on these perspectives and record progress.

By nature, a circular economy is regenerative. It corrects the industrial economic model, of take-make-use-dispose, into one that designs out waste and pollution, keeps materials and the products manufactured with them in use for longer, and regenerates natural systems. A circular economy provides opportunities for resource efficiency and new industries, markets, products, revenue streams and jobs. The transition to a circular economy will

require a transformational, systems-based approach to global consumption patterns.

State of Circularity: Perspectives from the field is divided into six chapters. **Key findings per chapter include:**

1

Chapter 1: ACE Hub

- Origins of circular economy, defining the term, its principles and business models
- Circular economy can support the achievement of environmental, social and governance (ESG) targets and other frameworks that organisations are increasingly reporting against
- Federal and state policy documents reflect the basic principles and language of a circular economy and also signal opportunities for greater adoption of the full range of circular business models

Target audience: All

2

Chapter 2: ThinkPlace

- Visualising opportunities in circular economy within and across supply chains that if framed differently would not be observable and may be missed
- Ecosystem mapping spotlights activity and creates awareness of who else is participating in local and regional circular activities
- Mapping can spotlight local initiatives that can be used as examples or learning experiences by others
- A live, updateable platform will provide a new richness and vigour to Australia's circular economy landscape and create intentional movement forward

Target audience: All

3

Chapter 3: thinkstep anz

- The circular economy delivers and retains value
- Value can be generated through resource flows and stock management, beyond purely economic value
- Systems-level change is needed to maximise the full range of value and to reduce business risk
- The Value Hill model helps to show where value can be added and retained
- The Materials Circularity Index helps to measure value
- Retaining value throughout the system is paramount, and this must be done intentionally

Target audience: Businesses and government

4

Chapter 4: Edge Environment

- The window of opportunity to create a sustainable future is rapidly closing
- A system transition is needed
- Circular economy offers tools and creates a mindset to adopt system change
- The key challenge is the current incremental, symptom-focused practice, rather than taking an all-of-system approach
- A circular mindset has three 'E' strategies – Enable, Enact, Elevate
- Getting started involves conscious design, followed by seven questions
- Adopting the three 'E's will help navigate and successfully execute a circular transition
- The chapter offers a practical 'how-to' guide to generate circular thinking

Target audience: Businesses and government

5

Chapter 5: Point Advisory

- Purchasing decisions dictate positive and negative impacts on the environment, society and the economy
- There is an opportunity for procurement to create significant positive impacts by adopting sustainable and circular procurement practices
- Early adopters of sustainable and circular procurement will see benefits in brand representation, decreased risk and increased competitive advantage
- From analysis of the retail sector, companies need to move beyond compliance to realise opportunities that sustainable procurement provides
- Collaboration is key to circular procurement
- This chapter offers objectives and activities to start sustainable procurement discussions within an organisation

Target audience: Procurement decision makers in organisations

6

Chapter 6: MRA Consulting Group

- Local government plays a key role in Australia's circular economy transition
- Circular economy is important to the future of local government areas
- While research suggests local governments are knowledgeable on circular economy, more than half simply identify circular economy activities as waste strategy activities
- Activities focused on organics attract the greatest attention
- Lack of resourcing, policy, information and education were noted as important barriers to adopting circular economy practices within local government
- Additional resources, co-funding, policy and end markets will drive circular strategy adoption in local government

Target audience: Local government

CONCLUDING REMARKS AND RECOMMENDATIONS

As the first *State of Circularity in Australia* report, this document reflects the early stage of circular economy adoption across the country. Progress is shown, however, through a range of case studies. There is evidence of exemplars of leadership, a community of practice, and the building of a 'coalition of the willing.' From this point in our transition, there are many opportunities to inject systems-based approaches that can disrupt traditional linear models of consumption and speed up the much-needed system change.

Common throughout the report is the theme of collaboration. Collaboration, combined with a range of funding sources, policies at all levels of government (not least of which is circular procurement), and education for all decision makers, is critical if we are to truly adopt a circular economy.

Recommendations from the report vary by chapter, but can be summarised as follows:

COLLABORATION

Collaboration is essential to a circular economy transition – no single organisation, area, region or country can transition alone, all actors and stakeholders need to be involved.

SYSTEMIC CHANGE

Systemic change is needed across all sectors of the economy, with governments, businesses and communities all playing an important role.

MAPPING

Mapping of Australia's existing circular economy network and progress is needed to identify clear connections and opportunities for collaboration.

CIRCULAR THINKING

Circular thinking is necessary to navigate and execute circular economy business model adoption successfully.

GOVERNMENT LEADERSHIP

Governments need to take the lead with strategies that include public procurement, product regulation and education.

BOLD BUSINESS DECISIONS

Businesses need to be bold in their design, production and product management decisions.

MOVING BEYOND COMPLIANCE

Companies need to move beyond circular economy and sustainability for compliance – there are many more benefits to the transition, not least of all is reduced risk in supply chains.

INTERVENTION POINTS

Leadership teams and decision makers across all operational areas of local governments must be encouraged to work with the principles of a circular economy.

This will help identify the intervention points across the LGA as a whole.

INVESTMENT

Investment is needed, from both private and public sector organisations, to test new technologies, fund evidence-based strategies that incorporate more circular business models and scale up to broaden implementation of circular economy practices.

USING PRACTICAL EXAMPLES

Practical examples are available and should be used to demonstrate how to approach the transition, however these require greater industry circulation.

EDUCATION

Education is vital for all, particularly for leadership and procurement decision makers.

The ACE Hub is committed to facilitating the ongoing transition to a circular economy in Australia. The findings of this report reiterate the important role of the ACE Hub in enabling education, connection and collaboration to support this transition.

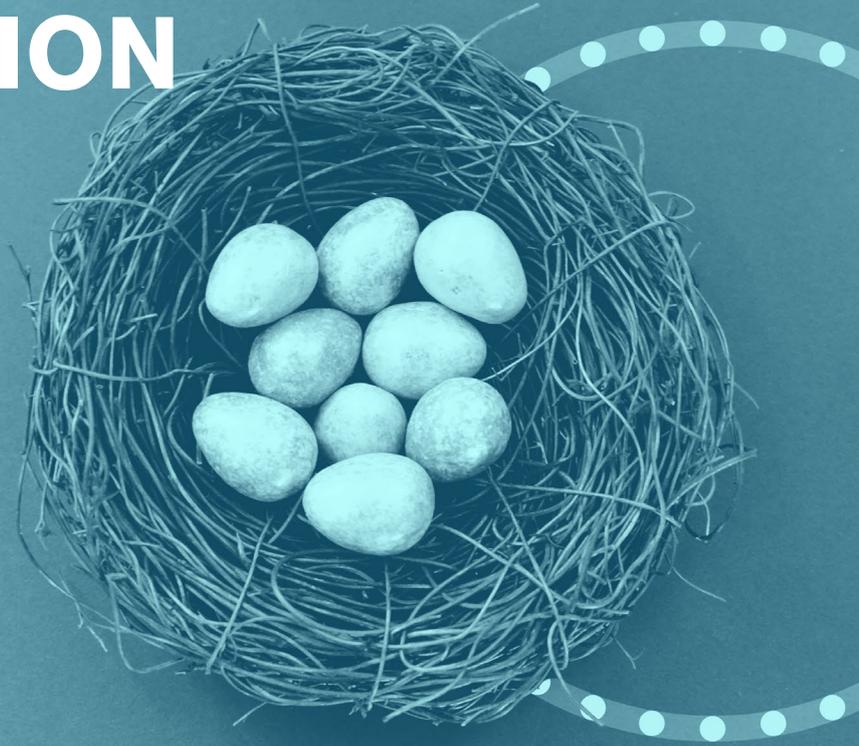
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INTRODUCTION

Authors: Dr Nicole Garofano and Claire Laws
ACE Hub



ORIGINS OF THE CIRCULAR ECONOMY

Nature-based approaches to land and resource management and consumption have been used by First Nations peoples for tens of thousands of years. Therefore, understanding the need to live in balance with nature is far from a new way of thinking. The circular economy is inspired by natural systems and has developed out of the realisation that our current industrial model of consumption has moved further and further away from Indigenous practices.

The current industrial model, known as the linear economy, is fuelled by natural resource extraction and is based on a 'take-make-use-dispose' pattern of consumption. Materials are taken from the Earth, made into products that can be sold, used for a period of time and then disposed at their end of life. In contrast, the circular economy is an economic model that is regenerative by design. It focuses on designing products that can be kept in use for longer, including designs that enable reuse, repair and refurbishment, and that

can be easily remanufactured, repurposed or recycled. Keeping products and materials in use retains the integrity of the resources used to create the products, while eliminating waste and pollution and regenerating nature.

... the circular economy is an economic model that is regenerative by design.

The circular economy builds on several foundational concepts developed over recent decades including biomimicry, industrial ecology and industrial symbiosis. Like the circular economy, each of these concepts seeks to regenerate nature, reduce leakage and prevent waste. These are introduced in Figure 1.1 on the following page.



BIOMIMICRY

Biomimicry¹ involves mimicking nature and natural systems, which are inherently circular and generate limited or zero waste, to create environmentally friendly innovations and solutions. The term was first coined by Janine Benyus in 1997.



INDUSTRIAL ECOLOGY

Industrial ecology² is a cyclical approach to production where mapping the flow of materials and energy allows production cycles to mimic natural ecosystems. The systems created identify waste as an input for an organisation's next stage of production.



INDUSTRIAL SYMBIOSIS

Industrial symbiosis³ uses a collaborative approach whereby organisations from different industrial sectors exchange resources to improve efficiencies. In this model, the waste and by-products generated by one industry becomes the resource or inputs of another.

Figure 1.1: Examples of foundational concepts towards circular economy

Despite critiques,⁴ the circular economy is gaining momentum at a time when there is a strong sense of urgency to change the way we consume resources. The current trajectory of resource consumption projects the need for at least three Earth's worth of resources by 2050.⁵ Furthermore, according to Accenture's research:



Unless current trends are reversed, resource supply disruptions coupled with rising and increasingly volatile prices will in the next two decades translate into **trillion-dollar losses for companies and countries whose growth remains tied to the use of scarce and virgin natural resources.**⁶

As climate change, resource depletion and environmental degradation continue to present some of the greatest global challenges of our times, we need a systems-wide redesign and transition to a carbon neutral circular economy.

MODERN DEFINITION OF THE CIRCULAR ECONOMY

After more than 50 years since the term 'circular economy' was first used,⁷ there is not yet a globally agreed definition.⁸ What is generally agreed, however, is that a circular economy offers a "systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution"⁹. The focus is on the use of systems thinking when deciding on the introduction of products into the economy to ensure all-of-system resource efficiency. Three guiding principles expand the term, which are introduced below.

1. Ellen MacArthur Foundation (2013), *Towards the Circular Economy: Economic and business rationale for an accelerated transition*

2. Centre for Strategic and International Studies (2021), *Industrial Ecology: Closing a Loop in Circularity*

3. Winans et al. (2017), *The history and current applications of the circular economy concept*

4. Corvellec et al. (2021), *Critiques of the circular economy*

5. Cramer (2020), *How network governance powers the circular economy: Ten guiding principles for building a circular economy, based on Dutch experiences*

6. Accenture (2014), *Circular Advantage: Innovative Business Models and Technologies to Create Value in a World without Limits to Growth*, p.3

7. Ellen MacArthur Foundation (2022), *What is a circular economy?*

8. Kirchherr et al. (2017), *Conceptualizing the circular economy: An analysis of 114 definitions*

9. Ellen MacArthur Foundation (2022), *What is a circular economy?*

PRINCIPLES OF THE CIRCULAR ECONOMY

According to the Ellen MacArthur Foundation, there are three guiding principles in a circular economy.

1

DESIGN OUT WASTE AND POLLUTION

Designing for circularity focuses on designing out waste and pollution for the entire life cycle of the product – including product development, product use and post-use product management phases. Ideally, circular designs also enable biological materials to be returned to the land to refuel natural systems.

2

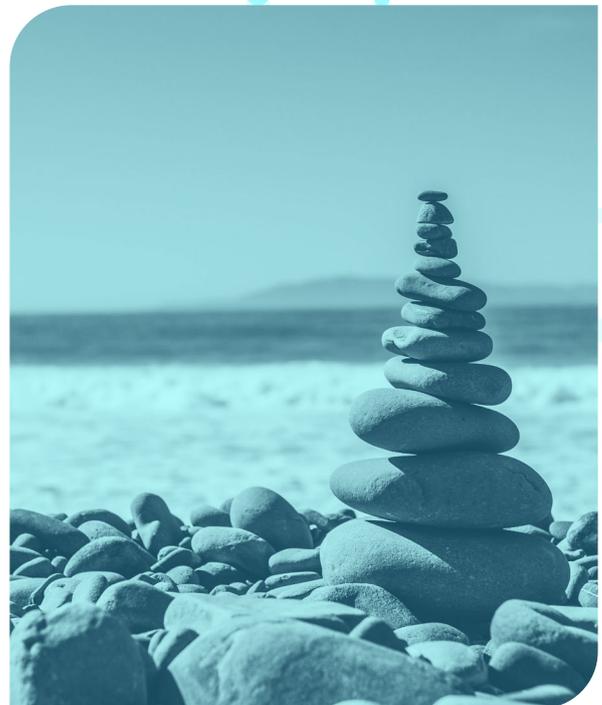
CIRCULATE PRODUCTS AND MATERIALS (AT THEIR HIGHEST VALUE)

Products or materials must be kept in use for the longest time and at their highest value. This can be achieved by referring to what Professor Jacqueline Cramer calls the 10Rs of circularity.¹⁰ These 'R-strategies' are an expansion of the EU waste hierarchy launched in the 1970s and place greater emphasis on keeping materials in use.¹¹

3

REGENERATE NATURE

In nature there is no such thing as waste. A circular economy mimics this waste-free natural system and shifts the focus from extraction to regeneration.¹² For example, returning valuable nutrients to the soil and other ecosystems helps at least balance if not regenerate natural systems.



In nature there is no such thing as waste. A circular economy mimics this waste-free natural system and shifts the focus from extraction to regeneration.

10. Cramer (2020), *How network governance powers the circular economy: Ten guiding principles for building a circular economy based on Dutch experiences*

11. The R-ladder presents a hierarchy of 'R-strategies' for resource consumption and management. In general, the higher on the ladder a strategy, the lower the resource related environmental burden and the more circular it is. R-strategies range from refuse and reduce at the top of the ladder, to recover and re-mine at the bottom of the ladder. Further information is available from the publication by *The Netherlands Environmental Agency*

12. Ellen MacArthur Foundation (2022), *Regenerate Nature*

CIRCULAR ECONOMY BUSINESS MODELS

A circular economy provides opportunities for creating new industries, markets, products, revenue streams and jobs.¹³ KPMG Australia suggests a rise to some \$210 billion in GDP, and an additional 17,000 full-time equivalent (FTE) jobs across the country by transitioning to a circular economy.¹⁴

Taking a circular economy approach enables businesses to 'future-proof' their operations and reduce risk by moving away from reliance on increasingly limited and expensive natural resources. It also allows organisations to differentiate their brand and align themselves with growing consumer expectations around sustainability.¹⁵ To assist organisations in understanding their path towards a circular economy, Accenture have identified five circular business models.¹⁶ These are briefly described below.



CIRCULAR SUPPLIES

Using fully renewable, recyclable, or biodegradable inputs in production processes, reducing waste, and phasing out the use of scarce virgin resources.



RESOURCE RECOVERY

Efficient recovery of secondary materials that are transformed into value (as high value as possible), while minimising material leakage.



PRODUCT LIFE EXTENSION

Extending product and asset lifecycle, both in design and use phases. Value that is usually lost when products are disposed of is conserved (or even improved) through reuse, repair, refurbishment, remanufacturing or repurposing.



SHARING PLATFORMS

Promotion of product sharing among users to maximise resources, often using technology such as apps to monitor usage.



PRODUCT AS A SERVICE

An alternative to product ownership – a service for customers to lease or pay-for-use of products. Also encourages product design for durability, longevity and reusability.

“Taking a circular economy approach enables businesses to ‘future-proof’ their operations and reduce risk...”

13. Commonwealth of Australia (2018), *National Waste Policy*

14. KPMG (2020), *Potential Economic Pay-off of a Circular Economy*

15. Accenture (2014), *Circular Advantage: Innovative Business Models and Technologies to Create Value in a World without Limits to Growth*

16. Accenture (2014), *Circular Advantage: Innovative Business Models and Technologies to Create Value in a World without Limits to Growth*

THE SEA OF FRAMEWORKS: WHERE DOES THE CIRCULAR ECONOMY FIT?

There are a number of important targets and frameworks that organisations are navigating alongside circular economy adoption. These include 'environmental, social, and governance' (ESG) targets and reporting, low carbon economy targets, biodiversity impact reduction targets, as well as the frameworks developed by the Taskforces on Climate Related Financial Disclosures (TCFD) and Nature-related Financial Disclosures (TNFD). A circular economy approach offers a tool to support each of these requirements simultaneously. The relationship between selected targets and frameworks and the circular economy is outlined briefly below.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) TARGETS AND REPORTING

The United Nations' Sustainable Development Goals (SDGs) are useful in assessing the sustainability of a company's activities. The adoption of ESG targets is not only an ideal mechanism to address SDGs and sustainability but is increasingly being called for as business-as-usual practice by global investment houses and contracting organisations. Examples of ESG targets are described in Figure 1.2 opposite.

“Only 55 per cent of global emissions can be reduced by full-scale adoption of renewable energy. The remaining 45 per cent of emissions are generated in the way we use land and related resources...”

17. Tern PLC (2022), *What is ESG and its three pillars?*



ENVIRONMENTAL

Impacts on climate change, pollution, waste etc. Also involves environmental considerations related to assessing companies' long-term financial health such as reliance on fossil fuels and other finite natural resources.



SOCIAL

Issues such as employee health and safety, employment equality, worker rights and modern slavery.



GOVERNANCE

Assessing the internal operations of the business including ethics, values and reporting.

Figure 1.2: Examples of ESG Targets
(Source: Tern PLC)

Transitioning to a circular economy can support ESG-led growth. This is when considering the circular economy encompasses switching to renewables, switching to processes that reduce waste and pollution, becoming carbon neutral and restoring ecosystems, and can support increased employment and improved governance structures.¹⁷

LOW CARBON ECONOMY

Adopting a renewable energy or net zero policy will result in obvious reductions in greenhouse gas emissions. However, additional emissions reductions can be achieved by embracing a circular economy. Only 55 per cent of global emissions can be reduced by full-scale adoption of renewable energy. The remaining 45 per cent of emissions are generated in the way we use

land and related resources, meaning there are many other opportunities to reduce emissions by evaluating the full supply chain of products.¹⁸ For example, while seeking to improve supply chains for circularity, Scope 3 emissions (indirect emissions produced by suppliers and consumers up and down the value chain¹⁹) can be addressed.

BIODIVERSITY

UN SDG 15 is to “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”²⁰. The SDG Report 2021 reflects that greater effort is still required to address loss of biodiversity.

Following the three principles of the circular economy offers potential to halt biodiversity loss and restore natural systems.²¹

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

The Financial Stability Board developed the TCFD framework in 2015 to enable consistent reporting of climate-related financial risk.²² The TCFD framework is used by companies, banks and investors.²³

The circular supplies business model focuses on renewable inputs to production – not just for individual organisations, but across the supply chain. This applies to renewable energy but also to limiting emissions in each product’s system.

Having consistent reporting of climate-related financial risk will improve transparency and allow companies and investors to more accurately assess the financial benefits (and risks) of transitioning to a low carbon and circular economy.

TASK FORCE ON NATURE-RELATED FINANCIAL DISCLOSURES (TNFD)

The framework developed by the TNFD will help to quantify the impacts of business activities on nature and assist companies to quantify the finance-related risks of causing negative environmental impacts.²⁴ The use of circular business models can help reduce impacts on nature by reducing dependence on virgin natural resources.

Following the three principles of circular economy offers the potential to halt biodiversity loss and restore natural systems.

A SNAPSHOT OF AUSTRALIA’S CURRENT CIRCULAR ECONOMY POLICIES

Whilst the above shows corporate organisations play an important role in the transition to a circular economy, government and its policies are key enablers.²⁵ In Australia, governments at all three levels are including circular economy principles and language in their strategies and plans. This section presents a summary of federal and state policy, with more detail on local government activity in Chapter 6.

With good foundations, Australia is well placed to increase upstream decision making and use higher R-strategies to transition to a truly circular economy. Some examples of policies that include circular thinking are provided on the next page.

18. PwC (2022), *ESG-led growth: Embedding a circular economy model in your business*

19. GHG Protocol (2022), *FAQ: What are Scope 3 emissions?*

20. United Nations (2022), *The 17 Goals*

21. Ellen MacArthur Foundation (2021), *The Nature Imperative: How the circular economy tackles biodiversity loss*

22. Refers to “the set of potential risks that may result from climate change and that could potentially impact the safety and soundness of individual financial institutions and have broader financial stability implications for the banking system,” *Bank for International Settlements (2020)*

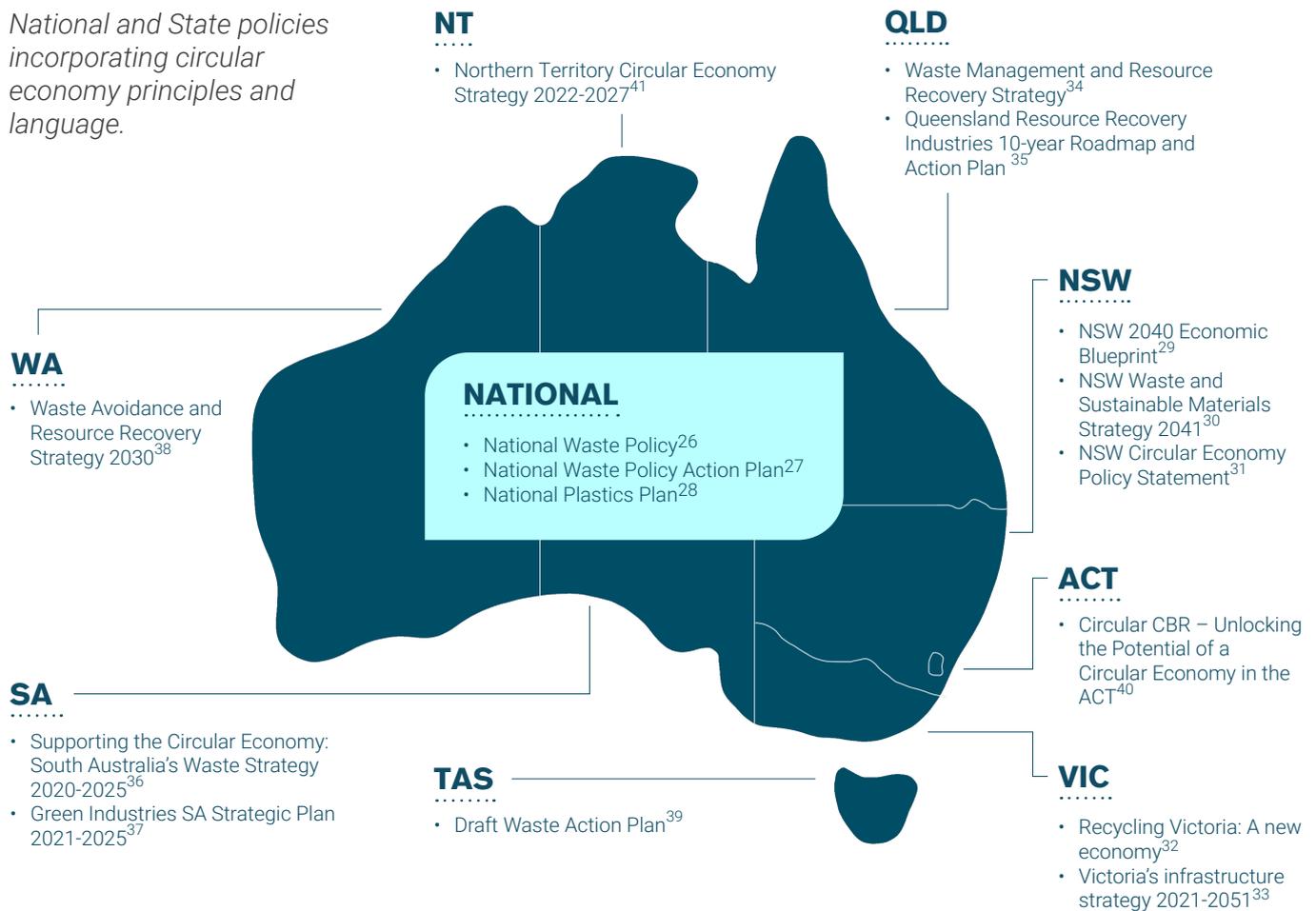
23. United Nations Environment Programme - Finance Initiative (2022), *TCFD – TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES*

24. Taskforce on Nature-related Financial Disclosures (2022), *FAQs*

25. PwC (2022), *ESG-led growth: Embedding a circular economy model in your business*

FEDERAL AND STATE CIRCULAR ECONOMY POLICY IN AUSTRALIA

National and State policies incorporating circular economy principles and language.



The achievement of a circular economy requires whole-of-government engagement (federal, state and local), as laws, regulations and policies at one level are often informed by those of the level above. As an example, local government planning regulations are often informed by state government plans. Therefore, spatial planning strategies, legislation and regulation for land use between these two levels of government could prioritise circular economy businesses and initiatives.

The circular economy requires collaboration – no one level of government can achieve circularity alone, nor can government alone achieve circularity. To be fully circular, government agencies and departments must work with businesses across value chains to ensure policies are enabling a circular economy locally and within the global community.

26. Commonwealth of Australia (2018), *National Waste Policy*
 27. Commonwealth of Australia (2019), *National Waste Policy Action Plan*
 28. Commonwealth of Australia (2021), *National Plastics Plan 2021*
 29. State of New South Wales (NSW Treasury) (2019), *NSW 2040 Economic Blueprint: Investing in the state's future*
 30. Department of Planning, Industry and Environment (2021), *NSW Waste and Sustainable Materials Strategy 2041: Stage 1: 2021-2027*
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 33. Infrastructure Victoria (2021), *Victoria's infrastructure strategy 2021-2051*
 34. Queensland Government, *Waste Management and Resource Recovery Strategy*
 35. The Department of State Development, Manufacturing, Infrastructure and Planning (2019), *Queensland Resource Recovery Industries 10-Year Roadmap and Action Plan*
 36. Green Industries SA (2020), *Supporting the Circular Economy: South Australia's Waste Strategy 2020-2025*
 37. Green Industries SA (2021), *Green Industries SA Strategic Plan 2021-2025*
 38. Government of Western Australia (2019), *Waste Avoidance and Resource Recovery Strategy 2030: Western Australia's Waste Strategy*
 39. Tasmanian Government, Department of Primary Industries, Parks, Water and Environment (2019), *Draft Waste Action Plan*
 40. ACT Government (2019), *Circular CBR – Unlocking the potential of a circular economy in the ACT: Issues paper 2019/3*
 41. Northern Territory Government, Department of Environment, Parks and Water Security (2022), *Northern Territory Circular Economy Strategy 2022-2027*



REPORT STRUCTURE

The remainder of this report presents chapters developed by ACE Hub Technical Supporters. The chapters show the transition to a circular economy is already well underway and provide inspiration for others to join. Chapters are outlined below.

Chapter 2 is delivered by **ThinkPlace**. In this chapter the team introduces ecosystem mapping as a tool to visualise circular opportunities and to help measure progress towards a circular economy. Focused on the Australian context, ThinkPlace presents the argument that to transition together, ecosystem mapping is necessary.

Chapter 3 is delivered by **thinkstep-anz**. The team dives into the question of value and the varying perspectives of value. They discuss how organisations can reconsider their supply chains, both pre and post-production, and how value can be used to deliver multiple sustainability outcomes.

Chapter 4 is delivered by **Edge Environment**. Being able to use circular thinking to generate transformational change is a strong focus for the Edge team. This chapter provides a practical matrix for businesses to consider as they start to generate internal shifts to circularity.

Chapter 5 is delivered by **Point Advisory**. This chapter is focused on an important tool in generating system-wide change – procurement. This research seeks to understand progress and challenges in adopting sustainable and circular procurement within the Australian retail sector. The chapter provides guidance on what needs to be done to effect a step change towards circularity in procurement.

Chapter 6 is delivered by **MRA Consulting**. In this chapter, the team focuses on the adoption of circular economy within local government. Using primary data, the chapter highlights progress made to date and the opportunities for new business models in this sector.

The conclusion in **Chapter 7** delivered by the **ACE Hub** identifies common themes and offers some recommendations for next steps towards a circular economy in Australia.

“The chapters show the transition to a circular economy is already well underway and provides inspiration for others to join.”



CHAPTER 2

VISUALISING AUSTRALIA'S CIRCULAR ECONOMY OPPORTUNITIES

USING ECOSYSTEM MAPPING TO NAVIGATE AND ACCELERATE AUSTRALIA'S CIRCULAR ECONOMY TRANSITION

KEY FINDINGS

1

Visualising opportunities in circular economy can enable collaboration within and across supply chains

2

Ecosystem mapping creates awareness of who else is participating in local and regional circular activities

3

Mapping can spotlight local initiatives

4

A live, updateable platform will provide a new richness and vigour to Australia's circular economy landscape and create intentional movement forward



ECOSYSTEM MAPPING CAN HELP VISUALISE A CIRCULAR ECONOMY

The Australian circular economy needs a live ecosystem map to support an intentional and accelerated transition into the future.

A circular economy's success hinges on the ability to see opportunities for connection that will increase the value and life of limited resources. The movement towards a circular economy in Australia has largely been activated in silos by organisations, industries and governments.⁴² While networks such as the ACE Hub are bridging this divide, the lack of visibility across sectors and supply chains means that opportunities for circular collaborations are being missed. Visibility across Australia's current circular economy activity is critical to see the current state and where activity can expand.⁴³ Learnings are available from successful accelerators of the circular economy around the globe who are using ecosystem mapping as a tool to increase the visibility of actors and capitalise on otherwise missed opportunities.

To frame this challenge within the principles of a circular economy, an example might be, how might a manufacturer who is designing out waste and pollution (Principle 1) find or connect to a designer who can keep products and materials in use (Principle 2)? Furthermore, how can manufacturers and designers generate balance within natural systems, if not regenerate these systems (Principle 3)? What opportunities are currently being missed because these actors can't find each other?

A circular economy's success hinges on the ability to see opportunities for connection that will increase the value and life of limited resources.

Actors across Australia hold different pieces of the puzzle and are seeking ways to connect with others. Many are progressing towards a common goal of wide-scale

42. Braun et al. (2022), *Measuring the Circular Economy: An Australian Perspective, ACE Hub and Edge Environment*
43. Braun et al. (2022), *Measuring the Circular Economy: An Australian Perspective, ACE Hub and Edge Environment*

circular economy adoption. However, there is limited awareness of who else is actively participating in this work or how they could support each other. An Australia-wide ecosystem map will provide visibility of other actors and highlight possible connections.

To increase the visibility of actors within the sector and provide an understanding of current activity, this chapter offers maps from both global and Australian ecosystems as examples. It also provides an example resulting from this research to help address the current disconnection.

CULTURAL BARRIERS TO THE CIRCULAR ECONOMY

Research into barriers to circular economy implementation identifies cultural factors as one of the most significant issues, only surpassed by market drivers such as high upfront investment costs or lack of standardisation.⁴⁴ Cultural barriers include lack of awareness and interest in circular economy and hesitant company culture towards a transition⁴⁵ and limited willingness to collaborate while operating in a predominantly linear system.⁴⁶ The lack of a circular economy support network in addition to the above has also been noted.⁴⁷ The absence of circular economy business partners leads to companies doing it alone and at a relatively higher cost.⁴⁸

There are various avenues to address cultural barriers in circular economy work. These include demonstrating circular operating systems using case studies. Such case studies help to provide confidence in the sector to hesitant companies and shine a light on opportunities to collaborate. An ecosystem map can help to identify these case studies. Plotting localised initiatives can help generate a 'coalition of the willing' in local areas.⁴⁹ This can enable users to make sense of the current baseline of activity in Australia, the evolving sectors and changing economy, and find their place within this transition.

Cultural barriers include lack of awareness and interest in circular economy, hesitant company culture towards a transition and limited willingness to collaborate while operating in a predominantly linear system.



DETERMINING OUR BASELINE

Creating a baseline of activity is an important step forward for Australia's circular economy. For example, creating a circular economy measurement framework baseline is one of the key recommendations in the *Measuring the Circular Economy: An Australian perspective* report.⁵⁰ The importance of baselining for circularity is also explicitly expressed in the British Standard of circular economy implementation which stresses the need for a baseline as a starting point so organisations can assess their own maturity or acceptability and identify areas for improvement.⁵¹ Australia needs such a baseline to provide an important macro view of activity.

44. Hartley et al. (2022), *Barriers to the circular economy: The case of the Dutch technical and interior textiles industries*

45. Hartley et al. (2022), *Barriers to the circular economy: The case of the Dutch technical and interior textiles industries*

46. Grafstöm and Asama (2021), *Breaking Circular Economy Barriers*

47. Gadem et al. (2021), *Circular economy practices in a developing economy: Barriers to be defeated*

48. Hartley et al. (2022), *Barriers to the circular economy: The case of the Dutch technical and interior textiles industries*

49. Cramer (2020), *How Network Governance Powers the Circular Economy: Ten Guiding Principles for Building a Circular Economy Based on Dutch Experiences*

50. Braun et al. (2022), *Measuring the Circular Economy: An Australian Perspective, ACE Hub and Edge Environment*

51. British Standards Institution (2017), *Framework for implementing the principles of the circular economy in organizations*

ECOSYSTEM MAPPING IS A DATA VISUALISATION TOOL BEING USED ACROSS THE SECTOR

Ecosystem maps are used globally to represent complex systems. These maps, or similar data visualisation tools, help address barriers, support the acceleration of collaboration, and determine a baseline. This visual representation of 'connection' can be a powerful tool in influencing decision-makers.⁵² Some circular economies are harnessing this power of visualising connection in ways that will have implications on the way forward for Australia. Following are some examples of the use of data visualisation tools to help identify connections.



INTERNATIONAL DATA VISUALISATION EXAMPLES

African Circular Economy Network (ACEN)

The ACEN have developed and published an interactive ecosystem map of their case studies using the platform *Esri* and embedded it into their website.⁵³ This map categorises case studies by industry, with indicators of how many case studies exist in an area and superimposes this information onto a geographical map. Interacting with an icon that represents the case study provides a brief overview, important context, and links to more information and connections. The goal of this project was to increase visualisation of circular economy activities happening within the network and provide users with an easy-to-access tool to connect with initiatives that may impact their own work.

City of Austin, Texas, USA

The City of Austin have created a circular economy map called *Austin's Circular Economy Story*.⁵⁴ Austin's map differs to the ACEN as it shows the relationships

between industry actors and their partners using coloured lines. By clicking on a line, the user can read about this circular economy collaboration. Using categories as the key anchors, this map is not overlaid onto a geographical map, but rather organised in rings to demonstrate circularity. Another feature of this visualisation is the ability for the user to toggle relationships on or off based on diverse ownership such as 'Asian-led' or 'LGBTIQ+-led' activities.

Organisation for Economic Cooperation and Development (OECD)

At a global scale, the OECD have collated a list of examples of digital tools, such as the two examples above, that circular economies are using to survey their cities and regions and create connections.⁵⁵ Other examples from this report include Antwerp's Capital of Things initiative and Paris's Grand Paris Circulaire.



AUSTRALIAN DATA VISUALISATION EXAMPLE

Hunter Joint Organisation (Hunter JO)

The Hunter JO has developed a circular economy ecosystem map of the Hunter and Central Coast region in New South Wales.⁵⁶ Similar in visualisation choices to Austin's ecosystem map, this regional level map connects industry to organisation and community. It also demonstrates the roles of each of these actors. This communication of data provides a narrative of the drive towards a circular economy in the region and is a useful resource for actors wanting to become involved.

Learnings from data visualisation examples

Learnings from the data visualisation of ACEN to Austin to Hunter JO can be leveraged to design an ecosystem map which

52. Comai (2015), *Decision-making support: the role of data visualisation in analysing complex systems*

53. African Circular Economy Network (2022), *African circular economy case studies*

54. City of Austin (2022), *Austin's Circular Economy Story*

55. OECD (2020), *The Circular Economy in Cities and Regions synthesis report*

56. Hunter Joint Organisation (2022), *Hunter & Central Coast circular economy ecosystem map*

will create visibility, opportunities and support acceleration for Australia's circular economy. Like these examples, a live, interactive ecosystem map in Australia will amplify the current work of those in the sector and provide an accurate and current picture of what activities and opportunities are present.

The remainder of this chapter presents the methods used to investigate Australia's circular economy ecosystem, followed by the research findings. Suggestions for mapping are then presented.



CREATING AN ECOSYSTEM MAP PROTOTYPE OF AUSTRALIA'S CIRCULAR ECONOMY

ThinkPlace investigated opportunities in Australia's circular economy through desktop research and rapid prototype development using mock data for visualisation trials.

Initial desktop research was conducted to investigate ecosystem mapping that has assisted in addressing key cultural barriers. As part of the desktop research, access was provided to the ACE Hub Portal – an online meeting place that offers members engagement, collaboration, discussion and general information sharing on a range of topics within the circular economy in Australia.⁵⁷

Next, 1000 points of 'mock' data were generated to mimic the type of member data available from the ACE Hub Portal. Mock data was entered into an online tool, Mockaroo, which generates test data points. Mockaroo allowed initial prototype testing to be conducted with data points for individuals with fields representing cities, industry, sectors, interests, and first and last names. These fields were chosen to mimic the fields of data available within the ACE Hub Portal to simulate the experience of using real data. This allowed for testing of ecosystem prototypes without compromising real data

or the privacy of existing ACE Hub Portal members.

While several data visualisation and mapping tools were tested for functionality, Kumu Inc⁵⁸ could accommodate the data fields used in the mock data, create connections between data points, and toggle between views. Thus, Kumu was used to develop the ecosystem map prototype shown in Figures 2.1 and 2.2 below. Interaction with the ecosystem map on Kumu is available by [clicking on this link](#).

As part of the desktop research, access was provided to the ACE Hub Portal - an online meeting place that offers members engagement, collaboration, discussion and general information sharing on a range of topics within the circular economy in Australia.

In Figure 2.1, one potential visualisation for a whole-of-Australia circular economy is presented. This image represents an ecosystem map based on special interest areas (blue outer ring of circles) and specific sectors (coloured inner rings). Each dot in the inner rings represents one mock ACE Hub Portal member. Connections are shown via the lines across the ecosystem, including between the outer interest areas, inner sectors and between members. Toggling the ecosystem map using an interest area immediately highlights potential opportunities for connection and further engagement between members. An example of the connections between members in the inner rings is shown in more detail in the extract in Figure 2.1

57. ACE Hub (2022), *ACE Hub Portal: Australia's online circular economy community*
58. Kumu Inc (2022), *About*

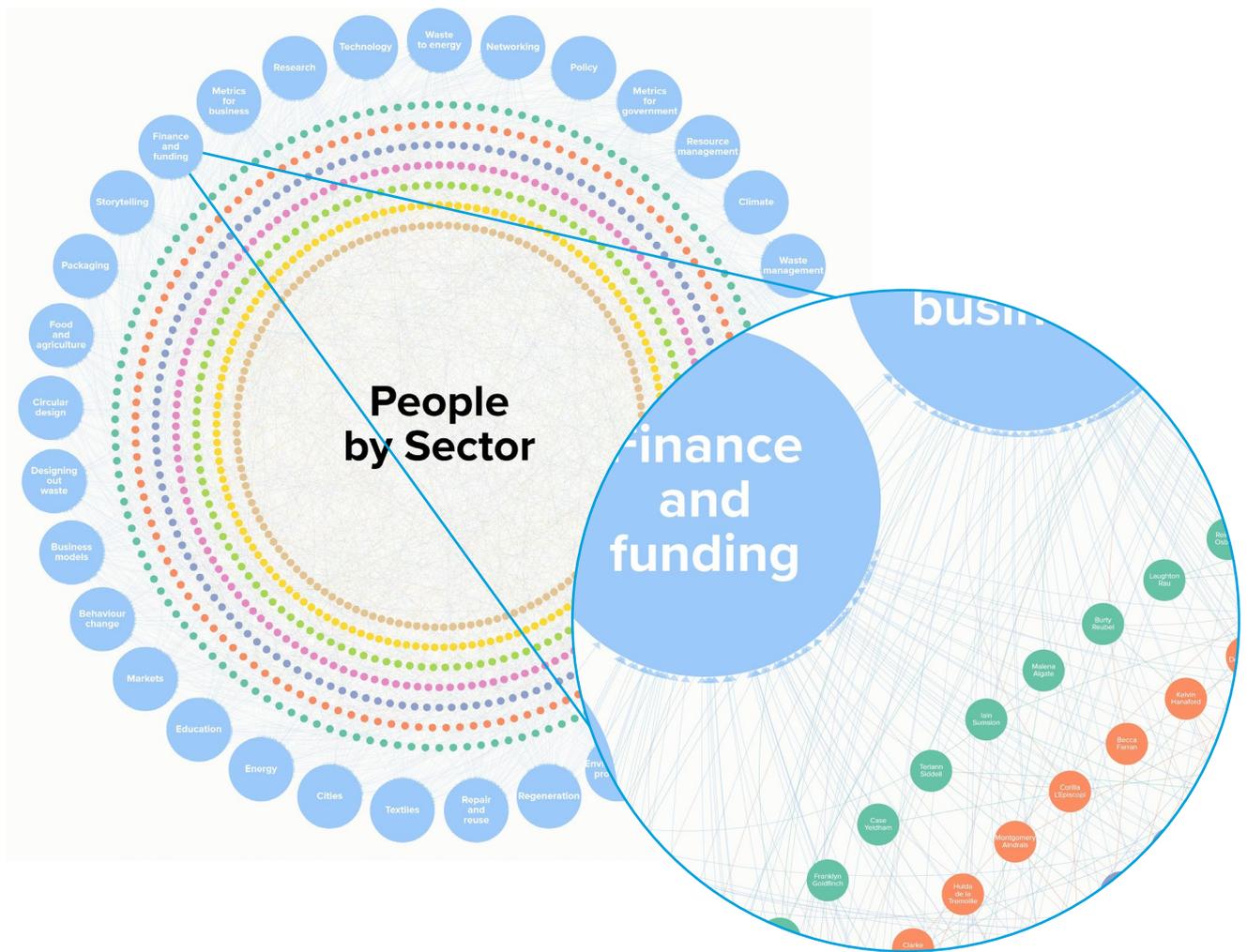


Figure 2.1: Prototype of an Australian circular economy ecosystem map using 1000 points of mock data created with Kumu, with opportunities and connections using the finance and funding interest area shown (Source: ThinkPlace)

Experimentation and testing using Kumu for this project provided important information for the direction of how to present the visualisation of data. Testing examined the need to make such a tool fit-for-purpose and demonstrated connections and opportunities that could accelerate industries in their transition.

DIRECTION FOR VISUALISATION

Testing this prototype with Kumu revealed the importance of understanding the user experience when interacting with the tool. A static overview, while interesting, can only offer one narrative for circular economy in Australia. Functions such as interactivity with the data points and toggling based on interest

or industry provide further usability to draw connections between actors. Conducting usability testing with this and other prototypes with identified target audiences will provide a clearer understanding of what they seek to achieve and what functionality is needed. In particular, one key question that needs to be tested is whether this ecosystem map, which is organised by industry and interest, should be overlaid onto a geographic map, like the example from the African Circular Economy Network, to create improved information availability and therefore user experience.

DATA MANAGEMENT NEEDS

It must be noted that a static input of data at one point in time can only provide a snapshot of the current circular economy. While this may help to provide a much-needed baseline, a live, up-to-date and user-sourced ecosystem map is needed to continue to highlight opportunities for connection and accelerate the sector. This means that there needs to be investment into a data management system that can collect data and update the ecosystem map, as well as effectively communicate and market the value proposition to encourage users to add their data points and keep them up to date.

OPPORTUNITIES FOR ACCELERATION

The most significant finding from the prototype testing was that the ecosystem map needs to uncover opportunities in the sector without putting the onus on the user. Unlike the philosophy behind search engine information management systems where the user needs to come with a question, an ecosystem map should provide answers to questions they did not know they had by visualising connections and revealing opportunities.

Even from initial prototyping with randomised mock data, potential connections and sources of opportunity could be identified by highlighting shared industry interests.

ABOUT THINKPLACE



ThinkPlace is a global design consultancy that exists to create positive change in the world, helping humans tackle complex challenges. They are committed to driving change from within systems by partnering with forward-thinking leaders in the public, private and not-for-profit sectors. They chose to focus on visualising the circular economy in Australia because they know from their work across multiple emerging industries that visibility is a tool that can create connections and accelerate growth.



RECOMMENDATIONS

Ecosystem mapping of Australia's circular economy is an important next step to providing visibility, creating a baseline and showing the transition of a circular economy in Australia. Such a map could enable faster progress both locally and nationally by connecting possible business partners not traditionally connected while addressing existing cultural barriers. Not only is ecosystem mapping being used globally as a visualisation tool, but there is also sufficient data in Australia's circular economy ecosystem to produce a map.⁵⁹ Producing a baseline map is the first step but this must be matched with funding to maintain this ecosystem mapping tool and enable progress.

It is envisioned that the ecosystem map will sit on a digital platform, such as the ACE Hub Portal. Users can interact with the embedded content by adding their own industry and find relevant contact details and make connections. The ACE Hub Portal currently holds around 1000 points of data and could be a potential starting point to develop a national ecosystem map using systems designed in collaboration with ThinkPlace.

A live, updateable platform will provide a new richness and vigor to Australia's circular economy landscape, provide visual embodiment of the brilliant work happening across the country and offer an intentional movement forward.

59. Braun et al. (2022), *Measuring the Circular Economy: An Australian Perspective*, ACE Hub and Edge Environment

CHAPTER 3

MAXIMISING OPPORTUNITIES TO DELIVER VALUE WITHIN CIRCULAR SYSTEMS

KEY FINDINGS

1

The circular economy delivers and retains value

2

Value can be generated through resource flows and stock management, beyond purely economic value

3

Systems-level change is needed to maximise the full range of value and to reduce business risk

4

The Value Hill model helps to show where value can be added and retained

5

The Materials Circularity Index helps to measure value

6

Retaining value throughout the system is paramount, and this must be done intentionally



A CIRCULAR ECONOMY PROVIDES A WAY TO CREATE AND RETAIN VALUE

Retaining economic and social value in materials, products and services is a core circular economy principle. In this chapter the value that a circular economy provides across value chains is analysed. Also considered is how to measure this value and the change needed to increase and retain it.

The 'value' most often talked about is the economic value in materials and products. This is the most tangible example of circular value in what is still an abstract concept to many, but it is not the only value a circular economy can achieve. For example, there is incredible value in the ability for a circular economy to help conserve natural resources and balance natural systems.

This chapter introduces the *Value Hill* model and the *Material Circularity Indicator* (MCI)

as two ways of discussing value. Both consider how businesses can retain value in the circular economy. Knowing where value exists starts with assessing the system as a whole.

thinkstep-anz has over 15 years' experience in building value from sustainability. This experience, staying current with burgeoning literature around circular economy, has assisted in drafting this chapter around maximising value in the transition to circularity.

... there is incredible value in the ability for a circular economy to help conserve natural resources and balance natural systems.

CREATING AND RETAINING VALUE

The Ellen MacArthur Foundation's circular economy model uses a 'butterfly diagram'⁶⁰ to show how a circular economy supports biological (natural) and technological (manufactured) systems (see Figure 3.1). Biological systems are shown as renewables flow management and technological systems are shown as stock management. The diagram also illustrates strategies to retain value.

[Recycling] is the outermost 'loop' as it is the lower value option in comparison to maintaining, reusing, or refurbishing... in inner 'loops.'

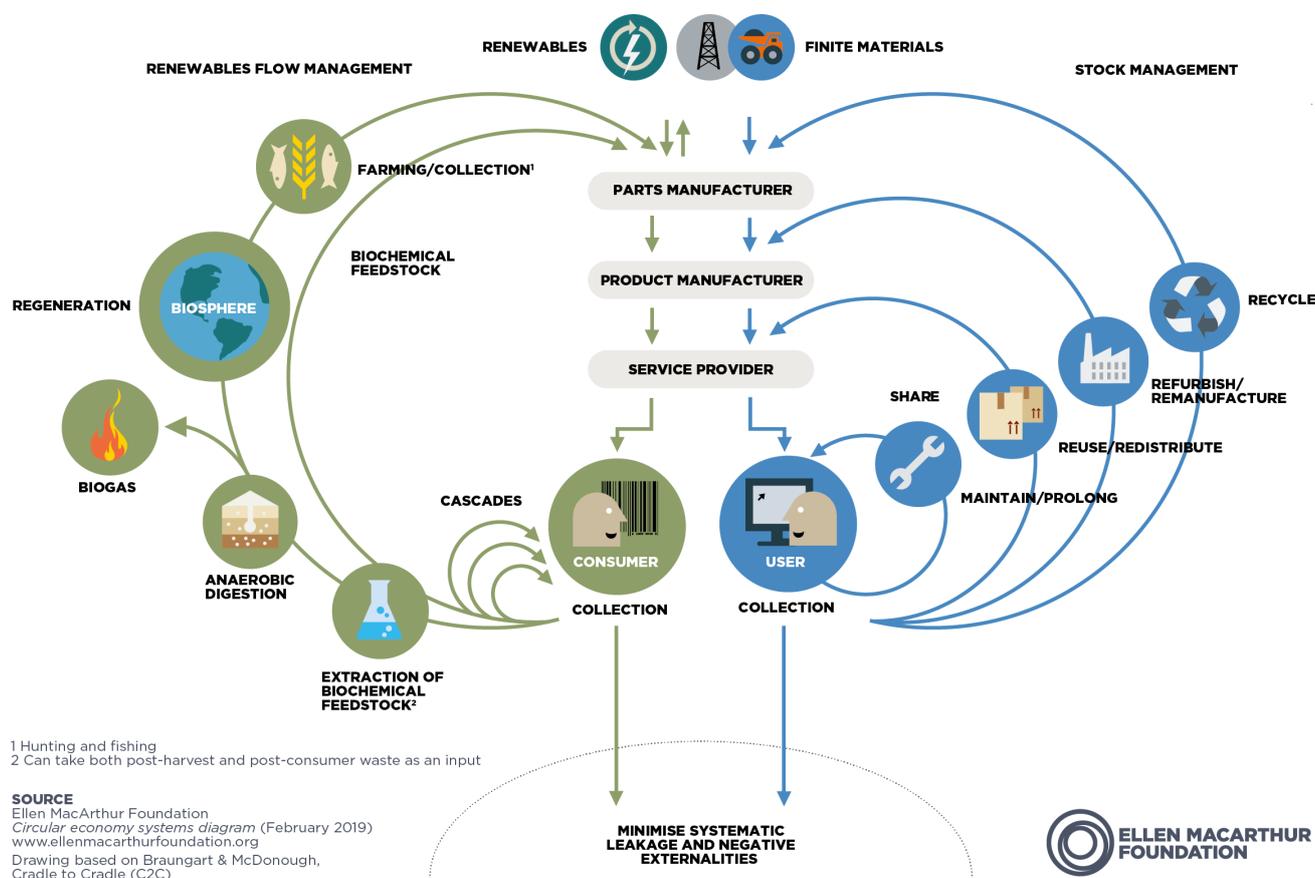


Figure 3.1: Circular economy butterfly diagram (Copyright © Ellen MacArthur Foundation 2019)

On the stock management side of the butterfly diagram, reflecting technological systems, recycling sits in the outermost 'loop'. This is because a recycled product is often of a lesser value than the original product and 'one loop' away from disposal. An example is textiles made from recycled polyethylene terephthalate (PET) fibres. In what is the dominant practice using a linear design,

textiles lose their value through disposal. In a circular design, highest value is achieved by maintaining or sharing the textiles, while lower value is achieved by recycling. Value is still recovered as companies can recycle PET into some new textiles or other products. But it is the lower value option in comparison to maintaining, reusing, or refurbishing the textiles in inner 'loops.'

60. Ellen MacArthur Foundation (2019), *The butterfly diagram: visualising the circular economy*

SYSTEMS-LEVEL CHANGE

Going truly circular means delving into the butterfly diagram's 'inner loops.' This is where systems-level change takes place. For example, reusing heat generated during manufacturing, redesigning a product to extend its life, and ensuring a product can be repaired represent the 'inner-loop' processes. These processes retain value in the system and reduce virgin resource consumption. They may also create new business models, suppliers and users, meaning that the value retained is more than simply recovering the (economic) value in the materials.

OPPORTUNITIES TO ADD BUSINESS VALUE AND REDUCE RISK

Shifting to a circular economy can help a business:



Retain asset value

This value includes intangible assets such as the product's branding and associated services (e.g. warranties) that can be achieved through circular design and manufacturing.

These non-material sources of value are typically many times greater than the value the business can recover by recycling its raw materials. They make up the greater share of the economic opportunity circular economy offers. In Australia, PWC estimates the economic opportunity of transitioning to a circular economy is \$1.86 trillion over 20 years (2020 to 2040).⁶¹



Build resilience

In a world of supply chain shortages, wars, nationalism, volatile prices and regulations controlling waste, circular economy processes like remanufacturing can help a business 'lock in' access to raw materials. Original Equipment Manufacturers (OEMs)

such as General Electric, Boeing, Caterpillar, Deere, Navistar, Xerox and Pitney Bowes have created business models in which remanufacturing capital goods plays an integral part.⁶²



Address supply chain risk and value

Across the world, regulators have supply chains in their sights. The increasing attention on (ESG) targets is tackling issues such as hazardous substances, conflict minerals, critical materials, modern slavery and minimum thresholds for recycled content. Circular economy processes like reusing core product elements or materials can help a business minimise these risks in its supply chain and address ESG targets.



Access value in new business opportunities

Redesigning business models for products and services that use circular economy principles can help a business generate new or stronger income streams. For example, a business that can lease products (reuse) as well as sell them gains a new source of revenue and 'sticky' customers. Manufacturer X-Frame⁶³ has changed its traditional financial relationship with customers to allow them to lease its prefabricated structural framing.



Reduce costs

Businesses may be able to recover secondary raw materials to reuse and thus reduce the waste they pay to dispose of.



Build brand value and loyalty

Many consumers, wholesale and retail, want to 'buy responsibly'. The environmental benefits of circular products may appeal to them. For example, online reuse platform Loop⁶⁴ provides a reusable packaging system that includes well-known global brands of

61. PwC (2021), *Building a more circular Australia: The opportunity of transitioning to a circular economy*

62. Parker et al. (2015), *Remanufacturing Market Study*, European Remanufacturing Network.

63. X-Frame (2022), *X-Frame - About*

64. Loop (2022), *Explore Loop*

fast-moving consumer goods. The system is convenient and scalable and makes it easy for brand owners, retailers and logistics providers to deliver products in reusable packaging. It also creates value through customer loyalty by encouraging customers to continue to stay involved.



Build valued investment relationships

Investors may appreciate the value circular economy generates and the resilience it fosters. For example, investment firm BlackRock⁶⁵ funds organisations with clear ESG goals and measurable targets. Recognising the opportunity this investment strategy offers, BlackRock has recently launched a Circular Economy Fund.⁶⁶ The Fund invests at least 80 per cent of its assets globally in companies that benefit from, or advance, a circular economy.

“Investors may appreciate the value circular economy generates and the resilience it fosters.”



Attract valuable employees

Many employees want to work for an ethical business. They may see the use of circular business models by organisations as an example of ‘doing good’ and may also value the innovation that circularity entails.



WHAT NEEDS TO CHANGE TO CREATE AND RETAIN VALUE?

Circular economy is in its infancy in Australia. The focus tends to be on recycling waste, rather than on minimising risk and the upstream opportunities available to add value.⁶⁷ Most activity is incremental and does not involve major changes to business models, value chains or systems. This incremental approach needs to change, and quickly. Below are some ways to bring about this change. They involve changing systems to create and retain value.⁶⁸

MANUFACTURING STRATEGIES

Business models in the linear economy generally focus on selling new, short-lived products. Companies aim to maximise revenues and minimise average costs by selling as many units of a product as they can. These high-turnover products are designed to consume large volumes of raw materials. Coupled with this, manufacturers and brand owners usually lose control of, or are unconcerned about, their products after they sell them. As a result, they disregard product and material value and miss out on additional business opportunities, such as leasing products or reusing materials from product take-back schemes.

Adapting business models and manufacturing strategies to take material value into consideration can overcome these issues. The Value Hill model⁶⁹ is a useful way to understand what is involved. Figure 3.2 shows the value added from extracting raw materials (bottom of the pyramid), through the manufacturing process, to selling the product (top of the pyramid). If the product is well designed and long-lasting, the materials will constantly cycle within the pyramid. There will be minimal need to dispose of the materials.

65. Fink (2022), *The Power of Capitalism*

66. Black Rock Circular Economy Fund (2022) *BGF Circular Economy*

67. Braun et al. (2022), *Measuring the Circular Economy: An Australian Perspective*, ACE Hub and Edge Environment

68. The regulatory and policy environment also acts as an enabler for a transition to circularity, although not mentioned in this chapter as it is covered in other chapters.

69. Rodrigo-González et al. (2021), *Circular Economy and Value Creation: Sustainable Finance with a Real Options Approach*

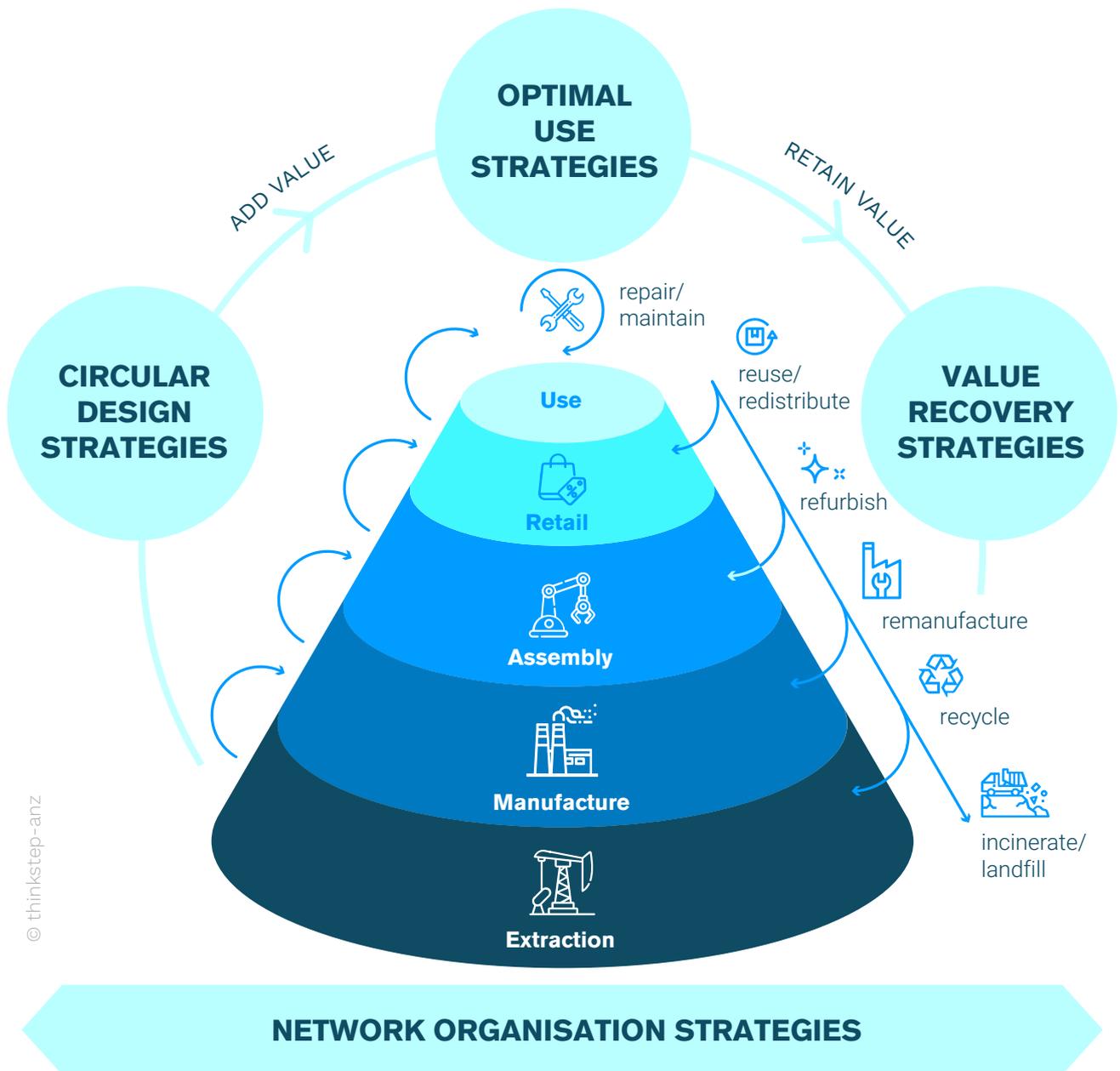


Figure 3.2: Value Hill Model (Source: adapted from Achterberg et al)⁷⁰

Strategies at each stage of the pyramid can make the product and business more circular and retain greater material and economic value. They include:

Circular design strategies (pre-use): intentionally designing a product to reduce waste generated in manufacture and during consumption, to ensure longevity of the product, to enable maintenance and repair during use and to make it easier to manage after its initial use. Examples include easy to

maintain mobile phone provider Fairphone⁷¹ and Ecovative’s mushroom packaging using renewable energy or regenerative/recycled content.⁷²

Full cost accounting is another circular design strategy. The full cost of a product includes ‘externalities’ such as the costs that the product imposes on the environment when it goes to landfill. Planet Price software calculates an organisation’s full costs, including carbon- and water-related costs.⁷³

70. Achterberg et al. (2018), *The value hill business model tool: identifying gaps and opportunities in a circular network*
 71. Fairphone (2022)
 72. Ecovative (2020), *Goodbye, Mushroom @ Packaging*
 73. Planet Price (2022)

Optimal use strategies (use): opportunities for consumers to maintain value in the product by offering complementary services or products. Examples include ‘product as a service’ and subscription models such as Signify’s⁷⁴ lighting as a service, Your Closet’s⁷⁵ clothing rental service, and Numidan’s⁷⁶ baby clothing subscriptions. The second-hand market and recirculating products for reuse should be encouraged. A well-known example with social benefit is the Salvation Army’s Family Stores.

Value recovery strategies (post-use): recovering the value of products that are beyond the value of the second-hand or refurbished market, i.e. beyond being reused, repaired or refurbished. Examples from the

textiles material stream include Blocktexas⁷⁷ textile fibre recovery and Circular Centre’s⁷⁸ textile recovery.

Network organisation strategies (all phases): making it as easy as possible for everyone to play their part and for resources to flow between phases. Examples include Makerspace’s⁷⁹ shared tools and resources, ACE Hub’s⁸⁰ professional portal and working groups, and the ANZPAC Plastics Pact’s⁸¹ collaborations in pre-competitive activities across value chains to find regional solutions to a global challenge.

The Value Hill model provides steps to transition to a circular business strategy (Figure 3.3):



Figure 3.3: Value Hill steps to developing a circular business strategy (Source: thinkstep-anz)

74. Signify (2022)
 75. Your Closet Pty Ltd (2022)
 76. Numidan (2022)
 77. BlockTexp Pty Ltd (2022)
 78. Circular Centre (2021), *Circular solutions: sustainable textiles through to textile waste*
 79. SA Makers Incorporated (2022)
 80. Planet Ark (2022), *Australian Circular Economy Hub*
 81. ANZPAC Plastics Pact (2022)

MEASUREMENT

What gets measured gets managed. To transition to a circular economy, businesses need to get measuring and managing.

The *Material Circularity Indicator* (MCI) tool,⁸² developed by The Ellen MacArthur Foundation and Granta Design, allows companies to identify additional, circular value from their products and materials (see Figure 3.4). It also helps them mitigate the risks caused by volatile material prices and supply. The MCI is a number between 0 and 1. The closer to 1, the more circular the product.

On the input side, indicators consider the materials the product uses and the extent to which they are sustainably sourced, reused or recycled. Output indicators include the product's end-of-life. They look at the extent to which the materials are reused, recycled, composted or disposed of. The case study shown in Box 3.1 uses indicative MCI results to identify circular economy opportunities in the joinery industry.⁸³

MCI MATERIAL FLOW

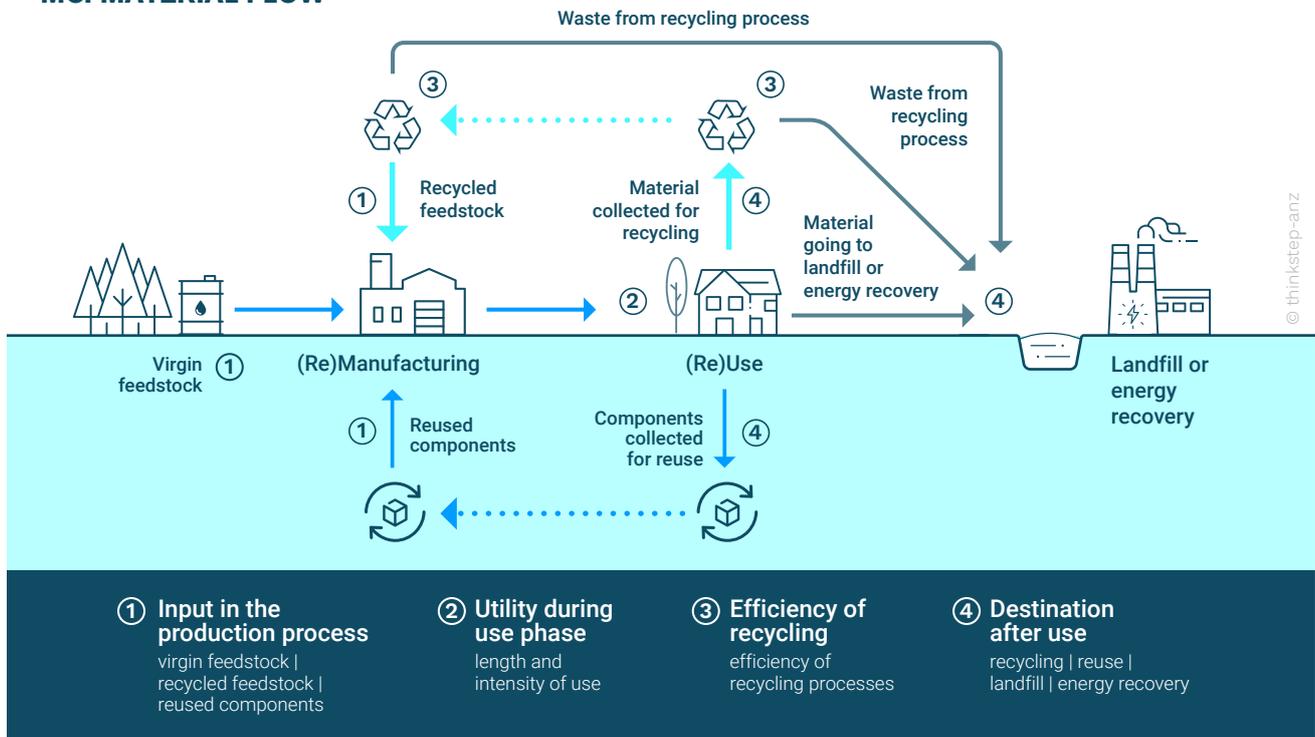


Figure 3.4: Overview of the material flow data points included into MCI calculations (Source: thinkstep-anz)

“What gets measured gets managed. To transition to a circular economy, businesses need to get measuring and managing.”

82. Ellen MacArthur Foundation (2022), *Material Circularity Indicator (MCI)*
 83. thinkstep-anz (2022), *Circular economy opportunities to reduce joinery waste in ISJO*



CASE STUDY

CIRCULAR CONSIDERATIONS AT THE ILLAWARRA SHOALHAVEN JOINT ORGANISATION (ISJO)

The ISJO is a collaborative body that brings together four councils on the south coast of New South Wales. The region is home to more than 100 joineries and kitchen manufacturers. Together they generate 5,000 tonnes of Medium Density Fibreboard (MDF) and particleboard offcuts every year (and a lot of sawdust!).

WHAT ARE THE OPPORTUNITIES FOR CIRCULAR ECONOMY?

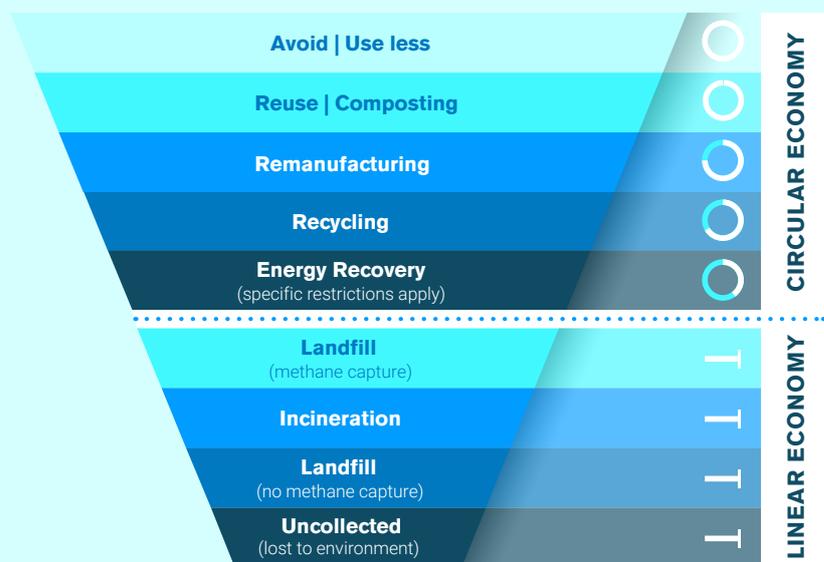
The ISJO wanted to understand the circular economy opportunities available for the region's businesses. They also wanted to identify ways to reduce the waste these businesses send to landfill. Reducing waste is often the impetus for moving towards circularity.

The organisation asked trans-Tasman sustainability firm thinkstep-anz to investigate how these manufacturing materials could be repurposed, reprocessed, recycled, or remanufactured.

thinkstep-anz used the principles and theory of the MCI tool to assess the process from raw materials to next use phase, i.e. offcuts and/or post-consumer use. thinkstep-anz's first recommendation was that the ISJO businesses should use regenerative sources of timber and wood fibres. This was followed by an assessment of the manufacturing processes available.

WHAT ARE THE OPPORTUNITIES AND PRIORITIES FOR ISJO?

In Figure 3.5, the processes available are ranked. Opportunities to practise circular economy include remanufacturing and recovering energy. Processes in the linear economy, like sending waste to landfill, are not circular at all.

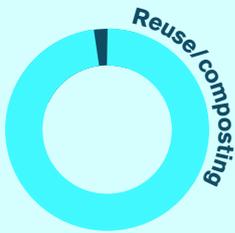


© thinkstep-anz

Figure 3.5: Best practice for timber and wood products. Source: thinkstep-anz

WHAT ARE THE 'MORE CIRCULAR' OPPORTUNITIES AVAILABLE?

These opportunities have the highest circularity. If we measured them formally using the MCI, we would expect them to score relatively high.



Reuse/Composting

The ISJO should establish a business-to-business reuse programme to allow joiners to trade or swap reusable offcuts. They should also research how safe and biodegradable common resins are and explore whether the offcuts could be composted.

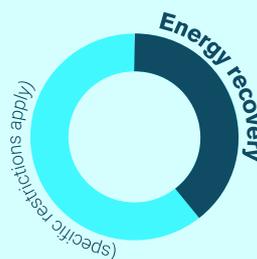
WHAT ARE THE 'LESS CIRCULAR' OPPORTUNITIES AVAILABLE?

These opportunities have lower circularity. If we measured them formally using the MCI, we would expect them to score relatively low.



Recycling

The ISJO should extend current recycling programmes by establishing a local aggregation point for recycling offcuts back into new particleboard.



Energy conservation

Manufacturers should use excess materials to generate power or heat in industrial processes.



SUMMARY

While recycling is on the bottom rung of the Value Hill model and the outer loop of the butterfly diagram, it is often the first strategy that companies turn to. However, recycling captures the least value in a circular economy and is only slightly better than disposal. Businesses should consider recycling only after they have explored all other strategies and only recycle when it retains the value of the material such as for glass and metals.

Tools and approaches like the Value Hill model and the Material Circularity Index provide a platform to start from and measure progress along the way. Every company and business will differ in their approach and the context will differ, too. The opportunities are many, including the potential for pre-competitive collaboration and more business models that involve a broader community and contribute to social outcomes.



RECOMMENDATIONS

We need to transition to a circular economy to build a regenerative and inclusive society that respects and values people and the environment. Retaining value throughout the system is paramount and this must be done intentionally. We need to start with design and ensure that products can be reused, repurposed, repaired and remanufactured. To achieve these goals:

- **Businesses need to be bold in their design, production and product management decisions**, even if this may feel uncomfortable and risky. Businesses need to take more responsibility for providing and procuring more circular materials and products. They also need to manage externalities ‘beyond the gate’, i.e. after the product is ‘in market’. Initially going circular may involve costs, such as

investing in new product designs and new recovery systems. However, the long-term benefits can be substantial.

- **Industry associations need to advocate for their members, provide education and encourage collaboration to create circular products or outcomes.** Wider collaboration is needed to help achieve the scale of change required to realise a circular economy.
- **We all need to change how we think**, especially how we think about the products we buy, how we use them and how we manage what happens to them after use.

ABOUT THINKSTEP-ANZ



thinkstep-anz is an independent sustainability firm with offices across Australia and New Zealand. They have been helping organisations from many industries succeed sustainably for more than 15 years. Their services make products, businesses and the built environment more sustainable. These services include sustainability and circular economy strategy, technical solutions like Life Cycle Assessment, sustainability certifications, reporting and communications. They are a certified B Corp with a science-based target for reducing our greenhouse gas emissions. In their chapter, they wanted to show the many ways circular economy creates value for businesses and the practical strategies and tools that deliver this value. They also wanted to emphasise that circular economy is a ‘systems change’.

CHAPTER 4

A PRACTICAL GUIDE:
**HOW CIRCULAR
THINKING CAN
CATALYSE
TRANSFORMATIVE
SUSTAINABLE
CHANGE**



KEY FINDINGS

1

The window of opportunity to create a sustainable future is rapidly closing

2

A system transition is needed

3

Circular economy offers tools and creates a mindset to adopt system change

4

The key challenge is incremental, symptom focused practice, rather than all of system analysis

5

A circular mindset has three 'E' strategies – Enable, Enact, Elevate

6

Getting started starts with conscious design, followed by seven questions

7

Adopting the three 'E's will help navigate and successfully execute a circular transition



A CIRCULAR ECONOMY REQUIRES SYSTEMS CHANGE

Globally, the urgency to transition to a sustainable future is building momentum, with organisations facing an increasing number of complex economic, social and environmental challenges, coupled with a rapidly closing window of opportunity to resolve them.

The multifaceted shift that a sustainable future demands requires a transformational approach that enables comprehensive change at pace and scale. It is no longer feasible to address these challenges using traditional, linear methods.

The circular economy provides the tools and can create the mindset to enable organisations to navigate multiple systems' issues simultaneously and transform their operations to align with and implement their sustainability outcomes.

Having operated in the sustainability sector in Australia for over 14 years, Edge Environment has worked with over 250 clients across all facets of sustainable action. By leveraging the depth of knowledge within our business, we have reflected on the role that circular thinking has played in unlocking true transformational change for our clients, and assessed the common models, tools and methods that underpinned these transformations to inform our recommendations.



THE CHALLENGE

Whilst organisations recognise the urgency to enact system-level transformation to achieve sustainability, change is being implemented incrementally, focusing on the symptom rather than the root cause.

Observations of client work at Edge Environment reflect increasing pressure from customers, regulators and investors to transition to sustainable operations and supply chains. Organisations are needing to navigate increasingly complex and broad scale environmental and social issues such as decarbonisation, supply chain resilience, resource scarcity, increasing supply chain costs and demand for transparency.

However, current efforts to address these issues are falling short, as the need to effect fundamental business change to realise potential long-term benefits is competing with short-term pressures associated with traditional linear business models. Without knowing how to combat both simultaneously, organisations revert to addressing issues in isolation in lieu of taking a system-level circular approach.

“... change is being implemented incrementally, focusing on the symptom rather than the root cause.”

Take the rise of compostable packaging particularly across the food services and fashion sectors, as an example. Implemented to reduce the impact of product packaging, the product level approach has seen some initiatives fall short of positive impact. This is particularly so where packaging avoidance or availability of sortation in the end-of-use collection and industrial composting infrastructure have not been considered.⁸⁴

84. Symons (2022), *Environmental and economic implications of biobased packaging*



THE SOLUTION

To help achieve the systemic, transformative change that sustainable action demands, organisations need to embrace a mindset that embodies such scale and impact – that is circular thinking. This is already being applied by many Edge clients to tackle sustainability issues (see Figure 4.1).



Figure 4.1: A summary of sustainability issues being tackled by Edge’s clients using circular thinking (Source: Edge Environment)

At Edge, circular thinking is defined as the application of a mindset that is systemic, holistic and diverse, placing the relationship between nature and human activity at the centre of the decision-making process. This mindset explores solutions through a lens that focuses on smart design and, as defined

by Circulab (see Figure 4.2), actively and intentionally considers the intersectionality of desirability, viability, feasibility and circularity. Circularity refers to the presence of environmental systems that seek to design for material flow through closed loops over their lifecycles.

“... **circular thinking is defined as the application of a mindset that is systemic, holistic and diverse...**”

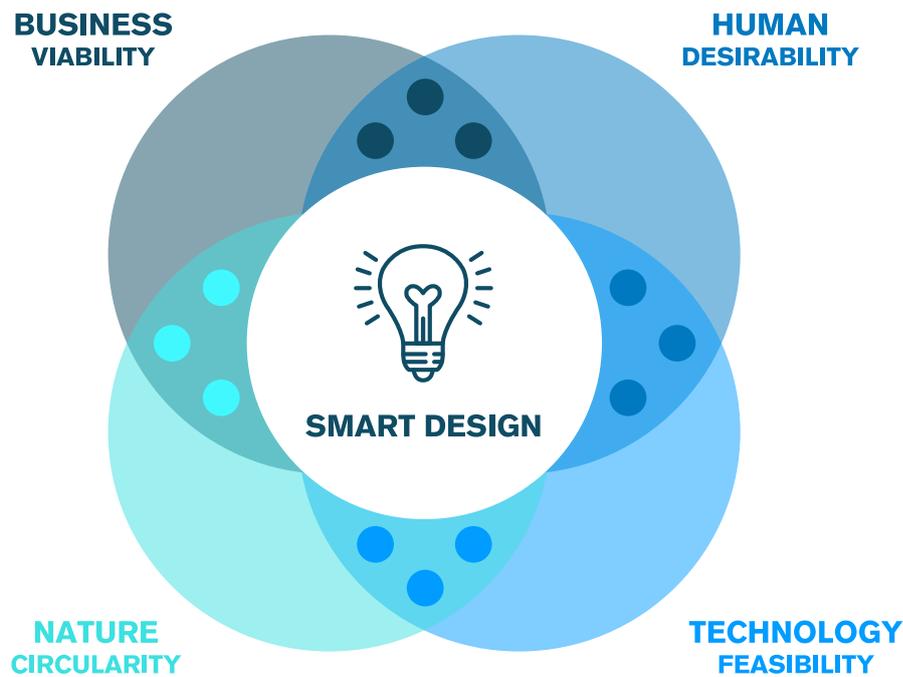


Figure 4.2: The Four Elements of Smart Design by Circulab (Source: [Circulab](#), adapted by ACE Hub, Planet Ark)

It is this simultaneous consideration of all four of the elements that can realise sustainable transformation, enabling an integrated and mutually beneficial approach with all stakeholders.

Through the experience and learnings in applying circular thinking to client challenges, Edge Environment has formulated a guide to achieving transformative sustainable change using three ‘E’ strategies of a circular mindset (see Figure 4.3). These are:

1. Enable
2. Enact
3. Elevate

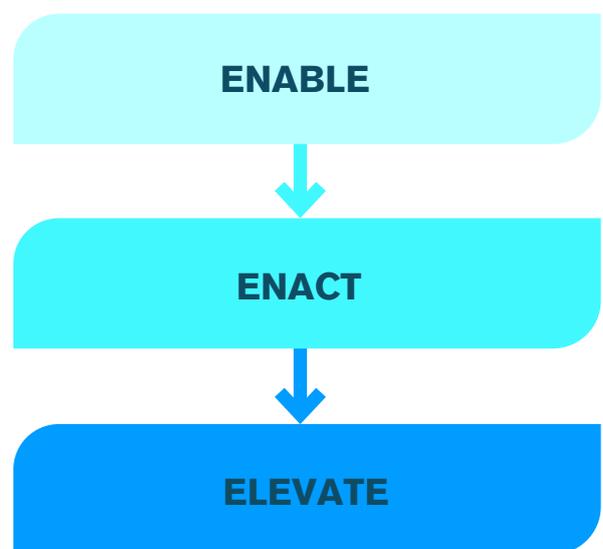


Figure 4.3: The three ‘E’ strategies of a circular mindset (Source: Edge Environment)

85. Circulab (2022), *The Circulab Method*

Each of the three 'E' strategies are explained below.



Enable

To enact a circular mindset, organisations need to leverage or establish key enabling conditions.

In analysing work completed with customers, circularity is seen to be successful when there are three fundamental enabling conditions:

1. The emergence of a 'burning platform' creating a series of interconnected challenges
2. A suitable system with well-defined boundaries
3. A shared vision across a diverse range of stakeholders operating in that system

To drive genuine pursuit of circular thinking, there first needs to be a **burning platform** – a situation impacting multiple stakeholders, where the status quo is no longer viable or the potential for value creation through circular means is too significant to ignore. Market disruptions, introduction of new technology, or investor pressure can all provide a trigger. A recent example is noted in the disrupted global supply chains and scarcity of resources arising from the COVID-19 pandemic. In other examples, the looming economic collapse in traditional coal-mining regions is driving the implementation of Australia's leading region-level circular and sustainable transformation. These and other examples suggest that proactively identifying a trigger can allow stakeholders to pursue a mutually beneficial sustainable transformation in a non-competitive environment.

The true potential of circularity is realised by adopting a **system-level approach**. Such an approach needs to be at scale. Scale needs to involve a critical mass of stakeholders and capital. It also needs to incorporate diversity in skills, perspectives and resources, yet be manageable for solution synergies to be achieved and for each stakeholder to have an opportunity to influence.

A coalition of stakeholders participating in such a system can source sufficient funds (e.g. grants and partnerships), leverage complementary skillsets, overcome external barriers (e.g. regulations and market competition), and provide the capability for resilient and self-sufficient closed loop supply chains. Currently, successful circular transformations are observed in either place-based systems, at a region, city, precinct or building level, or across a value chain, where different stakeholders across a resource lifecycle connect.

To drive pursuit of circular thinking, there first needs to be a burning platform - a situation impacting multiple stakeholders, where the status quo is no longer viable or the potential for value creation through circular means is too significant to ignore.

Within this system will be a diverse range of stakeholders with interconnected needs and challenges. A **shared vision** of success that will realise benefit to all stakeholders is fundamental to achieving stakeholder cooperation, effort alignment and determining priority actions. Taking the time to develop and articulate a joint vision will provide tangibility to circular thinking that is often missing.

Box 4.1 presents a case study from the Hunter Joint Organisation (Hunter JO). The organisation recently launched its regional roadmap for the circular economy. This case study provides an example of the enabling conditions in action.



CASE STUDY

THE HUNTER AND CENTRAL COAST CIRCULAR ECONOMY ROADMAP

As energy demands from coal decrease globally, the Hunter JO has responded to changes in the economic security of the Hunter and Central Coast region in New South Wales. This region has been a traditional coal mining and processing region and is looking to new business alternatives. The region is coordinating and catalysing the transition to a circular economy to diversify its economic, environmental and social opportunities.

The Hunter JO approach was reliant on a comprehensive program of engagement with local stakeholders with clear roles, responsibilities and timelines for key players identified. The process was fundamentally collaborative, establishing a clear mission and vision to guide the collective inputs from stakeholders.

By driving change at a regional level, Hunter JO provided a platform for community, government, industry and universities to connect and contribute to a plan that provides mutually beneficial outcomes, leveraging diverse skillsets and interconnected value chains across different stakeholder groups and sectors. The process led to the development of an impactful circular economy roadmap with a shared vision and mission that identified focus areas along with short to medium term actions (Figure 4.4).

Vision and Mission Statement

VISION

AUSTRALIA'S LEADING REGIONAL CIRCULAR ECONOMY
a thriving place for people, planet and the economy.

MISSION

ACCELERATE THE TRANSITION TO A CIRCULAR ECONOMY IN THE HUNTER AND CENTRAL COAST THROUGH:

- Providing strategic direction to empower and align local stakeholders,
- Connecting people to foster collaboration and innovation,
- Providing guidance on how value from resources can be maximised locally.

Focus Areas

Focus Area 1	Focus Area 2	Focus Area 3
 <p>REGIONAL CIRCULAR ECONOMY KNOWLEDGE HUB</p> <ul style="list-style-type: none"> • Hunter and Central Coast is recognised for circular economy knowledge, training and research • Physical spaces to enable innovation, experimentation, and collaboration • Active business ecosystem (ranging from start-ups to large corporations) creating circular products and services • Skills development for circular jobs. 	 <p>PIVOTING AND ADVANCING INDUSTRY</p> <ul style="list-style-type: none"> • Existing infrastructure and skills are leveraged to build local industries contributing to a circular region • Local cycling of key materials, such as organics, plastics and construction materials • Priority sectors include renewable energy, manufacturing and agriculture. 	 <p>DRIVING CIRCULAR MARKETS</p> <ul style="list-style-type: none"> • Local circular communities where sharing and reuse is normal • Stimulate markets for circular products and services through public procurement • Industry is supported to create demand for circular products and services.

Figure 4.4: Extract from the Hunter and Central Coast Circular Economy Roadmap (Source: Hunter Joint Organisation)



Enact

Applying a circular mindset relies on enacting strong leadership and effective collaboration.

Circular thinking will see collaboration across stakeholders who may not traditionally interact, and at a scale that demands clear and intentional communication guidelines. Common challenges include competitive attitudes, conservative and risk-averse mindsets, and power imbalances. **A strong leader or leadership group** is needed to provide inspiration, focus, accountability and support. Application of governance mechanisms such as a Memorandum of Understanding (MOU), working groups, documented roles and responsibilities, and defined key performance indicators can provide clarity and commitment, and facilitate leaders in executing a 'win-win-win' framework amongst stakeholders.

The impact of a strong leader is evident in the concrete industry where one client, Holcim, has emerged as a leader in sustainable product design with the development of a low carbon concrete range available globally. Holcim states this product, ECOPact, will achieve between 30 per cent and 100 per cent reduction in embodied carbon of concrete.⁸⁷ Their ambition has already had an impact at a sector level, triggering a shift in market demand towards the more sustainable product.

Effective collaboration is dependent on the right individuals being engaged to address and affect change across all aspects of the value chain. Consider the role of governments to regulate and manage negative externalities through policy, or lead infrastructure developments to close gaps in the resource loop. Investors can contribute by establishing incentives for business buy-in and helping integrate circular solutions to commercial viability and market demand.

Involving stakeholders across the entire value chain can also unlock innovative ideas and new definitions of value, e.g., shared economic value, social benefits.

Collectively, strong leadership and effective collaboration can be leveraged to instil an abundance mindset that invites leaders to see more options beyond business-as-usual, reinforcing the role of collaboration in realising individual gains, and can contribute to successfully implementing a circular mindset across stakeholders. Leveraging is discussed more in the following section.



Elevate

Leveraging and elevating continuous dialogue between stakeholders in the circular ecosystem can foster continuous improvement of the methods and approaches used to achieve transformative and sustainable change.

Circular thinking is founded on a **sensing and adaptive mentality** that seeks and responds to changes in nature. By nurturing an innovative, learning environment, key players will be empowered to explore new concepts and solutions that challenge the norms of the current linear short-term mindset while providing the basis for long-term system opportunities. For example, Hunter JO approached the circular transition for its region iteratively, undertaking a partial material flow analysis (MFA) on downstream material flows with available data to inform a roadmap before undertaking a more comprehensive MFA on upstream flows when additional funds were available.

Incorporating or learning from community initiatives such as think tanks or social labs provides a model for ongoing exploration into innovative solutions. For example, the Victorian Circular Activator provides a physical lab for innovation by supporting, connecting and elevating organisations exploring circular solutions in Victoria.⁸⁸ At a national level, the ACE Hub offers a designated platform while connecting with multiple stakeholders to provide in-person promotion and elevation of the concepts of circular economy. Box 4.2 summarises these activities.

87. HOLCIM (2022), *ECOPact: the green concrete*

88. Victorian Circular Activator (2022), *Activating the circular economy through innovation*



CIRCULAR THINKING: HOW ACE HUB CAN PLAY A ROLE

The long-term vision of the ACE Hub is to facilitate Australia's transition to a circular economy. By providing a central meeting place for Australia's circular economy ecosystem, the ACE Hub enables collaboration and knowledge sharing, so all actors working towards circularity can engage to optimise their collective impact.

The ACE Hub facilitates connections between (and within) industries and governments through its working groups, curated events, education programs and the development of an Australian circular economy marketplace. Additionally, the ACE Hub Portal offers a platform to leverage and elevate exemplars in the circularity space through the sharing of case studies. The ACE Hub encourages ongoing learning, dialogue and opportunities for action among Australia's circular economy community.

Undertaking a circular, sustainable shift in operation will provide numerous opportunities for organisations to **share knowledge** and create and impact beyond their immediate outcomes. These opportunities will be available for both themselves as well as the community, enabling long-term partnerships and enhanced public awareness of circularity and sustainable behaviour. For example, by working with Australian recycling and waste management company BINGO,⁸⁹ Edge has supported the implementation of a Responsible Sourcing Strategy aligned to ISO20400, an endeavour inherently influencing actors across the value chain. This strategy was underpinned by a Stakeholder Engagement Strategy to plan for the ongoing engagement, education and partnerships required with various stakeholders on key issues for responsible sourcing.

Organisations should seek to realise the benefit of knowledge sharing and continuous improvement through education and engagement of community, becoming public advocates for change, and sharing their story to improve public accessibility to circular solutions. This transparency and 'pay-it-forward' attitude reflect the social layer to the shared vision component of a circular mindset.

Organisations should seek to realise the benefit of knowledge sharing and continuous improvement through education and engagement of community, becoming public advocates for change...



HOW-TO GUIDE FOR CIRCULAR THINKING

Currently, the pursuit of circularity is impeded by lack of knowledge of the circular mindset, and how to apply circular thinking to the current linear business model. Successfully enacting circularity requires conscious design of the conditions to start, undertake and evolve circular operations. We have identified seven key questions to guide organisations in successfully leveraging circular thinking to realise systemic transformative sustainable change. Table 4.1 provides a summary of these questions. An expanded 'How-to' guide is presented at the end of this chapter.

89. BINGO Industries (2022), *Pushing for a waste free Australia*

Table 4.1: Our 'how-to' guide to Circular Thinking

PHASE	KEY ELEMENTS	QUESTIONS TO POSITION FOR SUCCESS
Enable	<ul style="list-style-type: none"> • 'Burning platform' • Well-defined system • Shared vision 	<ol style="list-style-type: none"> 1. Why will you transform? 2. Who will this transformation apply to? 3. What transformation do you want to achieve?
Enact	<ul style="list-style-type: none"> • Strong leadership • Effective collaboration 	<ol style="list-style-type: none"> 4. Who will drive this transformation? 5. How will you work together to realise this transformation?
Elevate	<ul style="list-style-type: none"> • Sensing and adaptive mentality • Share knowledge 	<ol style="list-style-type: none"> 6. How can you improve your transformation? 7. How can you share success to drive further transformation?

As the shift towards a sustainable future accelerates, organisations will benefit from adopting circular thinking to combat the multiple elements of transformational change. By implementing the three 'E' strategies to generate circular thinking, this seemingly overwhelming transition can be more easily navigated and successfully executed.

“Successfully enacting circularity requires conscious design of the conditions to start, undertake and evolve circular operations.”

ABOUT EDGE ENVIRONMENT



Edge Environment has a mission to create a world where unsustainable is unthinkable. They catalyse change by combining science, strategy and storytelling. Leveraging insights from 14+ years of collaboration with their clients, they have developed a practical guide to effect transformative sustainable change through circular thinking. As this is the decade of action, the focus of their chapter is on the “doing” at pace and scale to make circular economy in Australia a reality.



Fostering an innovative, learning environment can allow actors to be courageous and confident in exploring new concepts and solutions that challenge the norms of the current linear short-term mindset. This guide offers actions and questions to consider for generating circular thinking.

Table 4.2: 'How-to' guide to Circular Thinking, by Edge Environment

PHASE	KEY ELEMENTS	QUESTIONS TO POSITION FOR SUCCESS	FURTHER GUIDANCE
Enable	<ul style="list-style-type: none"> • 'Burning platform' • Well-defined system • Shared vision 	<ol style="list-style-type: none"> 1. Why will you transform? 2. Who will this transformation apply to? 3. What transformation do you want to achieve? 	<ul style="list-style-type: none"> • Is there a social, economic, or environmental trigger to drive change? If not, can you create one? E.g. voluntary agreements across value chains (think product stewardship schemes). • What size is your system? What players do you need to be involved for success? Does your system size match the scale of transformation you want to achieve? E.g. will you be able to fund the transformation? Is the potential reward sufficient for the number of stakeholders involved? • What are the sustainability challenges that need to be addressed? What can't be achieved individually?
Enact	<ul style="list-style-type: none"> • Strong leadership • Effective collaboration 	<ol style="list-style-type: none"> 4. Who will drive this transformation? 5. How will you work together to realise this transformation? 	<ul style="list-style-type: none"> • Create a map of the stakeholder ecosystem to understand existing network connections and key stakeholders who could lead the transformation. • Consider if there are any power imbalances to proactively address. How can you create a win-win-win approach for all stakeholders? • Create a formal agreement, or MOU to provide accountability and commitment from stakeholders, both in project outcomes and roles, responsibilities, and terms of collaboration. • Establish and agree on a clear vision and mission. • Consider selecting key focus areas and measures for success to guide stakeholder efforts.
Elevate	<ul style="list-style-type: none"> • Sensing and adaptive mentality • Share knowledge 	<ol style="list-style-type: none"> 6. How can you improve your transformation? 7. How can you share success to drive further transformation? 	<ul style="list-style-type: none"> • Iteration can be proactively designed into the approach. Do you need to gather data first before agreeing to direction or course of action? Would a pilot approach be more amiable to stakeholders? • Is the transformation scalable or replicable to other environments or stakeholder groups? How could you facilitate this? Consider the mutual benefits of facilitating such expansion (remember to maintain an abundance mindset).



CHAPTER 5

POWER IN PROCUREMENT:
**A CASE STUDY OF
THE AUSTRALIAN
RETAIL SECTOR**

.....

KEY FINDINGS

1

Purchasing decisions dictate positive and negative impacts on the environment, society and the economy

2

There is an opportunity for procurement to create significant positive impacts by adopting sustainable and circular procurement practices

3

Early adopters of sustainable and circular procurement will see benefits in brand representation, decreased risk and increased competitive advantage

4

From analysis of the retail sector, companies need to move beyond compliance to realise opportunities sustainable procurement provides

5

Collaboration is key to circular procurement

6

This chapter offers objectives and activities to start sustainable procurement discussions within an organisation



THE UNREALISED POWER OF PROCUREMENT

Collectively, purchasing habits shape the global economy and dictate both positive and negative environmental, social and economic impacts of consumption. Through purchasing decisions for organisations seeking goods and services, known as 'procurement', those organisations can influence and create significant positive impact across value chains while also managing organisational risk.

Sustainable procurement is an interdisciplinary approach to reduce an organisation's environmental, economic and social impacts through purchasing decisions.⁹⁰ It looks beyond upfront costs and material supplies, considering these impacts

across the entire life cycle of a product.⁹¹ It helps address a range of complex issues through an integrated approach. These issues might include value chain resilience, rising operating costs, resource efficiency, climate change or modern slavery, as well as broader social responsibility and community impact. Hence, sustainable procurement is an important tool to help organisations achieve their ESG targets.

Sustainable procurement... looks beyond the upfront costs and material supplies, considering these impacts across the entire life cycle of a product.

90. International Organization for Standardization (2017), *ISO 20400: Sustainable procurement - Guidance*

91. Commonwealth of Australia (2020), *Sustainable Procurement Guide: A practical guide for Commonwealth entities*

Circular procurement is one tool to achieve overarching sustainable procurement targets. A relatively recent term, circular procurement is defined as “the purchase of works, goods or services that seek to contribute to the closed energy and material loops within supply chains”⁹². The key focus is on the ability to adopt circular business models to improve material and product flows, reduce environmental impacts and waste creation and enable regeneration of natural systems.⁹³ With a high regard for environmental efficiencies, including the adoption of renewable energy, circular procurement can

contribute to balanced outcomes across many competing demands. Together, sustainable and circular procurement can help organisations minimise risks of modern slavery, address climate change, prevent environmental degradation and promote sustainable business growth.

Early adopters of sustainable procurement practices have demonstrated improved brand reputation, cost savings, increased sales, competitive advantage, improved supplier relationships and decreased supply chain disruptions (see Figure 5.1).

RESULTS ATTRIBUTED TO SUSTAINABLE PROCUREMENT

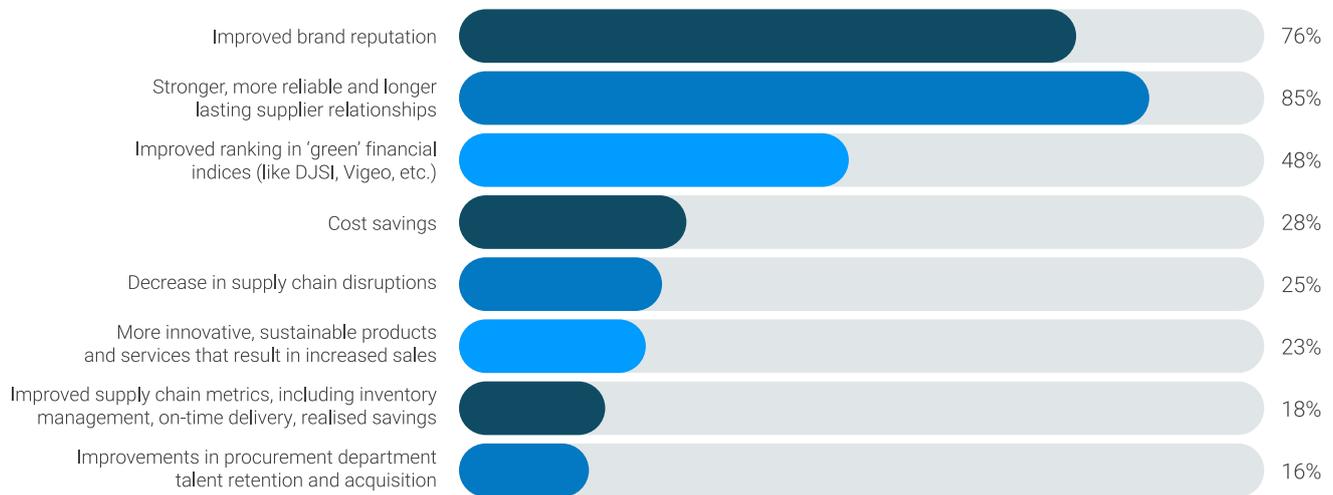


Figure 5.1: Results attributed to sustainable procurement (Source: HEC/EcoVadis⁹⁴)

Consumers, investors and employees are increasingly demanding greater transparency from suppliers of items they buy and invest in and from their employers. Addressing ESG issues is now essential to an organisation’s long-term economic success.⁹⁵ These can all be achieved by transitioning to a circular economy.⁹⁶

While circular procurement is a relatively recent concept, it has the ability to support the achievement of sustainable procurement objectives and an organisation’s ESG targets.

“... circular procurement is defined as ‘the purchase of works, goods or services that seek to contribute to the closed energy and material loops within supply chains.’”

92. European Commission (2022), *Circular Procurement*

93. Van Oppen et al. (2018), *Circular Procurement in 8 steps*

94. HEC/EcoVadis (2017), *Scaling Up Sustainable Procurement, A New Phase of Expansion Must Begin*. White paper based on the 2017 HEC/EcoVadis Sustainable Procurement Barometer. 7th Edition

95. Australian ISO 20400 Committee (2019), *Building the Business Case for Sustainable Procurement in Australia – Guidance*

96. ACE Hub (2021), *Circularity in Australian Business: Awareness, knowledge and perceptions*. Planet Ark



A QUALITATIVE ASSESSMENT OF SUSTAINABLE AND CIRCULAR PROCUREMENT IN AUSTRALIA'S RETAIL SECTOR

For this research, a qualitative assessment was conducted by Point Advisory, part of the ERM Group, to understand the current state of sustainable procurement in Australia's retail sector – a \$400 billion sector,⁹⁷ representing 11 per cent of Australia's economy.⁹⁸ Retail is the second largest employer in Australia behind the health care sector.⁹⁹

Retail traditionally procures large volumes of materials and products in a linear supply chain model. It can shape consumer behaviour and is subject to a range of ESG risks. Certification schemes such as the Better Cotton Initiative, Forest Stewardship Certification and Roundtable on Sustainable Palm Oil have developed largely in response to procurement of retail goods and highlight the ESG issues that circular procurement can help address.

Publicly available information for Australia's top 25 retailers was collated and analysed, including sustainability and annual reports, websites and supplementary material including media releases. The sample represented companies from sectors including food, household goods, clothing, footwear and several department stores.

Thematic coding was used to identify key associations with procurement, the broader supply chain, internal waste management and product stewardship of sold goods. Information was assessed to identify linkages to the circular economy and broader sustainability issues such as climate risk, modern slavery and value chain (Scope 3) greenhouse gas emissions reduction. Barriers to implementation or participation were also collated.

THE GAP BETWEEN THEORY AND PRACTICE

In examining the procurement practices in the sample of Australia's retail sector, three overarching categories of adoption of circular and/or sustainable procurement practices were identified (see Figure 5.2).

In the majority of companies sampled, procurement decisions were driven by compliance requirements (36 per cent). In contrast, 27 per cent of companies assessed showed evidence of moving beyond compliance and 32 per cent were emerging sustainable procurement leaders.

OF THE 25 MOST BELOVED AUSTRALIAN RETAILERS ASSESSED:

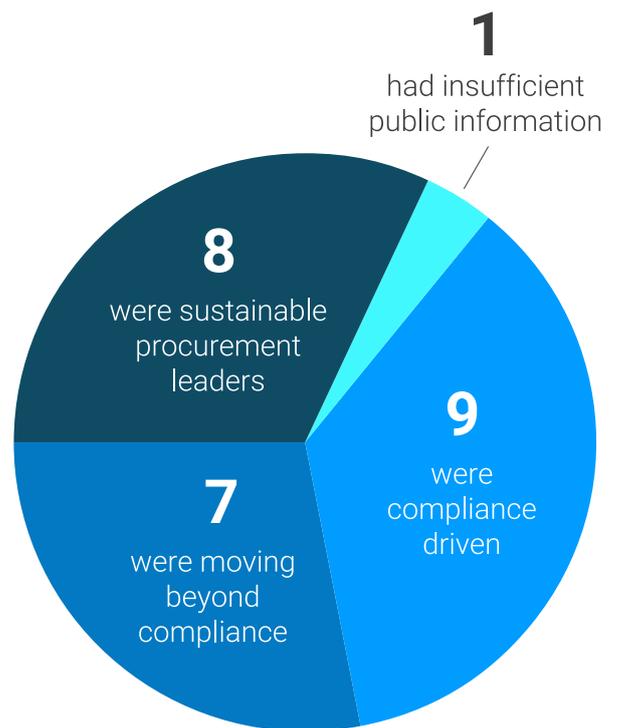


Figure 5.2: Approaches to circular and/or sustainable procurement in the Australian Retail sector (Source: Point Advisory)

97. Australian Retailers Association (2022), *About us*

98. National Retailers Association (2022), *What we do*

99. Australian Bureau of Statistics (2022), 81550D0001_202021 Australian Industry, 2020-21

There were limited mentions of barriers to improved procurement practice. Those noted included disruptions and reprioritisation during the COVID-19 pandemic. A lack of internal transparency across and within complex supply chains, notably beyond the first tier of suppliers, was also mentioned.

Companies using a sustainable or circular procurement initiative highlighted the importance of working with suppliers, customers and community groups, and the availability and management of data.

We examine the three categories of approaches to circular and/or sustainable procurement, in further detail below.¹⁰⁰



Of the retailers assessed, 36 per cent had a compliance driven approach. Action on sustainable procurement was primarily structured around compliance with reporting requirements. Those mentioned included the Modern Slavery Act.¹⁰¹ As many retailers provide packaged goods, the research also identified compliance with the Australian Packaging Covenant Organisation (APCO) 2025 National Packaging Target commitments.¹⁰² These targets include 100 per cent reusable, recyclable or compostable packaging by 2025. APCO targets have been a key driver for organisations to set internal packaging and waste-related targets to enable compliance.

Thus, when making procurement decisions, retailers are not only making buying decisions based on their own market needs but are also guided by national targets that determine what is and is not procured. Inadvertently, in this case, the key focus is on environmental impact reductions by ensuring principle one of the circular economy – design out waste and pollution. Compliance with these national policies and targets can also support both

ESG and sustainable procurement criteria. A key finding was that most public-facing targets and action plans within the retail sector tended to focus on operational waste. Focusing on internal operational waste reduction is to be lauded, however, to move towards circular procurement, retailers need to be looking further into product design in the first instance to assist in reducing waste and pollution generated from product manufacture as well as throughout the product value chain. They can also use designs to keep materials and products in use for longer while regenerating natural systems.



Of the retailers assessed, 28 per cent were moving beyond compliance in both upstream and downstream initiatives in their circular and/or sustainable procurement decisions. These retailers can have greater influence and impact within the broader value chain.

This research found that upstream initiatives were driven by:

- The requirements of certification standards (e.g. Better Cotton Initiative, FSC, Rainforest Alliance);
- Internal targets related to increased recycled content in own brand products (e.g. recycled nylon and polyester in activewear) and/or packaging; and
- Objectives on improving the overall recyclability of products and packaging (designing for repair, reuse or separation).

Downstream activities involved product stewardship initiatives such as takeback schemes for sold products or reuse through community programs. In some instances, reuse involved repair prior to donation. These activities are encouraging, but there is more that can be done in the upstream procurement decision-making to support an all-of-lifecycle approach of goods to be sold in the first instance.

100. One company had insufficient public information relating to sustainable procurement and has been excluded from the categories below
 101. On 1 January 2019, the Modern Slavery Act 2018 (Cth) (Commonwealth Act) came into force. This was followed by the Modern Slavery Act 2018 (NSW) (NSW Act) on 1 January 2022. Unlike other jurisdictions the reporting criteria in Australia are mandatory, with annual reporting required for Australian entities within a minimum annual consolidated revenue of \$100 million. For further information see [Home Affairs Modern Slavery](#)
 102. APCO 2025 Packaging Targets are designed to deliver a new and sustainable approach to packaging. For further information, see [APCO National Packaging Targets](#)



EMERGING CIRCULAR/ SUSTAINABLE PROCUREMENT LEADERS (8 of 25)

Of the retailers assessed, 32 per cent were leaders who have moved beyond standalone initiatives for specific product streams, towards a more integrated approach to procurement. These companies recognised the multifaceted benefits derived from adopting a comprehensive strategy for procurement, drawing connections to other sustainability issues.

Issues identified ranged from reduction in greenhouse gas emissions (particularly for Scope 3 emissions from the value chain¹⁰³), climate risk (TCFD – see Chapter 1),

decreased disruptions to supply chains and improved customer satisfaction. In some instances, the broader strategy and internal key performance indicators (KPIs) were supported by a circular economy strategy that had board oversight by the C-suite and the audit and risk committee of the organisation. By addressing these issues and incorporating internal KPIs, emerging leaders have a greater likelihood of implementing circular procurement more widely across their business areas. One example of an emerging leader is presented in the case study in Box 5.1 below.



CASE STUDY JB-HIFI GROUP

Box 5.1

The JB Hi-Fi Group (including The Good Guys and JB Hi-Fi brands) discloses several initiatives that recognise the power of procurement and contribution to the circular economy, including:

- **Establishing new reuse programs:** a program to refurbish and reuse ‘unsellable’ mobile phones (returned by customers or ex-display stock) gave 7,578 phones a second life in FY21. Phones were used as display units, customer loan devices, and employee company phones, with collection for material recovery through recycling as a last resort. A reuse scheme for blank DVD and Blu-Ray cases used in visual merchandising also diverted 1,118 kg of plastic waste from landfill in FY21.
- **Streamlining supply chain:** utilisation of JB Hi-Fi Group’s Home Delivery Centre to centralise distribution of big and bulky items to reduce Scope 3 emissions]] and streamline recycling for difficult to recycle materials.
- **An eye for recycling:** The Good Guys launched a National Uniform Recycling Program in 2021, repurposing textiles into foam filling, ceiling tiles, insulation, office partitions, and stuffing and diverting approximately 2,000kg from landfill.
- **Governance and oversight:** an internal Waste and Recycling Working Group was established in 2021 to guide reductions in operational waste and increase reuse and recycling across the company. Chaired by the CFO, this group is evaluating company waste streams to strategically improve processes, systems and behaviours, reporting to the Audit and Risk Management Committee (Board sub-committee).

In addition, the Group recognises the role of procurement in addressing Scope 3 value chain emissions and climate risk disruptions to the supply chain in their TCFD aligned disclosure.

103. Greenhouse Gas Protocol (2013), *Technical Guidance for Calculating Scope 3 Emissions*

REPORTING

In addition to an analysis of the three categories, the assessment found variation in the quality and transparency of sustainability reporting more broadly. Reporting was found to be further advanced and more detailed for publicly traded organisations. Privately held companies had less publicly available information on sustainability initiatives, with some of these limited to third party websites such as APCO or the Australian Border Force website, the latter being the entity responsible for reporting against modern slavery requirements.

Such a variation is in part being driven by regulators and investors, with increasing demands for disclosure of ESG targets and associated metrics.

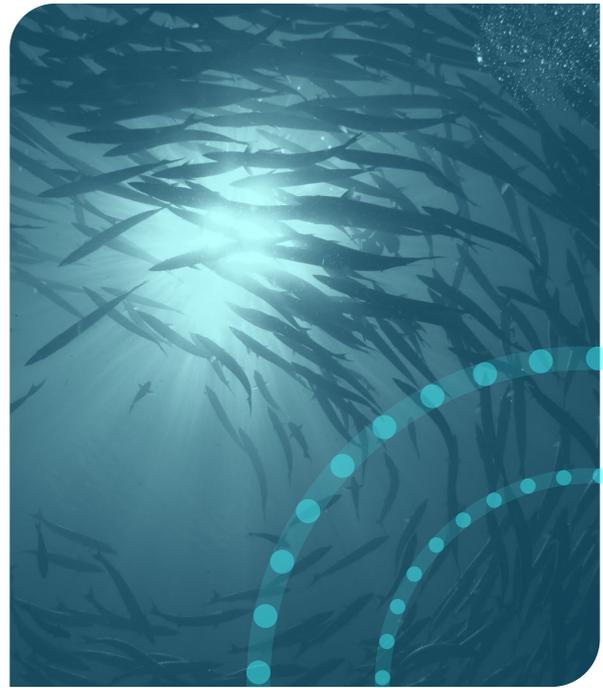


WHERE TO FROM HERE: COLLABORATION TO MOVE TOWARDS CIRCULAR PROCUREMENT

The current state of play in the Australian retail sector indicates that compliance requirements are the primary drivers of circular and/or sustainable procurement practices. Unfortunately, this research shows that few companies publicly disclose the use of these procurement practices that can truly embrace the circular economy.

There is a significant opportunity to look beyond operational waste and develop strategic, integrated solutions across the value chain that embrace circular and regenerative systems. There are exciting examples of standalone initiatives and emerging recognition of interconnected ESG issues. However, the power and value creation opportunity of circular procurement appears to remain largely untapped.

Whilst modern slavery regulation and APCO commitments have provided a strong impetus for organisations to interrogate supply chains and increase transparency in this sector, by adopting circular procurement there are ample opportunities to reduce complexity of these chains, reduce risk from



The current state of play in the Australian retail sector indicates that compliance requirements are the primary drivers of circular and/or sustainable procurement practices. Unfortunately... few companies publicly disclose the use of these procurement practices that can truly embrace the circular economy.

chain disruptions, and create more circular material flows to enable a truly circular economy.

A further pressing incentive comes from the need to address supply chain emissions. Value chain emissions (Scope 3) often dwarf those from direct operations (Scope 1 & 2), yet many organisations are at the beginning of quantifying this impact. With 45 per cent of global emissions created from how we use and manage land and produce products,¹⁰⁴ procurement using circular business models that address the three principles can significantly reduce emissions.

By taking an all-of-value-chain oversight, procurers can further understand their emissions by collecting data from suppliers and identify opportunities to reduce impact. For example, by moving from a linear to a circular business approach, both transport and embodied carbon emissions can be reduced.

To support the transition to circular procurement, organisations must first develop a clear understanding of its current context and what it wants to achieve internally to start discussions.

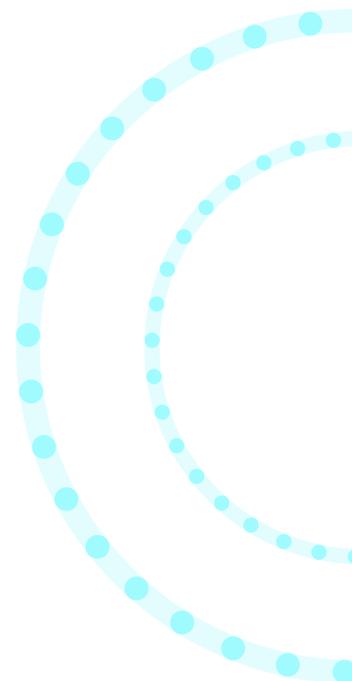
This research suggests the need for collaboration to overcome barriers and support circular economy initiatives and solutions. Barriers to sustainable procurement and a circular economy often include: limited capability and capacity in already busy procurement functions; a lack of adequate data about product impact and waste streams; requirements related to safety, quality, and aesthetics; and limitations

in recycling technology or supply and cost of recycled materials. By collaborating within and across industries, many of these barriers can be addressed.

Circular procurement activities start with considering how products are used and their technical function.¹⁰⁵ Considering improved product design that enables reuse, repurpose and repair can be adopted as a foundational step. The creation of well-designed product stewardship initiatives that incorporate incentives for circular design can be powerful tools to enable circular business model adoption. Such initiatives will be necessary to identify, test and scale solutions to overcome existing barriers. Furthermore, disclosure of initiatives including failures, barriers or challenges, will help inform and improve future initiatives.

To support the transition to circular procurement, organisations must first develop a clear understanding of its current context and what it wants to achieve internally to start discussions. This will help identify actors that are most crucial in the value chain and with whom collaboration is most important. Table 5.1 offers objectives and activities to support discussions.

.....



104. Ellen MacArthur Foundation (2021), *Completing the Picture - How the circular economy tackles climate change*
105. Van Oppen et al. (2018), *Circular Procurement in 8 steps*

Table 5.1: Activities to facilitate an organisations circular and sustainable procurement journey

OBJECTIVE	ACTIVITY
1. Current State 'Where are we now?'	<ul style="list-style-type: none"> • Benchmark performance against peers and leaders. • Identify and articulate the business needs related to circular economy issues (and vice versa). • Conduct risk analysis into key material ESG issues within the supply chain. • Review internal policies and procedures for procurement, including supplier screening and environmental data collection.
2. Target State 'Where do we want to be?'	<ul style="list-style-type: none"> • Identify and articulate business opportunities related to circular economy concepts. • Confirm future ambition and company positioning, including targets and KPIs. • Understand linkages between sustainability ambitions and identify where circular and sustainable procurement can play a role.
3. Future State 'How do we get there?'	<ul style="list-style-type: none"> • Preferentially adapt and make use of existing processes and mechanisms for change. • Prioritise supplier engagement based on sustainability ambitions and business drivers (e.g. most emissions intensive suppliers, highest contributors to non-recyclable materials, products most suited to service models (over ownership models), highest residual labour rights risk etc). • Identify stakeholders with whom collaboration could be mutually beneficial. • Consider internal governance arrangements to ensure responsibilities and accountabilities are clear and create cross-functional mechanisms such as working groups. • Integrate circular and sustainability criteria into the organisations procurement policy and strategy • Explore the use of contractual mechanisms to enable the collection of environmental data to support company disclosures. • Train staff on circular and sustainable procurement buying decisions



ABOUT POINT ADVISORY



Point Advisory, part of the ERM Group, is a leading climate change, sustainability and ESG advisory firm. They provide innovative, elegant and effective solutions that embed sustainability principles into client strategies and operations. Many sustainability challenges require a multi-disciplinary approach which is why their team includes engineers, scientists, economists and entrepreneurs. They combine deep technical knowledge with strategic acumen to work across the full spectrum of the sustainability agenda – from climate change, energy and environmental management through to sustainability strategy, reporting, governance and human rights. Point Advisory and ERM recognise that sustainable and circular procurement has the potential to transform the current linear economy to a circular one where products are designed to be kept in use for the longest time and at their highest value. Based on research by Point Advisory and ERM, their chapter examines one sector of focus – the Australian retail sector. The chapter provides guidance on what needs to be done to affect a step change towards circularity in procurement.



CHAPTER 6

A PLACE FOR CIRCULAR ECONOMY IN LOCAL GOVERNMENT



Authors: Katherine Dodd, Catherine Smith and Masa Vahldiek
(MRA Consulting Group)



KEY FINDINGS

1

Local government plays a key role in Australia's circular economy transition

2

Circular economy is important to the future of local government areas

3

While research suggests local governments are knowledgeable on circular economy, more than half simply identify circular economy activities as waste strategy activities

4

Activities focused on organics attract the greatest focus

5

Lack of resourcing, policy, information and education were noted as important barriers to adopting circular economy practices within local government

6

Co-funding, policy and end markets can drive circular strategy adoption in local government



LOCAL GOVERNMENT'S ROLE IN AUSTRALIA'S TRANSITION TO A CIRCULAR ECONOMY

Local government has an important role to play in Australia's transition to a circular economy. Not only do local governments manage materials at the end-of-use phase, facilitating waste removal and recycling processes across the nation, they also play a valuable role upstream, in the engagement and education of their communities and in large-scale procurement of materials for public services and infrastructure. The spend is not insignificant, reflected by 2018-19 local government expenditure totalling almost \$40 billion.¹⁰⁶

Australia is made up of 537 local government areas (LGAs), fifty-five per cent of which are

in regional, rural and remote areas.¹⁰⁷ While local governments differ greatly in size, demographics and geography, there is a growing acknowledgment across the board that moving towards a circular economy is both beneficial and necessary. Many Australian local governments have begun to implement circular economy programs, and while such programs are still in their infancy, data from this research indicates that a transition towards a circular economy is important for the future of LGAs (Figure 6.1). This chapter captures the state of circular economy adoption in local governments across Australia.

106. Australian Local Government Association (2022), *Facts and Figures*

107. Australian Local Government Association (2022), *Facts and Figures*

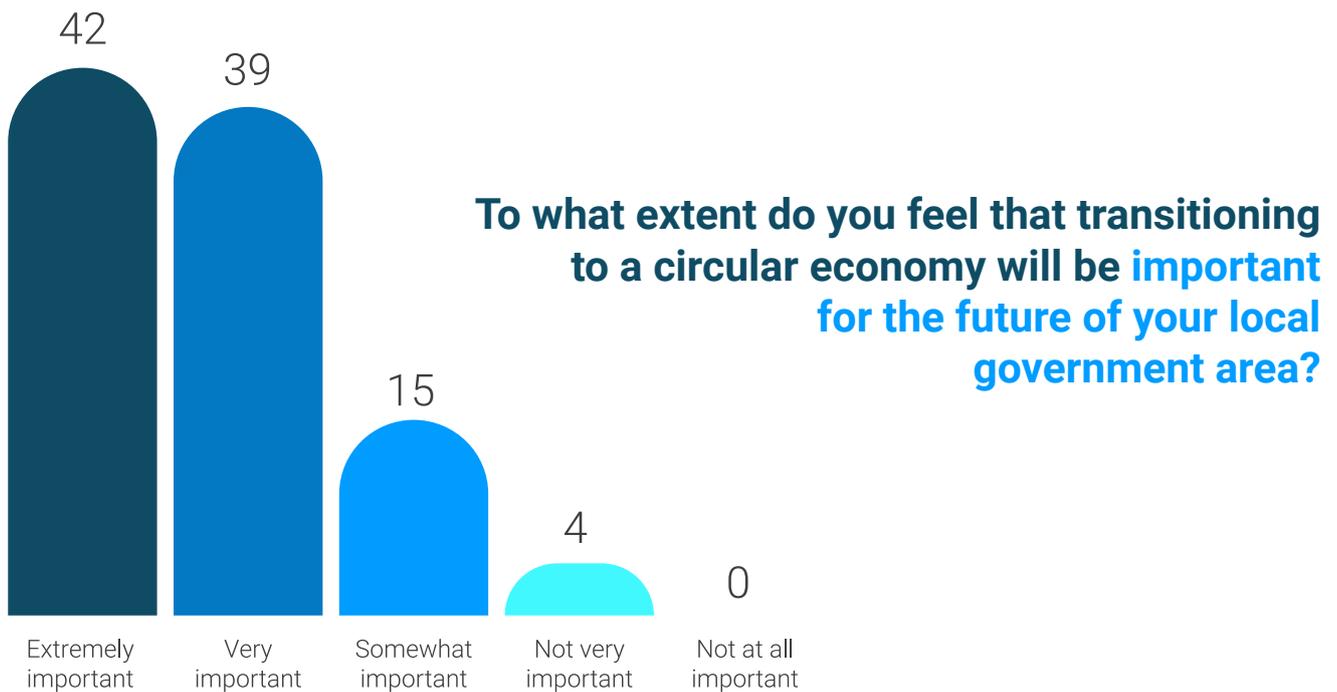


Figure 6.1: Importance of circular economy to local government respondents (Source: MRA Consulting)



SURVEY OF AUSTRALIAN LOCAL GOVERNMENTS

To understand if and how local governments are engaging with circular economy principles and practices, Planet Ark along with Technical Supporter MRA Consulting, surveyed local governments across Australia asking key questions about circular economy understanding and engagement.

The survey was sent to all 537 local governments via the Australian Local Government Associations (ALGA) Council mailing list. To increase engagement, the survey was also sent to Planet Ark's 'Recycling Near You' local government mailing list. After removal of duplicate responses,¹⁰⁸ a total of 100 local governments responded to the survey.



SURVEY RESULTS: HOW IS CIRCULAR ECONOMY BEING IMPLEMENTED IN LOCAL GOVERNMENT?

The results of the survey provide a strong picture of how the circular economy is emerging at a local government level. The data revealed four themes of circular mindsets and action:

- 1 Knowledge and level of progress
- 2 Planning
- 3 Implementation
- 4 Future outlook

108. Duplicate responses were removed via a random selection process to avoid over-representation of some Councils



Knowledge and level of progress

Survey data shows that across local governments there is a strong understanding of the circular economy. As shown in Figure 6.2, 46 per cent of those surveyed say they are 'very knowledgeable' about the concept of the circular economy and a further 44 per cent state that they are 'somewhat knowledgeable'.

When asked which statement best describes the circular economy, 65 per cent of

respondents answered correctly with "A circular economy is designed to ensure regenerative processes and products". In comparison, in a recent survey of Australian businesses, only 27 per cent of respondents answered this correctly.¹⁰⁹ This result demonstrates that respondents from local government are generally well informed about the circular economy.

How knowledgeable are you about the concept of the circular economy?

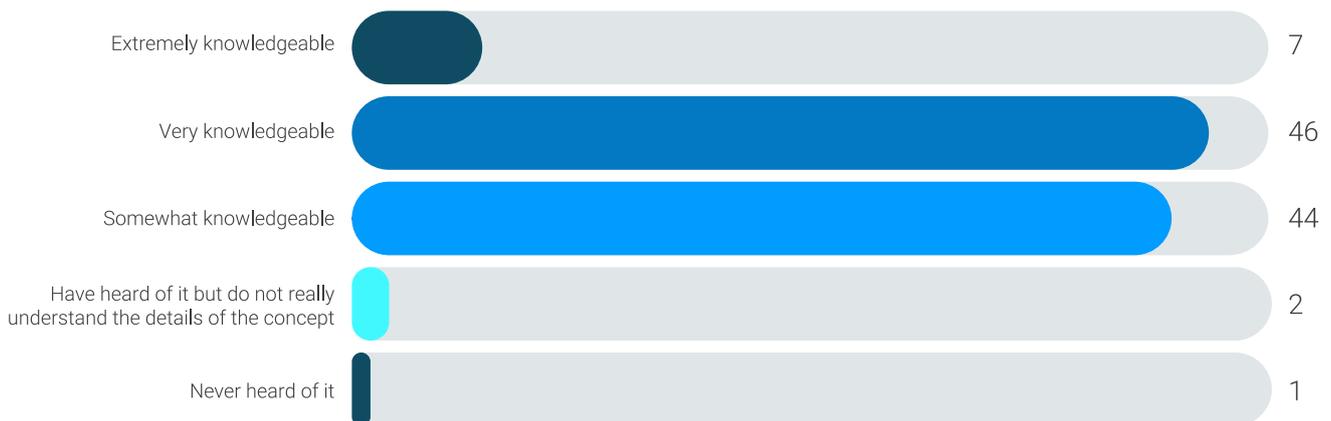


Figure 6.2: Level of knowledge on circular economy (Source: MRA Consulting)

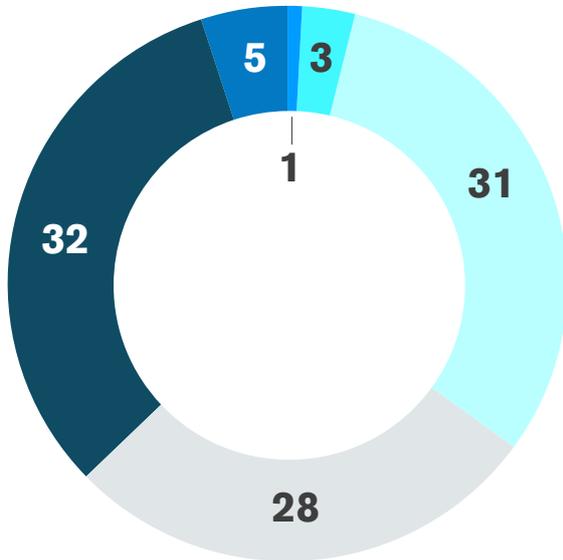
When it comes to action, local governments are at different stages of planning for and implementing a circular economy. For example, three respondents indicated they felt confident that the circular economy has been fully implemented in their local government and is central to their department operations, yet only one of those has a 'circular economy' policy available. One-third of local governments (31 per cent) reported that they have implemented aspects of a circular economy model, while 28 per cent are still reviewing how to implement this within

their LGA. Only a minority (5 per cent) have not considered the circular economy at all and a mere 1 per cent feel that the concept does not apply to their LGA (see Figure 6.3).

“... local governments are at different stages of planning for and implementing a circular economy.”

109. ACE Hub (2021), *Circularity in Australian Business: Awareness, knowledge and perceptions*

What stage would you say your LGA is at in terms of implementing circular economy models?



- Fully implemented - the concept is central to our department/LGA
- Somewhat implemented - we have implemented aspects of it
- Not yet implemented but we are reviewing how to implement it within the department/LGA
- We are considering, or are open to implementing circular economy principles in our department/strategies/LGA
- We have not considered it
- I don't feel the concept applies to our department/LGA

Figure 6.3: Stages of circular economy implementation (Source: MRA Consulting)



Planning for a circular economy

When looking at aligning local government operations to incorporate the principles of a circular economy, it is important to map out the current practice and establish when and where certain services can be added or changed to suit local requirements.

Circular economy strategies

Circular economy strategies can assist in providing direction towards new opportunities – both for local government itself and for its ratepayers. Of the government survey respondents, 11 percent indicated they have drafted or published a circular economy strategy to date.

The description of what a 'circular economy strategy' consists of was not defined and therefore, could be open to interpretation. More than half (55 per cent) indicated that their local government is opting to update

their waste management and resource recovery strategy with circular economy principles. It is noted that 20 per cent of those surveyed said their local government did not have a waste strategy or a circular economy strategy.

Circular economy strategies can assist in providing direction towards new opportunities - both for local government itself and for its ratepayers.

Circular economy roles

Figure 6.4 shows that, at an employee level, only 7 per cent of respondents indicated there were roles in their local government with 'circular economy' in their title.

Similar to the inclusion of 'sustainability' in role titles, the inclusion of 'circular economy'

as a defined role suggests commitment by the organisation.

Overall, the current state shows that there is a positive shift towards circularity demonstrated through the incorporation of circular economy at the strategy development level.

Do you have any employees within your organisation with the term 'circular economy' in their title?

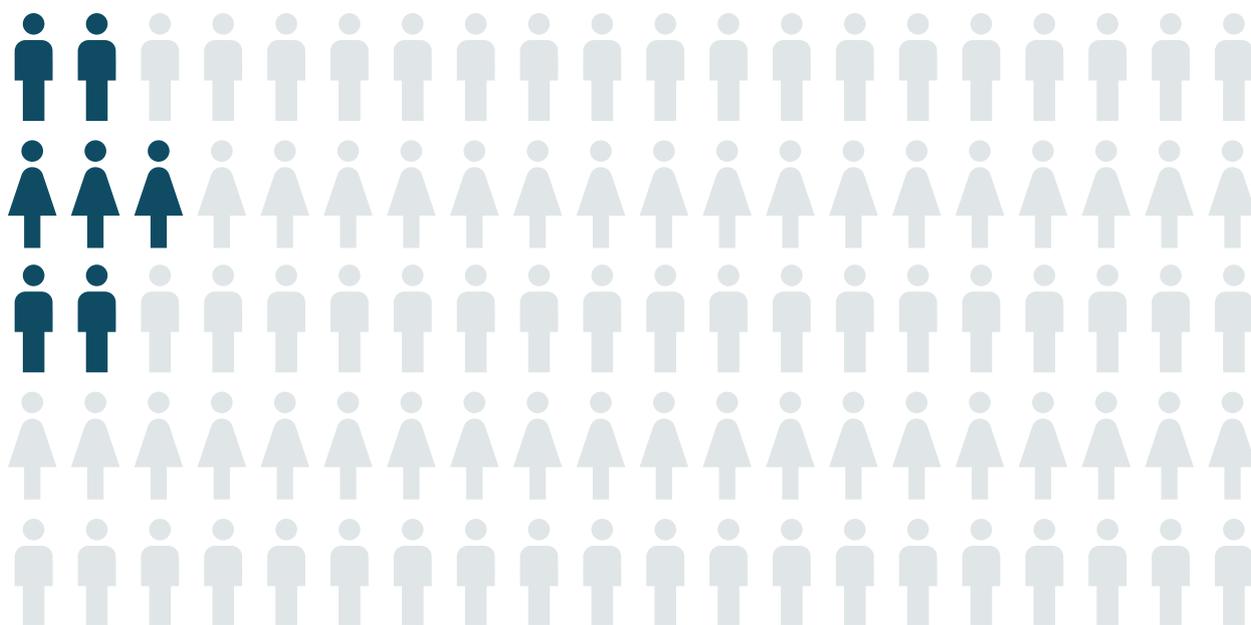


Figure 6.4: Local government employees with 'circular economy' in their title (Source: MRA Consulting)



Implementation of circular economy

As the system shifts from a take-make-dispose model to a circularity model,¹¹⁰ starting with refuse then reduce, LGAs find themselves at the turning point where 'dispose' moves to a greater number of actions to reduce materials sent to landfill. What was framed in the 1980s and 1990s as the 3R's – 'reduce reuse recycle' – is increasingly being seen as insufficient. Indeed, the language is already reflecting this societal shift. In one example, the industry

body once known as the Waste Management Association of Australia (WMAA) changed its name in 2019 to the Waste Management and Resource Recovery Association of Australia (WMRR).

This turning point sees local governments having to manage waste AND recover resources. Questions arise at this point as to what constitutes 'waste' and what constitutes a 'resource'. If the circular economy designs out waste, does all waste become a resource?

110. Cramer (2017), *The Raw Materials Transition in the Amsterdam Metropolitan Area: Added Value for the Economy, Well-Being and the Environment*

It is worth noting that until circularity is designed into materials at the front end (upstream), it is impossible to eliminate waste entirely. Hence, it is evident that this is a period of transition. Some waste is still destined for landfill, while many resources are being recovered for recycling including plastic, glass, paper, cardboard and increasingly food organics and garden organics (FOGO).

Only 23 per cent of those surveyed said their local governments have undertaken circular economy projects within the built environment sector (design and planning) and 38 per cent identified that projects focused on construction and demolition have been undertaken. While local governments do not have the power to mandate the use of

circular economy business models in new developments, they have the power to make recommendations in both procurement and in reuse/disposal of demolition material. Local government recommendations follow on from the 2019 National Waste Policy Action Plan target to 'significantly increase the use of recycled content by governments and industry' (Target 4).¹¹¹ The responsibility for implementing the plan ultimately lies in the hands of federal and state governments.

Of the local governments surveyed, organics was the material stream most in focus for what were identified as circular economy projects (see Figure 6.5). Others had limited attention, suggesting wide ranging opportunities for increased recovery.

Has your local government undertaken any circular economy projects in the following areas?

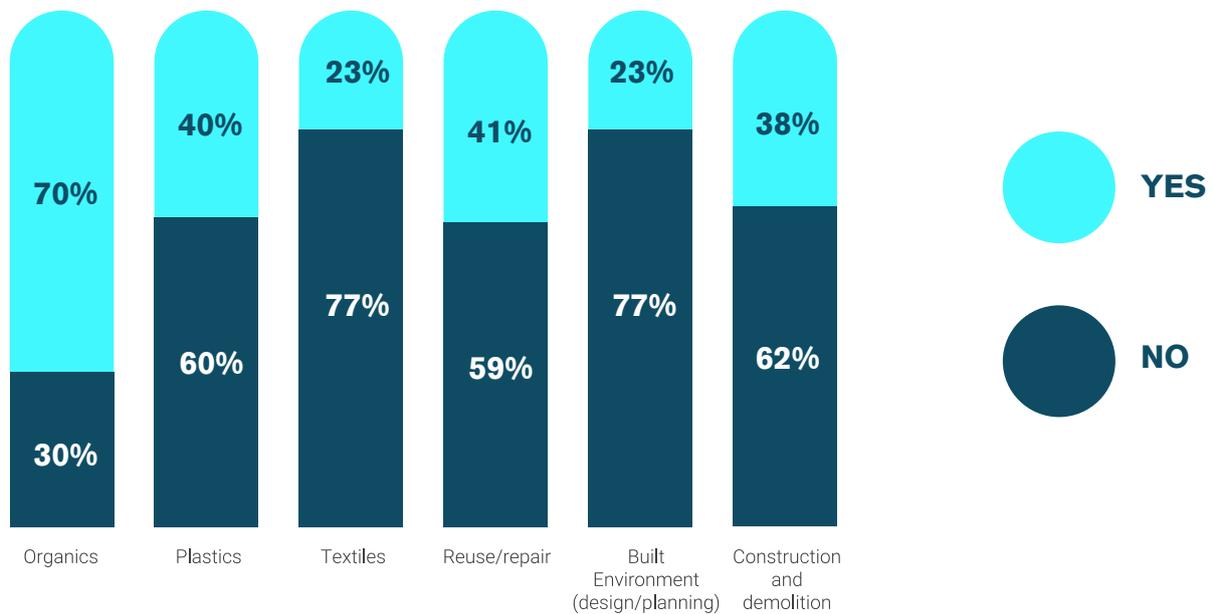


Figure 6.5: Local governments with self-identified circular economy projects underway (Source: MRA Consulting)

111. Commonwealth of Australia (2019), *National Waste Policy Action Plan*

The transition to a circular economy can only be achieved through collaboration of different stakeholders through the supply chain. This was evident when respondents were asked which department in their local government would lead the transition to a circular economy. On most occasions more than one department was identified. These departments included: Waste and resource recovery (75 per cent), sustainability (44 per cent), procurement (25 per cent), operations/engineering (20 per cent), economic development (12 per cent) and planning (10 per cent). Therefore, it is critical that senior executives collaborate across LGA departments to gather support and momentum to see the greatest change.

Future outlook

The survey responses showed that local governments see circular economy projects as a positive way to increase community trust and engagement. Respondents said that adopting circular economy business models would improve reputation and trust with the public. Incorporating circular economy is also seen to align with public opinion around sustainability. Other perceived benefits include increasing efficiency, addressing resource availability, cost reductions and ability to reach new industries and businesses.

Implementation of a circular economy across Australian local governments is not without certain barriers (see Figure 6.6). The main barriers to implementation, noted by more than 50 per cent of respondents, included lack of financial and labour resources. In addition, rural and remote councils stated that circular economy practices are difficult to adopt due to distance issues and lack of local infrastructure.

“Incorporating circular economy is... seen to align with public opinion around sustainability.”

Barriers to implementing circular economy models in local government

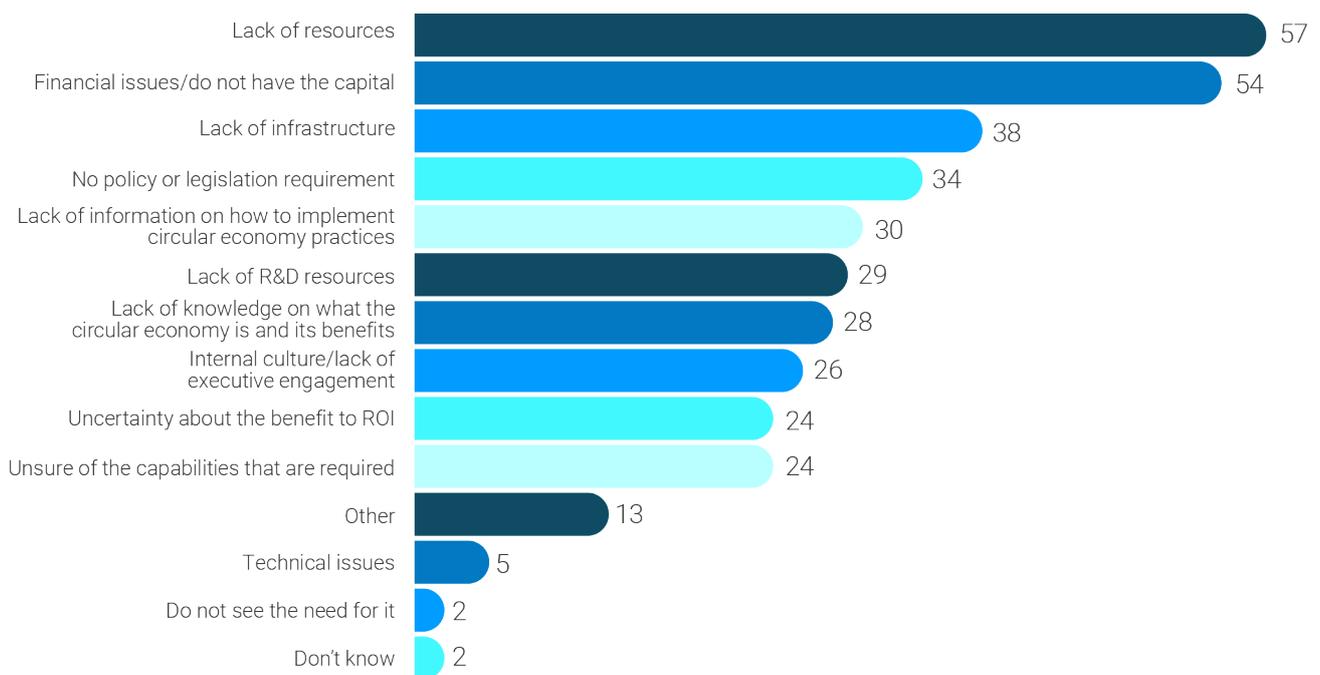


Figure 6.6: Barriers to implementing circular economy in local government (Source: MRA Consulting)

One example highlighted from the research and explored more deeply is the City of Greater Bendigo. This case study is presented in Box 6.2, highlighting the actions being undertaken within this LGA.

Box 6.1



CASE STUDY

CITY OF GREATER BENDIGO

The City of Greater Bendigo is a regional local government based in Victoria. The City is making significant headway in developing a circular economy through the following key projects:

- Residential and commercial food organics and garden organics (FOGO)
- Conducting material flow analysis of the City to understand where changes can be made to how resources are recovered and managed
- The processing of soft plastics into a road-based additive to be used in local roads
- Working with industry to find post-landfill, circular infrastructure solutions for waste streams through a co-design Expression of Interest 'Competitive Dialogue' process
- Implementing a Circular Procurement policy to mandate design and procurement for circular materials and products

The City of Greater Bendigo owns and operates its landfill, and while the City is regional, the landfill is treated as a metropolitan landfill for levy purposes and will reach capacity in 2023.

With food organics from homes and businesses being the dominant waste stream to landfill, FOGO was identified as a material stream to focus on for circular innovation. A FOGO trial began in 2016 and rolled directly into a mandated FOGO program for residents, with commercial FOGO added as an opt-in program in 2021. To date 200 businesses are participating. The key engagement factor lies simply in providing a reliable and accessible service.

With the landfill soon reaching capacity, the City undertook an analysis of materials and volumes going to landfill. They released an Expression of Interest out to market in order to identify and co-design alternative, circular destinations for materials within the region. This process developed three solutions, including: i) a soft plastics initiative whereby soft plastics are processed into a road-based additive to be used in local roads, which will result in a 392 per cent reduction in emissions versus the current landfilling of soft plastics; ii) a modular Energy from Waste facility is also under consideration to treat a limited amount of residual waste; iii) an in-vessel composting facility to be built in Bendigo specifically to handle the existing FOGO stream, rather than shipping to a facility outside the region.

Bendigo has a Circular Economy and Zero Waste Policy that seeks to standardise a circular procurement approach and encourages internal teams to reuse and refresh products such as playground equipment, rather than buying them new. The ASPIRE platform is also harnessed by the City to better manage internal resources and support resource sharing between local businesses.

Bendigo is one of the few local governments in Australia to have a dedicated 'circular economy' staff member. This has a measurable impact on the work that has been able to be achieved. When asked how Australia can progress towards circularity, Scott Bryant, Circular Economy Coordinator, stated that it is important to shift the focus off recycling and on to building markets for the reuse of material resources, both via supply-side (innovative solution providers) and demand-side (government circular procurement targets, taxation disincentives for virgin/primary resource materials and products etc.) mechanisms.

Survey results on the projects being implemented in the City of Greater Bendigo are shown in Table 6.1.

Table 6.1: City of Greater Bendigo's responses to survey question 'Has your local government undertaken any circular economy projects in the following areas?' (Source: MRA Consulting)

AREA	YES/NO	COMMENT
Organics	Yes	Have had collection and composting of residential (and commercial) organics since 2016. Currently completing a co-design tender to establish a local composting facility. Ongoing education and engagement in schools, community & with businesses.
Plastics	No	
Textiles	Yes	Recently started a co-design procurement process to identify (and hopefully establish) circular textile solutions/infrastructure for the region.
Reuse/repair	Yes	Our Circular Economy & Zero Waste Policy a.k.a. 'circular procurement policy' has been incentivising internal teams to reuse and refurbish equipment/products rather than buying new e.g. refurbishing park benches, playground equipment etc. The adoption of the ASPIRE reuse platform for internal use has also facilitated the reuse of excess materials from City Depot sites. Also currently in co-design with a local consortium regarding developing a regularly occurring Repair Café & Tool Library.
Built environment (design and planning)	Yes	Our ESD planning requirements for statutory planning of sub-divisions incorporates circular design and end-of-life reusability requirements.
Construction and demolition	Yes	In the very early stages, but currently starting master planning for a Circular Economy Hub (precinct) and our existing resource recovery sites, which will include planning for improved C&I and C&D separation in light of the region's transition to a 'post-landfill' environment.



RECOMMENDATIONS

While industry creates opportunities for circular economy, local government can have a significant role in propelling the transition. Local governments are well placed to create markets for recovered products through procurement practices by encouraging sustainable development of infrastructure, both within the local government’s management and through development applications and approvals and educating the local community on responsible consumer behaviour.

Where the greatest opportunity for impact lies for local government is in the management of resources at their end-of-use phase. Management of general waste, recycling, food organics and garden organics (FOGO) and bulky waste is the responsibility of local government through its appointed

contractors. Local governments are therefore bound by contractual agreements, often signed for many years in advance. Changes at this point in the circular (or linear) process are currently at the discretion of each local government. While many are invested in moving towards a circular model, some find themselves under-resourced and underfunded, and therefore unable to progress beyond a business-as-usual model.

To support local governments in this transition, collaboration with other levels of government and with industry is needed. Figure 6.7 presents the areas of support that would encourage the implementation of circular economy strategies and projects. Importantly, co-funding and policy from state governments as well as availability of and access to end markets were very likely to encourage action. These results provide windows into critical pathways for increased circular economy adoption by local governments.

What would encourage your LGA to implement circular economy strategies/projects?

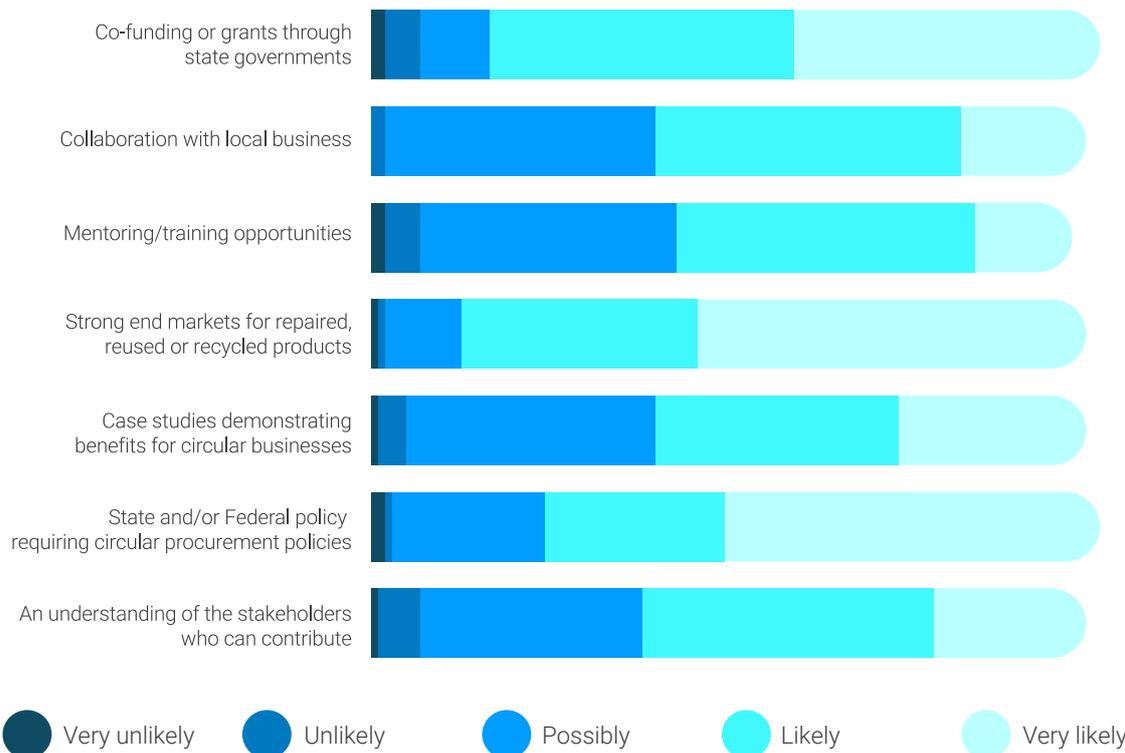


Figure 6.7: What would encourage local government to implement circular economy (Source: MRA Consulting)

In this research, **81 per cent of survey respondents stated that transitioning to a circular economy will be important for the future of their local government area.**

Therefore, it is important to identify actions and opportunities that are available to local governments to assist in creating a circular economy. Actions that can be taken include (but are not limited to):

- Educating departments across LGAs, their leadership teams and decision makers across all services and operational areas on the principles of the circular economy, to help them identify intervention points across departments and the LGA as a whole;
- Understanding what resources are procured by the LGA and for what purposes;

- Discussing and preparing procurement targets that adopt circular business models;
- Mapping the key industry, businesses and markets within an LGA, and working with neighbouring regions to identify upstream, higher 'R' strategy opportunities (see Chapter 1);
- Preparing a strategy and action plan with consultation and endorsement from the community. Include review points to track progress and allow for flexibility to respond to changes within industry and regulations;
- Reviewing planning and approval frameworks to identify opportunities that require sustainable development and circular design in each LGA; and
- Identifying opportunities to increase recovery of 'waste' as a resource.

ABOUT MRA CONSULTING



MRA Consulting is one of Australia's leading environmental consultancy firms, specialising in all aspects of waste and recycling. They are experts in waste, resource recovery and the circular economy, technology, climate change, carbon and sustainable development, and our vision of the future is one that is both environmentally sustainable and economically rational. With over 40 professionals working across Australia, they can support varying waste and resource recovery needs. Local Governments have an important role to play in supporting the shift towards a circular economy through their regional influence, procurement power and community engagement. MRA chose local governments as they are passionate about supporting LGAs to understand how they can make this shift and what actions they can take at the planning and implementation phases.

CONCLUSIONS



As highlighted in the introduction, a circular economy is not a new concept. Rather, it is built on millennia of practice by First Nations peoples to foster, conserve and regenerate natural systems, and on more recent frameworks that seek to mimic nature's circular resource flows. A circular economy integrates these practices and frameworks into modern, industrial and global supply chains to design out waste and pollution and keep materials in use for longer at their highest value, while also regenerating nature, to create a carbon neutral economy.

Our current rate of resource consumption is unsustainable. Changes must be made to limit losses to the economy, the environment and to maintain social and cultural practices and networks. Therefore, adopting a circular economy approach for the future is not a matter of choice, but one of urgency.

It is not all bad news, though. The opportunities available from adopting a circular economy include improved brand recognition, reduced supply chain risk, improved competitive advantage and

increased investment interest. In dollar terms, adopting a circular economy in Australia represents a potential \$210 billion contribution to GDP and an additional 17,000 full-time jobs.

“Circular economy is not a new concept... it is built on millennia of practice by First Nations peoples...”

This first *State of Circularity in Australia: Perspectives from the field* report reflects foundational knowledge and perspectives and uses real-world case studies to inform and inspire readers to take action towards circularity. Authored by the ACE Hub Technical Supporters, their five chapters identified areas of action where evidence is available and where additional effort is needed to support the circular economy transition in Australia. The topics explored in

the chapters are considered important areas of opportunity.

As reflected in the key findings of each chapter, good progress towards a circular economy is already being made in Australia, or opportunities are presenting themselves.

In Chapter 2, authored by ThinkPlace, the current state shows limited use of visualisation tools, such as ecosystem maps. The existence of such tools can enable connectivity and collaboration between circular economy actors within and across supply chains.

In Chapter 3, the team from thinkstep-anz provide insights into the proposed added value associated with circular economy adoption, including the need to look beyond purely economic value.

In Chapter 4, Edge Environment show that circular mindset adoption in Australia has good foundations. Edge's how-to guide will enable increased circular thinking within organisations to help drive the systems change required.

In Chapter 5, Point Advisory and ERM use procurement in Australia's retail sector to comment on the state of circular and sustainable procurement adoption. They show compliance as a key driver of circular and sustainable procurement, but there is a real need to move beyond compliance-driven action.

Finally, in Chapter 6, MRA Consulting provide an overview of the current state of circular economy adoption across Australian local governments. The chapter highlights that current waste strategies can be expanded to include broader circular economy considerations across local government departments and activities. This will offer substantial opportunities to reduce resource consumption.

By collaborating on this report, the ACE Hub Technical Supporters have identified a number of barriers which must be addressed in order to speed up Australia's transition to a circular economy. Improving knowledge and awareness of the opportunities associated

with the circular economy is an essential first step. This must be closely followed by action to eventually make circularity the business-as-usual. Investment in resourcing and C-suite-driven targets and strategies, greater availability of funding and increased circular economy policy will also enable a faster transition to a circular economy in Australia.



The recommendations presented in each chapter are by no means exhaustive, however, they provide some fundamental actions that can support organisations to adopt circular business models. The ACE Hub is committed to facilitating the ongoing transition to a circular economy in Australia. The findings of this report reiterate the important role the ACE Hub plays in enabling education, connection and collaboration to support the actions required in this transition. We look forward to presenting the progress towards increased circularity, measured and analysed in future editions of the ACE Hub's *State of Circularity in Australia* report.

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**AUSTRALIAN
CIRCULAR
ECONOMY
HUB**
PLANETARK

Suite 3.18, Level 3
22-36 Mountain Street
Ultimo, NSW, 2007

W: planetark.org
E: enquiries@planetark.org
P: (02) 8484 7200