



GREEN INDUSTRIES SA

Strategic Plan

2021-2025



**Government
of South Australia**

Green Industries SA

Green Industries

Through the work of Green Industries SA, South Australia is known for its leadership in waste management, recycling, resource recovery and the circular economy. South Australia is frequently recognised for its innovative practices and legislative reform.

Our vision

Creating a sustainable future through a green economy, focusing on enhancing the value of materials in a circular economy

Our purpose

Green Industries SA is a leader in advancing the circular economy in South Australia through supporting innovation, collaboration and excellence:

- Improving our environment and well-being
- Creating economic growth and prosperity
- Valuing our resources and reducing pollution and waste

Our values

- Trust
- Respect
- Honesty and integrity
- Courage and tenacity
- Service
- Professionalism
- Collaboration and engagement

Our key drivers for change

- Leadership and advocacy
- Policy and regulation
- Incentives and support
- Innovation and technology
- Education, behaviour change and capacity building

Acknowledgement of country

We acknowledge and respect the Traditional Custodians whose ancestral lands we live and work upon and we pay our respects to their Elders past and present. We acknowledge and respect their deep spiritual connection and the relationship that Aboriginal and Torres Strait Islanders have to Country. We also pay our respects to the cultural authority of Aboriginal and Torres Strait Islander people and their nations in South Australia, as well as those across Australia.

Green Industries SA Strategic Plan 2021-2025

Green Industries SA is leading the state's transition to a circular economy

This document outlines Green Industries SA's strategic plan for the next five years to advance the circular economy in South Australia. Our planet faces an urgent need to rethink our resource use and reduce our carbon footprint. This can only be achieved with a strategy that delivers a more circular economy as quickly as possible.

Our strategic plan outlines how South Australia can ensure a sustainable future while maintaining a thriving economy. Green Industries SA's five strategic priorities will focus on: **Circular products and services**, **Circular consumption**, **Circular resource recovery**, **Circular sectors** and **Circular capacity** over the next five years.

This strategic plan delivers a circular economy roadmap that aligns with the United Nations' Sustainable Development Goals as the blueprint for peace and prosperity for people and the planet.

Our Strategic Priorities

1 Circular products and services
Designing out waste to keep resources circulating in the economy and enabling sustainable procurement

2 Circular consumption
Reducing wasteful consumption by sustaining products through repair and reuse, avoiding waste, and improving recycling and recovery

3 Circular resource recovery
Investing in state-of-the-art infrastructure to unlock the value of materials that would otherwise be sent to landfill

4 Circular sectors
Creating economic growth and job opportunities by making targeted industry sectors resource efficient and carbon-neutral

5 Circular capacity
Capacity building through investment in training, education, innovation and research and development to nurture the next generation

The world economy is driven by an unsustainable 'take-make-waste' approach that uses 1.6 planets of resources every year, polluting the world with waste

Planetary pressures

1.3 billion tonnes of the food produced in the world for human consumption (about one third) gets lost or wasted

100 billion tonnes of primary materials are extracted and used globally, with only 9% recycled

55% of global climate change can be tackled by using renewable energy; the remainder has to come from changing the way we make and use our products

Global imperatives



17 United Nations (UN) Sustainable Development Goals – 'Global Goals' – call all countries to take action to address social and economic prosperity for all, while operating within planetary boundaries.

Central to the Global Goals include ending poverty and hunger, addressing inequality, delivering climate action, responsible consumption and production, sustainability in cities and communities, while building local economies.

All countries, including Australia, have adopted the Global Goals, and are driving partnerships to mobilise resources, expertise and technology to support global implementation.

A circular economy is critical to achieving the Global Goals. Because of its vital role in delivering resource and materials efficiency, it brings economic and social prosperity, wellbeing and resilience and security and access to the resources we need, while preventing pollution and biodiversity degradation. Progressing a circular economy will improve production and consumption of goods to reduce greenhouse gases, addressing the 45 per cent contribution to global greenhouse emissions that arise from how products are made and how we use our land.

GISA has mapped the SDG against our key activity areas and our Strategic Priorities. The top 5 SDG that align with our work are highlighted here.

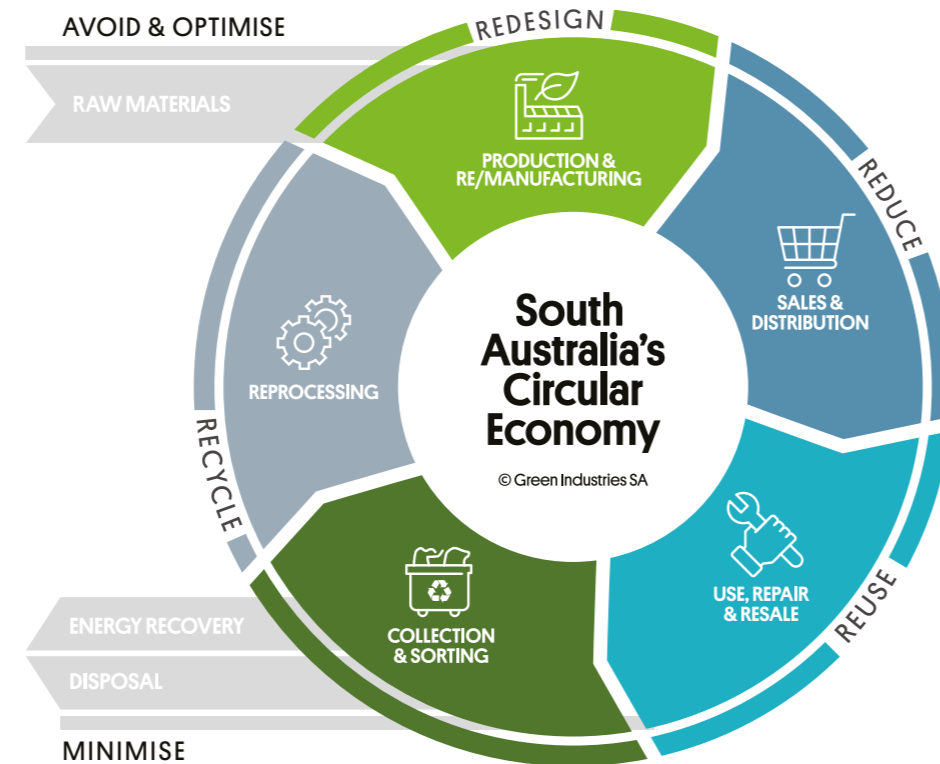
An urgent need for change – accelerating South Australia’s transition to a circular economy

Our imperative is to support economic growth goals and drive positive environmental outcomes. There is an urgency to be smarter with our resources, because our current approach is simply not sustainable.

We want to ‘close the loop’ by keeping materials in use for as long as possible and create a circular culture. Guided by this strategic plan, Green Industries SA will continue to build the resilience, capabilities and competitiveness of the state’s green sector.

Kevin McGuinness,
Presiding Member,
Board of Green Industries SA

Dr Ian Overton,
Chief Executive,
Green Industries SA



What a circular economy will mean for South Australia

Contribute
\$3.5b to our State's economy

Achieve
50% reduction in greenhouse gas emissions

Avoid
400m kilograms of food waste (\$670m for households)

Create
26k local circular economy jobs

Achieve
zero avoidable waste to landfill

Avoid
60m kilograms of clothing and electronics waste

Our achievements so far



83% of material was diverted from landfill in South Australia in 2019-20



79% of metropolitan councils have high performing waste collection systems and many with kitchen caddy and compostable bags



1st in Australia to ban single-use plastic items like bags, straws, cutlery and stirrers



\$270m in recovered, recycled and reused items in 2019-20



34% overall reduction in waste to landfill since 2002-03



\$64m invested to improve South Australia's capacity to avoid waste, recover and recycle resources in the last 10 years

Strategic Priority 1

Circular products and services

Designing out waste to keep resources circulating in the economy and enabling sustainable procurement

Stimulating economic growth and job creation, business efficiencies, innovation and market development

Measuring our success

100% Australian packaging to be recyclable, compostable or reusable by 2025 [Australian Packaging Covenant Organisation]

100% Phase out of problematic and unnecessary plastics by 2025 [National Waste Policy Action Plan]

- ↑ Increased jobs in resource recovery, circular manufacturing, products and services
- ↑ Increased number of businesses adopting new circular business practices
- ↑ Increased procurement of an expanded range of recycled content products and services by government, industry and households

SUSTAINABLE DEVELOPMENT GOALS



Focus areas

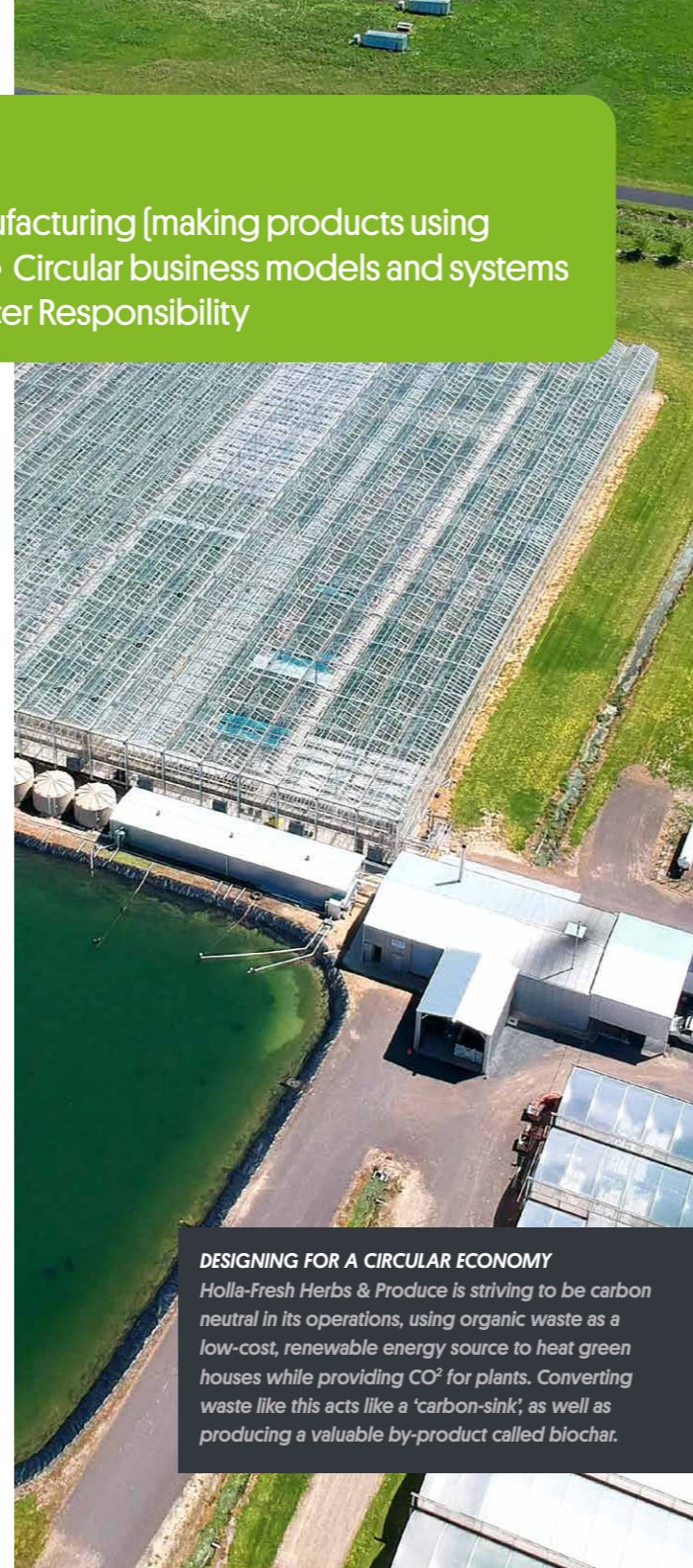
- Designing for a circular economy
- Remanufacturing [making products using recycled content]
- Plastics and packaging
- Circular business models and systems
- Product stewardship and Extended Producer Responsibility

Current actions

- **Building stronger domestic markets** for recycled materials and recycled content products
- **Promoting the circular economy** by advocating for the shift away from a single-use, throwaway mindset. Green Industries SA is the lead agency for delivering awareness, education and behaviour change to support businesses and households to make more sustainable and circular choices to comply with newly passed legislation to continue phasing out certain single-use plastic items now and in coming years
- **Assisting businesses** to transition to a circular economy by improving the use of materials, energy and water, integrating better design and collaborating with other businesses and industry sectors

Future actions

- **Design** – design out waste, design in durability and recyclability
- **Remanufacturing** – encouraging innovation and best practice and contributing to the South Australian Government's economic development objectives
- **Circular business systems** – investigating new ways of doing business
- **Extended producer responsibility** – promoting new and expanded product stewardship schemes



DESIGNING FOR A CIRCULAR ECONOMY
Holla-Fresh Herbs & Produce is striving to be carbon neutral in its operations, using organic waste as a low-cost, renewable energy source to heat green houses while providing CO₂ for plants. Converting waste like this acts like a 'carbon-sink', as well as producing a valuable by-product called biochar.

AVOIDING WASTE

By avoiding waste and shifting to sustainable options for single-use plastic products such as straws, stirrers and cutlery, we are ensuring the best environmental outcomes for future generations.



Our Earth's supply of raw materials is finite.

We need better ways to design, manufacture and consume things within our planetary boundaries. Products need to be designed and manufactured to be as efficient as possible in their use of materials. Products need to use recycled material, be made to last longer, be able to be repaired, upgraded, disassembled and recycled.

Plastic is an extremely useful material, but it must be used appropriately. Circular services provide more efficient ways to deliver benefits, leading to less waste, pollution and material use.

45% of greenhouse gas emissions come from the production and delivery of products and services, with renewable energy and transport only addressing about half of climate mitigation.

311^m tonnes of plastic were produced in 2014, compared to just 15 million in 1964 – and this is expected to double in the next two decades. This is about the weight of all the people on Earth, and creating it consumed as much oil as the entire aviation sector.

16^{kg} of electronic goods are discarded by each Australian every year, with only 9% collected and properly recycled. The remainder goes to landfill.



Strategic Priority 2

Circular consumption

Reducing wasteful consumption by sustaining products through repair and reuse, avoiding and reducing waste, and recycling effectively

Measuring our success

- 10%** Reduction per person in total waste generated (National Waste Policy Action Plan 2019; 5% South Australia Waste Strategy 2020-25)
- Increased household kerbside collection recovery rate (current 46%)
- Reduced contamination in household recyclables bins (current 13% in yellow bins)
- Increased number of businesses offering circular business practices such as repair and resale

SUSTAINABLE DEVELOPMENT GOALS



Focus areas

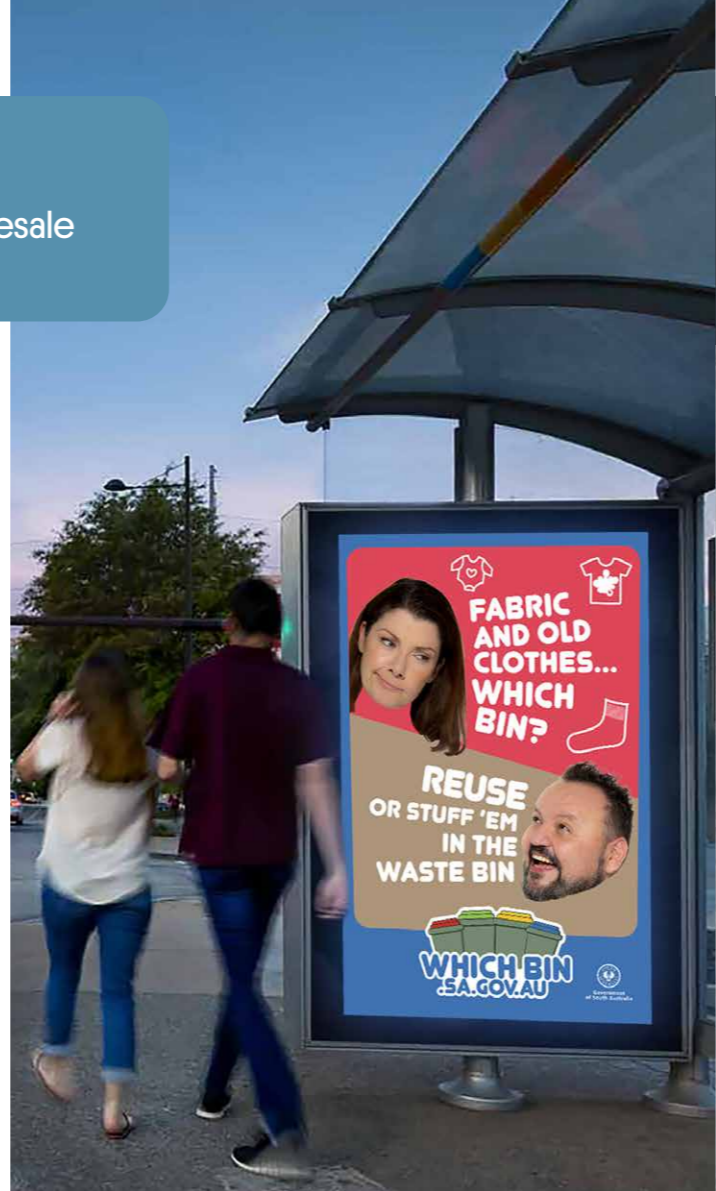
- Community behaviour
- Repair, reuse and resale
- Household waste diversion

Current actions

- **Community education** to change behaviour and attitudes towards recycling, waste and consumption, including the statewide, evidence-based *Which Bin* household education campaign
- **Funding the state-wide Wipe Out Waste education program**, which assists schools from pre-school to Year 12 to improve systems to reduce waste and recover resources in schools
- **Improving the diversion of waste and the recovery of resources from household kerbside collected bin systems** through standardisation and modernisation, with grants to encourage investment in technology and innovation

Future actions

- **Multi-unit dwellings and public place recycling** – using best international practice and knowledge and systems to encourage correct recycling
- **Repair cafes, charities** – addressing gaps in knowledge on the role of community-based organisations working in the area of product and material reuse



RECYCLING EDUCATION
The award-winning statewide *Which Bin* campaign is educating householders on correct recycling practices to reduce contamination in kerbside bins and improve the quality of recyclables collected for recycling.

REPAIR AND REUSE

Makerspace Adelaide is a skill sharing fabrication space using recycled materials and circular economy principles to teach the community about the process of design and production to avoid waste. More than just a teaching site, the Makerspace enables rapid prototyping for innovation and start-ups, with low-cost access to knowledge and equipment in 3D printing, welding, carpentry and textiles.



Our grandparents knew how to keep things in use as long as possible, but the modern fast fashion and electronics industries have led to major waste and pollution problems.

There are limits to the amount of human-made waste and pollution that the Earth can absorb. As well as reducing methane emissions from landfill, collecting and recycling materials can reduce greenhouse gas emissions and save energy and water.

To have a circular economy requires everyone to make thoughtful purchases, use reusable containers, repair items where possible, and recycle the right way.

1m tonnes of textiles are imported into Australia each year and 40kg per person are discarded to landfill or sent overseas. The average household in Australia wastes up to \$3,000 in uneaten food every year.

40% of food waste is contained in the average Adelaide household's landfill bin. The value of the food lost for the average household is equivalent to \$3000 per annum.

7 months is the average time that we keep wearing each new item of clothing we buy - and only 1% is ever recycled.

Strategic Priority 3

Circular resource recovery

Investing in state-of-the-art infrastructure to unlock the value of materials that would otherwise be sent to landfill or used to create energy

Keeping resources circulating through the economy to increase our resilience to supply chain disruptions, create local jobs and benefit our environment

Measuring our success

75% Municipal Solid Waste diversion
[South Australia Waste Strategy 2020-25]

90% Commercial and Industrial Waste diversion
[South Australia Waste Strategy 2020-25]

95% Construction and Demolition Waste diversion
[South Australia Waste Strategy 2020-25]

0% Zero waste to landfill by 2030
[South Australia Waste Strategy 2020-25]

↑ Collection and recycling systems for food, electronics, hazardous and other forms of household waste

SUSTAINABLE DEVELOPMENT GOALS



Focus areas

- Waste collection systems and services • Infrastructure and resource recovery
- Hazardous waste management • Disaster waste management

Current actions

- **Investing in collection and sorting infrastructure and systems** – state-of-the-art infrastructure to ensure the best possible approach towards managing our waste and resources
- **Investing in innovative processing infrastructure** – stopping resources such as plastics, paper, glass, tyres and organics from being sent to landfill, used to create energy, or shipped overseas for disposal
- **Hazardous waste collection** – providing South Australians with a responsible, safe and free depot and disposal service for unwanted chemicals
- **Light globe recycling** – the *Backlight* program enables South Australians to recycle all domestic light globes at no cost through Mitre10, Banner and True Value hardware stores
- **Disaster waste management plan** – Green Industries SA is the lead agency for the South Australian Government's Disaster Waste Management Plan, directing the clean-up response after catastrophic events such as the 2019-20 bushfires

Future actions

- **High-tech collection systems** – new technology for residential and mixed-use developments and innovative infrastructure for improved recycling
- **Solutions** for the recovery of emerging and problematic waste items
- **Expanded product stewardship schemes** for a broader range of items

RECYCLING COLLECTION AND PROCESSING
Northern Adelaide Waste Management Authority (NAWMA) operates resource recovery and recycling centres in Adelaide's northern suburbs and processes materials from metropolitan and regional councils.

DISASTER WASTE MANAGEMENT

Green Industries SA coordinated the \$18.885m clean-up of 547 bushfire affected properties [Summer 2019-20].

Wasted resources must be redirected to more beneficial uses if less waste is to go to landfill.

Effective systems are essential for collecting, transporting, sorting, consolidating, transferring and re-processing recyclable and recoverable resources.

Markets need to be developed for new products manufactured from recycled materials.

only 11% of food waste statewide is recovered from kerbside bin collections because so much is put into the landfill bins and not all commercial food services have organics collections.

only 11.5% of the 3.5 million tonnes of plastics consumed in Australia was recovered in 2018-19, and only a very small percentage of this ended up in new bottles.

8m tonnes of plastic end up in the ocean each year, creating pollution and harming wildlife. It is estimated that there will be more plastic than fish by weight in the ocean by 2050.

Strategic Priority 4

Circular sectors

Creating economic growth and job opportunities by enabling industries to procure sustainable products, improve resource efficiency and reduce their carbon footprint

Measuring our success

- 50%** Halve the amount of food and organic waste [business and household] generated [National Waste Policy Action Plan]
 - 50%** Halve the volume of food waste presented in household residual waste bins by 2025 [South Australia Food Waste Strategy 2020-2025]
 - 100%** All households in metropolitan Adelaide have access to organics collection systems by 2025 [South Australia Food Waste Strategy 2020-2025]
 - 100%** Zero food and organic waste lost from recycling or other higher value use by 2030
- ↓
Reduced construction and demolition waste generation using waste avoidance, recycled content and improved building and deconstruction processes

SUSTAINABLE DEVELOPMENT GOALS



Focus areas

- Food and organics • Built environment
- Textiles • Electronics • Growth State sectors

Current actions

Implementing South Australia's strategy to reduce and divert household and commercial food waste

- Weekly and public place organics collections in metropolitan Adelaide
- Improved waste management systems in high and medium density developments and segregated organics recycling systems in businesses
- Pilot projects, technological advances and system changes

Providing incentives for councils to introduce high performing household food waste recycling systems

The single, largest remaining area for improvement in council kerbside systems is food waste. GISA provides councils with financial incentives to introduce an effective food waste recycling service to residents.

Future actions

- **Built environment** – planning, prefabrication, deconstruction and reuse
- **Reducing textile waste** – through resale and reprocessing innovation
- South Australian government's sectors like: tourism, defence, space, health and medical, energy and mining and creative industries

CONSTRUCTION AND DEMOLITION

X-Frame is a structural framing system designed to meet circular economy requirements. It is being piloted in South Australia through Green Industries SA's commercialisation of innovation program which is delivered by Innovyz.

ORGANICS REPROCESSING

Peats Soils & Garden Supplies invests in specialised infrastructure to increase the quality and quantity of compost processed from kerbside collected food and gardens and other organic waste streams.



South Australia relies on its world leading industry sectors such as its clean and green food and wine, hi-tech industries and mining and renewable energy sectors.

There is a huge opportunity for 'first movers' to thrive in South Australia by shifting to more circular practices, including more sustainable procurement and increasing the sophistication of their waste management and resource recovery efforts.

Our food sector creates a great deal of waste, some of which ends up in landfill, where it generates methane, a greenhouse gas with 27 times the warming potential of carbon dioxide. Wasted food loses the energy, water, money and resources used to produce, process, store and transport food. Diverting food waste into higher value uses lowers landfill costs, supports local industry and jobs, and reduces greenhouse gas emissions.

Our building and construction industries are the largest waste generators. A circular built environment through materials reuse and better sorting and recycling provides massive economic, social and environmental benefits.

200^k tonnes of food waste end up in South Australia's landfills every year. If we divert it from landfill, we save 120,000 tonnes of greenhouse gas emissions.

contributes
\$367 is added to GSP for each tonne of organic material processed, thanks to the flow-on benefits of improved soil health and land productivity.

2.8^m tonnes of waste are generated by the construction and demolition sector in South Australia; of this, 2.52m tonnes are recovered.

Strategic Priority 5

Circular capacity

Capacity building through investment in training, education, innovation and R & D to nurture the next generation

Creating inspired and skilled practitioners to drive change and accelerate the transition to a circular economy

Measuring our success

- 1 A new circularity metric for South Australia and an increase use of digitisation, metrics and analytics to measure South Australia's transition to a circular economy
- ↑ Increased innovation and commercialisation of circular business products and services
- ↑ Increased investment in research and development to support the transition to a circular economy
- ↑ Increased number of students participating in circular economy programs in schools, Universities and community groups

SUSTAINABLE DEVELOPMENT GOALS



Focus areas

- Smart data gathering and metrics • Innovation and commercialisation • Investment and funding • Research and development • Education in schools and tertiary institutions

Current actions

- **Mapping systems and developing metrics** – releasing South Australia's Circular Economy Roadmap and developing measures of 'circularity'
- **Innovation and commercialisation grants** – commercialising early-stage innovations used at scale to address long-standing environmental problems with global climate change impacts.
- **Centre of Excellence** – collaborating with industry, universities and international partners through a new Centre to advance opportunities in the circular economy.
- **University support for research and scholarships** – partnering with universities to co-fund collaborative research projects
- **Professional Certificate in Circular Economy** – developing a new tertiary-level qualification in partnership with a South Australian university

Future actions

- **Optimising systems** through digital technologies e.g. Internet of Things, Industry 4.0 and AI
- **Funding** to individuals, community groups and businesses and industry associations.
- **Supporting the take-up of practical skills** for use by business, industry and public policy practitioners
- **Investing in research and development** to address issues of pressing global environmental significance in the circular economy



PARTNERSHIPS
Adelaide-based company ByGen is commercialising a new technology for the conversion of waste products into high-quality activated carbon, enabling agricultural producers to add significant value to wastes and by-products that currently have little or no value.

INTERNATIONAL ENGAGEMENT

The Global Leadership Program on the Circular Economy showcases South Australia's achievements in the areas of resource recovery, water management, climate change, smart cities, innovation and renewable energy.



The transformation to a circular economy requires an increase in our capacity to manage, process and live a sustainable life.

Education and training at the tertiary level are key to building capacity to service a circular economy; changing the behaviour and attitudes of communities and individuals is key to building a circular culture.

More sustainable practices need to be supported financially and greater networks need to be created to support the transformation.

A more circular economy could increase the number of full-time equivalent jobs in South Australia by 2030.

25,700 additional jobs generated in a more circular economy.

21,000 jobs from keeping materials in circulation.

4,700 jobs from efficient and renewable energy strategies.

Circular 360 - The Global Centre of Excellence in Circular Economy

Green Industries SA is establishing a Global Centre of Excellence in the Circular Economy in South Australia.

The Centre will be a partnership with not-for-profit organisation, Circular360 and the South Australian Government. Led by an international board to provide a collaborative platform for the fast transition to a circular economy. The circular economy is rapidly emerging as the leading regenerative economic model for sustainable and more profitable future growth.

The potential global benefit of a circular economy by 2050 is estimated by the United Nations at \$2 trillion per year.

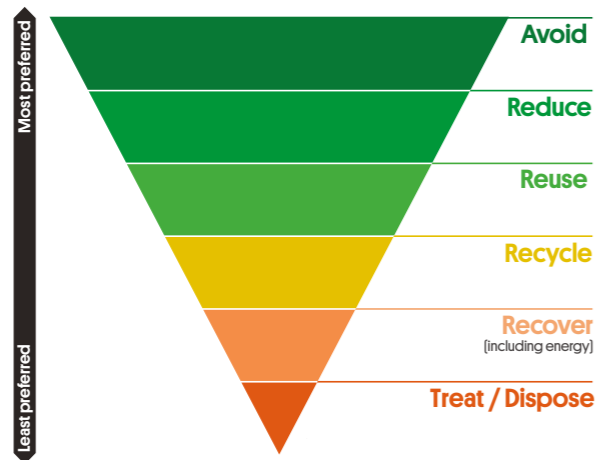
The transition to the circular economy is essential for addressing the United Nation's Sustainable Development Goals, which are aligned with Green Industries SA's five strategic priorities for 2021-2025.



The waste management hierarchy

The waste management hierarchy is a crucial tool used in Green Industries SA's strategic priorities and underpins decision making when it comes to avoiding waste and maximising economic value.

The hierarchy ranks waste management options according to what has the best outcome for the environment and delivers the most efficient use of resources.



REDESIGN

Biobag Australia's production plant at Netley in Adelaide produces certified 100% compostable plastic alternatives for a global market.

Delivery associates

Waste Management and Resource Recovery Association of Australia
www.wmrr.asn.au



Local Government Association of South Australia
www.lga.sa.gov.au



KESAB environmental solutions
www.kesab.asn.au



Innovyz
www.innovyz.com.au



Makerspace Adelaide
www.makerspaceadelaide.org



Circular 360
www.circular360.org



Knowledge base

For references and supporting material for this document and more publications from Green Industries SA scan this code or visit greenindustries.sa.gov.au



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