

# Benefits of a Circular Economy in South Australia

Summary



Government of South Australia  
Green Industries SA





**25,700**  
**jobs**

By 2030, a more Circular Economy could deliver major job creation benefits.

# Foreword

South Australia is a state in transition. We are moving from an 'old' to a 'new' economy, while at the same time seeking to protect the environment and quality of life we value.

Economic prosperity, furthering our State's 'clean and green' status, and creating a low-carbon economy, are all part of this transition to improve people's lives and bring about lasting change.

I am excited by the potential of a Circular Economy to support this process. The possible benefits set out in the report *Creating value, the potential benefits of a Circular Economy in South Australia* chart recent international moves in this direction, providing examples of South Australian firms setting the pace and forecasting gains that can be achieved by local job creation and reductions in greenhouse gas emissions.

The Circular Economy complements our State's 10 Economic Priorities – especially those relating to innovation, becoming the Knowledge State, unlocking the full value of our resources, forming global connections, and boosting our premium food and wine sector.

The Circular Economy can foster an environment in which local businesses thrive, and attract interstate and overseas investors.

Compelling evidence shows how the Circular Economy can create jobs and diversify industry. Overseas examples of the reuse of furniture, remanufacturing electrical goods and leasing products through service systems have the potential to work in our State as well.

Establishing a Circular Economy will not happen immediately. This report spells out the steps we can take right now to encourage understanding and build the partnerships required to set the process in train.

I commend this report to all those who are passionate about South Australia's future and want to see our State remain at the forefront of green innovation.



**Jay Weatherill MP**  
PREMIER

The report *Creating value, the potential benefits of a Circular Economy in South Australia* provides a compelling case for introducing a more Circular Economy in our State.

The Circular Economy concept refers to an improved economic system, keeping material resources in use, or 'circulating' for as long as possible.

This contrasts with the traditional linear economic system of 'take, make, use and dispose' that is inherently wasteful, resulting in environmental damage and overconsumption of the earth's finite resources.

Internationally, many countries are adopting Circular Economy principles to guide economic and environmental policies and practices, for example, Europe, the United Kingdom, Asia and India. The concept is largely untapped in Australia. Releasing this report reinforces South Australia's leadership in innovative practices and reforms in waste management, recycling and resource recovery.

Our recycling rate is a success story, as we currently divert more than 80 per cent of the waste we generate. Our resource recovery industry has an annual turnover of around \$1 billion, contributing to more than \$500 million to Gross State Product, and employing around 4,800 people.

While this puts South Australia in a good position to ensure resources circulate more, it does not mean that our economy is as circular as it could be. Reused or remanufactured products retain much more of the value created during manufacturing, than if these were only recycled.

The report will encourage serious thinking about a more Circular Economy – to achieve economic growth while producing no, or minimal, waste and pollution. I am confident we can realise the benefits of a Circular Economy for future generations through the stewardship of Green Industries SA and its partners and supporters.



**Ian Hunter MLC**  
MINISTER FOR SUSTAINABILITY,  
ENVIRONMENT AND CONSERVATION  
MINISTER FOR CLIMATE CHANGE



**27**<sup>%</sup>

Reduced greenhouse gases  
equivalent to 7.7m tonnes of CO<sub>2</sub>.

# About the report

Green Industries SA commissioned Lifecycles in a joint venture with EconSearch, Colby Industries and the University of Queensland to investigate the potential benefits of a Circular Economy in South Australia.

The report, *Creating Value, the Potential Benefits of a Circular Economy in South Australia* measures the possible impacts of a more Circular Economy in South Australia.

The report affirms South Australia's achievements in recycling and recovery of solid waste and its current focus on the development of a low carbon economy.

Employment opportunities associated with developing aspects of a more Circular Economy are highlighted.

It estimates the environmental and social impacts of a more Circular Economy by assessing 2030 greenhouse gas emissions and employment outcomes in South Australia.

The report uses well recognised macro-economic modeling using an environmentally-extended input-output model of the South Australian economy.

The model depicts the interdependencies between 78 sectors, showing how input from one sector may become an input to another.

Assumptions and modeling techniques were reviewed by an international panel of Circular Economy experts.

To assess material flows and energy use in South Australia the Circular Economy is regarded as consisting of two elements – 'material efficiency' and 'renewable and energy efficiency'.

To quantify the greenhouse gas emissions and employment impacts of moving to a more Circular Economy assumptions are made relating to 'material efficiency' and 'renewable and energy efficiency' aspects.

These assumptions involve how long materials stay in use in South Australia, energy efficiency levels and the replacement of fossil fuel by renewable energy. For interpretation, results are referenced to a 'Business as Usual' scenario which assumes current state growth projections to 2030.

*Creating Value, the Potential Benefits of a Circular Economy in South Australia* is available at [www.greenindustries.sa.gov.au/circular-economy](http://www.greenindustries.sa.gov.au/circular-economy)

## The transition to a Circular Economy



\*Denmark, Scotland, Taiwan, Northern France, Wallonia (Belgium), Catalonia (Spain), London (UK), Haarlemmermeer (Netherlands) and Phoenix (USA) are all working together in the Ellen MacArthur Foundation's CE100 governments and cities program to accelerate the transition towards a Circular Economy.

# What is the Circular Economy?

A Circular Economy is an alternative to the wasteful traditional 'linear' economy based on 'take, make, use and dispose'. It is a self-sustaining system driven by renewable energy and an imperative to keep material resources in use, or 'circulating' for as long as possible.

It extracts the maximum value from these resources while in use, then recovers and regenerates products and materials.

A truly Circular Economy is driven by renewable flows, rather than finite stocks. It depends on renewable energy sources, including wind, solar and bioenergy, rather than coal and other fossil fuels and materials from renewable sources.

Economic growth is a fundamental objective - while producing no or minimal waste and pollution, by design or intention.

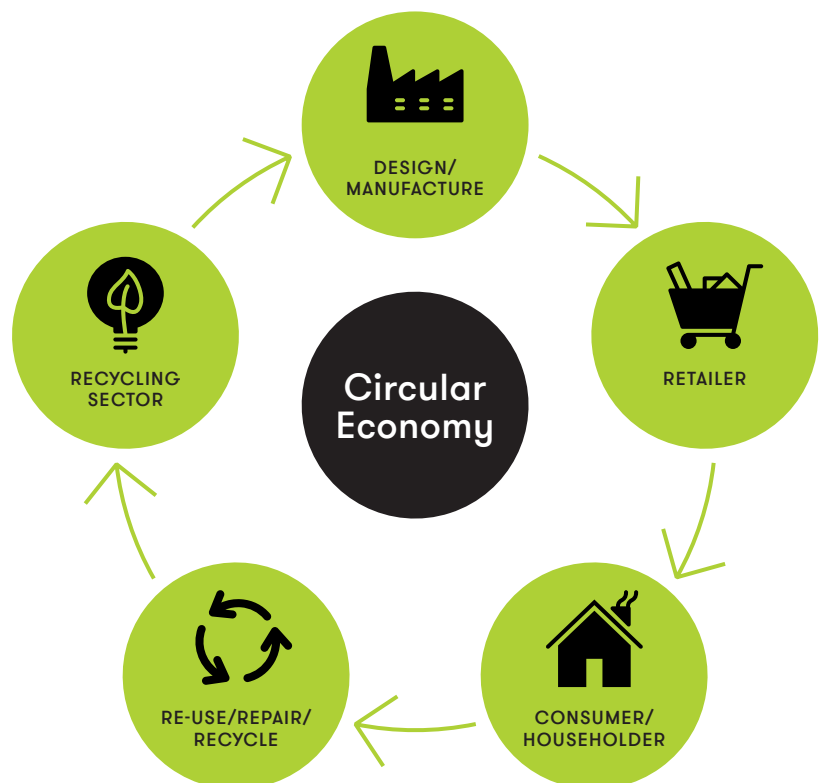
In a Circular Economy there are two types of material flows:

- Organic material, designed to re-enter and regenerate the environment safely, for example, as compost
- Materials, such as metals, paper and plastic, which are designed to circulate for as long as possible through repair and reuse, without entering the environment for disposal.

The report, *Creating Value, the Potential Benefits of a Circular Economy in South Australia* estimates economic and environmental impacts of a more Circular Economy by assessing 2030 greenhouse gas emissions and employment outcomes in South Australia.

Recent overseas studies report similar findings to that estimated in the report. Wales, Scotland, the World Economic Forum, and the work of the European Commission confirm the opportunity that the Circular Economy provides.

Major global businesses such as Google, Unilever, Nike, Cisco and Renault are investing heavily in the Circular Economy, with the capacity to influence supply chains worldwide.



# Benefits for South Australia

By 2030, compared to a 'business as usual' scenario, a more Circular Economy could deliver significant job creation and greenhouse gas reduction benefits.

Many types of Circular Economy jobs already exist, especially in South Australia which has well-developed recycling and waste management sectors and is investing in renewable energy.



## CREATE AN ADDITIONAL 25,700 FULL TIME EQUIVALENT JOBS

- 21,000 jobs by actioning material efficiency gains
- 4,700 jobs by actioning efficient and renewable energy gains



## REDUCE SOUTH AUSTRALIA'S GREENHOUSE GAS (GHG) EMISSIONS BY 27% OR 7.7 MILLION TONNES OF CO2 EQUIVALENT

- 21% GHG reduction by actioning efficient and renewable energy gains
- 6% GHG reduction by actioning material efficiency gains

Many of these jobs are in traditional waste management and resource recovery areas such as waste collection, recovery and recycling, reuse (repair, sales of second-hand goods) and sharing (rental and leasing) activities.

By keeping products, components and materials at their maximum utility and value this means:



**DESIGNING - OR IMPORTING - 'SMART' PRODUCTS THAT LAST LONGER AND CAN BE REUSED MANY TIMES**



**SHARING THINGS MORE AND MAKING REPAIR THE NORM**



**RECYCLING MATERIALS EFFECTIVELY AND CONVERTING SOME WASTE MATERIALS INTO BIOFUELS**



**DISPLACING FOSSIL FUELS AND DERIVED PRODUCTS WITH BIO-BASED MATERIALS**

Entrepreneurs and innovation in reverse logistics, services and digital technologies will be needed to facilitate these changes.

Most of the jobs created in the Circular Economy come from service sectors in the areas of design and technology. There are also jobs to repair and maintain goods so that these stay in circulation for longer. In some sectors, such as construction, there is some displacement of jobs from creating new products and materials (in this case buildings and other structures) to maintenance and building refurbishment.



# 80% +

South Australia's recycling rate of more than 80% places the State in a good position to ensure that its resources circulate more. However, there are opportunities to make the current economic model more circular.



# Progress in South Australia

Products that are reused or remanufactured retain much more of the value created during manufacturing, than if these were only recycled. This value, if realised, has the potential to stimulate economic development.

There are existing business activities in South Australia with elements of the Circular Economy:

## sundrop

### SUNDROP

The Sundrop System uses a combination of proven technologies to grow high-value crops using seawater and sunlight. The system allows Sundrop to produce more from less; growing profits while breaking farming's worsening dependency on freshwater, farmland and fossil fuels. The 20 hectares of greenhouses at Port Augusta will produce 15,000 tonnes of prime truss tomatoes worth tens of millions of dollars a year. The hydroponic operation is located on degraded land not usually considered suitable for agriculture, and is powered by more than 23,000 mirrors focusing the sun's energy at the top of a 115m tower. The system saves around 16,000 tonnes CO<sub>2-eq</sub>, 450,000m<sup>3</sup> of fresh water and has created more than 150 jobs in a new high tech industry.

## SHARE N SAVE

### SHARE N SAVE

The collaborative – or sharing – economy can facilitate more sustainable resource use through swapping and exchanging things that are surplus or no longer wanted by their owners, and by the lending and sharing of resources. Created by Green Industries SA in 2013, Share N Save is a crowdsourced, online interactive map that shows where sharing and collaborative activities are taking place across South Australia. The mapping software itself is shared as well, released as an open source platform so users can download, modify, update and improve the software. Over 200 groups, activities and events are listed, and categorised according to whether they are about sharing and swapping, doing things together or borrowing, including food swaps, community gardens, bike and car sharing, toy and tool lending libraries and more. In 2017, a feature enabling individuals to list 'haves' and 'wants' was introduced, allowing individuals to connect to each other, empowering one-to-one connections to share and swap materials and skills.

## peats

SOIL & GARDEN SUPPLIES

### PEATS SOILS & GARDEN SUPPLIES

Peats Soils & Garden Supplies uses waste organic material to produce high quality compost products. They developed their own proprietary process to manufacture Blend 437, a finely-screened humus – the most stable and long-lasting form of organic matter. It has been field demonstrated to improve crop yield and quality for viticulture, broad-acre and horticulture. Blend 437 has been further re-manufactured into PEATS TAILORMADE™ Prill, a more advanced product in flowable form to allow easy application by farmers through air-seeder equipment during crop sowing. Peats is also upgrading one of their depots to extract additional value from waste organic material, through anaerobic digestion. This generates bioenergy to supply electricity to plant used at the depot, and manufacturing biodiesel to replace fossil fuel use in machinery and trucks.



The award winning Zero Waste Lifeline artwork, located in the Range Wetlands, Adelaide, South Australia.

The circular forms represent the closed loop systems of nature where everything is reused and there is no waste.



# About Green Industries SA

Green Industries SA helps develop the green economy, promote the more efficient use of resources, and the conservation and recovery of scarce resources.

Its activities are guided by the primary objectives of the *Green Industries SA Act 2004*:

- To promote waste management practices that, as far as possible, eliminate waste or its consignment to landfill; and
- To promote innovation and business activity in the waste management, resource recovery and green industry sectors, recognising that these areas present a valuable opportunity to contribute to the State's economic growth.

Reflecting international developments, and realising the economic benefits of the Circular Economy is a major focus for the agency.

Green Industries SA is undertaking detailed investigations, advocating for increased understanding and encouraging support for the Circular Economy in South Australia.

The Circular Economy will be a focal point for collaborative research and work undertaken to identify where the new jobs and business models are in South Australia.

Green Industries SA will act as a catalyst to stimulate investment in these new industries.

It is also identifying key sectors, materials and regions which would benefit from the Circular Economy.

Complementing this focus on the Circular Economy is the assistance provided to organisations wanting to learn more about resource efficiency and industrial symbiosis where one organisation's waste is a useful and valuable input to another organisation.



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[www.greenindustries.sa.gov.au](http://www.greenindustries.sa.gov.au)

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