



SOUTH AUSTRALIA'S CIRCULAR ECONOMY CAPABILITY



Government of South Australia
Green Industries SA



South Australia – a leader in the Circular Economy

South Australia is known for its leadership in waste management, recycling and resource recovery and the circular economy. Increasingly, it is being recognised internationally for its innovative practices and legislative reform through its container deposit legislation in place since 1977, ban on checkout-style plastic bags introduced in 2009 and landfill bans.

A UN HABITAT report, *Solid Waste Management in the World's Cities* lauds aspects of South Australia's waste and resource management as global best practice. This status is a legacy of the strategic and collaborative approach to waste management reform taken by the South Australian Government, through Green Industries SA and the waste industry, particularly in resource recovery.

The South Australian Government's policy on minimising waste to landfill and its management of landfill sites has been a key factor in reaching its recycling and resources recovery targets. South Australians currently divert about 54% of household waste, over 87% of commercial and industrial waste and 90% of construction and demolition waste.

In 2016-17, 83.4% (4.4 million tonnes) of material was diverted from landfill in South Australia. The State's per capita recycling rate was at some 2,555 kilograms per person per year. Both are the best in the country.

These recycling efforts prevent the equivalent of about 1.25 million tonnes of carbon dioxide entering the atmosphere. This equates to taking approximately 288,500 passenger cars off the road. The total 'direct' market value of resource recovered materials for South Australia in 2016-17 was \$320 million, or \$85 per tonne of resource recovered on average. Metals, organics, and paper and cardboard waste materials were the major contributors to this resource market value.

“Waste management in South Australia has progressed apace and now provides a platform for South Australian industry to take advantage of its intellectual property through export opportunities. The Green Industry Fund, incentives and regulation have assisted in gaining this recognition.”

Vaughan Levitzke, Chief Executive Green Industries SA

南澳州 — 循环经济的领导者

南澳州在垃圾管理、资源回收再利用以及循环经济方面的领导力闻名遐迩。国际社会越来越认可南澳州在这方面做出的创新实践和法律改革，如1977年生效的容器押金法、2009年实施的禁止结账时提供免费塑料袋和垃圾填埋场禁令。

一项联合国人居署报告——《世界各大城市固体废物管理》——赞誉南澳州的垃圾和资源管理领先全球。这一地位源自于南澳州政府通过南澳州政府绿色产业局和垃圾行业（尤其是资源回收再利用领域）实施的垃圾管理改革战略性和合作性措施。

南澳州政府减少运送垃圾至垃圾填埋场的政策以及对于垃圾填埋地点的管理是实现循环使用和资源回收再利用目标的关键因素。南澳州目前能够分流54%的家庭生活垃圾、87%以上的商业和工业垃圾和90%的建筑和拆除垃圾。

在2016-2017年，南澳州83.4%的垃圾（4.4 百万吨）从垃圾填埋场分流出来。州人均资源回收再利用率约为每人每年2,555公斤，居全国之首。

这些资源回收再利用措施防止了相当于1.25 百万吨二氧化碳进入大气层。相当于防止了约288,500辆乘用车上路。南澳州在2016-2017年资源回收再利用材料的“直接”市场价值总计为 3.2亿澳元，平均每吨回收再利用资源的市场价值为85澳元。金属、有机物以及纸和硬纸板垃圾材料是这一资源回收再利用市场价值的主要构成部分。

“南澳州的垃圾管理飞速发展，目前已为南澳州工业创造了一个通过出口机会利用自身知识产权的平台。绿色产业基金、各种激励政策和法律法规均有助于取得这些成绩。”

Vaughan Levitzke, Chief Executive 行政长官

Green Industries SA 南澳州政府绿色产业局



“South Australia is a global leader in the green and circular economies. Success in container deposit legislation, the plastic bag ban, high-performing kerbside systems, collection of hazardous waste, capture and reuse of stormwater, wastewater reuse, renewable energy and investment in resource recovery infrastructure are all elements contributing to our leadership.”

As we work to remain a leader in these areas, we are equally keen to export our knowledge and experiences nationally and internationally.

In June 2018, I welcomed international leaders from the government, industry and not for profit sectors to our pilot Global Leadership Program on the Circular Economy, developed in partnership with the United Nations Centre for Regional Development.

Realising the benefits of reuse and remanufacturing to achieve the greatest value from waste is especially important for achieving our target to meet the United Nations' Sustainable Development Goals and addressing the most pressing challenges facing nations today – rapid urbanisation, resource scarcity and poverty.

In South Australia, we are uniquely positioned to demonstrate the circular economy principles being implemented in the areas of waste management, water management, climate change, smart cities, innovation and renewable energy.

This can be seen through our world-class reforms and incentive programs to improve and increase the value of waste and in turn generate economic activity. I am committed to maintaining and growing South Australia's leadership in these sectors.

We are helping businesses to implement sustainable resource efficiency measures and increase their productivity; we are funding innovations which will create new jobs in the waste and recycling sector for solutions to growing problematic new waste streams; and we are undertaking leading-edge work in the areas of disaster waste management, circular economy leadership education and waste infrastructure planning for the next 30 years.

These strategies will help keep South Australia at the forefront of green innovation and the circular economy, while growing these sector's contribution to the State's economy, and South Australia is excited to share its knowledge and experience.”

David Speirs MP Minister for Environment and Water

“南澳大利亚州是绿色和循环经济的全球领导者。各项成功举措促成了我们的领先地位如：容器押金法，禁用塑料袋，高性能居民垃圾收集系统，危险垃圾回收，雨水收集和再利用，废水再利用，可再生能源以及对资源回收再利用设施的投资。

我们在保持在这些领域的领导地位的同时，也热衷于在国内和国际传授我们的知识和经验。

2018年6月，我接待了来自政府、业界和非营利部门的国际领导人参加我们与联合国区域发展中心合作开发的循环经济全球领导力试点项目。

再利用和再制造，从废品中获得最大价值的利益——意识到这一理念对于我们实现联合国可持续发展目标和解决当今国家面临的最紧迫挑战——快速城市化、资源稀缺和贫困——尤其重要。

在南澳大利亚州，我们具有独特的优势，能够展示在垃圾管理、水处理、气候变化、智慧城市、创新和可再生能源等等领域贯彻实施循环经济原则。

我们通过世界级的改革和激励计划改善并增加垃圾的价值，从而产生经济活力。我会全力以赴保持和发展南澳大利亚州在这些领域的领导地位。

我们帮助企业实施可持续资源高效措施以提高其生产力；我们为企业创新提供资助，这将在垃圾和回收再利用行业创造新的就业机会，同时解决日益严重的新垃圾种类带来的问题；我们正在开展灾害垃圾管理、循环经济

领导教育和未来30年垃圾管理基础设施规划领域的前沿工作。

这些战略将有助于保持南澳大利亚州位于绿色创新和循环经济的最前沿，同时增加这些行业对州经济的贡献，南澳大利亚州很高兴分享自己的知识和经验。”

David Speirs MP Minister for Environment and Water

环境与水资源部长

In May 2017 the South Australian Government's Environment Portfolio agencies co-signed a Memorandum of Understanding with the Shandong Province Department of Environment Protection to provide a framework for communication and cooperation in environmental and resource management matters. The South Australian Government's Environment Portfolio agencies include Green Industries SA, the Department of Environment and Water and the Environment Protection Authority.

2017年5月，南澳大利亚州政府环境机构与山东省环境保护厅共同签署了谅解备忘录，为环境和资源管理事宜提供了沟通与合作的框架。南澳大利亚州政府的环境机构包括南澳州政府绿色产业局，环境与水资源部和环境保护局。

South Australia's waste strategy

South Australia's *Waste Strategy 2015-2020* is the government's tool for reforming waste management. It has three key targets to divert waste from landfill by 2020:

- Diverting 70% of household waste (metropolitan) – including organic waste
- Diverting 80% of commercial and industrial waste
- Diverting 90% of construction and demolition waste

Green Industries SA has adopted a strategic approach towards waste management by working with industry, local and state governments and community. The agency has rolled-out many programs which ensure recycling and resource efficiency remain a priority. South Australia's waste strategies, first introduced in 2005 and developed every five years, has been the catalyst for implementing wide-ranging waste reforms such as:

- Australia's first ban on checkout-style plastic bags
- Australia's most comprehensive pilot of household food scrap recycling
- the Zero Waste SA Centre for Sustainable Design and Behaviour, a partnership with the University of South Australia for world-leading research into consumption and disposal behaviours, waste generation, and market development and design

- waste planning and infrastructure improvements
- new recycling ventures for organics, electronic waste, construction and demolition material, waste to energy, recycling services to industry and plastics recycling
- improved quality of recyclable material by reducing contamination and introducing high performing collection systems
- the *Environment Protection (Waste to Resources) Policy* under the Environment Protection Authority that bans a range of materials including e-waste and whitegoods from disposal to landfill
- Australia's first disaster waste management plan and guidelines.

南澳州的垃圾管理战略

南澳州《2015-2020年垃圾管理战略》是政府改革垃圾管理的工具。到2020年为止，南澳州对从填埋场分流垃圾方面有三个主要目标：

- 分流70%的生活垃圾（市区）-包括有机垃圾
- 分流80%的商业和产业垃圾
- 分流90%的建筑和拆除垃圾

南澳州政府绿色产业局通过与工业、地方和州政府以及社区合作来对垃圾进行战略性的管理。该部门已经展开许多项目以确保回收再利用和资源有效利用的优先权。南澳州2005年推出第一项垃圾策略—后每五年制定新策略—这成为实施广泛垃圾改革的催化剂，其中包括：

- 澳大利亚第一个禁止结账时提供塑料袋的禁令
- 澳大利亚最全面的家庭食物残渣回收试点
- Zero Waste SA 可持续性发展设计和行为研究中心，是与南澳州大学的合作，研究处于世界领先水平的消费和垃圾处置行为、垃圾生成以及市场开发和设计
- 垃圾规划和基础设施改善
- 新型回收再利用企业，经营有机物、电子垃圾、建筑和拆除材料、垃圾发电、回收再利用服务行业和塑料回收再利用
- 通过减少污染和引进高性能收集系统提高回收材料的质量

- 环境保护局的《环境保护（变废为宝）政策》禁止一系列材料包括电子废物和家电在垃圾场填埋
- 澳大利亚第一个灾难垃圾管理计划和指导细则。



Key capabilities

- Collection services for putrescible wastes
- Commercial composting
- Commercial and industrial waste recycling and resource recovery
- Consulting advice on site remediation and organics management
- Consulting and training in the development and implementation of domestic waste management collection systems and procedures and education
- Design and development of integrated resource recovery centres (waste transfer stations)
- Development and supply of new technology waste handling equipment
- Disaster waste management
- Education campaign design, delivery and evaluation
- Electronic waste recycling
- Expertise and training in waste management supply chain and logistics
- Expert advice on land use and development proposals
- Innovative legislative policies e.g. container deposit legislation, plastic bag ban, landfill bans
- Market research surveys and behavior analysis and measurement

- Processing of waste into alternative fuels
- Research, development and commercialisation of innovative waste and circular economy technologies and systems
- Soil, waste and water remediation technologies
- Specialist waste needs including liquid waste and treatment facilities
- Technical consulting
- Waste, energy and water auditing
- Waste infrastructure planning
- Zero waste strategies

Consultants and contractors

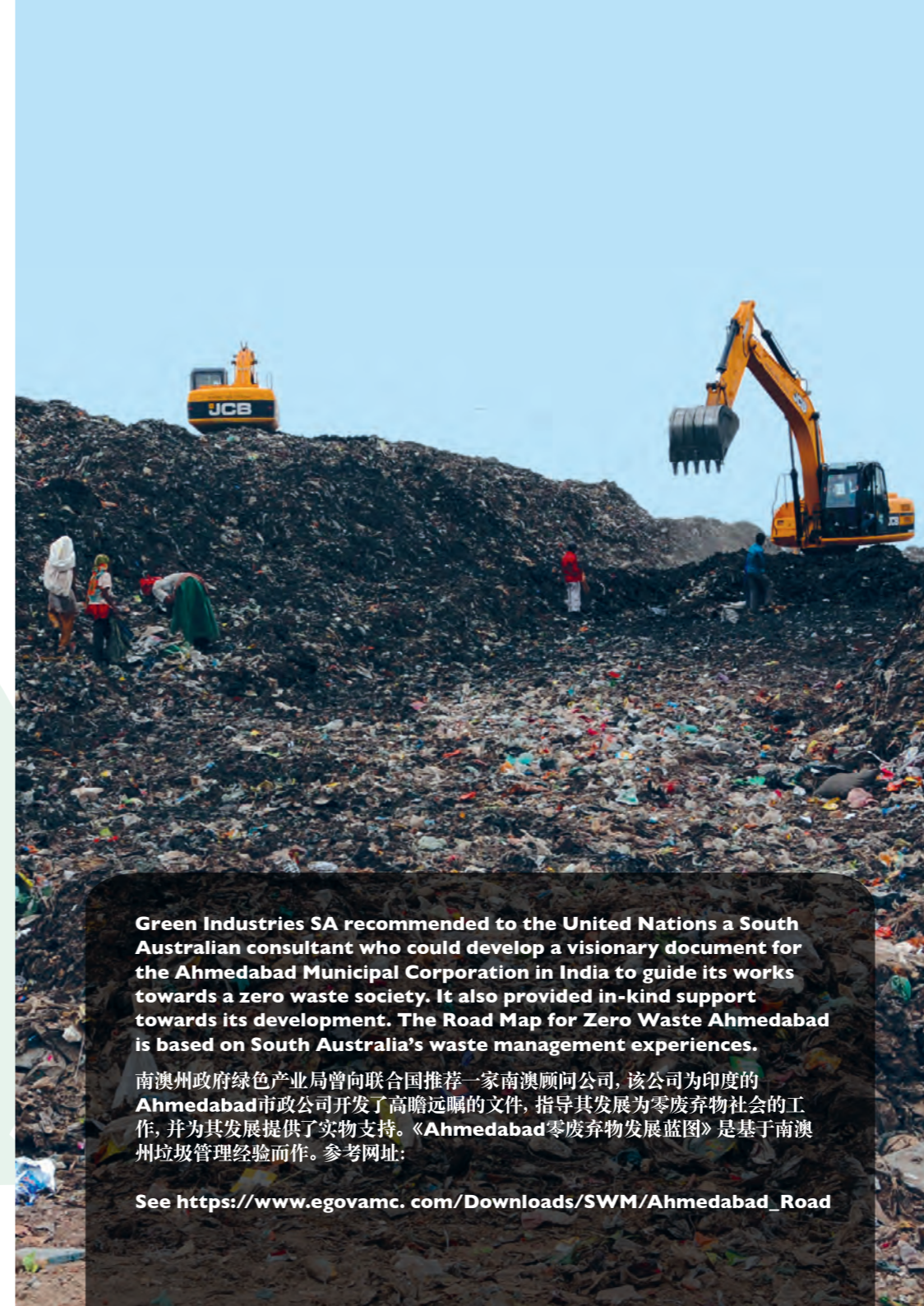
Green Industries SA has detailed knowledge of consultants and contractors providing professional services in waste management strategies, energy and water savings, circular economy and sustainability.

主要能力

- 易腐烂垃圾的收集服务
- 有机垃圾商业堆肥处理
- 商业和工业垃圾回收再利用
- 污染场地修复和有机物管理的咨询服务
- 对于居民生活垃圾管理收集系统、步骤以及教育的开发并提供咨询和培训
- 综合资源恢复中心(垃圾转运站)的设计和开发
- 新技术垃圾处理设备的开发和供应
- 灾难垃圾管理
- 教育宣传活动的设计、开展以及评估
- 电子垃圾回收再利用
- 垃圾管理供应链和物流的专业技术和培训
- 土地使用和发展方案的专业建议
- 创新立法政策, 如: 容器押金法、塑料袋禁令、垃圾填埋禁令
- 市场调研、行为分析和考量
- 垃圾处理为可替代性燃料
- 垃圾创新和循环经济技术和系统的研发和商业化
- 土壤、垃圾和水的修复技术
- 专业性垃圾管理需求, 包括液体垃圾和处理设施
- 技术咨询

顾问和承包商

南澳州政府绿色产业局熟知能提供垃圾减废策略、节能、节水以及资源共生和可持续性专业服务的顾问和承包商。



Green Industries SA recommended to the United Nations a South Australian consultant who could develop a visionary document for the Ahmedabad Municipal Corporation in India to guide its works towards a zero waste society. It also provided in-kind support towards its development. The Road Map for Zero Waste Ahmedabad is based on South Australia's waste management experiences.

南澳州政府绿色产业局曾向联合国推荐一家南澳顾问公司, 该公司为印度的 Ahmedabad 市政公司开发了高瞻远瞩的文件, 指导其发展为零废弃物社会的工作, 并为其发展提供了实物支持。《Ahmedabad 零废弃物发展蓝图》是基于南澳州垃圾管理经验而作。参考网址:

See https://www.egovamc.com/Downloads/SWM/Ahmedabad_Road



Industry overview

South Australia supports local companies reprocessing paper, metal, glass, plastics, concrete, asphalt, timber, electronic waste and garden organics.

In Adelaide, South Australia's capital city, the resource recovery industry has the advantage of being close to waste stream sources and markets for recycled materials, and is buffered from residential areas.

The industry is concentrated in Adelaide's northern suburbs near Port Adelaide. The Wingfield Waste and Recycling Centre includes a cluster of resource recovery businesses including Adelaide Resource Recovery, Orora, Jeffries Group and Transpacific Industries. Also conveniently located in the precinct is a waste education centre for school and community groups operated by KESAB *environmental solutions*, a non-government organisation.

Major facilities in Adelaide's south include Peats Soils and Garden Supplies. One of the state's largest waste management facilities, capable of processing more than 50,000 tonnes of waste a year with more than 75% recycled, operates a joint venture between Integrated Waste Services and the Southern Region Waste Resource Authority.

South Australia's reprocessors treat most recycled material locally (87% or 3.84 million tonnes) while 6% (286,000 tonnes) is treated interstate and 6% (274,000 tonnes) is shipped overseas.

工业概况

南澳州支持50多家地方公司回收再加工废纸、金属、玻璃、塑料、混凝土、沥青、木材、电子垃圾和园林有机物。

在南澳州首府阿德莱德，资源回收工业距离垃圾流源和回收再利用物料市场非常近，极有优势，并且与居民区有缓冲隔离地带。

工业集中于阿德莱德北部靠近阿德莱德港的郊区。Wingfield垃圾和回收再利用中心包括一个资源回收再利用企业集群，Adelaide Resource Recovery, Orora, Jeffries Group和Transpacific Industries均坐落于此。同时该区还有一个由KESAB（非政府组织）运作的交通便利的废品回收再利用教育中心，为学校和社区团体提供教育服务。

阿德莱德南部的主要垃圾处理设施包括Peats Soils and Garden Supplies公司。南澳州最大的垃圾管理设施之一是由Integrated Waste Services公司和Southern Region Waste Resource Authority合资运营，该设施每年能够加工处理5万吨的垃圾，其中75%以上为回收再利用。

南澳州的加工处理商大多在本地处理回收物料（87%或384万吨），6%（286,000吨）在其他州处理，还有6%（274,000吨）运往海外处理。

Companies with a global or national presence

Cleanaway South Australian facilities include: A resource recovery and waste transfer station at Wingfield; landfill at Inkerman, north of Adelaide; a liquid treatment plant at Wingfield; regional operations supporting the Riverland, Iron Triangle (Whyalla, Port Augusta and Port Pirie), South East and Barossa Valley regions. Cleanaway is the national partner of Paintback™.

CMA EcoCycle Operates a facility in Wingfield in Adelaide's north and is a specialist recycler of mercury containing wastes such as fluorescent tubes and dental amalgam. A recycler of X-ray film, batteries and some e-waste.

Hydro-pac A division of Torque Industries and with it's head office in Adelaide, it specialises in the manufacture of waste and recycling machinery.

LMS ENERGY Pty Ltd Leaders in renewable energy and carbon abatement, offering a complete in-house service from landfill gas extraction to electricity production.

MASTEC Australia Pty Ltd A leading local manufacturer of products including 80, 120, 140, 240 and 360 litre Mobile Garbage Bins, 660 and 1100 litre bins, compact kitchen organics bins and suppliers of compostable bags.

Orora Operates four plants in South Australia that manufacture packaging products such as glass bottles, caps, cardboard boxes and specialised cartons. Orora operates a recycling facility for paper, cardboard and plastics at Wingfield in Adelaide's north.

Sims Metal Management Has three locations in South Australia: Gillman, Roseworthy and Lonsdale where various metals are purchased from Government organisations, demolition companies, waste and recycling companies, industries and the public.

SUEZ Recycling and Recovery With joint venture partner ResourceCo, operates the SUEZ-ResourceCo Alternative Fuel facility. The plant produces fuel from construction and demolition waste which is used by Adelaide Brighton Cement as an alternative for fossil fuel in its cement kilns. SUEZ Australia also operates a Resource Recovery Centre and a medical waste treatment facility.

Toxfree Australia Operates three facilities in South Australia, providing services for hazardous waste collection and disposal, waste hydrocarbon collection and disposal, resource recovery, fluorescent tube and globe recycling, e-waste recycling, laboratory relocations and decontamination and site remediation.

Tyrecycle Australia's leading tyre recycler with a national network of collection and processing capabilities. Tyrecycle is part of the integrated resource recovery group, ResourceCo.

Veolia Environmental Services In South Australia Veolia operates 12 sites providing domestic, medical, hazardous, liquid and industrial waste collections services.

Visy Operates three material recovery facilities at Elizabeth, Wingfield and North Plympton in Adelaide. It processes about 145,000 tonnes of co-mingled material each year from these facilities.

跨国公司或国内集团公司

Cleanaway公司

在南澳州的设施包括：一个位于Wingfield的资源回收和垃圾中转站；位于阿德莱德以北的Inkerman垃圾填埋场；位于Wingfield的液体垃圾处理厂；地方上的运作对Riverland地区，铁三角地区(Whyalla, Port Augusta and Port Pirie)口东南地区和巴罗萨谷地区提供服务。Cleanaway 是Paintback™(澳大利亚油漆制造业开发的废油漆回收计划)的国家合作伙伴。

CMA EcoCycle公司

在阿德莱德北部的Wingfield经营一家废品厂，专门回收含汞废物，如荧光灯管和牙科用汞合金，也回收X光胶卷、废电池和一些电子垃圾。

Hydro-pac公司

是Torque工业集团的下属部门，总部位于Adelaide，专业制造垃圾回收再利用的机械设备。

LMS能源公司

再生能源和碳减排的领导者，提供一套完整的从提取垃圾填埋气体到生产电力的内部服务。

MASTEC澳洲公司

国内领先的本地制造商，产品包括80、120、140、240和360升移动垃圾桶，660、1100升垃圾箱，小型厨房有机垃圾桶和堆肥袋供应商。

Orora公司

在南澳州运营四家工厂，生产包装产品如玻璃瓶、瓶盖、纸箱和专用纸箱。Orora在阿德莱德北部的Wingfield设有回收再利用工厂来处理废纸张、纸板和塑料。

Sims金属处理公司

在南澳州有三家工厂位于Gillman, Roseworthy和Lonsdale，从地方和州政府部门、拆迁公司、废品回收公司、各行业部门以及公众回收各类金属。

SUEZ资源回收再利用公司

与合作伙伴ResourceCo一起运营SUEZ-ResourceCo可替代性燃料厂。这家工厂从商业、工业、建筑及拆除垃圾中生产可替代性燃料以提供给阿德莱德Brighton水泥厂的水泥窑使用。SUEZ澳洲公司还经营一家资源回收再利用中心和一家医疗垃圾处理中心。

Toxfree澳洲公司

在南澳州运营三家工厂，从事有害垃圾的收集和处理、废物烃的收集和处理、资源回收、日光灯管和灯泡的回收、电子垃圾回收、实验室搬迁和去污以及污染场地修复服务。

Tyrecycle公司

澳大利亚轮胎回收再利用的领导者，其回收再加工处理点遍布全国。Tyrecycle是ResourceCo综合资源回收再利用集团的下属公司。

Veolia环境服务公司

在南澳州运营12个站点，提供家用、医用、有害垃圾、液体垃圾和工业垃圾的回收服务。

Visy公司

在阿德莱德运作三家材料回收厂，分别位于Elizabeth, Wingfield和North Plympton。每年处理14.5万吨的混合垃圾。

Construction and demolition waste

South Australia's industry for recovering and recycling construction and demolition material is particularly well developed with over 90% diverted from landfill. Construction and demolition material includes soil, bricks, bitumen, steel, processed timbers, plaster boards, plastic and general builders' waste.

ResourceCo South Australia's largest specialist processor of construction and demolition, and commercial and industrial waste. It recovers and processes over two million tonnes of mixed construction and demolition waste materials per annum, producing recycled concrete/aggregates/asphalt products for use in construction and road base, and grinds combustible materials for use as an alternative fuel to fossil fuels.

ResourceCo Concrete provides concretes produced from recycled aggregates, a high quality alternative to standard concrete with a carbon footprint reduction of up to 65% to a quarried alternative. The concrete product has no compromise to the compressive and splitting tensile strengths from the use of sustainable aggregate and sand in the supply and manufacture of concrete. Green Industries SA has provided grants to support trials for using recycled asphalt back into new asphalt roads.

Adelaide Resource Recovery The company recycles materials such as bitumen, concrete and mixed construction and demolition waste. After a resource recovery process, Adelaide Resource Recovery (ARR) sells recycled rubble, aggregates

and a range of graded sands to building and engineering operations throughout South Australia. ARR's most popular product, Recycled Rubble, is used by construction companies ranging from builders who want to lay foundations for buildings, to major civil engineering projects that require well-compacted bases for new roads and bridges.

ARR has supplied recycled quarry materials on road redevelopments throughout Adelaide's road network, as well as on specific projects such as the O-Bahn busway extension and the Brickworks Marketplace development. ARR produces in excess of 300,000t of recycled quarry materials resulting in the diversion of an equivalent amount of concrete and brick from landfill. ARR material is a direct replacement for virgin quarry materials.

建筑和拆除垃圾

南澳州建筑和拆除材料的回收再利用行业发展良好，其中90%来自从填埋场分流出的垃圾。建筑和拆除材料包括土、砖、沥青、钢材、加工的木材、石膏板、塑料和常用建筑垃圾。

ResourceCo公司是南澳州最大的专业处理建筑、拆建垃圾和商业、工业垃圾的公司。它每年回收处理超过两百万吨的混合拆建废料，生产再生混凝土/骨料/沥青产品用于建筑和修建道路基础，并加工可燃性材料用来替代化石燃料。

ResourceCo水泥厂以回收骨料为原料生产混凝土，其高质量的产品可替代标准混凝土，比采石场生产减少碳排放65%。其混凝土产品并没有因为在生产过程中使用再生骨料和沙子而降低压缩和拉伸强度。南澳州政府绿色产业局曾对其提供拨款支持尝试使用回收沥青用于新的沥青公路。

Adelaide资源回收公司回收的材料包括沥青、混凝土和混合建筑和拆除废料。回收处理后，ARR将再生毛石、骨料和不同等级的沙子出售给南澳的建筑和工程项目。ARR最受欢迎的产品是再生毛石，被各建筑公司广泛用于从铺设房屋地基，到新建道路和桥梁等需高密度地基的大型市政工程。

ARR为整个阿德莱德公路网的重建提供回收的石料，也供应具体的工程如O-Bahn 快车道路延伸和Brickworks市场的重建工程。ARR生产超过30万吨的再生石料，相当于从填埋场分流了等量的混凝土和砖头的

垃圾。ARR的材料可以直接替代从采石场开采的石料。



The South Australian Government has helped expand the sector, investing in financial incentives for infrastructure, market development and research and innovation. New or expanded businesses and facilities in South Australia serve industry by replacing fossil fuel energy, and reusing reprocessing or recycling electronic waste, compost, demolition and building waste and plastics.

南澳州政府支持行业扩展，对基础设施、市场研发和创新给予财政激励。新建或拓展的垃圾管理企业服务于南澳的其它工业，提供可替代化石燃料的能源、重新使用，再利用再加工电子废物、有机物堆肥、拆卸和建筑垃圾以及废塑料。

Compost industry

Organics material is a valuable resource for South Australia's severely nutrient deficient soils. Green Industries SA provides financial incentives to improve the organics processing industry to maximise the beneficial use of waste materials, decrease greenhouse gas generation and reduce the disposal of waste to landfill.

Jeffries Group This organics recycling company has completed a \$3 million upgrade of its Buckland Park composting facility in northern Adelaide with the assistance of a grant from Green Industries SA. The custom designed Recycled Organics Screening System helps South Australia maintain the State's nation-leading role in reducing organic waste to landfill. A grant of \$300,000 has also assisted with installing an innovative sorting system which includes the use of x-rays to remove glass, stones, metal, ceramics, brick and some plastic from mulch and compost products.

Peats Soils and Garden Supplies The Willunga-based company continues to grow and now has three production sites located around Adelaide. It invests in key infrastructure with the assistance of Green Industry SA grants for specialised grinding and screening machinery. This has enabled an increase in the quality and quantity of compost processed from kerbside collected garden organics and other putrescible waste streams. Grants are also assisting with market development with research into new products such as the use of foundry sands for re-use as an additive to compost.

BiobiN® is an on-site, capture and containment system used for organic material processing (starting the composting process) in an odour-free, easily accessible vessel. The patented BiobiN® aeration system initiates a composting process of organic material, reducing bacteria and other pathogens. The composting process also maximises the amount of organic material that can be collected by the BiobiN®. Customers include shopping centres, supermarkets, primary industry, catering facilities, food processors, hotels, hospitals, restaurants, clubs and many others, producing an organic waste stream.

堆肥业

南澳州土壤严重缺乏营养物质，因此有机物是十分宝贵的资源。南澳州政府绿色产业局提供财政激励方案以提高有机物加工行业的现状，从而最有效利用废弃物料，降低温室气体排放，减少垃圾填埋场的垃圾填埋处量。

Jeffries Group 这家有机物回收公司位于北阿德莱德Buckland Park堆肥场完成了价值300万澳元的升级。定制的回收再利用有机物筛分系统使得南澳州在减少垃圾填埋场有机垃圾填埋方面保持全国的领先地位。南澳州政府绿色产业局的30万澳元拨款帮助该公司安装一个新型分类系统，包括使用X光移除植物护根物和堆肥产品中的玻璃、石头、金属、陶瓷、砖以及塑料来提高堆肥产品质量。

Peats Soils and Garden Supplies公司位于Willunga，该公司持续增长，目前有三个分布阿德莱德的生产基地。公司在南澳政府绿色产业局的拨款帮助下投资专业研磨和筛分机械的基础设施，提高了对路旁收集的园林有机物和其他易腐烂垃圾加工的堆肥数量和质量。政府拨款也有助于新产品的市场开发，如再利用铸造砂作为堆肥添加剂。

BiobiN® 是一个实地提取和围护有机物加工系统（开始堆肥的过程），使有机物料在无异味、极易提取的器皿中加工。这个获得专利保护的BiobiN®曝气系统开启有机物料的堆肥过程，减少细菌和其他致病菌。此过程也使得BiobiN®可收集的有机物料达到数量上的最大化。



The organics industry is a strong performer in South Australia. In 2016-17 over one million tonnes of organics (including food and garden organics and timber) were recovered for reprocessing. Grants have been awarded for developing markets or investigating the feasibility of new products such as specialised composts and fertilisers.

有机物行业在澳大利亚发展强劲。在2016年到2017年，超过100万吨的有机物（包括食品和花园有机物和木材）得到回收再加工。许多政府拨款用于发展市场和调研新产品的可行性，包括利用流动污水成分制成的特殊堆肥和肥料。



Global Leadership Program on the Circular Economy

An intensive five-day program offered by Green Industries SA provides exposure to circular economy strategies and opportunities for networking with South Australia's business and policy leaders.

The program is ideal for experienced professionals and executives from government, industry, business and academia working across diverse areas in the Asia-Pacific region including Australia.

Inspiring case studies and site visits demonstrate elements of the circular economy in practice.

In addition to site visits, the program includes intensive sessions presented by experts who are internationally recognised as thought-leaders in the circular economy and related areas such as innovation.

Realising the benefits of the circular economy is especially important for achieving our target to meet the United Nations' Sustainable Development Goals and addressing the most pressing challenges facing nations today – rapid urbanisation, resource scarcity and poverty.

This program complements the Regional 3R Forum in Asia and the Pacific and the work of the United Nations Centre for Regional Development.

循环经济的全球领导力课程

南澳州政府绿色产业局提供为期五天的强化课程，学习循环经济战略并提供与南澳大利亚商业和政策领导者建立联系的机会。

该课程非常适合来自包括澳大利亚以及亚太地区不同领域的政府，工业，商业和学术界的经验丰富的专业人士和高级管理人员。

通过详实的案例分析学习和实地考察来了解循环经济的要素。

除了实地考察外，该课程还包括由专家提供的强化课程，这些专家是国际公认的循环经济及相关领域如创新科技的思想领袖。

实现循环经济的好处对于我们实现联合国可持续发展目标和解决当今国家面临的最紧迫挑战——快速城市化，资源稀缺和贫困——尤其重要。

该课程是对亚洲及太平洋地区3R论坛和联合国区域发展中心工作的补充。



Recycling education for the community 社区的回收再利用教育



Recycle Right® is a comprehensive household recycling education program. Developed in collaboration with the South Australian waste and recycling industry it responds to long standing issues with householders placing the wrong items, or incorrectly presented material, in kerbside-collected recycling bins.

With all of Adelaide's metropolitan councils and an increasing number of regional councils now implementing three-bin kerbside collection systems, *Recycle Right*® has evolved into a valued educational program.

The *Recycle Right*® campaign uses distinctive press advertising which focuses on short and sharp messages. It is supported by other tools such as a user-friendly online search engine, a 1300 hotline, fact sheets, a resource for school children, educational DVD, a training program for local government staff and elected members and increasing use of social media. Critical to the success of the campaign is a close working relationship with metropolitan and regional councils and the Waste Management Association of Australia's Waste Educators Working Group.

Recycle Right® (正确回收再利用) 是一个综合家庭回收再利用教育项目。该教育项目由南澳州垃圾和回收再利用产业合作开发,旨在应对长期存在的居民在垃圾桶中错误丢弃垃圾或者不正确分类的现象

随着所有的阿德莱德市郊政府和越来越多的偏远地区政府实施三个垃圾桶路边收集系统, *Recycle Right*® 已经演变为一项有价值的教育方案。

Recycle Right® 活动使用不同的媒体宣传方案,重点采用短小精悍的信息。它还有其他辅助工具如方便用户在线搜索引擎、1300热线电话、情况说明书、针对学校儿童的资源、教育DVD、针对地方政府职员和议员的培训方案以及越来越多的使用社会媒体。活动取得成功的关键在于城市和偏远地区政府与澳大利亚垃圾管理协会下属的垃圾管理教育工作小组之间的密切合作。



Research organisations

China–Australia Centre for Sustainable Urban Development is an international research centre exploring how Asia-Pacific cities can plan for and manage sustainable growth. www.unisa.edu.au/Research/China-Australia-Centre-for-Sustainable-Urban-Development

National Centre for Contamination and Remediation of the Environment (CRC-CARE) in affiliation with the University of South Australia develops new technologies for treating contaminated soils and difficult-to-treat waste streams. www.crccare.com

Flinders University has world class researchers in the areas of bioremediation, composting and oil refinery clean-up. The University is affiliated with Flinders Bioremediation. www.flinders.edu.au

The University of Adelaide and Commonwealth Scientific and Industrial Research Organisation (CSIRO) carry out extensive research on materials recycling, phytoremediation (use of plants to treat contaminated wastes), bioremediation and mine site. www.adelaide.edu.au, www.csiro.au/en/About

Australian Road Research Board Group Ltd (ARRB) Researches the use of recycled aggregates in road pavements and works to improve market awareness of the technical capabilities for using recycled materials. www.arrb.com.au

Barbara Hardy Institute (University of South Australia) researchers conduct collaborative research across disciplines that are fundamental to the sustainability of natural and built environments and society. www.unisa.edu.au/research/barbara-hardy-institute/

Partners and industry associations

Australian Council of Recyclers Inc www.acor.org.au

Australian Landfill Owners Association (ALOA) www.aloa.com.au

Australasian Bioplastics Association www.bioplastics.org.au

Environment Protection Authority The South Australian Government's independent environmental regulator responsible for protecting the air, water quality and the control of pollution, waste, and radiation. www.epa.sa.gov.au

KESAB environmental solutions A non-government organisation which develops and implements awareness and behavioural change programs to encourage environmental improvement and sustainability. Supported by Green Industries SA. www.kesab.asn.au

Plastics and Chemicals Industry Association (PACIA) www.pacia.org.au

Waste Management Association of Australia Green Industries SA supports the South Australian branch of the Waste Management Association of Australia through a partnership agreement. www.wmaa.asn.au

研发组织

中澳城市环境和可持续发展研究中心是一个国际研究中心，专注于探索亚太国家城市如何规划和管理可持续发展。www.unisa.edu.au/Research/China-Australia-Centre-for-Sustainable-Urban-Development

全国环境污染评估和修复合作研究中心(CRC-CARE) 附属于南澳大学，开发新技术用于治理受污染的土壤和难以处理的垃圾种类。www.crccare.com

弗林德斯大学在生物修复、堆肥和冶炼厂清洁领域拥有世界一流的研究团队。弗林德斯生物修复部附属于弗林德斯大学。www.flinders.edu.au

阿德莱德大学和澳大利亚联邦科学与工业研究组织(CSIRO)对材料回收再利用、植物修复(使用植物来处理受污染垃圾)、生物修复和矿场修复进行广泛研究。www.adelaide.edu.au www.csiro.au/en/About

澳大利亚道路研究委员会(ARRB) 为南澳州可持续发展集团提供研究、咨询和信息服务。ARRB研究使用再生聚合物于路面铺设，致力于提高市场意识，以拓展使用再生材料的技术能力。www.arrb.com.au

Barbara Hardy 研究中心(南澳大学)的研究员在范围广泛的各类学科中进行合作研究，这些学科对于自然和人造环境和社会可持续性发展具有重要意义。www.unisa.edu.au/research/barbara-hardy-institute/

合作伙伴和行业协会

澳大利亚废品回收再利用委员会 www.acor.org.au

澳大利亚垃圾填埋场所有者联合会 www.aloa.com.au

澳大利亚生物塑料联合会 www.bioplastics.org.au

南澳州政府环境保护局

南澳州政府独立的环境监管机构，负责影响和规范人类活动以保护和恢复环境。该机构负责保护空气、水质以及控制污染、垃圾、噪声和辐射。www.epa.sa.gov.au

KESAB环境解决方案组织

是一个非政府组织，主要负责开发和实施意识和行为改变方案以鼓励环境状况的改善和可持续性发展。南澳州政府绿色产业局通过合作协议来支持KESAB。www.kesab.asn.au

塑料和化工产业协会 www.pacia.org.au

澳大利亚垃圾管理协会

南澳州政府绿色产业局通过合作协议协助澳大利亚垃圾管理协会在南澳的分会。www.wmaa.asn.au



联合国赞誉

联合国人居署报告《世界各大城市固体废物管理》总结道：南澳州已做出高度的政治承诺，显示出强烈的意愿来“冒险”执行一些政策和法规，而相比之下，其他国家政府可能更为谨慎保守。

南澳州人具有强烈的环保意识。30多年前南澳州实施容器押金法，对啤酒和软性饮料等的包装征收押金，此外，因为南澳州严重缺水，南澳州一直致力于环境保护并且期望其各行各业和政府也遵从相同的环保标准。澳大利亚的工业性质复杂，全国性经营的企业越来越多，这就意味着垃圾管理过程的各个阶段已得到妥善开发和管理，因此澳大利亚的工业为资本或技术集中型而非劳动力集中型。

UNITED NATIONS ACCOLADE

The UN HABITAT report *Solid Waste Management in the World's Cities* concludes that South Australia has demonstrated a high level of political commitment and willingness to “stick its neck out” and implement some policies and legislation which other governments treat more conservatively:

South Australians are highly environmentally conscious. Since the adoption of container deposit legislation over 30 years ago, which imposed a deposit fee on packaging such as beer and soft drinks, and also due to the acute water shortage in the state, South Australians are used to working for the environment and expect the same standards from their industry and government. The sophisticated nature of the industrial sector in Australia, combined with the tendency towards large nationally operating companies mean that all stages of the waste management process are well developed and regulated, and are capital/technology intensive rather than labour intensive.

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