



Waste management innovation

Applying our circular economy capabilities to generate effective solutions for plastic recycling and reuse.

The challenge

Australia only recycles 12% of the plastic we use. The remainder (84%) is sent to landfill or contaminates our lands, waterways and oceans.

Plastic is an incredibly useful product, but Australia is not utilising its potential to build new industries and jobs by converting this commodity into new products.

Increasing Australia's recycling rate by 5% will add an estimated \$1 billion to our GDP, and position Australia as a regional leader in providing circular economy solutions for plastic.



Our response

CSIRO is acting as an innovation catalyst to address this global challenge. We are working with industry, government, not-for-profits, peak bodies and science leaders to identify priorities for a circular economy in Australia and beyond our shores. This includes innovative product design, research and development, market development for recycled content products, decision support systems and understanding behaviours that enable or prevent adding value to waste streams.

We have already developed novel business approaches such as [ASPIRE](#); a matchmaking market for diverting waste from landfill for small and medium enterprises using industrial symbiosis. We are developing innovative technologies to automate the detection and collection of waste plastics and exploring opportunities to convert waste plastics to value-added products such as hydrogen, chemicals, liquid and gaseous fuels, heat and electricity. We have expertise in engineering and software that allows us to build bespoke sensors to track and monitor plastic litter and assess the various enhanced options using techno-economic approaches.

The prevention of microfibres entering the ocean is an emerging environmental challenge. We have world leading textile capability and vast experience improving natural fibres. This capability can be directed at fossil fuel derived fibres to prevent fibre pollution during wash and wear to assist the sustainability of the textile sector. We also have capability in bioplastics and biodegradation and have novel capability in developing enzymes that degrade PET.

The benefits

Our focus is on avoiding waste plastic and supporting reduction and reuse of plastic waste through innovation and collaboration between industry and science sectors. This will provide significant economic, environmental and social benefits whilst informing the Australian and global community on options, risks, and benefits.

Our research spans the breadth of the circular economy supply chain and aims to eliminate the loss of plastic from the productive economy. This benefits business and the environment and is critical for building a thriving circular economy in Australia.

As Australia's national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.

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