

# AUSTRALIAN WATER

ASSOCIATION

29 October 2024

## Opportunities in the Circular Economy – Productivity Commission Paper

As Australia's largest water network, the Australian Water Association (AWA) would like to call out the definitional distinction made between 'materials' and 'resources' (*Similar to the OECD (2024a): we define 'materials' as including metals, non-metallic minerals (industry and construction minerals), fossil fuels and biomass (such as wood and food). This is distinct from the definition of 'resources', which includes energy and water resources alongside materials, and gives rise to the related ideas of resources productivity and efficiency. Our inquiry will focus on materials. Opportunities in the circular economy*).

While your "Opportunities in the Circular Economy" paper specifically asks about 'materials productivity', AWA's view is that materials and resources are intrinsically linked and need to be considered in a more holistic way. Water is a vital component in processes like recycling and material transformation. Similarly, embodied water needs to be factored into any materials reprocessing as is embodied carbon. Wastewater products are also valuable inputs for agricultural reuse, building and construction materials, energy generation and emerging products such as bioplastics and biofuels.

Some examples include:

- The wastewater that is generated from materials processing can be treated to various levels of water quality for reuse in irrigation and industrial processes, reducing reliance on freshwater sources.
- Closed loop systems in manufacturing processes are a great example of circularity where water is reused in manufacturing processes, enhancing efficiency and minimizing waste.
- There are opportunities to advocate for incentives for water reuse in industrial applications which will encourage greater investment in water-efficient technologies and a stronger focus on the need for integrated water and resource management which will drive better circularity outcomes.
- Materials processing can involve investment in new innovative technologies that will minimize resource inputs and enhance water recycling and recovery processes. For example, solutions like advanced filtration, membrane bioreactors, and smart water management systems.
- Wastewater products such as biosolids have significant potential to be transformed into new products such as biochar, bioplastics and be key inputs to building and construction materials.
- Many water utilities across the country are producing biomethane from biosolids and reusing within their plants or exporting to the energy grid. There is still widespread use of biosolids for land application.
- The Australian water industry is leading examples of circularity through their utility operations. For example, Logan Water has pioneered an Australian first; a facility which transforms human waste, or biosolids, into renewable energy and a sustainable product called biochar. Biochar contains nutrients like those found in commercial slow-release fertilisers; making it great for healthy soil and plants. Biochar can also be added to soil, asphalt, concrete and bricks to sequester carbon for thousands of years. The biosolids gasification facility destroys chemicals in biosolids like persistent organic pollutants, and micro and nano-plastics. It will reduce carbon emissions by about 6,000 tonnes a year.

Logan Water will no longer pay contractors about \$1.8M a year to truck 34,000 tonnes of biosolids from Loganholme Wastewater Treatment Plant (WWTP) 300km to the Darling Downs agricultural area for disposal. Operational cost savings and carbon credits will return almost \$1M a year to the City of Logan, and a new revenue stream is being created from biochar sales. <https://www.awa.asn.au/resources/latest-news/australia-s-first-biosolids-gasification-facility>

- Australian universities are also driving innovative research into new solutions to promote greater circularity and reduce material and resource use. For example, The University of Technology, Sydney has developed a technology called Green Genie to address waste management, resource recovery, and sustainable practices. It demonstrates circular economy principles by effectively transforming waste into valuable resources, reducing environmental impacts, and promoting sustainability. Water plays a vital role in the processes involved, from facilitating anaerobic digestion to enabling nutrient recycling. Green Genie captures and converts carbon dioxide into algal biomass, which can be used for biofuel production, chemicals, bioplastics, fertiliser and agricultural feed products. <https://www.uts.edu.au/research-and-teaching/partner-us/green-genie-carbon-capture-magic-algae/practical-applications>

AWA would like to reiterate the need to consider both materials and resource elements of circularity in a more holistic way to ensure our national approach to developing Circular Economy Frameworks and Principles is fully integrated and reflects the true circularity of the opportunities we have. This will drive improved economic and environmental benefits for Australia.

The views expressed in this submission do not necessarily reflect the views of all AWA members, as extensive consultation is required to capture and share such diversity in experience, expertise and aspirations.

### **About The Australian Water Association**

The Australian Water Association (AWA) is Australia's largest water network. We provide individuals with career enrichment and organisations with business development opportunities as we share information and knowledge, connect members with industry and stakeholders, and inspire a sustainable water future. Through our extensive range of technical seminars, courses and conferences, we provide a forum for debate and best practice dissemination at a state, national and international level.

AWA is committed to building Australia's water capabilities to maintain its position as a world leader in water management.

AWA is a leader in international collaboration and networking in water, delivering a range of initiatives that showcase learnings from Australia's water reform journey, and create opportunities for the Australian water sector.

AWA's members cover every facet of the water sector, including professionals and practitioners working in utilities, government agencies, engineering, urban design and planning, science, research, academia, energy, resources, manufacturing, mining and agriculture.

AWA aims to inspire and drive a sustainable water future where water is recognised by all as essential to economic prosperity, health, the environment, and First Nations' connection to Country.