Opportunities in the circular economy

NSW Government submission to the Productivity Commission inquiry

October 2024

NSW GOVERNMENT

Acknowledgement of Country

The NSW Government acknowledges the Traditional Custodians of the lands where we work and live. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

We pay our respects to Elders past, present and emerging and acknowledge the Aboriginal and Torres Strait Islander people that contributed to the development of this document.

We advise this resource may contain images, or names of deceased persons in photographs or historical content.

Opportunities in the circular economy

Published by NSW Government

First published: November 2024

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1 Executive Summary

The NSW Government is committed to playing its part in Australia's transition to a circular economy. The circular economy means changing the way we produce, assemble, sell and use products to minimise waste and to reduce our environmental impact. It can also be great for business, through maximising the use of our valuable resources, and by contributing to innovation, growth and job creation. Moving to a circular economy will provide long-term economic, social, and environmental benefits for NSW.

NSW's transition to a circular economy is supported by a legislative and policy framework. This framework is further supported by a suite of reforms, initiatives and programs to avoid or reduce waste, enable circular practices like recycling and reuse, and stimulate sustainable economic growth.

NSW Government action is being guided by several opportunities and focus areas, including:

- incentivising diversion of waste from landfill
- supporting innovation and broad participation in promoting a circular economy
- reducing plastics waste
- diverting organics waste from landfill
- encouraging whole of life producer responsibility for products and product stewardship
- promoting end-markets for recycled materials
- protecting waste and recycling infrastructure and recycled materials from problematic and hazardous wastes
- addressing shortages in waste management and recycling infrastructure.

While there are opportunities, barriers to further progress exist, including:

- limited market demand for circular alternatives
- regulatory constraints, and the need for reform to keep pace with, and respond to, innovation
- costs to transition to circular practices
- data, reporting, measurement and valuation challenges
- a lack of public awareness and community engagement in circular practices
- regional and geographic constraints.

NSW's focus on developing circular markets, managing waste, strategic infrastructure planning and investment, and public engagement is critical to transition to a circular economy.

2 The Circular Economy in NSW

2.1 Current state of the circular economy in NSW

The circular economy represents significant potential for environmental sustainability and economic and jobs growth, especially in regional areas. NSW Government initiatives have played, and will continue to play, a fundamental role in how citizens, businesses and councils avoid, reduce, reuse, recycle and safely dispose of waste and materials. In recent years, the NSW Government has:

- invested more than $800 million in waste and resource recovery programs since 2013
- contributed to a 43% reduction in litter
- established 100 community recycling centres
- added 2.5 million tonnes of new recycling capacity
- provided free help to more than 30,000 small businesses to reduce waste
- invested in proactive enforcement and compliance programs to tackle waste issues
- established the Waste Crime Task Force to target the most serious, organised and highprofile waste crimes[1]
- used a levy on waste disposed to reduce the amount of waste being landfilled and to promote recycling and resource recovery.[2]

The circular economy represents considerable economic value to NSW. Recent estimates suggest that circular economy initiatives in key sectors such as food, transport and the built environment could be worth $7.6 billion to NSW's Gross State Product (GSP) and 50,000 jobs by 2025 and up to $69 billion by 2048.[3] More comprehensive analyses would provide a better estimate of the economic impacts for the state.

Whilst progress has been made, there is still need for improvement and challenges to overcome. Waste generation in NSW is increasing. From 2015-16 till 2019-20, waste volumes generated across the state rose by 17% to 21.9 million tonnes.[4] Over the same period, recycling rates in NSW remained at an average of 64%.[5] Under current policy settings, NSW waste volumes are forecast to grow from 21 million tonnes in FY2021 to nearly 37 million tonnes in FY2041.[6]

[1] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[2] https://www.epa.nsw.gov.au/your-environment/waste/waste-levy

[3] https://circularaustralia.com.au/wp-content/uploads/2020/11/the-circular-economy-opportunity-in-NSW.pdf

[4] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling

[5] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling

[6] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

Without a timely transition to greater circularity, NSW risks rising waste volumes, exceeding its waste capacity, reduced materials productivity, continued resource depletion, environmental and social impacts and missed opportunities to innovate.

2.2 Legislative and policy context in NSW

The circular economy legislative and policy framework in NSW is built around several key policies and strategies. These include:

- The *NSW Circular Economy Policy Statement 2019*[7] which helps guide NSW Government decision making in the transition to a circular economy. It sets the ambition and approach for a circular economy in NSW and provides principles to guide resource use and management.
- The *NSW Waste and Sustainable Materials Strategy 2041 – Stage 1: 2021 - 2027*[8] which focuses on the environmental benefits and economic opportunities in how NSW will seek to manage its waste. It sets out the actions NSW will take in the first stage of the strategy to carry it through to 2027. The strategy sets targets to:
    - reduce total waste generated by 10% per person by 2030
    - have an 80% average recovery rate from all waste streams by 2030
    - significantly increase the use of recycled content by governments and industry
    - phase out problematic and unnecessary plastics by 2025
    - halve the amount of organic waste sent to landfill by 2030.
- The *NSW Plastics Action Plan 2021*[9] sets out the actions Government will take to manage plastic throughout its lifecycle, from generation through to production, supply and reducing waste.
- The *NSW Net Zero Plan Stage 1: 2020 – 2030*[10] which aligns to circular economy principles and aims to reduce greenhouse gas emissions by focussing on the production of sustainable materials and reduction of waste.
- The Government has also given notice of its intention to make its first *Protection of the Environment Policy* (PEP) for sustainable construction, promoting low-carbon design and construction, and increased use of recycled material in NSW public infrastructure projects.[11]
- *NSW Decarbonising Infrastructure Delivery Policy*[12], which applies to NSW Government building projects valued over $50 million and infrastructure projects valued over $100 million. The policy focuses on reducing upfront emissions in delivering infrastructure and can also be applied on a whole of life carbon approach which includes circular economy considerations.

[7] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/19p1379-circular-economy-policy-final.pdf

[8] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[9] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/plastics/nsw-plastics-action-plan-2021.pdf

[10] https://www.energy.nsw.gov.au/sites/default/files/2022-08/net-zero-plan-2020-2030-200057.pdf

[11] https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/strategic-direction-for-waste-in-nsw/carbon-recycling-and-abatement

[12] https://www.infrastructure.nsw.gov.au/media/iycjqww3/decarbonising-infrastructure-delivery-policy.pdf

- *Local Government NSW Policy Platform*[13], which represents consensus by 128 councils across NSW and identifies transitioning to a circular economy and increasing procurement of recycled goods as a key priority for the local government sector. Close engagement with councils is vital to deliver effective circular economy practices.

In NSW there are also several primary pieces of legislation that deal with waste and circular economy issues:

- The *Protection of the Environment Operations Act 1997* (POEO Act)[14] is a key statutory instrument protecting human health and the environment, including from unlawful waste activities. It requires certain licensed waste facilities in NSW to pay a contribution for each tonne of waste received at the facility, referred to as the 'waste levy'.
- The *Waste Avoidance and Resource Recovery Act 2001* (WaRR Act)[15] aims to ensure that consideration of resource management prioritises avoidance of unnecessary resource consumption first, followed by resource recovery (including re-use, reprocessing, recycling and energy recovery), and lastly disposal.
- The *Plastic Reduction and Circular Economy Act 2021*[16], which provides a basis to prohibit the supply of problematic or unnecessary plastic items, set design standards for environmental, human health or economic reasons, and set product stewardship requirements for brand owners of regulated products.

These policies, strategies and legislative instruments form a framework that governs and guides the transition to a circular economy and improved waste management in NSW.

3 Priority circular economy focus areas in NSW

There are many opportunities in NSW and nationally to improve environmental and economic outcomes through greater adoption of circular economy activities. Current key priorities of the NSW Government to promote a circular economy in NSW and manage residual waste are to:

- incentivise diversion of waste from landfill
- support innovation and broad participation in promoting a circular economy
- reduce plastics waste
- divert organics waste from landfill
- encourage whole of life producer responsibility for products and product stewardship
- promote end-markets for recycled materials

[13] https://lgnsw.org.au/common/Uploaded%20files/Policy/LGNSW_Policy_Platform_2024.pdf

[14] *Protection of the Environment Operations Act 1997* (NSW)

[15] *Waste Avoidance and Resource Recovery Act 2001* (NSW)

[16] *Plastic Reduction and Circular Economy Act 2021* (NSW)

- protect waste and recycling infrastructure and recycled materials from problematic and hazardous wastes
- address shortages in waste management and recycling infrastructure.

3.1 Incentivising diversion of waste from landfill

As outlined above, the POEO Act requires certain licensed waste facilities in NSW to pay a contribution for each tonne of waste received at the facility. Referred to as the 'waste levy', the contribution aims to reduce the amount of waste being landfilled and promote recycling and resource recovery. This is an effective market-based mechanism to reduce waste, as shown by stagnating recycling rates when the waste levy was reduced after 2016. The NSW Government is currently reviewing the waste levy as part of its commitment to ensuring that the mechanism is optimised to maximise its potential to reduce waste and promote resource recovery.[17]

There are further opportunities to incentivise diversion of waste from landfill by supporting industry to access opportunities to capture, redesign, recycle and reuse materials. The Circular Solar program[18] is a successful example. The NSW Government awarded $9.5 million under the program to eight grant projects to address the recycling and reuse of solar panels and batteries. This included projects to construct two solar panel recycling facilities that will increase the recycling capacity in NSW by 10,000 tonnes per annum when construction is complete at the end of 2024.[19]

Significant economic and employment opportunities also exist in pre-disposal resource recovery, which contributes to diverting more waste from landfill. An expanded repair economy and second hand goods industry represents a high value circular economy option. For example, a recent NSW Environment Protection Authority (EPA) commissioned report found that reuse generates 81 times more jobs than landfill and 25 times more jobs than recycling on a per tonne basis.[20]

3.2 Supporting innovation and broad participation in promoting a circular economy

3.2.1 Assisting businesses and councils

The NSW Government is supporting the circular economy through $356 million in grants programs under the *NSW Waste and Sustainable Materials Strategy 2041* and the *NSW Plastics Action Plan* to assist businesses and councils and stimulate circular economy innovation. Some of the programs currently available include:

[17] https://www.epa.nsw.gov.au/your-environment/waste/waste-levy

[18] https://www.epa.nsw.gov.au/working-together/grants/infrastructure-fund/circular-solar-trials

[19] https://www.epa.nsw.gov.au/working-together/grants/infrastructure-fund/circular-solar-trials

[20] https://www.epa.nsw.gov.au/working-together/partnerships-with-the-epa/measuring-impacts-of-reuse

- Local Government Waste Solutions Fund: supporting NSW local councils in waste levy paying areas to deliver innovative and collaborative waste solutions that support the transition to a circular economy.
- Business Food Waste Partnerships Grants and Go FOGO: supporting organisations to incorporate education or training into existing programs to reduce and source separate food waste and supporting councils to provide weekly FOGO services to their residents.
- A $37 million Carbon Recycling and Abatement Fund: supporting innovative circular economy approaches that manage waste and materials more efficiently and reduce emissions.
- A $10 million Circular Materials Fund: providing a financial incentive for producers to design out, or replace, carbon emissions-intensive virgin plastic with lower carbon-intensity recycled materials. This will help improve materials efficiency, increase use of recycled content and deliver a measurable carbon dividend for NSW.

3.2.2 Critical minerals

The *NSW critical minerals and high-tech metals strategy*[21] sets out the NSW Government's vision for NSW as a leader in critical minerals exploration, mining, processing, recycling and advanced manufacturing. NSW's strong research and innovation capabilities can develop new methods for processing and recycling critical minerals, enhancing reuse and minimising waste. Critical minerals are essential for renewable energy technologies, electric vehicles, and high-tech industries. Relevant circular economy opportunities include:

- Establishing secure and sustainable supply chains and establishing domestic processing and manufacturing of critical minerals in NSW, supporting resource recovery and moving away from the traditional "take-make-dispose" model.
- Supporting industry to access opportunities in the capture and recycling of metals and minerals from e-waste, spent batteries, and solar panels.
- Forging partnerships to secure and scale homegrown innovation through collaboration with universities and research institutions, to explore metals re-processing and recycling.
- Promoting circular economy approaches for mine waste through dedicated programs to incentivise safe and sustainable reprocessing and reuse of mine tailings.

3.2.3 Circular design

Adopting innovative circular design practices in the built environment also brings major economic, social and environmental benefits. Analysis has shown that incorporating a circular economy approach into the built environment could reduce emissions by 3.6 million tonnes of CO_2 equivalent per year by 2040. It could deliver $773 billion in direct economic benefits over 20 years.[22] It also fosters innovation, and encourages the development of new industries and ventures.

[21] https://www.nsw.gov.au/sites/default/files/noindex/2024-10/nsw-critical-minerals-and-high-tech-metals-strategy-2024-35.pdf

[22] https://www.pwc.com.au/assurance/esg/building-a-more-circular-australia.pdf

The *Circular design guidelines for the built environment*[23] outline strategies for buildings, infrastructure and precincts with a focus on design, product selection, re-using materials, information tracking and sustainable procurement.

Subsequent analysis on these circular design strategies has indicated that if used in combination, they could reduce carbon emissions in the construction sector by a significant 39%, or 4.7 million tonnes of CO_2e. This is the same as removing 2.1 million cars from the roads for a year. The greatest potential impact is for residential and non-residential construction, where circular design could reduce emissions by as much as 48%[24].

3.2.4 Special activation precincts

The NSW Government is also supporting innovation and acceleration of circularity by implementing a place-based approach in precincts committed to the circular economy (e.g. Special Activation Precincts, Sydney Water Precinct South Creek). These precincts bring together planning and investment to boost jobs and economic activity and make it easier, cheaper and more feasible for businesses to collaborate and innovate for circular economy outcomes.[25]

3.3 Reducing plastics waste

Managing and phasing out problematic single-use plastics and improving plastics recycling capacity is a priority under the *NSW Plastics Action Plan*.[26] The Action Plan sets out the actions Government will take to manage plastic throughout its lifecycle – from generation through to production, supply and reducing plastic waste. It forms a key part of the *Waste and Sustainable Materials Strategy 2041* and outlines a comprehensive suite of actions to address plastic at all points of the plastic lifecycle, from production and consumption to disposal and recycling.

Key plastics targets under the action plan, include:

- phase out problematic and unnecessary plastics by 2025
- reduce the total waste generated by 10% per person by 2030
- achieve an average 80% recovery rate of resources from all waste streams by 2030
- reduce plastic litter items by 30% by 2025 and reduce overall litter by 60% by 2030.

Some of the initiatives that NSW has undertaken, and is undertaking, as part of its commitments to phase out problematic and unnecssary packaging include:

- bans on lightweight single use plastic bags.

[23] https://www.energy.nsw.gov.au/sites/default/files/2023-02/NZP_Circular_Design_Guide_2023_0.pdf

[24] Unpublished data

[25] https://www.planning.nsw.gov.au/plans-for-your-area/special-activation-precincts

[26] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/plastics/nsw-plastics-action-plan-2021.pdf

- bans on single use plastic straws, stirrers, cutlery, plates, bowls (without lids) and cotton buds, expanded polystyrene foodware and cups, and a design standard prohibiting plastic microbeads in certain rinse-off personal care products.[27]
- extensive public consultation on the next round of plastic item actions, including phase outs and design standards.[28]

3.4 Diverting organics waste from landfill

Diverting organics waste from landfill is another focus area for NSW. Waste from organics can significantly contribute to carbon emissions. In FY2019, an estimated 2.5 million tonnes of organic waste (such as food organics, garden organics and textiles) was sent to landfill.[29] Emissions from organic waste decomposing in landfill make up more than 2% of total net annual emissions in NSW.[30]

In line with the NSW Government's commitment under the Net Zero Plan Stage 1: 2020–2030 to achieve net zero emission from organic waste by 2030[31], the NSW Government is proposing to mandate:

- separate collection of food waste from large food-waste generating businesses, including large supermarkets and hospitality businesses, by 2026
- separate collection of food and garden organics from all NSW households by 2030
- reporting by large supermarkets on surplus food donation to food rescue organisations by 2026.

To assist with the transition, the NSW Government is investing in programs and services, such as, the Food Organics and Garden Organics (FOGO) grants program which provides up to $46 million to support NSW councils to deliver weekly household food organics (FO) or food organics and garden organics (FOGO) services to their communities.[32]

Further opportunities exist in the primary industries sector. For example, utilisation of in-field organic residues not only reduces potential fugitive emissions but can be harnessed to displace electricity and heat generation from coal-fired (carbon intensive) systems. This can be achieved at various scales on-site, especially in regional areas.

3.5 Product stewardship

NSW, and all other Australian jurisdictions, are working towards the development of national product stewardship schemes for priority products, to encourage producers to manage the entire

[27] https://www.epa.nsw.gov.au/your-environment/plastics/about-the-bans

[28] https://www.epa.nsw.gov.au/news/media-releases/2024/epamedia240909-next-steps-to-tackle-problematic-plastics-for-a-cleaner-and-safer-nsw

[29] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[30] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[31] https://www.energy.nsw.gov.au/sites/default/files/2022-08/net-zero-plan-2020-2030-200057.pdf

[32] https://www.epa.nsw.gov.au/working-together/grants/organics-infrastructure-fund/go-fogo-grants

lifecycle of their products.[33] Product stewardship involves taking responsibility for the full life cycle of a product, including the development, design, creation, production, assembly, supply, use or re-use, recovery, recycling or disposal of the product. It is one of the ways that businesses can promote and support the principles of a circular economy and reduce the impact, or potential impact, of a product on the environment and human health.[34]

NSW's Return and Earn Container Deposit Scheme (CDS) is an example of a successful type of product stewardship model with funding from contributions by the beverage industry. The scheme recovers high-quality beverage containers for remanufacturing and has successfully diverted over 12 billion containers from litter and landfill since 2017 at over 600 sites.[35] Additionally, NSW is working with other states to expand product stewardship to electronics, batteries and tyres. The NSW EPA has also provided support to Seamless, a voluntary product stewardship scheme for the textiles industry.

3.6 Promoting end-markets for recycled materials

Increasing recycling can only be commercially viable if robust end-markets for recycled products are available. Since 2018, demand for recycled materials, particularly from household and commercial waste streams, have steadily contracted with the closure of export markets, particularly in China and other countries in Asia.[36] This has led to a glut of recycled materials and a decline in their value, particularly for poorly sorted or hard-to-recycle paper and plastic.

Under the Waste and Sustainable Materials Strategy 2041[37], NSW has committed to requiring Government agencies to preference products that contain recycled content, including building materials and office fit outs and supplies, on an 'if not, why not' basis. The need to preference recycled content is subject to there being no significant additional cost or negative impacts on performance and the environment. To help give effect to this commitment, the EPA is developing the first PEP in NSW, under the POEO Act, to minimise upfront emissions and maximise the use of recycled materials in public infrastructure delivered by the NSW Government.[38]

Furthermore, through the new $13 million *Circular Innovation Fund*, the NSW Government is supporting research into new technologies and uses for recycled material and providing opportunities to pilot them in government projects. These commitments are being delivered under the Choose Circular program.[39] Some of these initiatives include:

- development of a recycled materials directory to inform buyers about products containing recycled materials.

[33] National Waste Policy Action Plan 2019 (dcceew.gov.au)

[34] https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/product-stewardship-schemes

[35] https://www.exchangeforchange.com.au/#nsw-cds-performance-dashboard

[36] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling#pressures

[37] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[38] https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/strategic-direction-for-waste-in-nsw/carbon-recycling-and-abatement

[39] https://www.energy.nsw.gov.au/government-and-local-organisations/ways-get-started-local/choose-circular-funding

- development of a reporting framework to allow reporting on NSW Government procurement of recycled materials not already covered by the proposed PEP.
- development of procurement guidance for agencies to support circular procurement, such as guidelines, contract and tendering templates, and material selection guides.
- improvement of data collection and reporting on circular economy activities. This includes developing metrics to track progress, measure impact, and increase transparency. These efforts can demonstrate the value of circular economy practices to businesses and investors.

Contracts between government and industry can be used as a mechanism for setting and enforcing requirements and expectations. Effective commercial arrangements offer a policy lever in driving sustainable practices and achieving circular economy and decarbonisation goals. For example, appropriate consideration of circular economy, sustainability and decarbonisation in contracts with suppliers through the Transport for NSW Sustainable Procurement in Infrastructure Standard[40] is aiming to enhance sustainability goals, opportunities, initiatives, and innovations, such as:

- increasing the number of designers and contractors capable of meeting net zero
- driving market uptake of low carbon materials and practices
- encouraging innovation
- promoting market expansion for lower carbon materials and practices.

3.7 Threats from problematic and hazardous wastes

The waste and recycling industries are currently facing threats from the entry of hazardous materials such as batteries, asbestos, and chemical contaminants into waste and recycling streams, where they can pose threats of harm to life, the environment and property.

To reduce battery-related fires and establish a safe collection network for end-of-life batteries, the NSW EPA is partnering with Victoria and Queensland to explore options to reform, through regulatory changes, product stewardship arrangements for all batteries, with agreement by Australian Environment Ministers in June 2024.[41] It is also proposing to expand Community Recycling Centres across NSW to accept lithium-ion batteries that are loose and embedded within products.

To ensure that recycled construction and demolition (C&D) materials can continue to be safely used, and in anticipation of the NSW Office of the Chief Scientist and Engineer's review of the management of asbestos in recovered materials, the NSW EPA is exploring options to detect, remove, and safely dispose of asbestos in C&D material.

To reduce FOGO contamination preventing the safe and beneficial use of recycled compost, the NSW EPA is developing actions to reduce harmful chemicals and microplastics in food packaging, as set out in the *NSW Plastics: The Way Forward* paper. It is also developing behaviour change programs to improve household FOGO disposal practices and ensure food packaging goes in the right bin.

[40] https://industry.transport.nsw.gov.au/tfnsw/tiip/sustainable-infrastructure-program

[41] https://www.dcceew.gov.au/sites/default/files/documents/emm-communique-21-june-2024.pdf

3.8 Addressing shortages in waste management and recycling infrastructure

NSW's recycling and resource recovery infrastructure needs are expected to continue to grow as waste volumes rise. Additional infrastructure will be needed to manage residual waste and process complex materials such as e-waste, C&D waste, plastics, and organics.

At current rates of generation and recycling, the putrescible landfills, which accept household waste and service Greater Sydney, are likely to reach capacity within the next 15 years. The non-putrescible landfills, which accept inert commercial and construction wastes, will reach capacity in this decade. In some regional areas, like Coffs Harbour and Port Macquarie, landfill capacity is also likely to be reached this decade.[42]

There are also looming capacity constraints for the safe storage, treatment and disposal of hazardous waste and liquid waste. This is associated with growing waste quantities, key site closures, ageing infrastructure and treatment processes and the emergence of new waste streams.[43] To address these issues, the NSW EPA has been progressing work to develop a NSW Waste Infrastructure Plan in consultation with local government and the waste and resource recovery industry. The NSW EPA commenced this work with a robust and data-driven analysis to determine the most urgent capacity needs for residual waste and to process food and garden organics waste and is developing advice to Government on the actions that could be taken to improve capacity, technology and planning approaches.

4 Challenges and barriers facing NSW

While there are opportunities and substantial progress has been made, NSW faces challenges transitioning to a circular economy. The NSW Government is working through a range of policy options to address these challenges, which will likely require collective actions across jurisdictions.

4.1 Limited market demand for circular alternatives

Limited demand for circular alternatives hinders widespread adoption of these practices. Demand for circular alternatives can also be influenced by a range of factors, including:

- low confidence in recycled products due to uncertainty about performance, safety and environmental fears, especially where use of recycled materials has had adverse outcomes. As well as difficulty for buyers to find trusted suppliers and verify the sustainability credentials of certain products, such as claims about low emissions or recycled content
- lack of awareness of alternative business models or materials

[42] https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/nsw-waste-and-sustainable-materials-strategy-2041.pdf

[43] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling#growing-waste-generation-and-infrastructure-constraints-pressures

- lack of directive regarding requirements for use of recycled content not being built into contracts, procurement processes or other decision-making frameworks
- uncertainty about adequate supply
- perceived additional risks about the use of recycled content, including perceived difficulty or perceived poor speed of delivery to market
- increased upfront costs, particularly when initially transitioning to circular practices and models, which are then passed onto the consumer.

There are opportunities for government and industry to apply economic principles to decision-making to enhance circular economy outcomes.

4.2 Regulatory constraints

The current regulatory framework for waste management and recycling is multifaceted. Some regulations can create barriers for businesses seeking to utilise regenerative natural resources and adopt circular principles and business models as these practices expand, especially across state borders. Consistent reviews, harmonisation of regulatory instruments and continued regulatory innovation can be used to ensure that these instruments are fit for purpose and don't inadvertently exclude resources (such as timber and biomass materials) from being considered. This can facilitate innovation, whilst continuing to maintain strong environmental protections.

4.3 Costs to transition to circular practices

When transitioning to circular models, businesses need to consider a range of practices, including reuse, sharing, repair, refurbishment, remanufacturing and recycling, end to end design and upcycling rather than downcycling of materials. Oftentimes, new products can potentially be more costly than current products, particularly in the early stages of development and trial.

Many industries currently rely on, and use, cheaper, less sustainable feedstock materials rather than investing in reused, repaired or recycled options. Transitioning to circular economy friendly operating models and utilising reused, repaired or recycled content often involves large initial costs, including new technologies, new materials and redesigning products for circularity. Businesses often see these investments as inferior, too costly, or too uncertain compared to the conventional linear 'take, make and dispose' business models, especially without sufficient incentives or support. When business costs are incurred, these are often then passed on to consumers.

Ability and willingness to develop new infrastructure is also deterred by high costs and investment risks. These arise from limited availability of suitably located land, obtaining the required approvals, low market competition, and volatile construction costs.

4.4 Data, reporting, measurement and valuation challenges

Measuring the impact and value of circular economy initiatives is another challenge. A lack of consistent data and reporting frameworks makes it difficult to monitor progress and value the economic, social, and environmental benefits of circular economy initiatives. These challenges can

also make it harder for governments and businesses to demonstrate the value of circularity to key stakeholders and share learnings, which can hinder the speed of the transition.

To assist key stakeholders in understanding the opportunities and value of circular economy initiatives, greater data availability and knowledge of the quantity of waste and materials generated across various industries, both organic and non-organic, across NSW is needed. This knowledge will assist in devising well targeted circular economy initiatives.

4.5 Public awareness and engagement

Public awareness, behaviour and compliance with circular economy practices is also a challenge. Many consumers and businesses do not understand or engage with reuse, repair, leasing models or with waste and recycling practices. Additionally, consumers may recycle their household waste, but do not undertake the same actions when out in the public domain. Public concerns of larger scale waste management facilities can also lead to opposition to proposed developments relating to the circular economy.

Consumer behaviour strongly influences the success of waste avoidance and recovery. For example:

- if people place recyclables in the wrong bin, they can be disposed of to landfill rather than being recycled
- householders putting plastic bags and other non-recyclable items in the recycling bin can interfere with recycling equipment and contaminate outputs
- consumers' preferences or prejudices about recycled products can influence their market demand and value, which may affect the commercial viability of recycling facilities.[44]

Consumer behaviour change toward circularity can be facilitated through a combination of making locally-sourced repair, exchange and reuse more convenient..

Public awareness and engagement may be improved through the behaviour change principles of making circularity Easy, Attractive, Social, and Timely (EAST framework.) NSW Circular, funded by the NSW Office of the Chief Scientist (now Australian Circular) has published work on the establishment of Circular Economy Hubs and Precincts, seeking to foster greater economic activity around circularity as well as greater citizen engagement.[45]

4.6 Regional and geographical constraints

Challenges to be considered, particularly for regional areas, are geographical barriers and the shortfall in skills in areas such as engineering and digital skills which are required for a circular economy transition. Geographical barriers are often a contributor to increased costs and carbon emissions from transportation to facilitate circular economy practices.

[44] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling#growing-waste-generation-and-infrastructure-constraints-pressures

[45] https://circularaustralia.com.au/wp-content/uploads/2022/05/Circular-Economy-Community-Hubs-Report-2205.pdf

Regional areas often have limited infrastructure to access volumes of common inputs to recycled materials such as fly ash. Additionally, the emissions from transportation and other services required to make recycled materials available in regional areas present challenges in terms of associated carbon emissions and financial costs.

Opportunities exist in regional areas to increase the sustainable use of local natural resources so they are not wasted. For example, improving the utilisation of primary industry (agricultural and forestry) residues so they are not left to waste.