



**Sustainable
Communities
and Waste**

National Environmental Science Program

Local government facilitation of circularity in regional and remote Australia: 2023 Survey

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Executive Summary:

The 2023 survey on Local Government's Facilitation of Regional and Remote circularity offers a comprehensive comparison between the Circular Economy (CE) activities, challenges, and innovations of 96 urban and regional/remote local governments in Australia. This research reveals significant disparities in materials of concern, levels of CE initiative implementation, and the maturity of these initiatives, underscoring the necessity for place-based, tailored approaches to enhance circular transitions across different geographic contexts.

Key Findings:

Material Concerns: Both urban and regional/remote councils identify hazardous waste, construction waste, and specific materials like batteries and soft plastics as major concerns. However, regional and remote councils face greater challenges in addressing these issues, often lacking the resources or infrastructure to effectively manage them. Both locations indicate some tensions between community and political views on what materials are priorities, and council management priorities.

CE Initiatives: Regional and remote respondents shared examples of waste management infrastructure improvement, community engagement, and partnerships, highlighting the significance of addressing logistical constraints and leveraging local collaborations. In contrast, urban councils emphasise policy development, community education, and industry partnerships, reflecting a more diverse approach to driving CE initiatives.

Initiative Maturity: Urban initiatives demonstrate a greater extent of progression beyond pilot phases compared to those in regional and remote areas, which are more likely to stall at the conception phase. This discrepancy indicates a need for greater support to bring regional and remote initiatives to scale and integrate them into broader systemic changes.

Transition Broker Capabilities: Encouragingly, both urban and regional/remote respondents self-assess as moderately strong in transition broker capabilities, though regional and remote participants express less confidence in accessing policymaking, CE knowledge, and engaging other actors, while still reporting positive scores. This suggests potential areas for capacity building to enhance the effectiveness of local governments as CE facilitators.

Implications for Policy and Practice:

Tailored Strategies: The diversity in challenges and priorities between urban and regional/remote areas necessitates context-specific strategies that consider local material flows, infrastructure capabilities, and community engagement opportunities.

Capacity Building: Enhancing internal expertise and defining clear, dedicated circularity focused roles within councils are crucial steps to strengthen the foundation for circular innovations, particularly in regional and remote areas where reliance on external consultants is more prevalent.

Collaboration and Networking: Encouraging collaborative networks that bridge local governments, industry, and community organizations can accelerate the sharing of best practices, resources, and innovations necessary for effective CE transitions.

Exploring non-market, regenerative and wellbeing priorities: Regional and remote councils more holistic approach to engaging with circular opportunities, combined with less entrepreneurial and business lead initiatives in remote and regional areas, may open up opportunities to explore wider imaginaries of circularity and sustainability than dominant CE approaches.

Funding and Support: Increased investment from state, federal, and NGO partners is essential to support the development and scaling of promising CE initiatives, with a focus on overcoming the unique challenges faced by regional and remote councils.

Our findings

- highlight the **spatial disparities** in CE roles, opportunities and challenges between metropolitan and regional/remote areas.
- Emphasise the importance of **place-based strategies** and context-specific solutions for effective transitions.
- Demonstrate the crucial role of **local governments**, including establishing pre-conditions, facilitating collaboration and driving change, and that its different in regional and remote areas than urban.
- Provide hints that ‘**circular society**’ initiatives are emerging where ‘circular economy’ struggles.
- Provide important insights to inform to the development of **networked governance models** for supporting regional and remote CE initiatives.
- Contribute to **theoretical perspectives** in circular transitions and management regarding brokers, geographies of transition, and intermediaries.

By addressing the unique needs and complexities of regional and remote Australia, this project aims to accelerate the circular transitions while fostering more equitable and sustainable development across the nation. By mid 2024, we will be finalising plans for place-based experiments. In addition to contributions to research on circular transitions, brokers and geographies, the project is facilitating peer to peer learning and support through an online community with the ACE Hub, and will conclude with a proposed national framework for regional CE transitions for local government in 2025-26. The project is funded by the Australian Government as part of the National Environmental Science Program Phase 2: Sustainable Communities and Waste Hub.

Introduction:

Local government can be pivotal actors in circular transitions. They work in close proximity to communities and control key levers like waste management, land use, and procurement grant them significant influence, sitting as they do between the 'bottom up' of community and local business, and the top down of other levels of government, plus broader economic and social institutions.

Research in the Netherlands and the EU has suggested that local governments can help establish the preconditions for circular economy transition including (Cramer, 2020):

- **Policy and program interventions:** Develop their own CE policy and/or adjust existing policy instruments in view of CE, and implement in daily practice – for example: Planning controls, bans on landfilling or incineration, extended producer responsibility schemes, eco-labelling, feed-in tariffs for renewable energy, and green procurement policies. Incentives such as grants, subsidies, tax breaks, and low-interest loans for circular economy businesses and initiatives, as well as access to spaces, infrastructure and networks all play a role.
- **Manage collection and processing infrastructure development:** Investing in composting facilities, repair workshops, recycling centres, and waste-to-energy plants.
- **Business learning and innovation:** Promote employment and new businesses in CE, and facilitate innovation and learning networks on CE.
- **Public awareness and capacity building:** Educational campaigns, community engagement programs, and training for residents and businesses on circular economy practices.

Such system-building activities generally fit with expected roles of government.

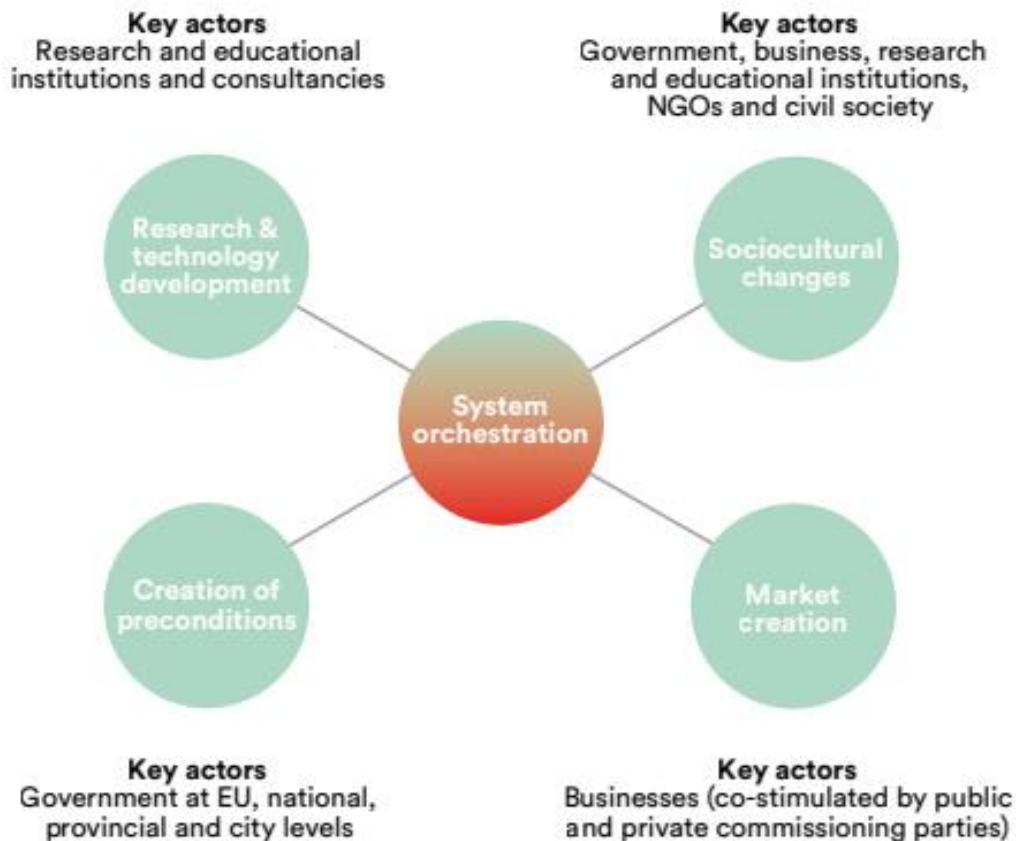


Figure 1: CE transition brokers connect key actors in the circular economy (Cramer 2020).

Transition brokers on the other hand draw on key capabilities to play a further role – system orchestration. These rely on the following characteristics (Cramer, 2020, p. 12):

- “To be entrepreneurial, dare to leave their comfort zone, persevere, be impatient and be willing to follow up with contacts”
- “To enthuse and inspire others to cooperate”
- “To think and act from a system perspective but at the same time to be pragmatic”
- “To get the idea of CE accepted in a variety of businesses and organisations, translate your activities into the language of other organisations and not appear threatening”
- “To act in the collective interest and be professional enough to stand above the parties”
- “To have a very broad knowledge base in CE innovations, the regional business environment and the regional political culture”

However, in Cramer’s research, a sharp distinction is drawn between that of governments and or transition brokers. As one of her participants states:

‘Local government can definitely not take on the task of the transition brokers. Local government should be busy with the creation of the preconditions. The transition brokers orchestrate the implementation process and act as an intermediary between the parties that need to cooperate in order to build a

viable business case and develop a business model that reflects the needs of all parties' (Cramer, 2020, p. 12)

Our earlier exploratory research (2023 forthcoming) identified a gap in knowledge about whether or not, and how differently, local governments in regional and remote Australia are playing a role in CE transitions. Roles in transitions can be varied, and change in response to context and experience (Trenks and Bögel, 2024). However, in Australia, are the lines between roles in Cramer's framework as sharply delineated? The expanded geographic scale, distributed populations, and the political, economic and employment significance of primary and secondary industry in non-urban Australia, offer different configurations of challenges and opportunities to the more densely populated global North. Australian local governments are also a step further removed from setting policy levers than Cramer's Dutch research. Australian State governments playing a crucial role in many areas managed at the provincial level in the Netherlands. Early indications are that further away from the CBD we travel, the more evidence there is that "circular society" at play, rather than circular economy – but does this take the form of circular economy innovation as a result of increased public investment, or is an alternative, potentially transformative practice of regional development emerging? (Denniss, 2017; Jaeger-Erben et al., 2021; Melles, 2021; Wiedmann et al., 2020). What does this mean for the role of local government in facilitating transitions to circularity? The current research begins to build an evidence base that can help answer such questions.

Circular transitions in regional and remote Australia

A range of government reports, policies and programs highlight specific circular economy challenges and opportunities for rural and remote Australia (Boxall et al., 2019; DELWP, 2022; GISA, 2022).

Recognised Opportunities:

- **Resource Diversification:** Much of the outsized environmental footprint of Australia is driven by extractive industry in remote and regional Australia (Wiedmann et al., 2015). Embracing the circular economy can breathe new life into waste and reframe the role of extractive industries into more diverse and value-added production. This generates jobs and economic diversification in areas increasingly feeling the vulnerabilities of their position in global supply chains and markets. Some regional communities are diversifying through the circular economy by transforming plastic into building materials, food waste into biochar, and discarded electronics into valuable components.
- **Self-Sufficiency and Reduced Reliance:** Local resource recovery can foster self-sufficiency, reducing dependence on external materials and lowering transportation costs. This has been argued to empower communities and strengthens local economies.
- **Infrastructure Upgrades and Improved Services:** Circular economy initiatives can act as catalysts for infrastructure development, leading to new technologies, improved waste collection, processing facilities, and essential services. Some regional communities host state-of-the-art recycling plants and efficient waste management systems.

- **Innovation hubs:** Regional communities can become hubs for innovative solutions, fostering local ingenuity, investment and workforce development. Biochar production, upcycling initiatives, and decentralized manufacturing are examples of how regions can lead with circular economy practices.

Recognised Challenges:

- **Limited Infrastructure and Expertise/Capability:** Smaller populations and remoteness pose challenges in accessing skilled personnel and establishing robust infrastructure. This can hinder the implementation of circular economy projects.
- **Economies of Scale:** Smaller material streams and less diverse economies in some regions struggle to achieve economies of scale, making efficient processing and recirculation opportunities difficult. This can hinder the economic viability of circular economy initiatives.
- **Market Access and Transportation Costs:** Distance from major markets and high transportation costs can make it difficult for materials to make their way into circular products to compete with those made from virgin materials, impacting the profitability of circular economy ventures.
- **Policy and Regulatory Landscape:** Existing policies and regulations might not fully support the development of a circular economy in regional areas. This can create barriers and hinder progress.

To our knowledge, the implications of these contextual differences for the role of local government and transitions brokers in CE transitions has not been examined in Australia. This report presents new research that compares and contrasts the experience of regional and remote participants with respondents from Australia's urban local governments. This research both generates new knowledge and identifies practical opportunities to facilitate innovation through peer-to-peer learning and collaboration, broader policy and program support, and industry and civil society leadership. In the following sections, we explore:

- key material issues
- progress in implementing responses
- characteristics of promising and innovative responses
- capabilities and partnerships harnessed to tackle CE innovations in regional and remote Australia.

We conclude with discussion of how the findings inform design of direct, peer-to-peer support, and opportunities for placed based experiments in phase three of this project. We also reflect on broader implications for research, policy and practice.

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Who we heard from

Sample

A total of 96 respondents representing 93 Australian local governments participated. They were recruited from a population list of 534 public contact details (17.8% participation rate). Note that reported proportions (%) in the rest of this report are based on the number of respondents who answered the relevant question, with some partially completed surveys and multiple answer allowances meaning total numbers are slightly higher or lower for some questions.

Locations were categorised with reference to the ABS remote area structure population statistics.

- Urban = 50% or more of the LGA population is "Major city" or "Inner regional" (n=43).
- Regional/remote = 50% or more of the LGA population is "Outer regional", "Remote" or "Very remote" (n=43).

By these criteria, approximately 270 LGAs are regional / remote, indicating relatively even coverage of the two groups. We achieved nearly equal numbers of urban (48) and regional/remote (REGIONAL/REMOTE) locations (47), with representation from all states and territories bar the Australian Capital Territory (Figure 2).

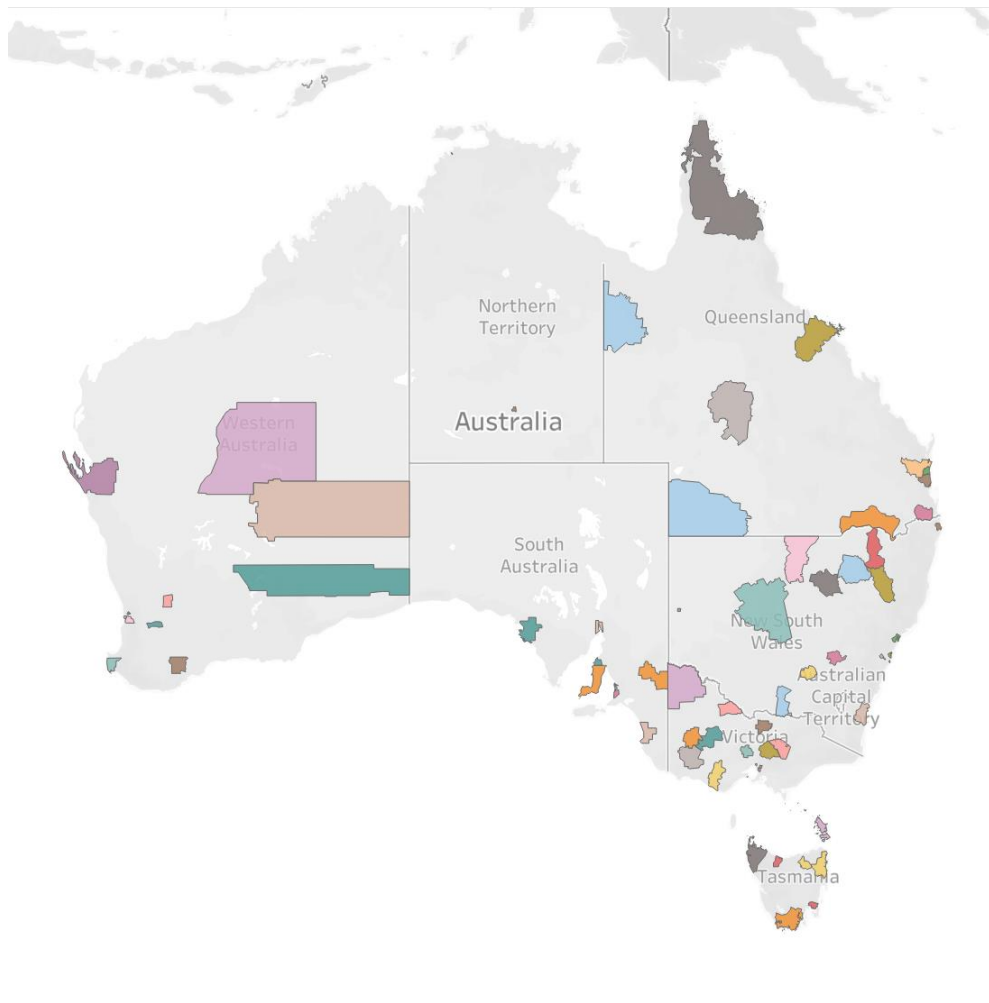


Figure 2: Map of participating locations. CO Open Map Box 2024 CO Open Street Map - courtesy of Raiyan Arshad

Recruitment

All LGA contacts were invited via email and the Australian Circular Economy hub portal in five calls for participants. We also systematically telephoned and emailed regional and remote locations, offering telephone assisted completion and to resend links, attempting contact at least three times if not initially successful. Direct contact with regional and remote location councils allowed us to record non-participation reasons given in response to our research team. The most common reasons were “no relevant staff currently available” (i.e. due to leave, other duties, too busy), or “no relevant staff at all”.

Roles, seniority and experience of participants

Our participants’ seniority, role foci and long-term experience suggests a tendency for more whole of council, senior strategic roles engaging in CE in regional and remote areas when it does occur, but also somewhat less specialisation of roles in the area.

Regional and remote participants were nearly one third senior management, whereas urban participants were dominantly managers or officers.

Around half of both groups participants describe themselves in waste services roles. Of the remainder, urban participants were more likely to be in sustainability (21%) than dedicated CE roles (5%), with both specialisations much more likely in urban locations than regional and remote participants (7% and 0% respectively).

More participants from regional and remote areas listed “other” as their role. Respondents listing “other” for their work area tended to be other environmental (e.g. environmental public health, compliance, infrastructure), in Economic Development, or Governance (i.e. CEO, governance, strategy).

In terms of experience in these roles, regional and remote participants are more than double the proportion of less than one years’ experience than urban, and slightly less than double the proportion of more than 20 years. Urban respondents show a similar pattern at 2-5 years, and 10-20 – suggesting a more even pipeline of experience in CE related roles.

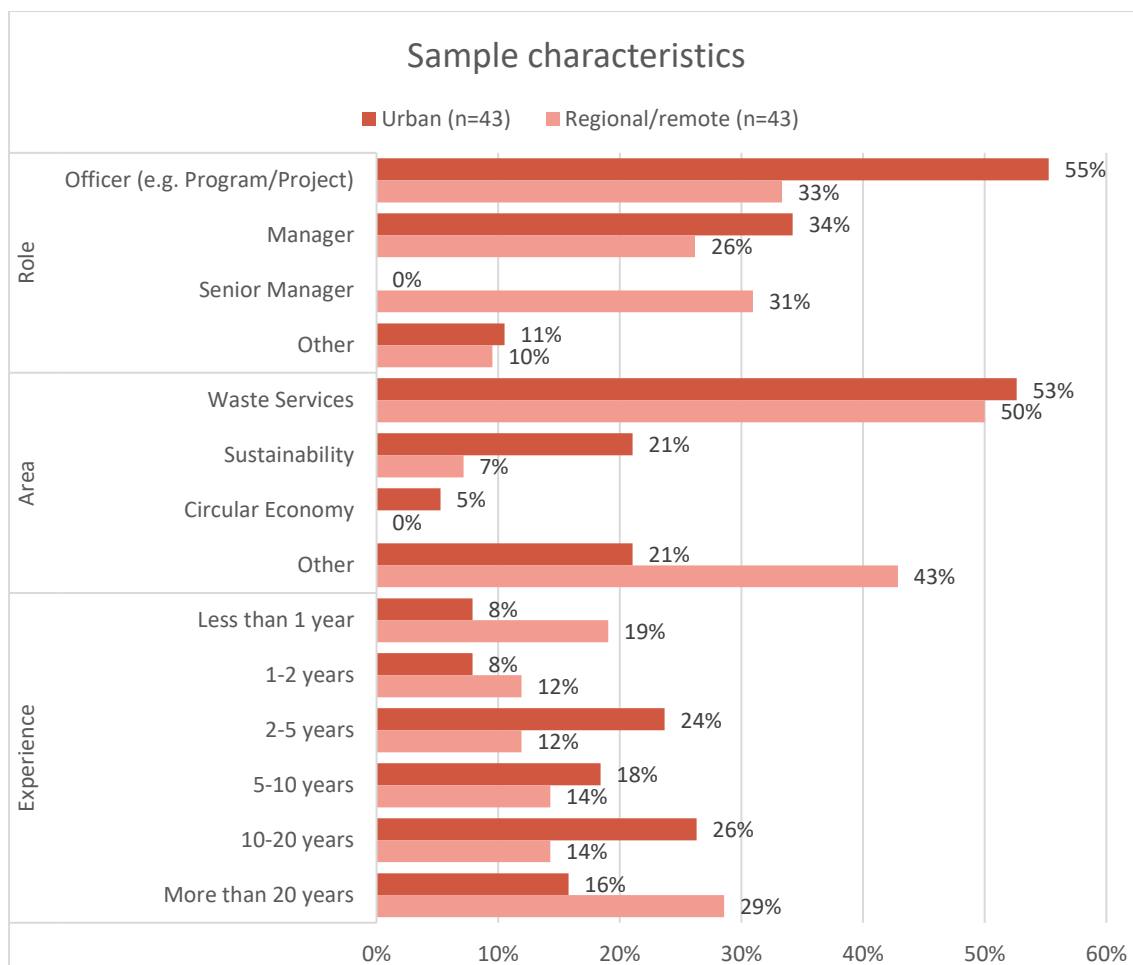


Figure 3: Comparison of roles and experience in urban and remote/regional local governments in Australia.

Part 1: Problematic Material Flows:

We asked councils what material flows are problematic now, which are present but stable, and which are emerging. Both urban and remote/regional councils face significant challenges in managing various waste streams, with hazardous waste, construction waste, and specific materials like batteries and soft plastics posing major concerns. Despite differences, there are also shared concerns across both categories for several materials, highlighting the need for collaborative solutions and improved waste management infrastructure across regions, states and nationally.

Differences:

- **Hazardous waste:** Both categories consider hazardous waste a major issue, but remote/regional councils report a significantly higher percentage (60% vs. 44% for urban). This suggests greater difficulty managing hazardous materials in these areas.
- **Commercial/Industrial, Construction and demolition waste:** This waste stream poses a larger challenge for remote/regional councils (40% vs. 26% for urban), likely due to factors like larger geographical areas and infrastructure limitations.
- **Treated/untreated timber:** Similar to construction waste, managing treated/untreated timber presents a bigger challenge for remote/regional councils (40% vs. 28% for urban).

- **Soft plastics:** While both consider it a major issue, urban councils report a higher percentage (72% vs. 51% for remote/regional), indicating potentially greater volume or specific challenges in urban areas.

Similarities:

- **E-waste:** Both categories consider e-waste a major issue (around 23-30%), highlighting the widespread challenge of managing electronic waste effectively.
- **Rigid plastics:** Both consider rigid plastics a major issue (around 28-30%), indicating shared concerns about managing this prevalent material.
- **Household chemicals/paint:** Both find managing these potentially harmful materials challenging (around 26-35%), underlining the need for proper disposal solutions.
- **Mattresses:** Both struggle with mattress disposal (around 42-51%), suggesting a lack of efficient solutions for this bulky waste stream.
- **Other materials:** Many materials have similar percentages for both categories, including metals, paper/cardboard, lights/globes, textiles, and food organics, suggesting shared challenges across urban and remote/regional areas

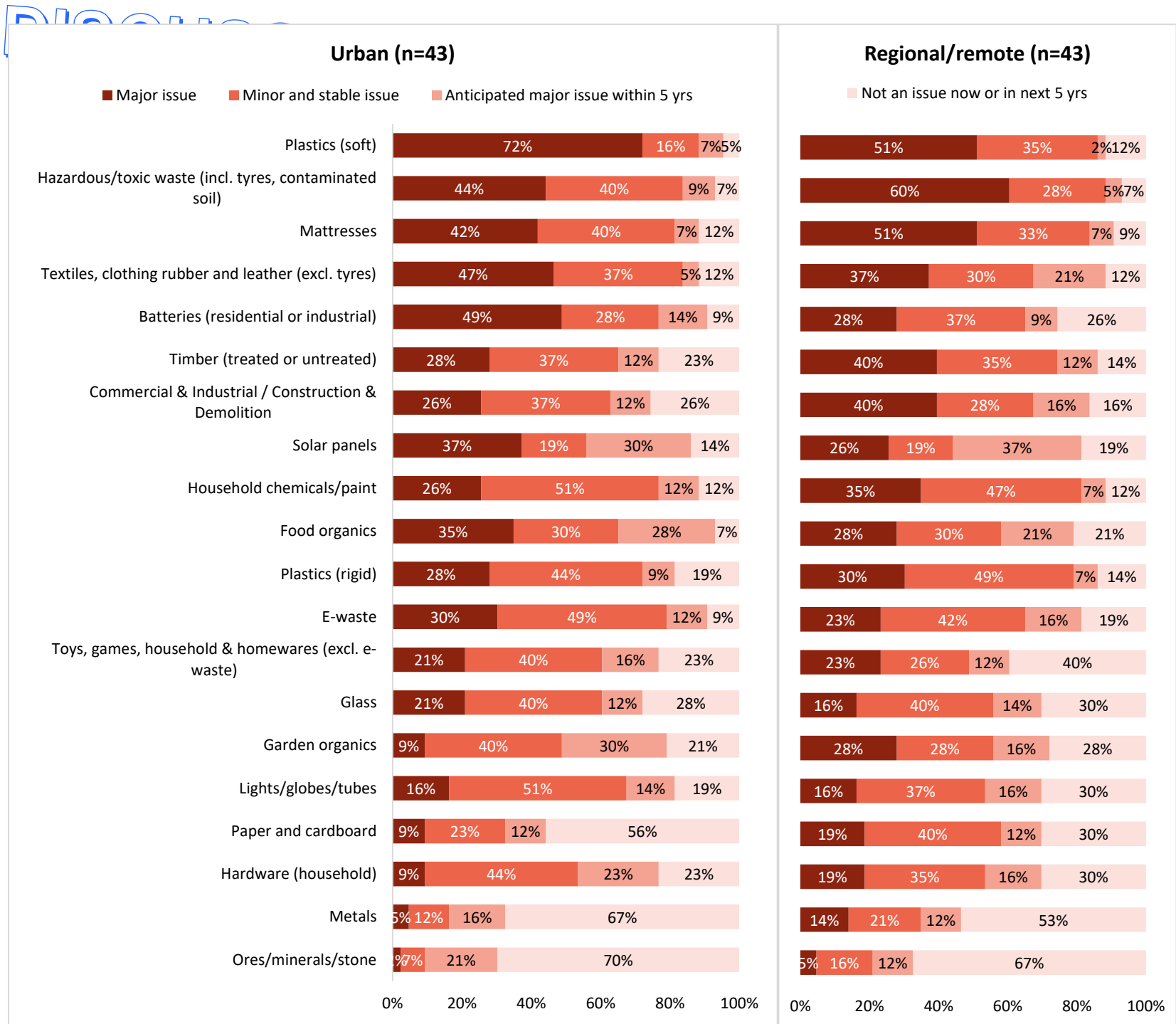


Figure 4: Comparison of which materials are current, emerging, minor or not issues across urban and regional/remote locations

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“Not an issue” compared between urban and remote/regional areas

There are also materials with a larger gap between "Not an Issue" percentages between the two categories:

- Paper and cardboard: 56% (urban) vs. 30% (regional/remote)
- Toys, games, household & homewares (excl. e-waste): 23% (urban) vs. 40% (regional/remote)
- Metals: 67% (urban) vs. 53% (regional/remote)

Possible explanations for these differences include: Better access to recycling infrastructure in urban areas may contribute to lower percentages for paper and cardboard. Higher consumption rates in urban areas could lead to more established waste management systems, making items like toys and homewares less problematic.

Emerging materials issues

Both urban and remote/regional councils share concerns about solar panels in the coming years. The only material that is anticipated to be a more significant major issue for urban councils but not for regional/remote councils is garden organics (30% urban, 16% regional/remote). The only material that is anticipated to be a significantly more major issue for regional/remote councils but not for urban councils is textiles, clothing rubber and leather (5% urban, 21% regional/remote).

Similarities:

- **Solar panels:** Both (30% for urban, 37% for remote/regional) anticipate challenges with managing end-of-life solar panels, indicating potential infrastructure and technology gaps in this emerging waste stream.
- Most other issues are also similar, with the following of particular concern:
 - **Food organics** (28% urban, 21% regional/remote)
 - **Hardware (household)** (23% urban, 16% regional/remote)
 - **Lights/globes/tubes** (14% urban, 16% regional/remote)
 - **E-waste** (12% urban, 16% regional/remote)
 - **Commercial & Industrial / Construction & Demolition** (12% urban, 16% regional/remote)
 - **Ores/minerals/stone** (21% urban, 12% regional/remote)
 - **Metals** (16% urban, 12% regional/remote)
 - **Toys, games, household & homewares (excl. e-waste)** (16% urban, 12% regional/remote)

Differences

- **garden organics** (30% urban, 16% regional/remote).
- **textiles, clothing rubber and leather** (5% urban, 21% regional/remote).

Reasons given for nominating materials as priorities

Participants were given the opportunity to explain their nomination of materials in the above questions in a free text question. Generally while urban areas focus is more specific to individual materials and re-circulation options, regional and remote areas grapple with transportation challenges, limited resources, and environmental concerns surrounding waste disposal and recycling. Respondents comments from both locations suggests some tensions between what materials are priorities for community and political reasons, and what council managers see as priority

materials based on considerations such as impacts on processing capacity, finances, health and environment.

Based on a thematic analysis, and with indicative quotes, the main reasons given as explanations for identifying specific materials as priorities were as follows:

Urban Areas examples of reasons for nominating issues:

- E-Waste (including Solar Panels): Lack of viable local recovery options and product stewardship, leading to potential environmental and safety concerns
 - *“Solar panels, there is no viable local recovery options and no product stewardship.”*
- Food Organics (FOGO): Driven by government commitments and environmental concerns, with an emphasis on implementing programs to divert organic waste from landfill.
 - (because it has) *“the least amount of recycling facilities or options to recycle”*
- Plastics (Soft and Rigid): Community concern and environmental impact, particularly due to limited recycling options and high volumes of municipal waste.
 - *soft plastics - political and residential demand for recycling*
- Glass: Political and environmental considerations, although crushing glass is seen as a low-value use of resources.
 - *(It’s) “Political and Environmental.”*
- Construction and Demolition Waste: Significant landfill contribution due to lack of reuse and repurposing practices, alongside contamination of recycling streams by composite materials.
 - *“Construction and demolition and associated wastes can comprise up to 50% of what is landfilled so having a broad diversion facilities, plant and markets are a huge priority for our council.”*
- Batteries: Safety hazards, especially concerning lithium batteries, lack of operators to manage problematic batteries, and inadequate recycling infrastructure.
 - *“Batteries are an issue as there are not enough operators able to manage problematic batteries such as lithium, vapes etc.”*

Regional/Remote Areas examples of reasons for nominating issues:

- Transportation Challenges: The environmental impact and financial burden of transporting materials to processing facilities outweigh the positive impacts, particularly for items like mattresses, tyres, and bulky waste.
 - *“Tyres, we cannot recycle, we do not have the infrastructure to shred, it costs over 60K per year to have an external company come... to shred but then we still have the issue of having the shredding tyres on location.”*
- Limited Infrastructure: Lack of infrastructure for recirculating certain materials like tyres, plastics, and e-waste, leading to illegal dumping, burning or accumulation in landfills.

- *“As an island all bulky products are shipped in by barge. Smaller items come in by plane. This creates excess in packaging. Particularly soft plastics and cardboard. Agricultural bulk bags, shrink wrap and strapping is a major issue that is being landfilled (legally and illegally) or burned by farmers. Whilst cardboard is a commodity, shipping cost and our lack of storage area means it is being predominantly landfilled., There is also some burning and reuse/composting by the community.”*
- Environmental Concerns: Issues with environmental impacts, such as fire hazards and health risks associated with improper disposal of materials like tyres, chemicals, and scrap metal.
 - *“Tyres/Rubbers - environmental impact - fire hazard, environmental health hazard (breeding mosquitos)”*
- Geographical Constraints: Remote locations face challenges in accessing recycling options, leading to stockpiling or landfilling of materials like green waste, tyres, and e-waste.
 - *“Tyres, no markets, no recycling schemes & often dumped.”*
- Financial Constraints: Limited funding and high costs associated with managing and transporting waste for recycling, especially for smaller local governments.
 - *“Disposal fees do not cover the cost for handling due to political pressure.”*

Levels of activity:

For each material stream highlighted as ‘major’ we asked whether action had been, is or will be taken in future.

Materials with no history of activity

Overall, urban areas tend to have a history of addressing materials like glass, garden organics, paper and cardboard, and metals. Regional/remote areas tend to have significantly lower action rates for almost all materials. Some of the most significant gaps in activity on major material issues in both locations, considering the number of councils listing them, are below, with REGIONAL/REMOTE areas much less likely to be acting on them currently or ever than urban areas

- E-waste
- Batteries (residential or industrial)
- Textiles, clothing rubber and leather (excl. tyres)
- Mattresses
- Plastics (soft)
- Commercial & Industrial / Construction & Demolition
- Solar panels
- Hazardous/toxic waste (incl. tyres, contaminated soil)

Ready to start

To help identify areas for potential collaboration in place-based experiments, we also sought to identify where work was about to start work on major material issues.

Similarities:

- Both urban and regional/remote councils are ready to start work on glass, food organics, plastics (soft), household chemicals/paint, and toys, games, household & homewares (excl. e-waste).

Differences:

- Urban councils are more ready to start work on garden organics, e-waste, batteries (residential or industrial), textiles, clothing rubber and leather (excl. tyres), mattresses, commercial & industrial / construction & demolition, and timber (treated or untreated).
- Regional/remote councils are more ready to start work on paper and cardboard, plastics (rigid), and hazardous/toxic waste (incl. tyres, contaminated soil).

Overall, urban councils appear to be more ready to start work on a wider range of material issues than regional/remote councils. However, there are some exceptions, such as paper and cardboard and hazardous/toxic waste, where regional/remote councils are more ready.

Considering for future

Opportunities for mid to long term collaboration may occur in materials local governments are considering for future. Note that there are materials where they are already currently active, or ready to start, where they have not indicated they are also contemplating for future.

Similarities:

Both urban and regional/remote councils are considering action in future on a wide range of materials, including:

- Glass
- garden organics
- food organics
- e-waste
- paper
- cardboard
- plastics (rigid and soft)
- batteries (residential or industrial)
- textiles
- clothing rubber and leather (excl. tyres)
- commercial & industrial / construction & demolition
- timber (treated or untreated)
- household chemicals/paint, and toys, games
- household & homewares (excl. e-waste).

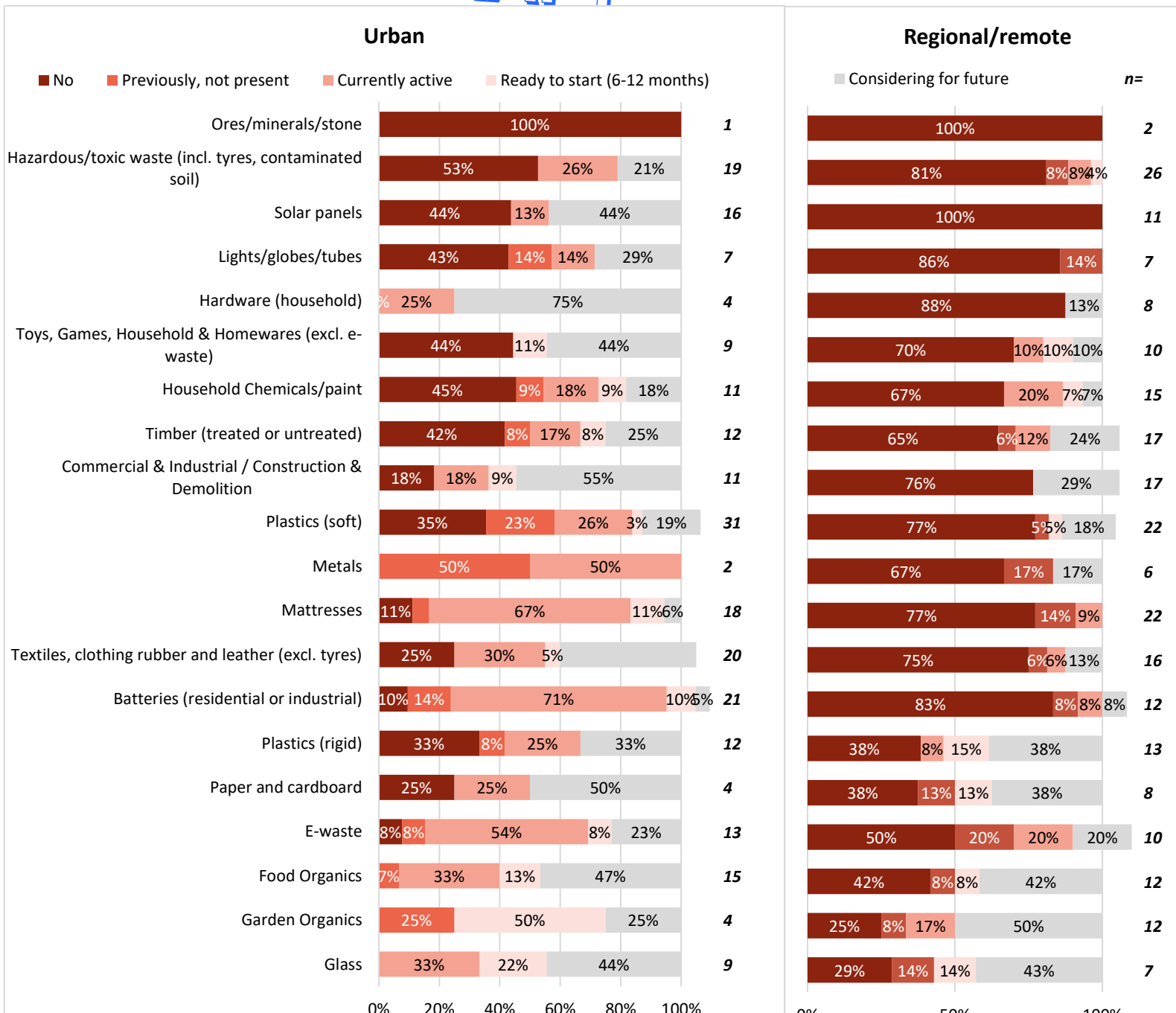
Differences:

Urban councils are considering action in future on some materials that regional/remote councils are not, such as mattresses, lights/globes/tubes, solar panels, and hazardous/toxic waste (incl. tyres, contaminated soil).

Regional/remote councils are considering action in future on metals, but urban councils are not. This may reflect increased access to processing and logistics facilities in urban settings.

Figure 5: Comparison of initiatives targeting major material issues between urban and remote/regional locations.

Note: % do not add up to 100 as respondents could select multiple response options.



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Part 2: Innovative Responses

A series of questions asked participants to nominate particularly promising initiatives and describe them. The following results describe the initiatives, their focal materials, what parts of the lifecycle they target, and how they are delivered, and with whom.

What types of initiatives tend to be nominated as promising?

We asked participants to describe CE initiatives that they felt were particularly promising in a free text question. Overall, regional/remote respondents tend to focus on improving waste management infrastructure, engaging the community, and fostering collaboration with external partners, while urban respondents prioritise policy development, community education, infrastructure enhancement, and industry partnerships to drive circular economy initiatives.

The following is a thematic summary of the descriptions provided by regional/remote and urban respondents regarding promising initiatives:

Regional/Remote Respondents:

Thematically common types of initiatives include:

- **Infrastructure Improvement:** Initiatives focused on improving infrastructure for waste management, such as investigating FOGO (Food Organics, Garden Organics) recycling options, setting up transfer stations, and exploring the establishment of material recovery facilities. In part, these are response to limited accessibility due to geographical constraints, difficulty in implementing initiatives aimed at larger populations in small communities, and challenges in transporting waste streams due to distance and cost.
 - *"Investigation for FOGO service is on track. It is the most promising cause we don't need to send end product 1500-2000km down the road."*
 - *"For those that don't own and operate resource recovery centres, there are limited large scale initiatives to process waste."*
- **Community Engagement:** Efforts to engage the community in waste reduction and recycling activities, including campaigns about household waste, community recycling centres, and (less commonly, but promising from a life cycle perspective) - initiatives to reuse and repurpose materials.
 - *"Community group second shop for toys and games and other household items for reuse."*
- **Partnerships and Collaboration:** Collaborative efforts with external stakeholders, such as partnerships with water authorities, local businesses, community groups, and state government agencies, to explore recycling opportunities and develop regional waste management plans. These include collaboration with third party schemes for recycling soft plastics, partnering with private companies for waste recycling, seeking state government support to transition to FOGO and forming regional collaborations.
 - *" We are a part of the group of councils ..., due to our distance away from Adelaide and Melbourne - far away from where materials could be recovered. Looking to set up a material recovery facility in the Southeast. In the analysis phase (financial analysis emphasis, if there's*

a market for it). Cut down on transport of materials to either Adelaide and/or Melbourne to be recovered.”

- **Innovation and Research:** Exploration of innovative solutions, such as pre-processing partnerships for e-waste, on-island solutions for cardboard recycling, and feasibility studies for kerbside FOGO collection.
 - *"We are looking into FOGO recycling options, but haven't chosen which pathway to go yet."*

Some outlier / interesting examples were mentioned:

- **Shredding Cardboard for Composting:** One respondent from an island location mentioned shredding cardboard and adding it to a composter as a promising initiative. This approach offers an on-island solution for cardboard recycling, demonstrating creativity in waste management in remote areas.
- **Recycling Agricultural Plastic:** Another respondent described a trial to collect agricultural plastic, specifically baling twine, at a council facility and deliver it to a local processor. This initiative shows a tailored approach to recycling in rural areas, addressing the unique waste streams generated by agricultural activities.
- **Fish Waste to Fertilizer:** One respondent mentioned efforts to find solutions to turn fish waste into fertilizer, emphasizing the need for on-site solutions due to transportation challenges. This initiative demonstrates innovation in waste management by repurposing a specific waste stream into a useful product in remote locations.

Urban Respondents:

Thematically common types of initiatives in urban responses included:

- **Circular Economy and Sustainable Procurement:** Focus on circular economy initiatives, including extended producer responsibility. Partnering with organizations for sustainable procurement and waste management. Implementing policies to eliminate single-use plastics and promote conscious consumption.
 - *"Council's sphere of control allows for support in education, awareness and procurement. Our circular initiatives are focused in reuse. We are looking to better understand our procurement data and map processes for improved management of Council generated waste."*
- **Policy and Regulation:** Initiatives focused on policy development and regulation to drive waste reduction and circular economy practices, including single-use plastics elimination policies, four-bin waste and recycling systems, and hard waste service redesigns.
 - *"Pilots are great but we have found that there is no real incentive for people to participate and the support has to be met with some formal regulation."*
 - *"Advocating for policy changes to support waste reduction and circular economy principles."*
 - *Successful circular economy initiatives encourage avoidance, design out waste and extended producer responsibility. These should be the regulated and established by federal and state government."*

- **Community Education:** Efforts to educate and engage the community in sustainable practices, such as promoting conscious consumption, circular economy principles, and zero waste lifestyles through education campaigns and events.
 - *"Focus on building the capacity of the community to support the repair and reuse culture."*
 - *"We have a single us packaging and materials policy currently on exhibition that will eliminate many unnecessary and problematic single-use items."*
- **Infrastructure and Collection Enhancement:** Investments in waste management infrastructure, such as implementing FOGO collection services, introducing kerbside recycling for soft plastics, and establishing drop-off points or collections for e-waste and batteries. Planning for efficient waste collection and processing systems, including changes in collection frequency.
 - *"mobile (phone) collection service where we collect these items separately at the kerbside and take them to dedicated facilities to recycle."*
- **Industry Partnerships:** Collaborative partnerships with industry stakeholders, such as recycling providers, manufacturers, and non-profit organizations, to develop recycling solutions and explore circular economy opportunities.
 - *"Council's latest partnership with [COMPANY].... allows soft plastic and hard to recycle rigid plastic."*
 - *"Timber recovery trial was very successful - but requires separation of specific timber types/categories."*

Some interestingly proactive, and less conventional, examples from the urban respondents included:

- **Solar Panel Recovery:** An example of a response to an emerging issue: *"Solar panel recovery offers an opportunity to grow the circular approach in the region whilst creating diversion from landfill."*
- **Saturdays at the Hub** – linking services across the lifecycle: *"CE initiative across multiple projects - refuse, reuse, repair, refurbish."*
- **On-Site Mattress Deconstruction:** Exploring localised and smaller scale responses to a hard materials – and thereby avoiding transport and volume challenges. *"Investigating on-site deconstruction of mattresses where materials can be readily recovered and used locally and/or recycled through existing services."*

Materials targeted in promising initiatives

Participants in both locations reported a wide range of materials, often multiple, being targeted by initiatives they regard as 'promising'. No participants from either urban nor remote/regional locations reported initiatives targeting hazardous / toxic waste (often a state government responsibility in Australia). Some of the most prominent differences in what is likely to be targeted by location are as below:

Material foci of regional/remote nominated promising initiatives

- Commercial & Industrial / Construction & Demolition
- Batteries (residential or industrial)
- Household Chemicals/paint
- Mattresses
- Timber (treated or untreated)
- Metals
- Paper and cardboard
- Garden Organics

Material foci of urban areas nominated promising initiatives

- Textiles, clothing rubber and leather (excl. tyres)
- Toys, Games, Household & Homewares (excl. e-waste)
- Plastics (rigid)
- Plastics (soft)
- E-waste
- Food Organics

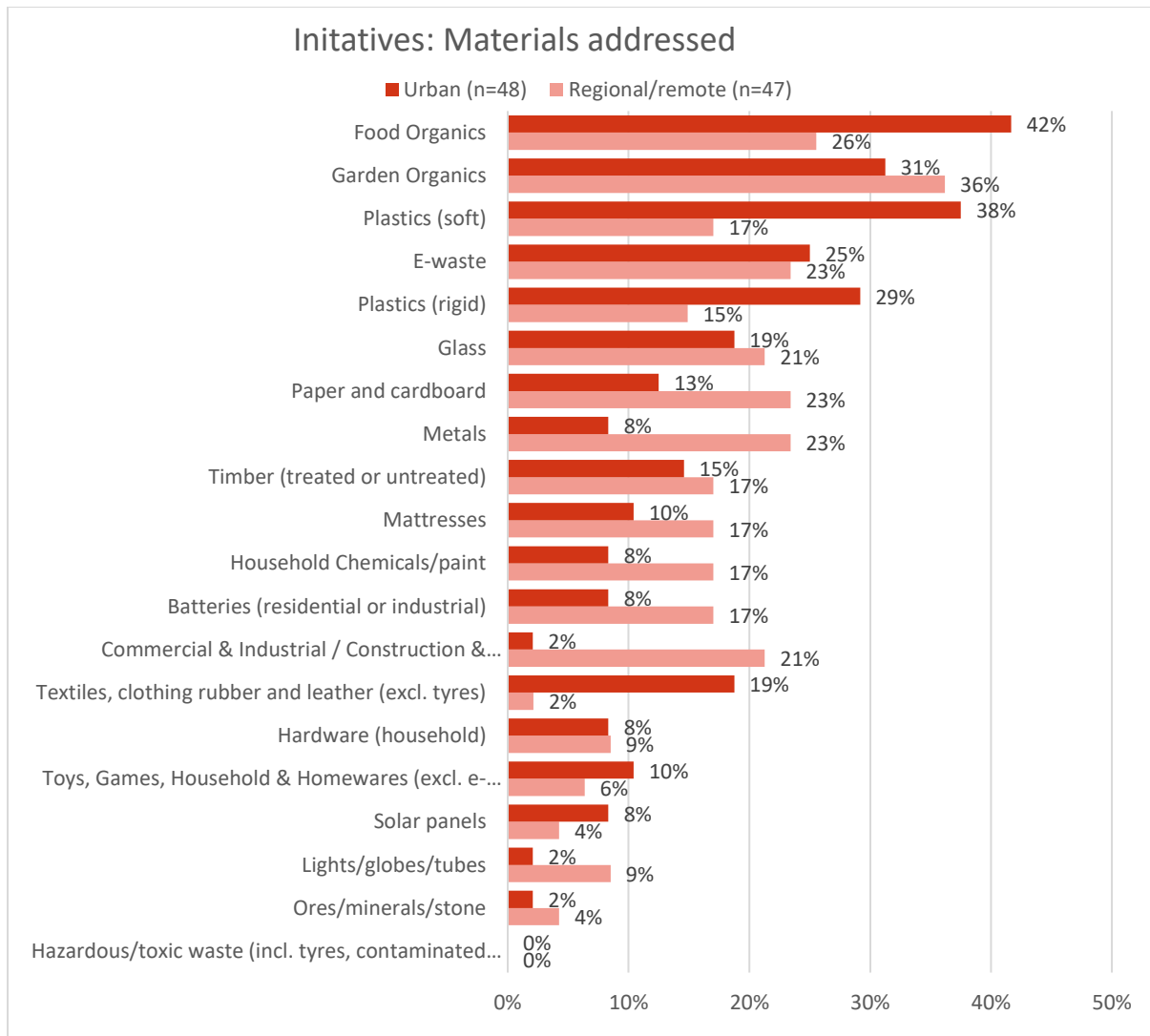


Figure 6: Material foci of nominated promising initiatives by participants

Life cycle intervention phase

Consistent with examples shared in the text descriptions above, respondents from both locations reported the largest category of initiatives they felt were promising as intervening at the recycling phase of the materials lifecycle (38% urban, 43% regional/remote). This reflects a 'post-use' focus common in local government, however there are examples across lifecycle. For example, REGIONAL/REMOTE areas had slightly more initiatives involving repurposing of materials, recovering energy and reducing materials, whereas urban initiatives had more redesign, refuse, remanufacture and repair/refurbish initiatives.

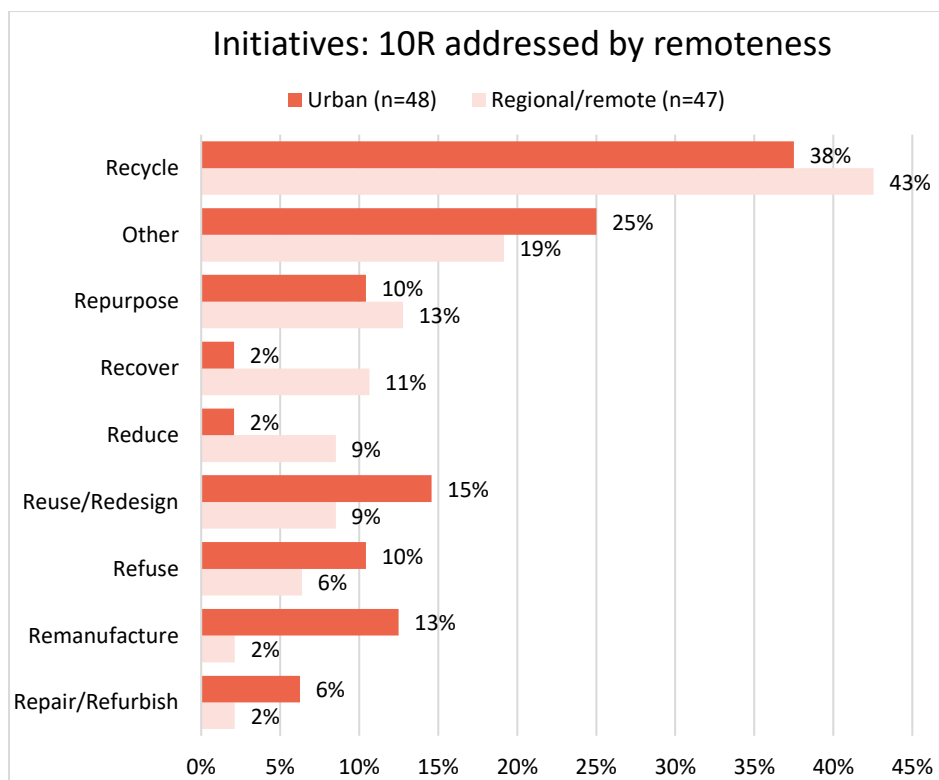


Figure 7: Material life cycle phase focus of initiatives nominated as promising (10Rs)

The high proportion of ‘Other’ category nominations suggests not all initiatives easily “Rs” framing we derived from literature (after Reike et al., 2018). ‘Other’ free text nominations included initiatives they felt represented multiple categories in some cases, and in many, descriptions of materials addressed without indicating the lifecycle phase.

Participants were provided with the following description of each category in the survey, as below.

- **Refuse:** preventing raw materials use (R0)
- **Reduce:** decreasing raw materials use (R1)
- **Reuse/design:** reusing or modifying product to enhance circularity (R2)
- **Repair:** maintaining and/or repairing product – combined (R3/ R4)
- **Remanufacture:** making new product from second hand (R6)
- **Repurpose:** reusing product but with other function (R7)
- **Recycle:** salvaging material streams with highest value (R8)
- **Recover:** incinerating waste with energy recovery (R9)

Ways of working in initiatives

There was some interesting similarities and differences in approaches to initiatives by location. While both urban and regional and remote areas described the approach as collaborations / partnerships in about 1/3 of examples, for 1/3 of and regional and remote it was a direct investment in capital/infrastructure or technology (compared to

8% in urban areas). Urban areas were also more likely to describe themselves as ‘supporting circular business models’, and implementing ‘shared benefits models’ than and regional and remote participants.

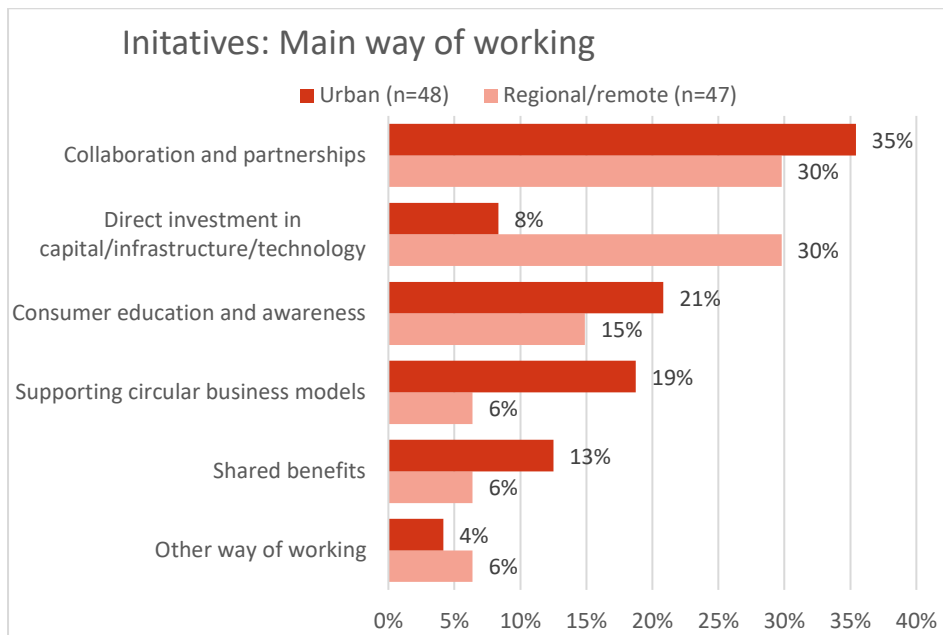


Figure 8: Main ways of working in nominated promising initiatives by regional/remote and urban participants

Who are they working with?

In both localities, it is most commonly private companies, plus local and state government. However urban initiatives tend to work slightly more with private companies and regional and remote slightly more with local and state governments. While not common overall, REGIONAL/REMOTE respondents were more likely to be working with Indigenous groups (significantly so), and with family business and federal government. Notably, 11% of REGIONAL/REMOTE initiatives involved no collaboration, while all urban projects had some form of collaboration. Urban participants were more likely to work with charities/not for profits and community groups than REGIONAL/REMOTE.



Figure 9: Who are participants working with in their nominated promising initiatives?

Initiative maturity by innovation 's-curve' phase

Consistent with the text descriptions of promising initiatives, urban initiatives are progressing beyond pilots and trails more so than regional/remote initiatives, but neither are 'breaking through' in large numbers. The biggest difference is in the "Preparing" phase, where we find 72% of regional/remote initiatives, compared to only 44% of urban initiatives. There is also a significant difference in the "Building" phase, with 33% of urban initiatives in this phase, compared to only 9% of regional/remote initiatives. Notably, in neither category are a substantial number of initiatives in the 'scaling up' or 'mainstreaming' phase. This suggests that regional/remote initiatives are taking longer to get off the ground and/or more likely to stall at the conception phase, than urban initiatives, and both are having difficulty achieving broader systemic change in structural factors like policy and regulation, markets, culture and norms, and infrastructure. That said, urban initiative descriptions (above) did more clearly reference efforts in that direction, for example influencing policy and regulation or community norms.

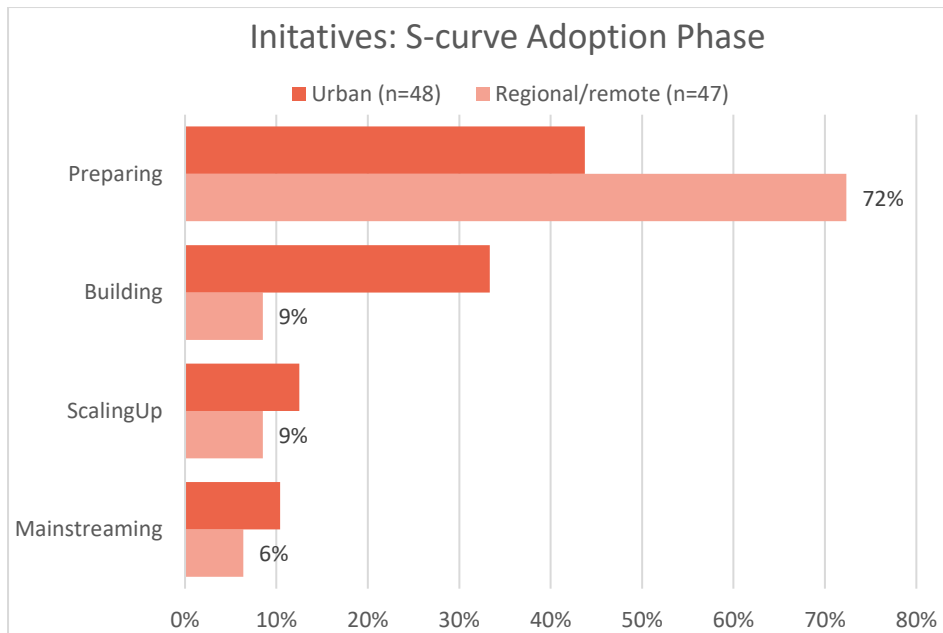


Figure 10: Maturity of nominated initiatives along the innovation "s-curve" by regional/remote and urban locations.

Part 3: Council functions and capabilities

Council characteristics

What council functions get involved in CE?

CE engages multiple council functions in remote and urban locations, but there are some differences. While nearly all of both geographies involve waste and management functions in CE, urban councils are statistically more likely to report environment and sustainability team functions involvement in CE than REGIONAL/REMOTE. Indicatively, urban councils also list more economic development involvement. Rural/remote councils (indicatively) list more public health, governance, and community services involvement, relative to urban. It appears that REGIONAL/REMOTE locations have a wider spread of council function involvement in CE, and somewhat less specialised sustainability focus, than urban - especially given the similar pattern in our survey respondents roles – (see Figure 3 on p. 11).

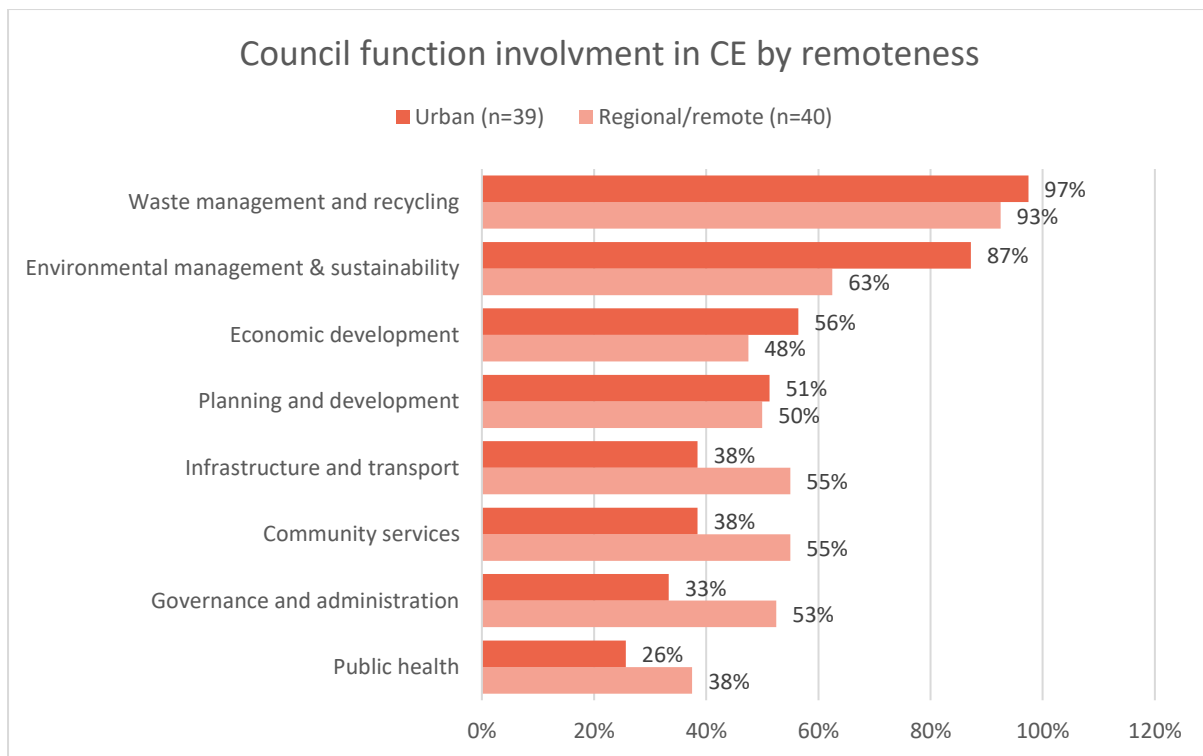


Figure 11: Council function involvement in CE by remoteness

Dedicated roles focused on CE

Participants were asked if they had roles dedicated to CE present in their council. There were 21 examples of 1 or more dedicated roles mentioned in urban areas, 11 mentioned in regional/remote areas, and 10 where it was described as shared or distributed, and 5 no response. It is not clear if references to waste roles indicate some role changes from more 'linear' functions towards circularity (the positive reading), or conflation of circular economy with waste management (a negative reading), and of course either might be happening in different examples.

Urban examples of roles described as dedicated to CE

1. Circular Economy Project/Coordinator/Lead/Senior (9)
2. Senior Community Waste Project Officer
3. Waste and Sustainability Officer, Climate Change and Emissions Reduction Officer
4. Asset Optimisation Officer
5. Sustainable Resources Project Officer - Reuse
6. Waste Education Officer
7. Resource Recovery strategy and engagement officer
8. Coordinator of Environment & Community Safety
9. Waste Minimisation Officer & sustainability education officer
10. Waste and Resource Recovery Officer (part-time)
11. Sustainable Economy Officer, Waste Education Officer, Sustainability Planning Officer, Manager of Waste
12. Resource Recovery Team
13. Switch Your Thinking Officers (which focus on reducing greenhouse gas emissions through various approaches)
14. Economic Development & Waste department

Regional/remote examples of roles described as dedicated to CE

1. Environment officer, regional waste management facility manager
2. Waste and Sustainability
3. Northern Inland Regional Waste Coordinator
4. Economic development section / Manager (2)
5. New Environmental Education Officer role will be working largely in the circular economy space.
6. Men's Shed - collection of steel etc.
7. Development and Infrastructure Department together with solid waste management
8. Standard recycling for kerbside and green organics.
9. Management team
10. Waste Education Officer and Waste, Water & Sustainability Department

Extent of reliance on consultants or external partners

While a larger proportion of REGIONAL/REMOTE participants than urban never use consultants, a greater, statistically significant proportion (nearly 2/5ths) rely on them almost entirely. This may indicate a capability gap if 'never' means unavailable but needed. Further inquiry is warranted. Urban participants are statistically more likely to blend use of consultants 'some of the time' with internal capability, and may indicate more internal expertise being available (especially in light of other responses to the survey).

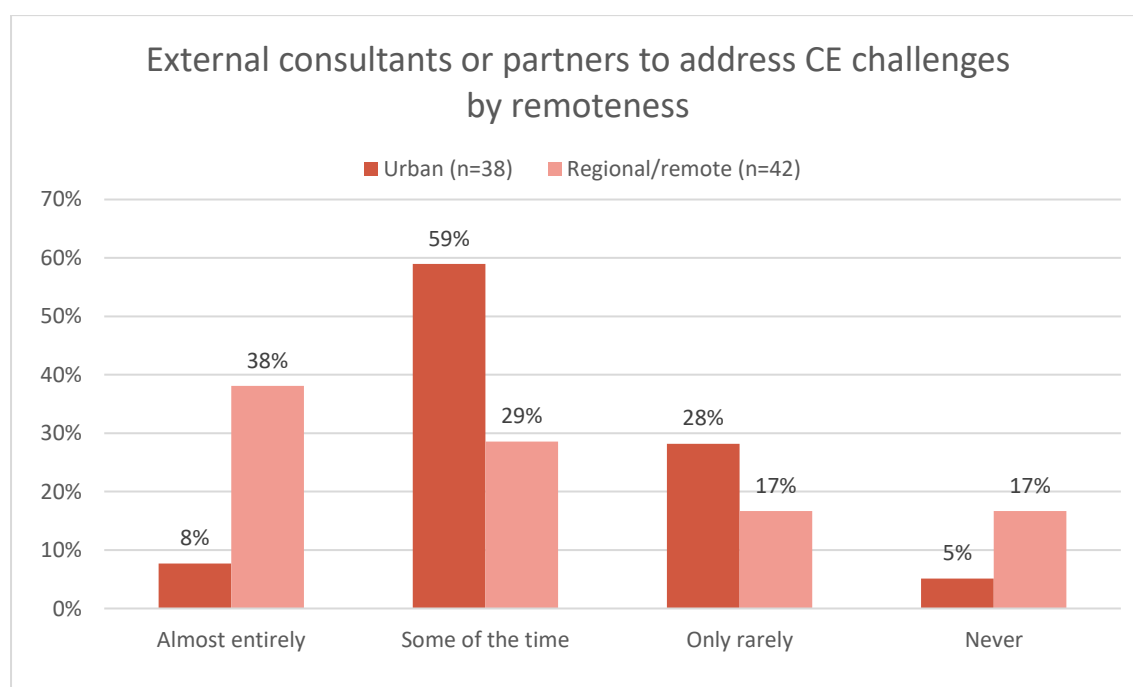


Figure 12: Extent of reliance on external consultants/partners (general) by urban and regional/remote participants.

One in four councils lack waste data stewards

Just under $\frac{3}{4}$ of participants from both locations have dedicated data roles, with urban respondents reporting slight more data management systems support (Figure

13). More concerningly (given acknowledged issues with national waste data, just over ¼ report having no dedicated waste data roles).

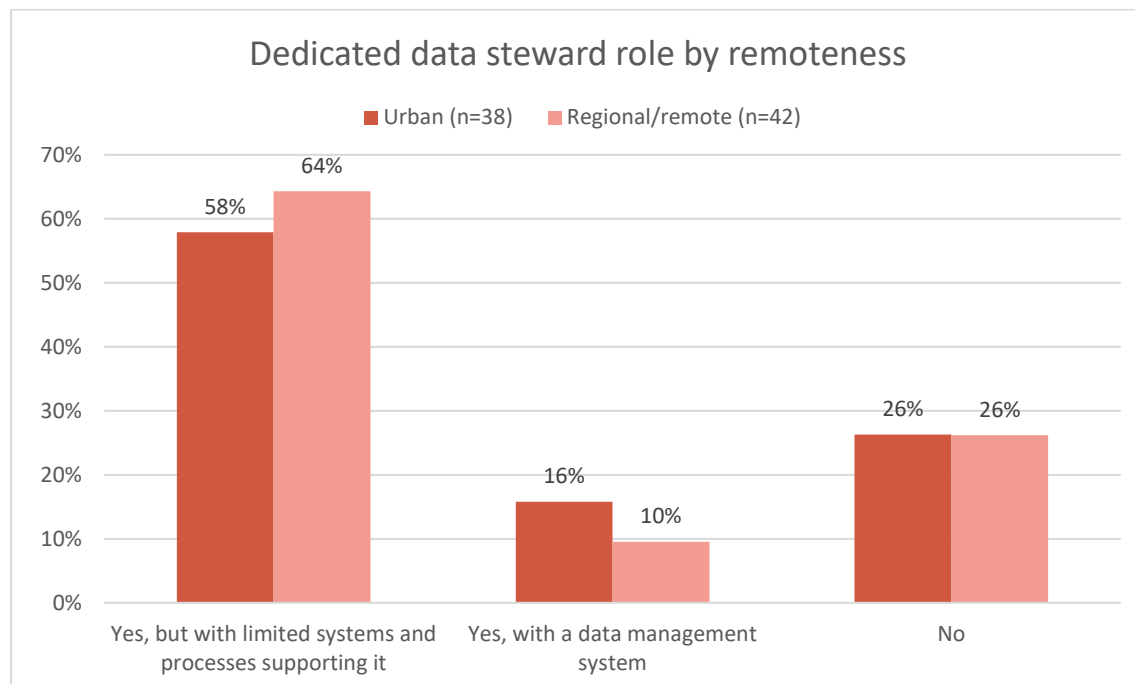


Figure 13: Waste and CE data roles

Overall strong transitions broker capabilities

As discussed in the introduction, we asked participants to self-assess their capabilities in a number of areas that previous research indicates may be important in facilitating regional circular economy innovations. Whether or not local government actors are playing the role of a transition broker at any given time, it does appear that they have all the requisite capabilities, if some more marginally than others (Figure 14).

Overall, there is promisingly strong / confident base in these capabilities, in particular there strengths and less variation in the group (especially for regional/remote) in characteristics like:

- perseverance
- pragmatism
- public good focus
- relationships

However, there are lower, if still overall positive, self-assessment, and a lot more variation in responses, with regards to respondent's ability to:

- open doors to policy
- CE idea acceptance pitching
- broad base CE knowledge
- systems approach

These tendencies are also somewhat greater in regional and remote area respondents' answers. Encouragingly, a lot of the higher scores are arguably in more

intrinsic and values orientated characteristics, whereas those with room to improve, are potentially more ‘trainable’ i.e. skills and knowledge orientated.

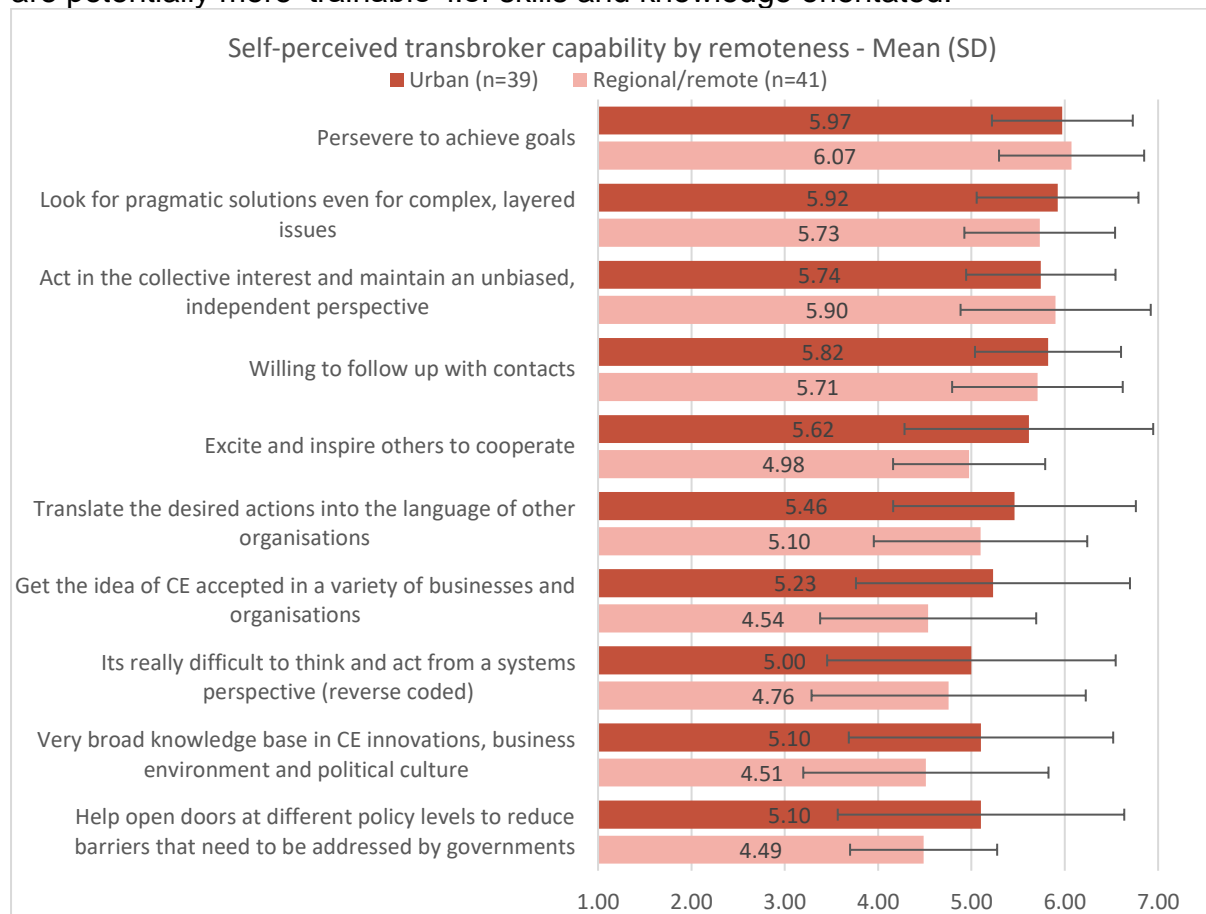


Figure 14: Self-assessed transition broker capabilities in urban and regional/remote locations.

Discussion

The types of materials causing issues, which are being acted on, and the characteristics the initiatives that are described by local government actors in regional, remote, and urban areas reveals distinct approaches shaped by their specific contexts and capacities. This discussion aims to consolidate our understanding emerging from these different locales, highlighting the contrasts and implications for broader policy and research in sustainability transitions.

In regional and remote areas, the emphasis on infrastructure improvement, community engagement, and partnerships and collaboration underscores a pragmatic approach to overcoming geographical and logistical constraints. Based on the described maturity phases of even promising initiatives, these are present and impactful in regional and remote Australia. There does seem to be an element of struggling to establish pre-conditions for circular innovation in many cases (after Cramer 2020). The focus on establishing or enhancing waste management facilities, such as Food Organics, Garden Organics (FOGO) recycling options and material recovery facilities, speaks to the pressing need to handle waste streams locally to mitigate the costs and environmental impacts of long-distance transport. These efforts are coupled with initiatives to engage communities directly in waste reduction

and recycling activities, reflecting an understanding of the critical role of local buy-in and participation in sustainability efforts. The emphasis on partnerships, notably with government agencies, businesses, and community groups, further indicates a recognition of the value of collaborative approaches in pooling resources and expertise to address shared challenges. This blurs into more transition broker roles – underlining the likelihood of a softer distinction between these roles in Australia than in the seminal research from the Netherlands.

Australia's urban areas, by contrast, demonstrate a more diversified and policy-driven approach to sustainability initiatives. The focus on circular economy principles, sustainable procurement, and policy development indicates a strategic use of urban governance levers to influence broader systemic change. Urban respondents' emphasis on community education and infrastructure and collection enhancement suggests a multifaceted strategy to engage the urban populace and improve the efficiency and reach of waste management systems. The partnerships with industry stakeholders highlight an urban capacity to leverage commercial and technological innovations in pursuing circular economy goals. At the same time, the limited progress beyond the “building” phase in the transition curve does suggest more potential than reality. Thus there are opportunities to leverage transition broker type contributions in both urban and regional/remote locations.

A key distinction between the two settings is the material focus of their initiatives. Regional and remote initiatives are facing a sea of insurmountable opportunities to address materials issues, across a broad range, including commercial and industrial waste, highlighting the diverse waste streams characteristic of these areas and their economic activities. In contrast, urban local government initiatives more frequently target consumer-related materials, such as textiles and plastics, reflecting the consumption patterns of denser urban populations, and greater specialisation in their contributions. It's possible this also reflects the comparatively limited availability of local pre-consumer intervention opportunities in Australia's economic structure compared to industrialised nations in the global north. This noted, they were still greater in urban settings than in remote and regional, as indicated by lifecycle phase of interventions.

Overall, the material life cycle intervention phase of the initiatives further reveals a common post-use focus across both locales, with a slightly higher emphasis in regional and remote areas on repurposing and energy recovery. This difference underscores the innovation potential in less urbanized areas to develop localized solutions that add value to material streams. Urban initiatives, however, tend to span a broader spectrum of the life cycle, including refuse, redesign, and repair, pointing to a more comprehensive approach to minimizing waste and promoting sustainability in consumer behaviours and product design. Note that traditionally, local government's role has been described as ‘roads, rates and rubbish’, however in Australia in 2024 local governments are often key implementers of state and federal policies, and responding to local community and business needs as well. In urban settings at least, this means they are actively engaging with policy, markets, infrastructure and community drivers of circularity.

Approaches to the development and delivery of these initiatives also differ by remoteness, with regional and remote areas more often emphasizing direct

investments in infrastructure or technology, while urban areas more commonly describe supporting circular business models and implementing shared benefits models. This contrast may reflect the different resource bases and strategic priorities of these locales, with direct investment often necessary in less developed infrastructure settings, whereas urban areas can build on existing structures to foster innovative business practices.

The collaboration patterns revealed in the initiatives suggest a slightly greater inclination in urban areas toward engaging with private companies, while regional and remote initiatives more frequently involve local and state governments. This may reflect the greater presence and influence of commercial actors in urban economies, whereas government entities may play a more central role in less urbanized areas, where market forces alone may be insufficient to drive sustainability transitions. There is also greater involvement with indigenous groups in regional and remote settings.

The analysis of initiative maturity along the innovation 's-curve' highlights a critical challenge: both regional/remote and urban initiatives struggle to progress beyond the pilot phase to achieve broader systemic change. This suggests that while local government actors are capable of generating innovative responses to sustainability challenges, scaling these initiatives to effect more significant structural shifts in policy, regulation, and societal norms remains a formidable hurdle. This challenge is exaggerated in regional/remote settings, and speaks to some of the less developed transition broker capabilities between the two locations.

In summary, the diversity of initiatives emerging from local government actors in regional, remote, and urban areas reflects the complexity of sustainability challenges and the varied contexts in which they are addressed. While the approaches differ, the underlying commitment to sustainability transitions presents opportunities for cross-local government learning and collaboration, potentially enabling more effective and widespread adoption of innovative solutions across different types of communities.

Several possible explanations can account for the differences between urban and regional/remote locations in the materials they are focused on for their circular economy initiatives:

- **Material Resource Availability:** Regional and remote areas may have different types and quantities of material resources available locally compared to urban areas. For example, regional areas might have abundant supplies of timber, metals, and minerals due to their proximity to forests or mining sites, leading to a greater focus on these materials in circular economy initiatives.
- **Economic Activities:** The economic activities predominant in each location can influence the types of materials generated and managed. Regional areas may have more reliance on industries like agriculture, mining, or manufacturing, resulting in a greater emphasis on materials such as timber, metals, and construction waste. In contrast, urban areas may generate more diverse waste streams due to higher population density and a greater concentration of commercial and residential activities. In some cases, regional

locations are receiving waste generated from urban locations, further complicating the situation.

- **Infrastructure and Logistics:** Differences in infrastructure and logistics can impact the feasibility of re-circulating certain materials. Urban areas often have more advanced waste management infrastructure and easier access to facilities, enabling them to focus on materials like textiles, plastics, and e-waste. In contrast, regional and remote areas may face logistical challenges such as limited transportation options and longer distances to recycling centres, influencing their material focus.
- **Community Priorities and Preferences:** Community priorities and preferences play a crucial role in shaping circular economy initiatives. Regional communities may place greater importance on materials with significant local environmental or economic impacts, such as timber, agricultural waste, and household chemicals. Urban communities, on the other hand, may prioritize materials associated with lifestyle choices, convenience, and consumerism, such as textiles, plastics, and electronic waste.
- **Regulatory Environment:** Differences in regulatory frameworks and policies at the local, regional, and national levels can also influence material priorities. Urban areas may be subject to stricter regulations and oversight, or have access to more funding opportunities for certain materials, leading to a greater emphasis on those materials in circular economy initiatives.
- **Collaborative Partnerships:** The availability and nature of collaborative partnerships between local governments, businesses, community organizations, and research institutions can shape material priorities in circular economy initiatives. Urban areas may have more diverse and accessible networks for collaboration, facilitating initiatives focused on specific materials like textiles, plastics, and e-waste.

What capabilities might help shift the situation?

The involvement of various local government functions in CE initiatives indicates a multidisciplinary approach, albeit with some differences between urban and regional/remote areas. Urban councils show a higher likelihood of involving environment and sustainability teams, alongside economic development functions, suggesting a more specialized focus on sustainability and economic aspects of CE. In contrast, the broader involvement of functions such as public health, governance, and community services in regional/remote councils points to a more integrated approach, likely reflecting the diverse challenges and opportunities in these areas. In this sense at least, circular initiatives may be closer to a 'circular society' notion than 'economy'.

The presence of dedicated roles focused on CE in both urban and regional/remote councils highlights the growing recognition of the importance of CE. However, the difference in the number of dedicated roles and the potential confusion between waste management and CE roles underscore a need for clearer definition and

understanding of CE functions within councils. This distinction is vital for moving beyond traditional waste management to embrace the broader principles of CE. Further integration across council functions still could help realise the potential of a Circular Society (CS).

Reliance on Consultants or External Partners

The reliance on consultants or external partners, particularly in regional/remote areas, suggests a capability gap that may hinder the effective implementation of CE/S initiatives. While urban areas blend the use of consultants with internal expertise, indicating a stronger internal capability, the significant reliance on external support in regional/remote areas highlights the need for capacity building within these councils. Developing internal expertise is crucial for sustaining CE/S initiatives and reducing dependence on external consultants.

System pre-conditions or Transition Broker Capabilities

The self-assessment of transition broker capabilities reveals a strong foundation in characteristics such as perseverance, pragmatism, public good focus, and relationships. These intrinsic values have been argued to be essential for driving CE initiatives, and possibly play a role in CS initiatives also. However, the lower self-assessment scores in areas like policy influence, CE idea pitching, broad-based CE knowledge, and systems thinking approach, particularly in regional and remote areas, identify critical areas for capacity building, and would likely be critical for facilitating CS brokering.

To leverage the capabilities of local government actors as transition brokers for CE/S, targeted efforts to enhance skills and knowledge in policy advocacy, CE/S conceptualization, and systems thinking are necessary. Building these capabilities can empower councils to effectively pitch CE/S ideas, influence policy, and adopt a holistic view of CE/S initiatives.

On the government side, there appear to be opportunities to better connect and integrate different levels of government's efforts in remote and regional Australia. Some of the 'transition brokering' required appears to be in leveraging even the possibility of system pre-conditions for the full opportunities a broker can unlock between the key actors (see introduction). At the same time, this will look different in regional and remote Australia than in regional Netherlands.

On the industry side, it appears noteworthy that primary and secondary industry activity, while present, is not front and centre in initiatives shared by regional and remote participants. Australia's regional and remote extractive industries have a very large environmental footprint and need to earn and maintain social licence at multiple scales (Baumber et al., 2021; Ghori, 2019; Scovell et al., 2024). Large corporations are increasingly aware of opportunities of 'green value adding' from local processing in a world of increasing carbon, biodiversity and circular trade barriers, and the local value of even individual large industry 'anchors' to local CE ecosystems (Boxall et al., 2019; Valentine, 2019, 2016). This may offer unique opportunities in some remote and regional areas and could provide a focus in place-based experimentation going forward.

On the community side, while geographic scale and population density can mean community is distributed, the reliance on local government as a point of contact for wider services and programs, as well as the reduced specialisation and ‘multiple hats’ worn by local government in terms of council functions, also represents a potential asset in that there is a close, multi-faceted connection between local government and different groups and communities. Government programs are often fleeting interruptions into people’s lives, but in regional and remote Australia, arguably there is some opportunity to align them to a greater degree than in complex noise of urban environments.

In short, the extent to which remote and regional circularity is ‘circularly economy plus public investment’ versus the emergence of alternative regional models of development remains an open question. The general implication is that, as for mainstream Australia, the dominant narrative is circular economy, not society (after Melles, 2021). However, it is clear that the challenges of regional and remote locations may open up the possibilities for circular society transitions, and provide insights into the different capabilities required to achieve them. While it is difficult to know how many, if any, of the innovative examples nominated might align with an alternative vision of circular society, there are possibilities here that could potentially be explored in future research.

For example, we can ask:

1. To what extent are regional and remote initiatives reframing circularity from the dominant ecological modernisation narrative (i.e. continued economic growth decoupled from material, energy and biodiversity impacts) to alternative development that further facilitates social justice and restoration of ecosystems (i.e. ‘doughnut economics’ (Raworth, 2017) or SDG wedding cake (SRI, 2016))?
2. Is regional and remote circularity prioritising and measuring its contributions of mainstream economic growth and innovation, or is it ‘growth agnostic’ – i.e. able to prioritise, and measure, non-economic value, prosperity and wellbeing without necessarily pursuing endless growth in conventional economic terms?
3. How do regional and remote initiatives engage with distributional, procedural and restorative justice? All of these are implicated in navigating decision making, governance and understanding, sharing and/or restoring the ‘goods’ and ‘bads’ of problems circularity initiative address, and their own subsequent intended and unintended impacts.
4. Are regional and remote initiatives pursuing incremental, transformative or a mixed portfolio of changes in behaviours and institutional structures contributing to harms and circular solutions?
5. What is the level of reflection and criticism of mainstream circular economy narratives and approaches embedded in policy, markets and movements reaching remote and regional Australia? To what extent are they being reframed? (see 1. and 2)
6. What capabilities, motivations and behaviours are being exhibited by circular society brokers and intermediaries, and how do they engage with broader systems in comparison to circular economy transition brokers?

Opportunities for remote and regional local governments

This analysis suggests local governance in remote and regional Australia might be able address the unique material issues they face by:

1. **Enhancing Specialized CE/S Roles:** Developing clear and dedicated CE roles within councils can provide the specialized focus required for effective CE implementation and establishing pre-conditions, that facilitate sustained careers in such roles.
2. **Capacity Building:** Strengthening internal expertise and/or foster transition brokers outside council, particularly in regional/remote areas, through training and development programs in **CE/S principles, policy advocacy, and systems thinking.**
3. **Leveraging Intrinsic Values:** Building on the strong intrinsic values and characteristics identified, such as perseverance and public good focus, to drive CE/S initiatives forward.
4. **Collaborative Partnerships:** Leverage the unique advantages of remote and regional locations to encourage collaboration between councils, industry, levels of government, and community organizations to share knowledge, resources, and best practices in CE/S.
5. **Incubate, scale and translate relevant place based, locally feasible solutions:** Contextual characteristics like geography, logistics and industry / socio-demographic mixes are essentially fixed constraints. 'What works' in more urban and densely populated regions, without these constraints, is unlikely to translate. The initial database of initiatives and solutions we've generated provides a resource for beginning to identify a uniquely regional and remote portfolio of innovations to work with.

By focusing on these areas, local governments and their supports can enhance their role in both establishing pre-conditions, and as transition brokers, facilitating **CE or CS** innovations that are tailored to the specific challenges and opportunities of their regions. This approach can contribute to the broader sustainability transitions necessary for a resilient and sustainable future in regional and remote Australia. Given the political and social significance of regional and remote Australia in key transitions, it is critical that narratives highlighting (real) local ownership and benefits are created. But beyond this, if existing and new connections between extractive primary and secondary industry and local government in regional and remote Australia realise their potential, this may provide a new leverage point for tackling Australia's global material, biodiversity and climate footprint, contributing to global transitions.

Implications for Place-Based, Policy-Relevant Experimentation and Translation (this project)

The 2023 survey research was designed to produce a comprehensive national baseline survey that maps the Circular Economy (CE) challenges and capacities of local government bodies in regional and remote Australia, focusing on their role as transition brokers and the innovative solutions they are developing in response to these challenges. The analysis presented here provides valuable insights into the

unique challenges, capabilities, and innovative responses across these diverse regions.

To foster collaboration and further exploration in 2024-25, we now invite expressions of interest from local government champions and their allies to support innovation in remote and regional Australia. Our aim is to facilitate connections, support knowledge exchange, and encourage collaborative innovation through the ACE Hub Planet Ark platform. We envision creating a Community of Practice space in 2024, starting as a minimum viable product backed by our project team and in-kind contributions from the ACE Hub. The insights from our survey are expected to attract additional investment from state, federal, industry and NGO partners, potentially expanding our efforts into a comprehensive dashboard that facilitates peer-to-peer matching and supports an active online community.

Additionally, we will seek expressions of interest for place-based trials, strategically selecting councils based on the survey findings, geographical considerations, and social, industry and waste demographics. This targeted approach will allow us to create a nuanced socio-technical profile of CE/S practices in regional and remote Australia, laying the groundwork for tailored, impactful interventions.

From July 2024 to June 2025, we plan to co-design and implement place-based experiments, aiming to secure external funding to broaden our impact across multiple locations. Experiments can test various interventions, ranging from transformative circular society efforts, capability building plus governance reforms, to technological solutions like MICROfactories (Sahajwalla, 2020). We can also provide translation and evaluation support for existing grass roots innovations, particularly those aligned with 'circular society' outcomes. In all cases they aim to generate scalable resources and insights for broader application. Our goal is to produce a rich tapestry of case studies that illuminate how council capabilities, regional characteristics, and specific challenges influence the success of CE/S initiatives.

Looking ahead to July 2026-June 2027, we will conclude ongoing experiments, synthesize learnings, and share resources widely, contributing unique insights from regional and remote Australia to a vibrant, collaborative CE ecosystem. A repeat survey will track progress and trends among regional and remote local governments, updating our data portal and online community accordingly. This longitudinal approach will enable us to measure the impact of our interventions and refine our strategies for promoting CE practices nationwide.

Ultimately, this project aims to culminate in a capstone report outlining a national networked governance strategy for advancing circularity in regional and remote Australia. Through this collaborative effort, we aspire to catalyse a transformative shift towards sustainability, leveraging local innovations to inspire nationwide change, and potentially influencing Australia's global material, biodiversity and carbon footprint.

Conclusion

The 2023 survey exploring how circularity in urban and regional/remote local governments contrasts with urban local governments in Australia has underscored the critical role that local governance plays in the transition towards a more sustainable and circular economy. This research has illuminated the diverse challenges and opportunities that exist across different geographic contexts, highlighting the necessity for tailored, context-specific approaches to drive effective circularity transitions.

Our findings reveal a marked disparity in the capabilities, priorities, and levels of implementation between urban and regional/remote areas, suggesting that a one-size-fits-all approach to circularity is insufficient. Instead, the development of place-based strategies, enhanced through collaboration and supported by targeted capacity building, emerges as a pivotal factor in accelerating circularity initiatives. The diversity in the maturity of initiatives, from concept to scaling phases, particularly underscores the need for continued support and investment to bring promising projects to fruition and to leverage local innovations for broader systemic change.

This report both contributes to our understanding of the current landscape of circularity innovation in Australia and provides a foundation for future research, policy development, and practice. By highlighting the essential role of local governments as establishers of pre-conditions, facilitators and transition brokers, it calls for increased investment, collaboration, and innovation to overcome the unique challenges faced by regional and remote areas. In doing so there are opportunities to explore expanded imaginaries of circular society - beyond dematerialising economic growth - to transforming social justice and regenerative people-nature relations emerging from economic and material arrangements.

Fostering circular transitions in Australia requires a collective effort—one that embraces the complexities of local contexts, leverages the strengths of diverse stakeholders, and is underpinned by a commitment to sustainability, equity, and resilience. The journey towards a circular society, therefore, is not just an economic or environmental imperative but a collaborative endeavour that spans across all levels of government, industry, and community, aiming to achieve a sustainable future for all Australians.

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Appendices – 1 Survey

NESP2 Local governments & circular economy

Start of Block: Introduction

Display This Question:

If Source Is Empty

Int_On1 Local Governments & Circular Economy Survey You are invited to take part in this study, undertaken by Monash University and the University of Tasmania, on behalf of the Australian Government Department of Climate Change, Energy, the Environment and Water.

You should have received an Explanatory Statement in the invitation email. **Please read the [Explanatory Statement](#) in full before deciding whether or not to participate.**

This research aims to understand CE challenges for local governments in regional and remote areas of Australia and the capabilities you draw on to overcome them. If you agree to participate, you should not experience any inconvenience or discomfort, other than the time taken to complete this online survey (approximately 15 minutes). You are free to withdraw at any time before you submit your responses. To facilitate collaboration opportunities, some of the data you provide may be shared and directly attributed to your organisation **unless you specifically request otherwise**. You will be given an opportunity to opt out of this process at the end of the survey or you may do so in writing up until **4 weeks after the completion of the survey**. For more detail on confidentiality and data storage, please see the [Explanatory Statement](#).

If you would like further information regarding any aspect of this project, you can contact the responsible researcher, Dr Stefan Kaufman (Tel: 0423149185, Email: Stefan.kaufman@monash.edu). If you have any concerns or complaints about the project, you can contact the Executive Officer of the Monash University Human Research Ethics Committee (Project number: 38125, Tel: +61 3 9905 2052 Email: muhrec@monash.edu).

Thank you for considering participating in this project Yours sincerely, Dr Stefan Kaufman

Display This Question:

If Source = CAT1

Int_CAT11 Local Governments & Circular Economy Survey My name is [Name], I'm calling to invite you to take part in a study about material stream challenges for local governments in regional and remote areas of Australia. The research is being undertaken by Monash University and the University of Tasmania, on behalf of the Australian Government Department of Climate Change, Energy, the Environment and Water. You should have received an email invitation from Planet Ark with an Explanatory Statement that provides more detail about the study and what's involved. Have you seen the email and had a chance to read the [Explanatory Statement](#)?

Yes (1)

No (2)

Display This Question:

If Local Governments & Circular Economy Survey My name is [Name], I'm calling to invite you to tak... = No

Int_CAT12 That's fine, I'm just going to read out some information about the survey before we continue... This research aims to understand material stream challenges for local governments in regional and remote areas of Australia. If you agree to participate, you should not experience any inconvenience or discomfort, other than the time taken to complete this telephone interview (approximately 20 minutes). You are free to withdraw at any time during the interview. To facilitate collaboration opportunities, some of the data you provide may be shared and directly attributed to your organisation **unless you specifically request otherwise**. You will be given an opportunity to opt out of this process at the end of the interview or you may do so in writing up until **4 weeks after completion**. [Interviewer note: if the respondent would like more information about confidentiality and data

storage, read out relevant sections from the [Explanatory Statement](#).]

If you would like further information about this project, you can read the Explanatory Statement that was emailed to you previously. Or I can provide contact details for the responsible researcher, Dr Stefan Kaufman [*Interviewer note: if the respondent wants contact details, Tel: 0423149185, Email: Stefan.kaufman@monash.edu*].

If you have any concerns or complaints about the project, I can provide contact details for the Executive Officer of the Monash University Human Research Ethics Committee [*Interviewer note: if the respondent wants contact details, Project number: 38125, Tel: +61 3 9905 2052 Email: muhrec@monash.edu*].

I can also provide these contact details at the end of the interview if you'd prefer.

Cons Do you consent to participate in this research?

Yes (1)

No (2)

End of Block: Introduction

Start of Block: PART A - Council

Q1 Thanks for agreeing to participate.

First off, in which state or territory is your council located?

(This is to ensure we collect responses across all councils in regional and remote Australia)

New South Wales (1)

Victoria (2)

Queensland (3)

South Australia (4)

Western Australia (5)

Tasmania (6)

Northern Territory (7)

Australian Capital Territory (8)

Other Territories (9)

Display This Question:

If State/T = New South Wales

Q2 LGA Which council/LGA do you work for?

▼ Albury (1) ... Yass Valley (129)

Display This Question:

If State/T = Victoria

Q2 LGA Which council/LGA do you work for?

▼ Alpine (1) ... Yarriambiack (80)

End of Block: PART A - Council

Start of Block: PART B – Problematic material streams

Pre1 This survey aims to understand **circular economy challenges and opportunities** for local government areas in **regional and remote Australia**. We are interested in better understanding what linear **material streams** (e.g. packaging, organics, white goods, mattresses, clothing) are creating waste challenges and what opportunities exist for initiatives addressing these.

Page Break

Pre2 From past work, we know many regions have problems with certain material streams. We would like your help to identify which are relevant for your council.

Display This Question:

If Source = CATI

Int1 *[Interviewer note: ask yes/no first, then specify yes-major, yes-minor; or not now]*

Q3 Which of the following material streams is a relevant problem for your local government area?

| | Yes - and this is a major issue (1) | Yes - but this is a minor issue (2) | Not now - but anticipate it will be in next 5 years (3) | No - this is not a relevant issue now or in the next 5 years. (4) |
|--|--|--|--|--|
| Plastics (rigid) (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Plastics (soft) (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Paper and cardboard (8) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Glass (11) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| E-waste (12) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Textiles, clothing rubber and leather (excl. tyres) (13) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Timber (14) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Metals (15) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ores/minerals/stone (16) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Building and demolition (17) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Batteries (18) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Mattresses (19) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Solar panels (20) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lights/globes/tubes (21) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Toys, Games, Household & Homewares (Excl. e-waste) (22) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hardware (household) (29) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Food Organics (26) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Garden Organics (27) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Household Chemicals/paint (25) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hazardous/toxic waste (incl. Tyres. Contaminated soil) (30) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other - Please specify (24) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

 Page Break

Q4 (OPTIONAL) Are any of the material streams you listed a particular priority? Why is that?

End of Block: PART B – Problematic material streams

Start of Block: PART C - Circular economy initiatives (current and future)

Pre3 We know that local governments are involved in a lot of initiatives and programmes aiming to support a circular economy. We would like your help to better understand what initiatives or programs your council is currently contributing to and/or facilitating.

Page Break

Display This Question:

If Source = CATI

Int2 [Interviewer note: ask yes/no first, then specify yes]



Q5 For each of the problematic material streams you identified earlier, do you have any previous, current or planned circular economy initiatives targeting them?

Display This Choice:

If Problem materials = Plastics (rigid) [Yes - and this is a major issue]

Or Problem materials = Plastics (rigid) [Yes - but this is a minor issue]

Display This Choice:

If Problem materials = Plastics (soft) [Yes - and this is a major issue]

Or Problem materials = Plastics (soft) [Yes - but this is a minor issue]

Display This Choice:

If Problem materials = Paper and cardboard [Yes - and this is a major issue]

Or Problem materials = Paper and cardboard [Yes - but this is a minor issue]

Display This Choice:

If Problem materials = Glass [Yes - and this is a major issue]

And Problem materials = Glass [Yes - but this is a minor issue]

| | No (1) | Previously, but not at present (2) | Currently in place / active (3) | Ready to start in the next 6-12 months (4) | Considering for future (5) |
|---|-----------------------|------------------------------------|---------------------------------|--|----------------------------|
| <p><i>Display This Choice:</i></p> <p><i>If Problem materials = Plastics (rigid) [Yes - and this is a major issue]</i></p> <p><i>Or Problem materials = Plastics (rigid) [Yes - but this is a minor issue]</i></p> <p>Plastics (rigid) (x1)</p> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <p><i>Display This Choice:</i></p> <p><i>If Problem materials = Plastics (soft) [Yes - and this is a major issue]</i></p> <p><i>Or Problem materials = Plastics (soft) [Yes - but this is a minor issue]</i></p> <p>Plastics (soft) (x2)</p> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <p><i>Display This Choice:</i></p> <p><i>If Problem materials = Paper and cardboard [Yes - and this is a major issue]</i></p> <p><i>Or Problem materials = Paper and cardboard [Yes - but this is a minor issue]</i></p> <p>Paper and cardboard (x3)</p> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <p><i>Display This Choice:</i></p> <p><i>If Problem materials = Glass [Yes - and this is a major issue]</i></p> <p><i>And Problem materials = Glass [Yes - but this is a minor issue]</i></p> <p>Glass (x4)</p> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| E-waste (x5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Textiles, clothing rubber and leather (excl. tyres) (x6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Timber (x7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Metals (x8) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ores/minerals/stone (x9) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Building and demolition (x10) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Batteries (x11) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Mattresses (x12) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Solar panels (x13) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lights/globes/tubes (x14) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Toys, Games, Household & Homewares (Excl. e-waste) (x15) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hardware (household) (x16) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Food Organics (x17) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Garden Organics (x18) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Household Chemicals/paint (x19) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hazardous/toxic waste (incl. Tyres. Contaminated soil) (x20) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other - Please specify _____ (x21) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

Pre4 We'd like to know more about the circular economy initiative you consider to be most promising.

End of Block: PART C - Circular economy initiatives (current and future)

Start of Block: PART C - Loop

Display This Question:

If Loop all: Promising More != No

Q6 Can you describe the initiative in a few words, please?

Display This Question:

If Loop all: Promising More != No

Carry Forward Displayed Choices from "Which of the following material streams is a relevant problem for your local government area?"



Q7 Which material streams does it address?

Select all that apply.

- Plastics (rigid) (1)
- Plastics (soft) (2)
- Paper and cardboard (3)
- Glass (4)
- E-waste (5)
- Textiles, clothing rubber and leather (excl. tyres) (6)
- Timber (7)
- Metals (8)
- Ores/minerals/stone (9)
- Building and demolition (10)
- Batteries (11)
- Mattresses (12)
- Solar panels (13)
- Lights/globes/tubes (14)
- Toys, Games, Household & Homewares (Excl. e-waste) (15)
- Hardware (household) (16)
- Food Organics (17)
- Garden Organics (18)
- Household Chemicals/paint (19)
- Hazardous/toxic waste (incl. Tyres. Contaminated soil) (20)

Other - Please specify (21) _____

Page Break

Display This Question:

If Loop all: Promising More != No

Pre5 Circular economy programs change the fate of materials at any point across their life cycle - from the raw materials going into product through to recycling or energy recovery.

Display This Question:

If Source = CATI

And Loop all: Promising More != No

Int3 [Interviewer note: read each option with descriptions & probe for yes/no]
[Interviewer note: if the respondent seems unsure, read the hover-over text]

Display This Question:

If Loop all: Promising More != No



Q8 Still thinking about your most promising initiative, which of the following life cycle stages is the primary point of intervention in the material life cycle? (Hover your mouse over the bolded text for example initiatives).
Select all that apply.

- Refuse:** preventing raw materials use (0)
- Reduce:** decreasing raw materials use (1)
- Redesign:** modifying product in view of circularity (2)
- Repair:** maintaining and repairing product (4)
- Remanufacture:** making new product from second hand (6)
- Repurpose:** reusing product but with other function (7)
- Recycle:** salvaging material streams with highest value (8)
- Recover:** incinerating waste with energy recovery (9)
- Other** (please describe) (10) _____

Page Break

Display This Question:

If Source = CATI

And Loop all: Promising More != No

Int4 [Interviewer note: read each option & probe for yes/no]

Display This Question:

If Loop all: Promising More != No

Q9 Which of the following best describe the main 'way of working' in the initiative?

Select all that apply.

Collaboration and partnerships: initiatives that involve collaboration and partnerships with businesses, industry associations, research institutions, and other stakeholders to drive the transition to a circular economy. (1)

Supporting circular business models: initiatives that promote circular business models such as product-as-a-service, sharing economy, and leasing, to reduce waste and promote resource efficiency. (2)

Consumer education and awareness: initiatives that educate and raise awareness among consumers about the importance of circular economy principles and practices, and encourage them to adopt sustainable behaviours. (3)

Direct investment in capital/infrastructure/technology: a strategic investment in a missing capital or infrastructure element to increase the capability to manage a material stream (e.g. pyrolysis, glass crusher etc). (4)

Shared benefits : financial and other positive outcomes benefit all relevant actors in the initiative (5)

Other (please specify) (6) _____

Display This Question:

If Loop all: Promising More != No

Q10 Who of the following types of groups do you cooperate with on this initiative?
Select all that apply.

- Private company (excl. consultancies) (1)
- Consultancy (10)
- Not-for-profit/ charity/ social enterprises/ programs (2)
- Indigenous organisations - Aboriginal Corporation (3)
- Family-owned businesses – local (incl. sole proprietorships) (4)
- Academic institutions (5)
- Collaborative programs/ collaborations and alliances (6)
- Community groups (7)
- Government (8)
- Other (please specify) (9) _____
- None (11)

Display This Question:

If Loop current: Expl1 Collabs = Government

Q10.1 What level of government?

- Local (1)
- State (2)
- Federal (3)

Page Break

Display This Question:

If Loop all: Promising More != No

Pre6 We would now like to get a sense of which phase your initiative is in. We know reality is not neatly linear - phases repeat and overlap.

Display This Question:

If Loop all: Promising More != No



Q11 Which of the following best describes where your initiative is currently at?

- The initiative is in an early/preparatory phase *You are currently demarcating the scope of the initiative or pilot, developing an outline, consulting key actors, and agreeing upon a joint action plan.* (1)
- Putting plans into action *You are currently in the phase of executing your joint action plan, realising the initiative or pilot, developing tools and procedures, possibly searching for the most promising innovations, selecting investors, etc.* (2)
- Scaling up a successful initiative *You have run a successful initiative and may be communicating and celebrating best practices, evaluating outcomes, looking into possibilities for standardisation and upscaling the reach of successful examples.* (3)
- Mainstreaming the initiative *You are aiming to make the circular initiative more broadly accepted - or 'the norm'- , for example by changing legislation, removing institutional barriers, fading out linear technologies, or encouraging producers and consumers to change behaviours.* (4)

Page Break

Display This Question:

If Loop all: Promising More != No

Q12 If you have more time, is there another initiative that you would consider to be among the most promising circular economy initiatives that you would like to tell us about?
(You can describe up to three initiatives if you like)

- Yes (1)
- No (2)

End of Block: PART C - Loop

Start of Block: PART C - Barriers and advantages

Pre6 Now, we would like to ask you about challenges you may face when you are planning to contribute to, or facilitate, a new circular economy initiative.

Page Break

Display This Question:

If Source = CATI

Int5 [Interviewer note: read each option & probe for yes/no]

Q13 In your opinion, which of the following Infrastructure and Logistics issues can pose a barrier for new initiatives in your region?

Select all that apply

- Large geographical area and travel distances** (incl. between waste sources and processing facilities) (1)
 - Small population size** (2)
 - Population growth exceeds investment in waste recovery and processing infrastructure** (3)
 - Lack of locally available circular products and materials** (4)
 - None** (5)
-

Q14 In your opinion, which of the following Market and Demand issues can pose a barrier for new initiatives in your region?

Select all that apply

- Uncertain market conditions and end market for circular products** (1)
 - Inexpensive cost of virgin materials relative to circular alternatives** (2)
 - Lack of competition or alternatives to for profit / high volume activities lower down the waste hierarchy** (3)
 - None** (4)
-

Q15 In your opinion, which of the following Material Volume, Quality and Contamination issues can pose a barrier for new initiatives in your region?

Select all that apply

- Variable quality of materials due to collection or contamination** (1)
 - Variable quality of materials due to inconsistent production** (2)
 - Low economies of scale for some material streams** (3)
 - None** (4)
-

Q16 In your opinion, which of the following Organisational Capacity issues can pose a barrier for new initiatives in your region?

Select all that apply

- Lack of staff and expertise in the area** (1)
 - Lack of capacity of local government to invest in a circular economy** (2)
 - Lack of capacity of social sector and charities to invest in a circular economy** (3)
 - Lack of capacity of industry to invest in a circular economy** (4)
 - Lack of alternative providers providing more circular products/services than virgin material inputs** (i.e. higher up the waste hierarchy / circular life cycle) (5)
 - None** (6)
-

Q17 In your opinion, which of the following Policy or Regulatory issues can pose a barrier for new initiatives in your region?

Select all that apply

- Lack of regulatory barriers to linear options** (1)
 - Regulatory controls on reuse/diversion of materials that is disproportionately restrictive compared to the risk** (e.g. hazardous contamination) (2)
 - Restrictive land use planning** (3)
 - None** (4)
-

Q18 Are there any other barriers for new initiatives in your region? Please describe:

Page Break

Pre7 The following are advantages or opportunities to leverage that some regional and remote areas report helping with circular economy initiatives in their region.

Page Break

Display This Question:

If Source = CATI

Int6 [Interviewer note: read each option & probe for yes/no]

Q19 In your opinion, which of the following Geographic Advantages might boost new circular economy initiatives in your region?

Select all that apply

Brownfield and greenfield land is highly available (1)

There is land available for local processing and manufacturing plants or precincts (2)

Our region's proximity to major centres and access to the region (3)

There are sufficient buffers in available land from residential growth / sensitive environmental areas (4)

The long and/or uncertain supply chains reward getting maximum value from products and materials once here (5)

Our region has good transport infrastructure and connections to processing facilities and end markets (6)

None (7)

Q21 In your opinion, which of the following Existing Project and Trial Track Record aspects might boost new circular economy initiatives in your region?

Select all that apply

- The division of labor amongst relevant actors is transparent** (1)
- Initiatives typically benefit all relevant actors** (2)
- We have a track record of focusing on the most positively disruptive initiatives** (3)
- We have a range of current initiatives to draw on and promote** (4)
- Industry in our region is already investing in trials and projects** (5)
- Successful circular precinct or incubator process already in place** (6)
- There is an existing skilled workforce open to new opportunities/initiatives** (7)
- Strong participation rates - households** (8)
- Strong participation rates - business** (9)
- Strong participation rates - community and social sector** (10)
- None** (11)

Q22 Are there any other advantages or opportunities for new initiatives in your region we didn't mention? Please describe:

End of Block: PART C - Barriers and advantages

Start of Block: PART D - Relationships and governance capabilities

Pre8 An increasing number of organisations and community groups are collaborating on circular economy initiatives. We would like your help to identify which groups are active in your council and who you currently cooperate with or support.

Page Break

Display This Question:

If Source = CATI

Int7 [Interviewer note: read each option & probe for yes/no]

Q22a Who of the following external groups do you currently cooperate with across your circular economy initiatives?

- Private company (excl. consultancies) (1)
 - Consultancy (10)
 - Not-for-profit/ charity/ social enterprises/ programs (2)
 - Indigenous organisations - Aboriginal Corporation (3)
 - Family-owned businesses – local (incl. sole proprietorships) (4)
 - Academic institutions (5)
 - Collaborative programs/ collaborations and alliances (6)
 - Community groups (7)
 - Government (8)
 - Other (please specify) (9) _____
 - None (11)
-

Display This Question:

If Current collabs = Government

Q22b What level of government?

- Local (1)
 - State (2)
 - Federal (3)
-

Q23a Are there any external groups with whom you would like to collaborate more in future projects?

- Yes (1)
- No (2)

Display This Question:

If Future collab = Yes

Q23b Which of the ones mentioned before would you like to collaborate more with?
Select all that apply

- Private company (excl. consultancies) (1)
- Consultancy (2)
- Not-for-profit/ charity/ social enterprises/ programs (3)
- Indigenous organisations - Aboriginal Corporation (4)
- Family-owned businesses – local (including sole proprietorships) (5)
- Academic institutions (6)
- Collaborative programs/ collaborations and alliances (7)
- Community groups (8)
- Government (9)
- Other (please specify) (10) _____
- None (11)

Display This Question:

If More collab = Government

Q23b 1 What level of government?

Local (1)

State (2)

Federal (3)

End of Block: PART D - Relationships and governance capabilities

Start of Block: PART E - Capacity to be a transition broker

Q24 What dedicated or focused circular economy roles exist in your organisation?

Page Break

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If Source = CATI

Int8 [Interviewer note: read each option & probe for yes/no]



Q25 Researchers suggest that the following capabilities can support circular economy activities. No one person is likely to have all capabilities but it is advantageous to bring together collaborators with complementary skill sets to cover these. We'd like to get a sense of what capabilities exist across the different councils in Australia.

Below are some statements regarding how you normally act in your role. Your answers to this question will be anonymous and there are no right nor wrong answers.

Please indicate the best answer to each of the following statements, thinking about the last 6 months of work as a reference point:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|-----------------------|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|-----------------------|
| I persevere to achieve goals (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am always willing to follow up with contacts (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Usually, I find it easy to excite and inspire others to cooperate (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| It's really difficult for me to think and act from a systems perspective (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Even when I can see an issue is complex and layered, I look for pragmatic solutions (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I always act in the collective interest and maintain an unbiased, independent perspective (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have a very broad knowledge base in circular economy innovations, the business environment and political culture (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I think I would be able to open doors at all policy levels to remove barriers that need to be solved by governments (8) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

I am confident I could get the idea of circular economy accepted in a variety of businesses and organisations (9)

I am confident I could translate the desired actions into the language of other organisations (10)

Page Break

Q26 Does your council have a dedicated data steward role for collecting, handling and/or reporting waste and materials data and analytics?

- Yes, but with limited systems and processes supporting it (1)
- Yes, with a data management system (2)
- No (3)

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Int9 [Interviewer note: read each option & probe for yes/no]

Q27 To what extent do you rely on external consultants or partners to address CE challenges in your area?

- Almost entirely (1)
- Some of the time (2)
- Only rarely (3)
- Never (4)

Page Break

Q26 What core functions of your council are directly and actively engaged in supporting regional circular economy activities in your region?

Select all that apply

- Planning and development*i.e. regulating land use that includes space for circular economy activities, approving building and development applications, and managing infrastructure projects such as roads, footpaths, and public spaces* (1)
- Waste management and recycling*i.e. collecting and disposing of waste, as well as supporting and implementing recycling programs and promoting sustainable waste management practices* (2)
- Environmental management*i.e. policies and initiatives to protect and enhance the natural environment, including managing parks and reserves, preserving biodiversity, and reducing greenhouse gas emissions* (3)
- Community services*e.g. libraries, community centres, child care services, and support for seniors and people with disabilities* (4)
- Public health*e.g. initiatives such as food safety inspections, immunisation programs, and disease prevention campaigns* (5)
- Economic development*i.e. initiatives that work to attract new businesses that adopt circular business models to the area, support existing businesses, and promote tourism and events* (6)
- Infrastructure and transport*i.e. managing local roads and transport services, such as buses and trains, as well as planning and developing new infrastructure projects* (7)
- Governance and administration*i.e. managing own operations, including financial management, procurement, human resources, and communication with the community* (8)

End of Block: PART E - Capacity to be a transition broker

Start of Block: PART F - A few questions about you

Pre9 Thank you for answering the questions so far. This final section is to help us understand who is completing this survey and how opinions may differ across different areas of work.

Q27 What is your current role?

- Officer (e.g. Program or Project Officer) (1)
- Manager (2)
- Senior Manager (3)
- Other (please specify) (4) _____

Q28 Which of the following most closely describes your area of work or department?

- Waste Services (1)
 - Sustainability (2)
 - Circular Economy (3)
 - Other (please specify) (4) _____
-

Q29 How long have you been working at the council you are currently working at?

- Less than 1 year (1)
 - 1-2 years (2)
 - 2-5 years (3)
 - 5-10 years (4)
 - 10-20 years (5)
 - More than 20 years (6)
-

Page Break _____

Q30 How knowledgeable would you say you are about the concept of the circular economy?

- Extremely knowledgeable (1)
 - Very knowledgeable (2)
 - Somewhat knowledgeable (3)
 - Have heard of it but do not really understand the details of the concept (4)
 - Never heard of it (5)
-

Q31 Which of the below statements best describes your understanding of a circular economy?

"A circular economy..."

- ... ensures there is no excess waste in our supply chains (1)
- ... ensures products and materials are recycled where possible (2)
- ... is designed to ensure regenerative processes and products (3)
- ... means sustainable processes are utilised despite the cost (4)
- Other (5)

End of Block: PART F - A few questions about you

Start of Block: End

Pre10 That's the end of the survey questions.

Before you go...

Q32 As outlined earlier, we would like to share selected data that is directly attributed to your organisation publicly to facilitate connection and collaboration.

Please indicate if you would like to request for your data NOT to be shared.

- I do not wish for my responses to be publicly attributed to my organisation. (1)
-

Q33a Are you willing to be publicly listed as a council contact for any inquiries about your circular initiatives by interested parties?

(If you agree, you will be redirected to a separate form to collect your contact details so they are not linked to

your survey responses.)

- Yes, I am happy to be publicly listed (1)
- No, but somebody else at my council is happy to be publicly listed (2)
- No, please do not list any of my council's contacts publicly (3)

Q34a Are you interested in being kept up-to-date or being involved in any future aspects of this program – such as potential research and development collaborations?
(If you are interested, you will be redirected to a separate form to collect your contact details so they are not linked to your survey responses.)

- Yes (1)
- No (2)

End (online) **Thank you. That's the end of the survey.**

Please click "Submit" to submit your survey responses.

As a reminder, if you would like further information regarding any aspect of this project, you can contact the responsible researcher, Dr Stefan Kaufman (Tel: 0423149185, Email: Stefan.kaufman@monash.edu).

If you have any concerns or complaints about the project, you can contact the Executive Officer of the Monash University Human Research Ethics Committee (Project number: 38125, Tel: +61 3 9905 2052 Email: muhrec@monash.edu).

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End_CATI That's all the questions we have for you today. Thank you for your time and insights.

Once again, this research is being undertaken by Monash University and the University of Tasmania, on behalf of the Australian Government Department of Climate Change, Energy, the Environment and Water.

If you would like further information about this project, I can provide contact details for the responsible researcher, Dr Stefan Kaufman [*Interviewer note: if the respondent wants contact details, Tel: 0423149185, Email: Stefan.kaufman@monash.edu.*]

If you have any concerns or complaints about the project, I can provide contact details for the Executive Officer of the Monash University Human Research Ethics Committee [*Interviewer note: if the respondent wants contact details, Project number: 38125, Tel: +61 3 9905 2052 Email: muhrec@monash.edu.*]

[Interviewer note: click submit before closing the survey window].

End of Block: End