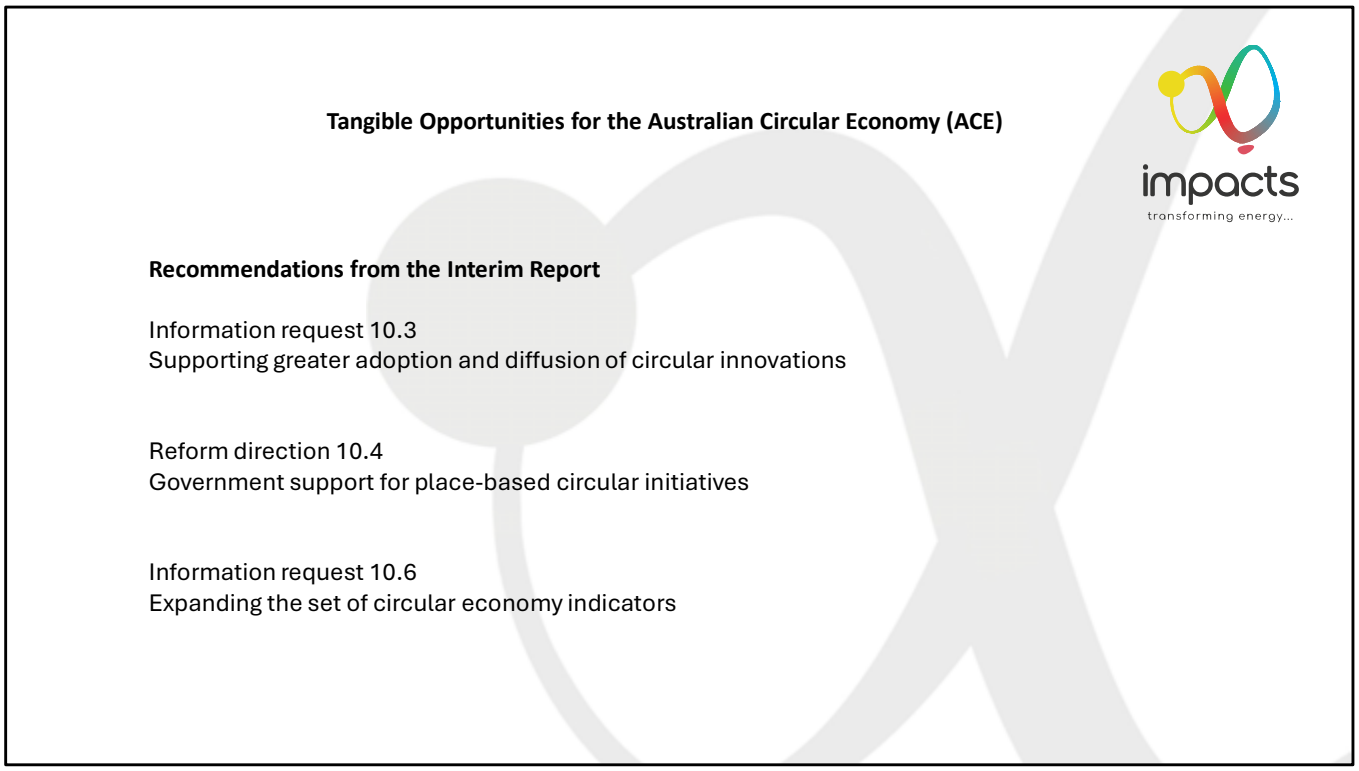
'Let me begin today by acknowledging the Traditional Custodians of the land on which we reside today, and pay my respects to their Elders past and present. I extend that respect to Aboriginal and Torres Strait Islander peoples here today.'



10.3 We have working relationships with UniSA, UniSQ & CSU. We could do more however the funding available to small business is small funds. Our research partners see the merit to our lines of investigation and the impacts this can have on the circular economy. Government however does not seem to be capable of holding up their end. If the funds were merit based to the impact on the circular economy and not limited to the size of the organisation as it appears to be. We lack the capacity to fund 50% of a multi million dollar program although we have consistently delivered. The potential outcome of our work is to the whole of the circular economy in this country and overseas.

10.4 Insurance companies argue increased risk if it is new. Which really means if it is new we will charge a premium while we can. We use industry standard components for the most part and therefore only a small core is not available off the shelf but we still get the it's new it's different. Government could offer an offset for new until it is main stream. At the time of writing our material environment

exposure testing exceeds 8000 hours with no noticeable degradation (testing by UniSA). Government policy changes to support 'new' technology. Government departments are ultra conservative towards new. They, the departments, have no framework for innovation support, implementation of new technology or purchasing from Australian small businesses. Really big ideas like the integrated RESOURCE Hubs where traditional waste becomes the input material for a company's output which goes to another co-located company to value added and become a high value export.
10.6 Work has been done to identify opportunities as outlined in the work of A/Prof A. Helwig and the work of Dr J. Feldmen we trace all material through new supply chains leading to high value exports while reducing waste to landfill. This work should be expanded and will provide an expanded set of indicators but more importantly reveal new supply chains from waste to high value export products.

History shows us unless you are a large corporate or university who can access research funds small businesses only get access to late stage development or commercialisation funds if the are lucky. These two technologies discussed in the following slides have the ability to underpin the whole Australia Circular Economy (ACE). With the right support, it could turbo charge the development of the ACE. Additional funding to a initial **RESOURCE (Renewable Energy Systems Operation Underpinning Remedial Circular Economy) HUB** and future expansion to regional hubs as ACE expansions. We have the basis for the first RESOURCE Hub at UniSQ.

Tangible Opportunities for the Australian Circular Economy (ACE)

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An argument for change.

Albert Einstein: 'We cannot solve our problems with the same thinking we used when we created them.'

We have to be brave and do something different using different methods.

Policy has to allow for: pilots, experimentation, evolving and disruptive approaches and technologies.

The industrial revolution brought change, but centralising resources and control is no longer working for us.

- Whether it be decision making, capital allocation or distribution, transportation infrastructure, energy production or consumption, or population concentration
- Decentralisation provides resilience, opportunity, innovation and economic growth increasing prosperity.

While we are building a new circular economy we should design a better solution at the same time. Climate change produces wild weather, floods, electrical storms, power outages and not only outages of power but road transport connectivity. Let's do something different let's build resilience by decentralising into the regions, creating regional jobs and national resilience at the same time.

What is on Offer for the Australian Circular Economy (ACE)

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Considerable human waste whether from domestic consumption, industry, agriculture, fisheries etc is going to landfill.

The circular economy promises:

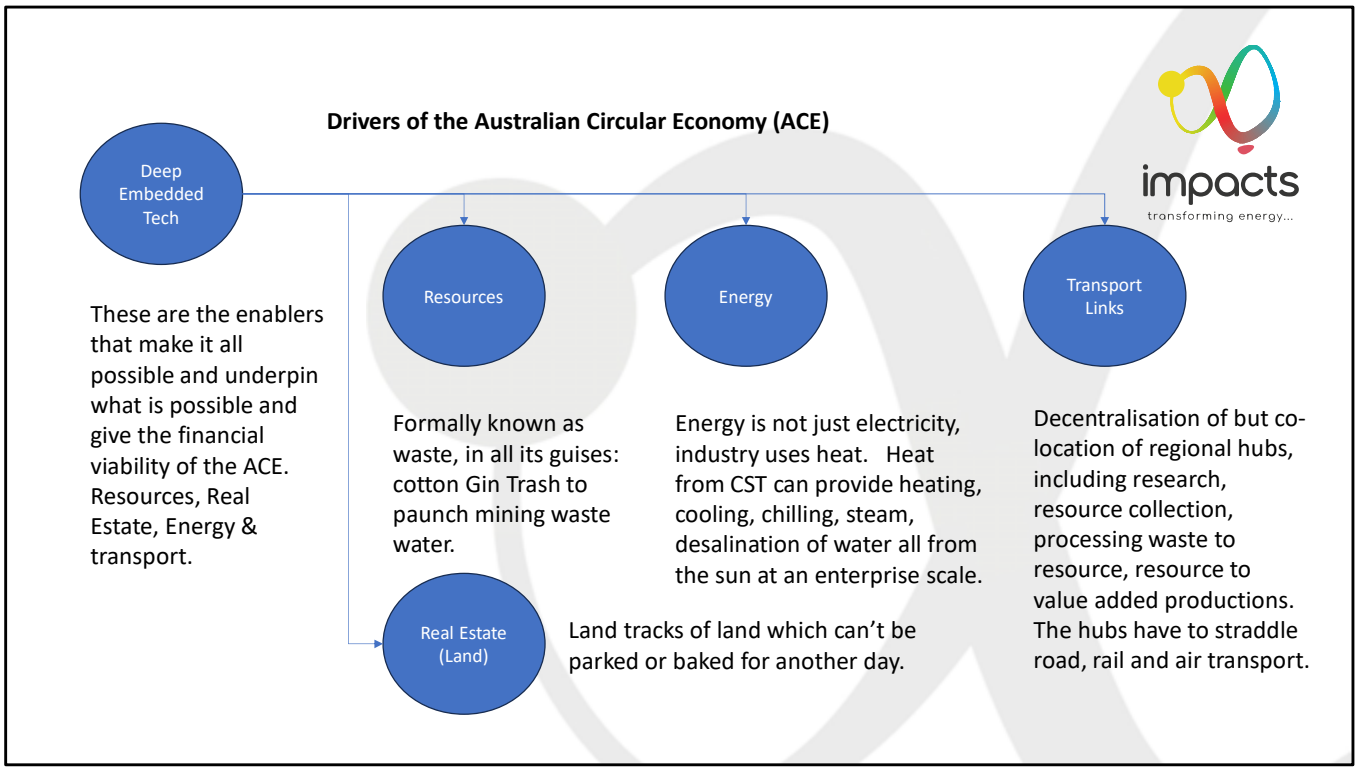
Waste become a new resource.

New economic opportunities

prosperity

How, what do we need to do

As we build a new circular economy, we must **design a better, more resilient solution**. Climate change is driving more extreme weather events—floods, storms, and power outages—disrupting infrastructure and supply chains. **Decentralisation is key.** By focusing on **regional jobs, local resilience, and distributed infrastructure**, we can create a **stronger and more adaptive economy**



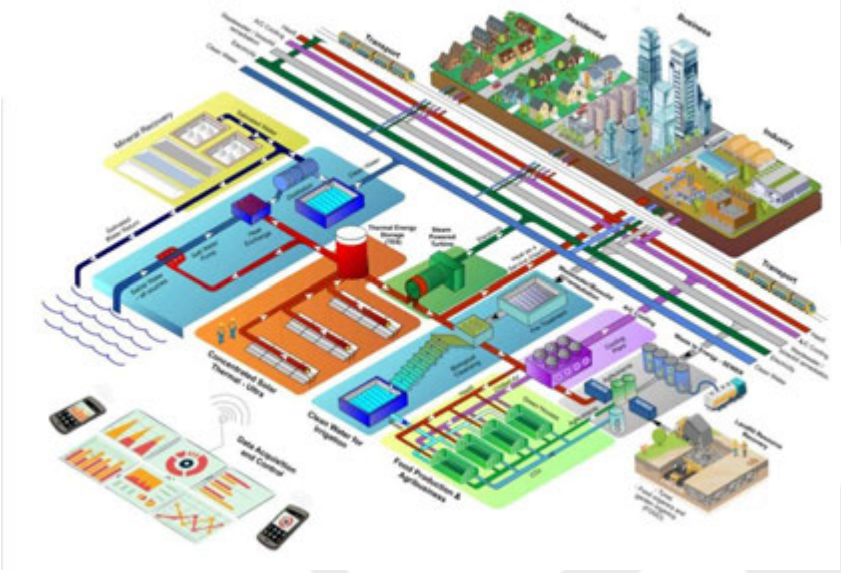
Government departments often **resist change** due to outdated **procurement policies** and **bureaucratic inertia**. For example, under the previous Queensland Government, the Department of Health had **targets for SME engagement and renewable energy use but lacked a mandate to act**. As a result:

- **No clear process** existed for piloting renewable energy solutions for industrial heating, cooling, or hot water.
- **SMEs could not compete** with multinational corporations in procurement processes.

- **Innovation stalled** due to the lack of funding for local manufacturing and technology development.

Australia **missed the boat** on renewable energy manufacturing—our wind turbines, PV panels, and batteries are all imported. But we **can still lead in next-generation technologies**, such as **Concentrated Solar Thermal (CST) and SEWER technology**.

What a hub looks like for the Australian Circular Economy (ACE)



SEWER (Solar Enhanced Waste Energy Recovery) is a **disruptive technology** that integrates **CST-driven heat** with **Hydrothermal Liquefaction (HTL)** to convert waste biomass into biofuels and valuable carbon products. CST provides **low-cost, high-efficiency heat**, enabling:

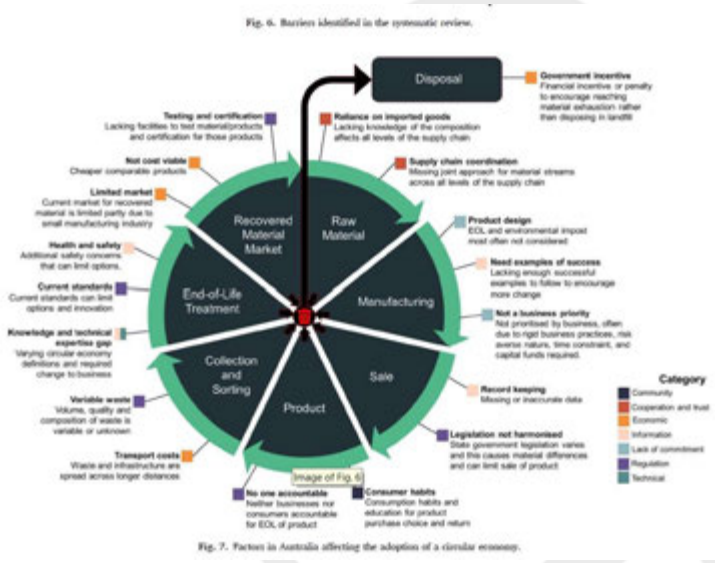
- **Plastic recycling and remanufacturing** (melting, reshaping, reforming polymers).
- **Biomass-to-fuel conversion** (HTL producing bio-oil, biochar, and syngas).
- **Agricultural waste valorisation** (converting

waste into graphene and other high-value materials).

- **Food and beverage processing** (pasteurisation, fermentation, cooling, and desalination).

This is **not theoretical—SEWER and CST are ready to be deployed in industrial applications today**.

What are the barriers for the Australian Circular Economy (ACE)



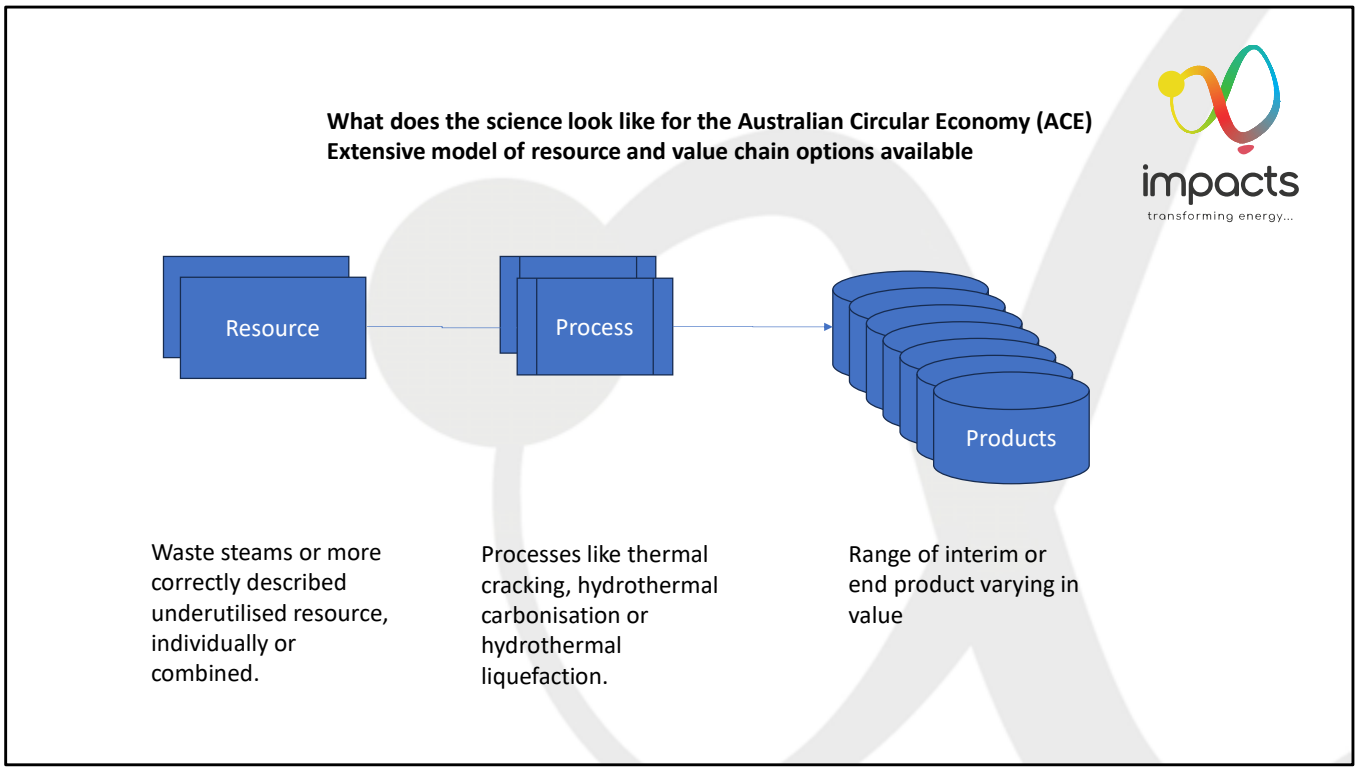
This model is from research done by Dr Jessica Feldman (UniSQ)

Australia ranks **33rd out of 38 OECD countries** in Sustainable Development Goal (SDG) progress, facing major hurdles in:

- **Zero Hunger (SDG 2)**
- **Responsible Consumption and Production (SDG 12)**
- **Climate Action (SDG 13)**

- **Life on Land (SDG 15)**
- **Partnerships for the Goals (SDG 17)**

Further, Australia **risks failing its 2030 target** of an **80% waste recovery rate**, as major waste streams are stagnating or declining.



A **network of regional industrial hubs** co-located with **SEWER-powered facilities** can transform waste into valuable resources.

- **Agricultural regions** → Convert Cotton Gin Trash and agricultural byproducts into **graphene and biofuels**.
- **Urban centres** → Process municipal waste (FOGO, plastics, medical waste) into **recyclable commodities** and fuels.
- **Industrial hubs** → Use waste heat for **desalination, fermentation, and metals**

recovery.

Each hub would leverage **local resources and transportation links** while relying on **low-cost, 24/7 renewable thermal energy**.

Building the Australian Circular Economy (ACE)
Progress

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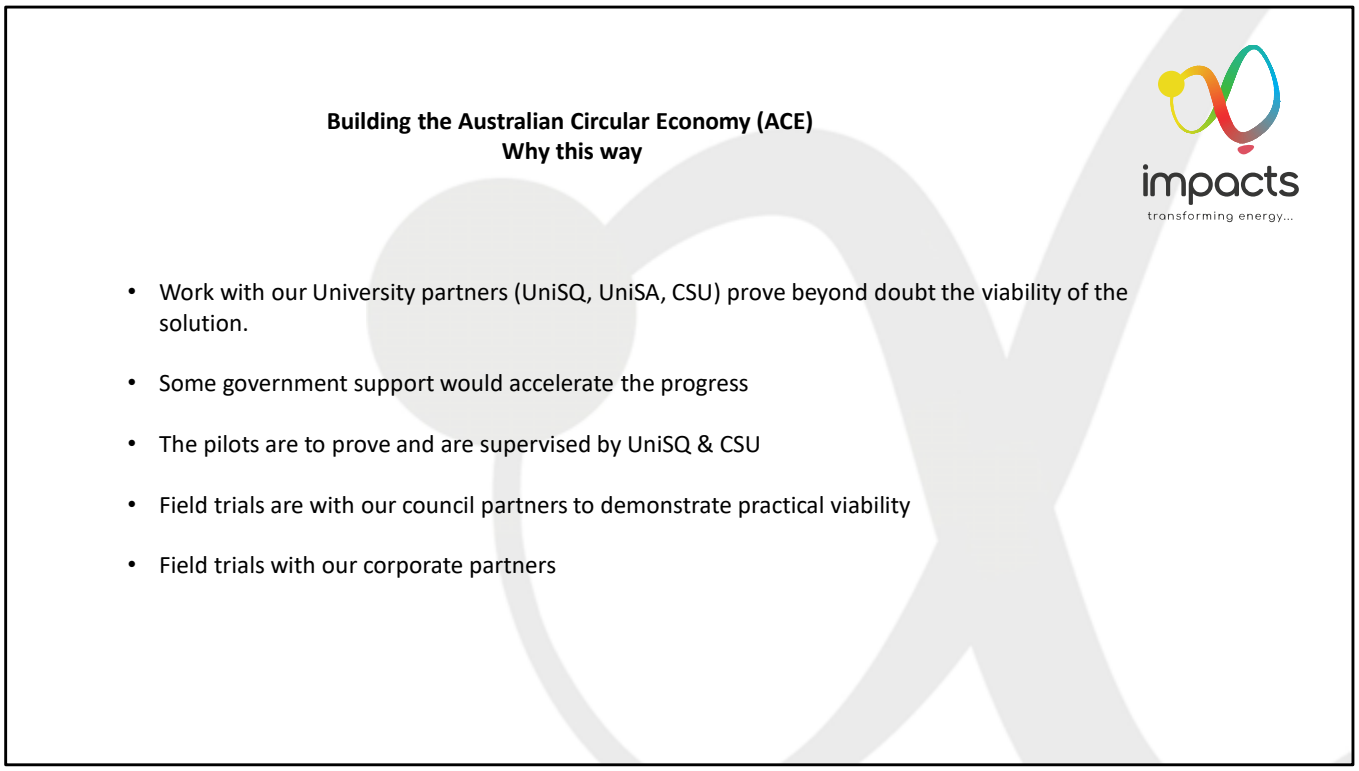
- Impacts Renewable Energy solved the energy cost equation.
- Assoc Professor Andreas Helwig (UniSQ) did a high level exploration of the value chains and should move on to the high level design for implementation of the HT pilot.
- Dr Jessica Feldman's (UniSQ) work looked at the barriers, next she should map the new industries.
- Impacts has developed the world class, patented CST technology and a pilot for the CST/Desalination (CSU) is scheduled for next year.
- Our partnership UniSQ/Impacts will deliver an opportunity to deliver advance material manufacture, while reducing environmental impacts and regional employment.

Assoc. Prof. **Andreas Helwig (UniSQ)** has extensively modelled **how CST and SEWER can transform agricultural waste into high-value products**. That modelling shows that a Renewable Energy Systems Operation Underpinning Remedial Circular Economy (RESOURCE) Hub can tune each regions input resources and outputs. Meanwhile, **Dr. Jessica Feldman (UniSQ)** has identified **regulatory and financial barriers** that must be overcome to scale these solutions. Australia's **circular economy progress is sluggish**,

but we can **accelerate change** by targeting **industries that require heat, not just electricity—25% of industrial energy demand is for thermal processes**. SEWER and CST offer a **cost-effective, scalable solution**.



We are actively working with **UniSQ, UniSA, and CSU** to validate these technologies.

With **government support**, pilot projects can rapidly demonstrate:

- **Job creation and regional economic benefits.**
- **Circular resource recovery and waste transformation.**
- **Significant emissions reductions through renewable energy integration.**

These local field trials can form the basis of the first

RESOURCE Hub, proving a implementation model that can be rolled out across the country.

UN's Sustainable Development Goals	Current	Achievable
1. No poverty	↓	
2. Zero Hunger	→	✓
3. Good health	↗	
4. Quality Education	→	
5. Gender Equality	↑	
6. Clean Water & Sanitation	↗	✓
7. Affordable & Clean Energy	↗	✓
8. Decent Work & Economic Growth	↗	✓
9. Industry, Innovation & Infrastructure	↗	✓
10. Reduced Inequality	→	
11. Sustainable Cities & Communities	↗	✓
12. Responsible Consumption & Production	→	
13. Climate Action	→	✓
14. Life below water	↗	✓
15. Life on Land	→	✓
16. Peace Justice & Strong Institutions	→	
17. Partnerships for Goals.	↗	

Our current progress is not great, by large scale implementation of two technologies, we can impact on nine UN Sustainable Developmental Goals.

Building the Australian Circular Economy (ACE)
Why this way

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We urge the Productivity Commission to:

1. **Drive policy reform** that enables SME access to procurement and pilot funding.
2. **Invest strategically** in SEWER and CST to unlock the full potential of the circular economy.
3. **Foster industry partnerships** to integrate renewable energy into waste-to-resource systems.

The challenge is clear, but the solutions are ready. The **path forward** is to **innovate, decentralise, and implement**. If we act now, Australia can **lead in circular economy solutions globally**.

The plan exists, the technologies exist, the support for implementation does not and I refer to Dr Jessica Feldman's work on barriers.