

IChemE Melbourne Roundtable – Circular Economy and Clean Energy Transition

Attended by thought leaders, innovators, experts, and early career representatives across academia, industry and government.

Key Roundtable insights

- Importance of policy-makers and industry fostering decentralised approaches to drive circular economy and clean energy outcomes
- Well targeted and technology-agnostic policy approaches will best support circular economy and clean energy market development, reducing costs and risk
- Collaborations on industry-focused learning experiences can successfully engage and inspire students, and professionals, to fast-track their development of circular economy and clean energy skills

Background

IChemE's inaugural Australian roundtable in Victoria discussed the challenges and opportunities for integrating circular economy practices into the clean energy transition, bringing a spotlight onto two potential industry growth areas that draw on chemical engineering expertise – bioenergy and battery recycling.

The prospects for bioenergy (also known as 'waste to energy') and its significant circular economy benefits, have recently received a boost in Australia with the Victorian government considering the introduction of an incentivised 2035 biomethane target for industrial use and also advocating for a national scheme. Biomethane is upgraded biogas which meets gas quality standards for industry.

Meanwhile, circular economy considerations have also started to come into policy-maker focus recently as Australia's battery roll-out has gathered significant pace from state-based storage targets, neighbourhood battery funding and household subsidies, to the more recent 'super-charged' take up via the Federal Government's Capacity Incentive Scheme auctions, community battery fund and home battery bonus initiative.

The collective viewpoints from the Roundtable session were captured in a puzzle piece framework, focusing on two key themes: Policy Development and Skill Development.

Policy development insights

- Focus on place-based energy and waste planning. Pursue co-location to remove transport component wherever possible. Local Area Energy Planning is well established in the UK, but local government in Australia is not currently resourced to do this.
- Policies must be designed to treat renewable fuels in the same as solar and wind, this will help to support a well-balanced net zero energy system. Important to consider flexible ‘light’ regulation approaches to support industry to innovate.
- Must learn from the past. Establishing an end-of-life policy upfront will be more beneficial than having nothing in place and fighting to add it later. Cultural shifts are needed. Must “make to unmake” – from waste to by-products to upcycling to valorisation.
- Policy levers can be applied through stewardship or extended producer responsibilities to be included upfront in contracts and regulations. Policy-makers could also consider how regulation may ensure end of life is considered as part of project development.
- Intellectual property can be a restriction for recycling, policies will need to ensure access to required info for circular economy. Should be able to get all product data when dealing with unknown wastes.
- Should draw upon international policy developments, such as the EU’s Battery Passport to ensure information necessary for safe and efficient re-use and recycling.
- Container deposit is not appropriate for a hazardous product (e.g. battery collections). Incentives are needed, just not for “return”.
- Need to develop a Circular Economy Roadmap to enable innovation, with funding support for scalable solutions.

Skill development insights

- More industry and academia collaboration on up-skilling and re-skilling is needed. Important to foster system-thinking, agility, exposure to industry and commercial acumen.
- Provide our students with real world industry problems to solve and learn by doing through focusing on interesting projects! IChemE’s Chemeca student hackathon is a successful example.
- Educational initiatives that expose much younger students in schools to the excitement of chemical engineering to grow the breadth of interest.
- Incentives for employers to support undergraduate interns and graduate programs may be needed.
- Competency needs to be based on what role you have. There is a need to provide more support for professional institutes.

- Micro-credentials can lower the barrier to up-skill and cross-skill – for e.g. power engineering for chemical engineers given cross-disciplinary skills are growing in importance.
- The technician route is important for converting adult skill sets, however this must be tailored for the way they learn as given already in industry they may not be able to engage in the same way.
- Must be a series of formal and on-the-job experiences for re-skilling. This forces companies to take risks and especially so if strong competition for resources.
- Invest in Australian technology and skills, not just importing.

About IChemE

The Institution of Chemical Engineers (IChemE) is the qualifying body and learned society for chemical, biochemical, and process engineers in the UK and worldwide, with over 32,000 members. Our mission is to champion the input of chemical engineers to create a sustainable future. Find out more about IChemE and our strategic vision of