

WORKSHOP

The circular economy: upskilling the engineering workforce

Helen Fairweather^a, Doug Hargreaves^b Engineers Australia^a, Australian Council of Engineering Deans^b, Corresponding Facilitator's Email: hfairweather@engineersaustralia.org.au

WORKSHOP MODE

Confirmed in-person.

OVERVIEW OF WORKSHOP

This workshop will develop an action plan to incorporate circular economy principles into the engineering curriculum as a step towards equipping the engineering workforce with the skills to implement the circular economy.

ACTIVITIES

The workshop will be in five parts [number of minutes for each part]:

- 1. Brief presentation of what the circular economy is and make a case for why it is important to upskill the engineering workforce. [10]
- Determine the mechanism(s) for upskilling the engineering workforce (eg. undergraduate curriculum, post-graduation training, micro-credentials or continuing professional development). [10]
- 3. Identify the content required in the curriculum for the mechanism agreed at part 1. [25]
- 4. Scope a draft action plan to deliver the curriculum. [20]
- 5. Wrap up. [15]

Groups of 4 to 5 will work on items 2 to 4 and present their action plan at item 5. The number of groups will be limited to 4, so total workshop participation is limited to 20.

TARGET AUDIENCE

The target audience includes those actively involved the education of engineers and who have a passion for developing curriculum for future ready graduates. Some background knowledge of the circular economy is required and can be developed through reading the references as appendix.

OUTCOMES

The main outcome will be a draft action plan to demonstrate a pathway to upskill the engineering workforce in circular economy principles.

KEYWORDS

Circular economy, engineering workforce

PRESENTERS' BACKGROUNDS

Dr Helen Fairweather is the Head of Accreditation at Engineers Australia. Prior to taking up this position, Helen enjoyed 12 years as an engineering academic at the University of the Sunshine Coast. Em Prof Doug Hargreaves AM is the Executive Officer of the Australian Council of Engineering Deans (ACED).

APPENDIX: BACKGROUND READING

Association of Nordic Engineers (2021). Towards a circular economy: Skills and competencies for STEM professionals. URL: https://circulareconomy.europa.eu/platform/sites/default/files/ane-report-towards-a-circular-economy.pdf

Global Infrastructure Hub. (2021). *Roadmap for enabling Circular Economy Potential in infrastructure*. https://cdn.gihub.org/umbraco/media/4244/gi-hub-roadmap-for-enabling-circular-economy-potential-ininfrastructure.pdf

Melles G. (2023). The Circular Economy Transition in Australia: Nuanced Circular Intermediary Accounts of Mainstream Green Growth Claims. *Sustainability*. 15(19):14160. https://doi.org/10.3390/su151914160

Renfors, S.M. (2024), "Education for the circular economy in higher education: an overview of the current state", *International Journal of Sustainability in Higher Education*, 25(9), pp. 111-127. https://doi.org/10.1108/IJSHE-07-2023-0270

Seeberg, H. R., Haakonsen, S. M., & Luczkowski, M. (2024). Systematic mapping of circular economy in structural engineering. *Buildings*, *14*(4), 1165.

Sumter D, de Koning J, Bakker C, Balkenende R. Key Competencies for Design in a Circular Economy: Exploring Gaps in Design Knowledge and Skills for a Circular Economy. *Sustainability*. 2021; 13(2):776. https://doi.org/10.3390/su13020776

The Ministry of Infrastructure and the Environment and the Ministry of Economic Affairs (2016). A circular economy in the Netherlands by 2050: A Government-wide Programme for a Circular Economy. URL:

https://circulareconomy.europa.eu/platform/sites/default/files/17037circulaireeconomie_en.pdf