



Circular Economy and Life Cycle Assessment (LCA)



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Chair: Dr. Nilmini Dissanayake MIMMM CSci National Physical Laboratory

'Circular Economy' is much more than 'closing loops' and it is about creating value to the economy, society and businesses while minimising resource use and environmental impacts with life cycle thinking. LCA is a holistic approach or methodology used to identify the environmental consequences of a product or process or its operation throughout the entire life cycle, as well as opportunities to reduce the environmental burden. Applying life cycle approach is highly beneficial to evaluate the impacts of circular economy and LCA can strengthen the propositions of the circular economy.



The Materials Cycle and The Circular Economy

Dr. Colin Church FIMMM CEnv CRWM MCIWM

Institute of Materials Minerals and Mining

Humanity's current linear economic model – *take, make, use, lose* – has led to significant environmental damage as the population has expanded and its needs have grown. Moving to a more circular economic model is essential to allow us to continue to thrive on this planet. The Materials Cycle is in turn an essential underpinning of this transition.

Life Cycle Assessment 101

Amy Fitzgerald

University of Surrey / National Composite Centre

As the race towards net-zero kicks off, how can we be sure that we are truly on the path of least environmental damage? LCA is a system analysis tool for modelling a process, product or service that documents material inputs and outputs focussed on a holistic "cradle-to-grave" approach, characterising usually a variety of environmental impacts in real terms. This informs the practitioner of damage hotspots across each life cycle stage of the system, which can be used to shape future decision-making. Due to its growing popularity, the LCA process has been consolidated into international standards and practice guides so that practitioners have a better idea of how they should be carried out. This webinar will introduce the key themes of any LCA and the nuances around its practical application through a series of examples.



Life Cycle Assessment may be an imperfect methodology?

Prof. John Summerscales FIMMM FInstNDT CEng CEnv CSci University of Plymouth

Industry has returned from the Covid situation with a new focus on sustainability as a balance of technical, economic, environmental, social and governance (TEESG) factors. ISO14040 provides principles and framework, while ISO14044 outlines requirements and guidelines for an LCA. The International Reference Life Cycle Data System (ILCD) aims to provide guidance and standards for greater consistency and quality assurance in applying LCA. To compare different LCA studies, it is necessary to confirm that the goal and scope sensibly address the parallel conditions. Software is available to process data but does the "black box" do what is expected? Data inventories support the software, but does the data truly represent the system under analysis? When the specific data is not available, how sensible is it to use "proxies"? How appropriate is it to allocate impacts to co-products as well as the primary product?

Organised by the Southern Counties Materials Minerals and Mining Society (SCMMMS)



Winner of the IOM3 Local Society of the year award 2022 southerncountiesmmms@gmail.com