Workshop on Life Cycle Assessment

AMRS 2022 Preconference Workshops, Dakar, Senegal

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Offered: Saturday, December 10, and Sunday, December 11

Purpose of the Workshop

Globally, decisions being made by government leaders, business executives, and those in academia are becoming more data-driven. This includes pressing decisions regarding our ability to sustain, and hopefully thrive, as a society. One technique used broadly to inform these decisions is life cycle assessment (LCA). LCA is a tool that is used to quantify the environmental, economic, and social impacts of all life cycles (production, consumption, disposal) of a particular product, process, or service. All inputs and outputs of the process are accounted for and an overall idea of the relative sustainability of the system is created. LCA can be applied broadly and has resulted in significant policy decisions worldwide.

This workshop aims to educate participants on the principles and application of LCA and teach the initial steps in planning and executing their own impactful LCA. It is geared to be hands-on with participants actively taking part in the discussion of LCA case studies. A free online learning course on LCA provided by the University of Michigan Center for Socially Engaged Design (CSED) will be introduced for continuing education after the workshop. Furthermore, there will be an opportunity for participants in the workshop to apply for free access to state of the art LCA modelling software as well as support in ideating and executing their own LCAs. In addition, an introduction to techno-economic assessment (TEA) will be provided.

Outline

- Sustainability is about People: How can LCAs be used to drive change?
    - Introductory example of how people drive environmental change now and for future generations
    - Introduction to the workshop and teaching methods that will be used (think, pair, share methodology)
- Case Study on Challenging Sustainability: How “green” are electric motorcycles?
    - Conversation on the electrification of motorcycles in East Africa with potential benefits and drawbacks environmentally, economically, and socially
- Four Criteria Interactive Activity
    - What are the four criteria for a sustainable system? How do we apply them?
    - Several examples are evaluated for passing/failing the criteria using the think/pair/share paradigm to facilitate discussion
- What happens when you don’t use an LCA? Selecting a meaningful comparison.
    - What is LCA useful for? What is it not useful for? Myths and misunderstandings around LCA
    - Setting the goal and scope of a study, creating a life cycle inventory of data for analysis, selecting an impact assessment methodology that is relevant to the study, and conducting a sensitivity analysis
- Case Study: Biologically-grown Cement for Sustainable Construction

    - Learning the components of the LCA through in-depth through discussion of a sustainable building material alternative
- Interactive Activity on Setting a Goal and Scope
    - Several energy and material systems will be discussed by participants and the first step of setting up an LCA, figuring out the Goal and Scope, will be facilitated.
- Live Demo of Modelling Software/Tips for conducting a complete LCA
    - The JUAMI Open Computing Facility and Umberto LCA modelling software will be demoed
    - Pointers will be provided on completing the next steps in the process, presenting your results in an impactful way, and providing recommendations
- Overview of LCA Resources Available and Closing Remarks
    - Online course on LCA through U. of Michigan, application for access to LCA software, support on ideating and executing an LCA

Agenda

Time	**Activity**
0800-0820	People-focused Sustainability: How can LCAs be used to drive change?
0820-0845	Challenging Sustainability: Electrification of Motorcycles in East Africa
0845-0850	Break
0850-0930	Four Criteria Interactive Activity
0930-1000	What is an LCA/Making a Meaningful Comparison Using LCA
1000-1020	Break
1020-1030	Recap LCA information (Goal and Scope, Inventory, Impact Assessment)
1030-1130	Case Study: Biologically-grown Cement for Sustainable Construction
1130-1140	Break
1140-1230	Interactive Activity on Setting up an LCA
1230-1245	Live Demo and Tips
1245-1315	Introduction to Techno-economic analysis
1315-1345	Overview of LCA Resources Available and Closing Remarks