

Life Cycle Assessment: Process-based, Input/Output, and Hybrid Methods

Traditional life cycle inventory (LCI) modeling is process-based: that is, it describes the flows of energy and materials among engineering unit processes, and exchanges between these processes and the environment. A second approach to modeling the environmental consequences of supply chains is based on economic input/output accounts that are used to construct models that describe inter-sector flows in economic terms. Both process-based and IO-based models have been used in LCA and industrial ecology applications for decades.

Each of the above methods has its strengths and weaknesses. That is why the current application frontier represents syntheses of the best of both methods. For example, there are now a variety of so-called “hybrid” methods for LCA.

The purpose of this course is to enable attendees to develop a practical and solid basis of understanding and familiarity with process LCA, IO LCA, and hybrid methods. We will combine interactive lecture/discussion with hands-on exercises to develop this solid understanding. In the structured hands-on sessions, students will make guided use of software for process, IO, and hybrid methods in order to solve practical LCA-related decision problems.

At the end of the course, participants can expect to have a firm grasp of the strengths and weaknesses of IO, process, and hybrid methods, and a good idea about when each is best applied. The instructors will also provide their personal summary observations about the near-term developments and evolution of this important field.

Instructors:

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