



IO AND HYBRID LIFE CYCLE ASSESSMENT

Course subject: Input-Output Analysis, using data from national statistics, to provide completeness to life cycle assessment (LCA). Advantages and disadvantages relative to LCA based on process-data. Integration of process-data and IO-data in hybrid modelling to obtain the advantages of both approaches. The course will provide the background for understanding IO and hybrid modelling and how to build both monetary and physical input-output models, including trade-linking in multi-regional models. The practical part of the course will mainly focus on the models behind and how to use the multi-regional hybrid database Exiobase v3.

Course outline (lectures and exercises on):

- The basic math of LCA-modelling and parallels between input-output modelling and process based modelling.
- Monetary supply and use tables and how they are constructed from raw data. Time series and currency conversion. Basic prices, producer's prices and purchaser's prices. Valuation tables and markets. Dealing with incompleteness and inconsistency in the raw data.
- Integrating final consumption into the core supply-use table.
- Different models for creating IO-models – and their pros and cons (technology models: by-product, commodity, industry). Consequential and attributional modelling in the IO-framework.
- Creating a physical mirror of economy: Physical supply use tables, focussing on fundamental balancing requirements for materials and energy.
- Modelling of waste treatment and by-product utilisation in the supply-use framework.
- Sources of data for inputs of natural resources and outputs of emissions.
- Different activity and product classifications and how data are converted between them.
- Handling IO tables in mixed units.
- Dealing with imports and exports. Closed-country models versus trade-linking of IO tables for different countries/regions, i.e. creating multi-regional IO models. Introducing international markets, different from historical averages, for predictive/consequential analysis.
- Integrating fixed capital formation and use into the core supply-use tables.
- Hybridisation:
 - Tiered and embedded approaches for hybridization
 - Disaggregating/detailing supply-use tables and IO models
 - Example: Implementing indirect land use changes (iLUC) in the supply-use framework
- Application examples and exercises:
 - economy wide level (from municipal to global)
 - product focus
 - corporate focus
 - project/programme/plan/policy focus
- Sources of uncertainty and ways of addressing these.

Teaching staff: Dr. Jannick Schmidt

Learning outcomes:

- Ability to read and to extract information from national accounts and input-output models.
- Understanding the limitations and ability to avoid pit-falls.
- Understanding of the difference between different modelling approaches and their implications for the modelled system.
- Ability to create simple input-output models.
- Ability to use existing input-output models for different application areas.

Dates: 22-24 January 2018

Location: ESCI-UPF, Passeig Pujades 1, Barcelona.

Course type: Short course

Academic recognition: 2 ECTS point (including pre-course reading)

Prerequisites: A basic understanding of life cycle inventory. Must bring own laptop computer.

Format: 10 hours lectures. 10 hours exercises.

Max number of participants: 12 (if more than one teacher 12-20).

Status: confirmed

Regular Price: 2500 Euro for professionals / 1000 Euro for university personnel / 500 Euro for students. Second registrations from the same institution offered at 50% discount.

Conditions: Does not include travel, accommodation and meals. Please ask for our list of accommodation recommendations.

Registration deadline: 22 December 2017

Contact person and email: Inger Weidema – inger@ilca.es