The activities conducted within the Life Cycle Sustainability Analysis group mainly consist in the development and application of methods, metrics and tools to assess the sustainability performance of products, technologies and policies for both industrial organisations and policy makers.

MAIN COMPETENCES

Life Cycle Assessment (LCA) is a core expertise of the research group. Depending on the decision-making context, its researchers apply different types of LCA methodologies: attributional, consequential, input-output, or hybrid. Besides of LCA, the group also applies its skills and experience from other expertise fields:

- Circular Economy approaches and best practices (e.g. eco-design, industrial symbiosis, remanufacturing, recycling)
- Eco-system services valuation
- Material Flow Analysis (MFA)
- Mathematical and resource optimisation methods
- Agent-Based Modelling (ABM)
- Life-Cycle Costing (LCC)

When needed, those expertise fields can be coupled to LCA methodologies to reinforce the modellings and the accuracy of the results. Moreover, the researchers’ programming skills (e.g. in Python programming language) enable the group to develop customised computational models for its partners.

Main Assets

- **ECOPACT**: simplified LCA tool to support eco-design projects in SMEs
- **OASIS**: trade off optimal solutions (i.e. environment and cost) for drinking water production
- **DAEDALUS**: decision-making regarding buildings refurbishment at urban scale for energy efficiency
- **OptiHEAT**: generate optimal waste heat recovery solutions within complex systems
- **VALUES**: provide more robust indicators for the assessment of land use on ecosystem services
- **MUSA**: decision-making (environment and cost) for local farming practices
- **DyPLCA**: provide more accurate and realistic LCA results considering dynamic inventories

SELECTED PUBLICATIONS

- **Waste heat valorisation at multiple scales: focus on inbuilding waste water and regional heat recovery**, Bertrand A. (2017), PhD thesis;

Partners

ArcelorMittal, Astron, Cimalux, Delphi, SCORELCA, Ministry of the Economy, Ministry of Sustainable Development and Infrastructure, Tarkett, Voestalpine.

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