



UNSW
SYDNEY



Integrated Sustainability Assessments

Making integrated sustainability assessments in industrial ecology, circular economy, consumption and production, and using virtual laboratory technology to perform economy-wide analysis and simulation to develop systems and strategies that deliver optimised, sustainable outcomes for society, the environment and the economy.

Competitive advantage

- Economy-wide sustainability assessments based on cutting-edge methodology
- Hybrid life-cycle assessments enabled by virtual laboratory technology
- Comprehensive sustainability indicator frameworks for system-wide applications of industrial ecology and circular economy
- Key sustainability performance metrics for system optimisation and product development

Impact

- Developing Sustainability Assessment Frameworks for the water industry
- Creating a scope 3 greenhouse gas emissions calculator for carbon neutrality assessments under the national Climate Active Carbon Neutral Standard
- Developing specific Life Cycle Inventories (LCI) for the built environment, energy, water and food industries
- Creating sustainability decision-support frameworks and tools for applications in industry sectors and for policy-making, e.g., water, dairy and beef industry
- Development of strategies and indicators for the achievement of the Sustainable Development Goals
- Recommending CO₂-reduction strategies for food, mining, packaging, waste and water industries

Successful applications

- Integrated Carbon Metrics, CRC for Low Carbon Living
- Triple Bottom Line tool of alternative water supply projects for Water Reuse Research Foundation
- Environmental performance evaluation of Australian construction, Australian Research Council
- Assessing absolute sustainability of global cities, Australian Research Council
- Energy benchmarking and visualization tool for the Water Services Association of Australia
- LCI for different photovoltaic technologies, water and wastewater technologies and Australian food categories
- Developing science-based carbon reduction strategies for various industries, such as building and construction, renewable energy

More Information

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- Australian Dairy Carbon Calculator for the Australian Dairy industry
- Sustainable Development Goals program for UNSW Sydney

Capabilities and facilities

- Industrial Ecology Virtual Laboratory (IELab), a collaborative e-research platform for economy-wide, integrated sustainability assessment of industries, sectors, facilities, processes, technologies and products

Our partners

- Australian Research Council
- CSIRO Land and Water
- Environmental Resource Management (ERM)
- Life Cycle Strategies Pty Ltd
- Mitsubishi Heavy Industries
- NSW EPA
- Sydney Water Corporation