

Sustainability, Economics and Waste Research at the CSIR

Providing scientific evidence and decision support to enable sustainable consumption and production and the transition to a circular economy.

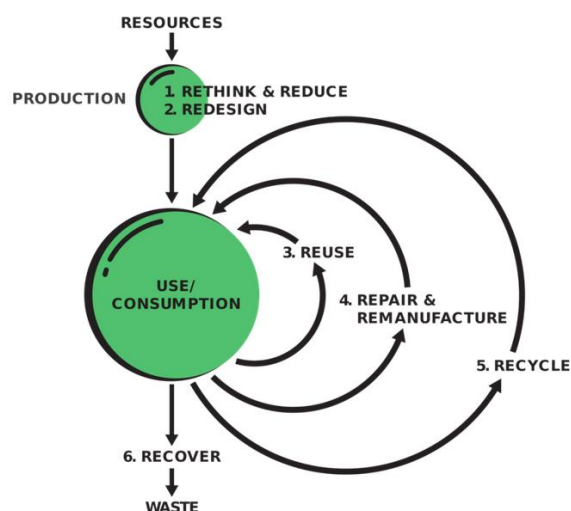
Who are we?

The CSIR's Sustainability, Economics and Waste (SEW) research group provides scientific evidence and decision support for both the public and private sector, aimed at enabling sustainable development and achieving the Sustainable Development Goals (SDGs).

Our main focus is on providing evidence-based decision support to achieve SDG 12 (Sustainable Consumption and Production), and to enable the transition to a Circular Economy.

This includes a focus on all three principles of a circular economy:

- (1) Designing out waste and pollution;
- (2) Closing resource loops so as to keep products and materials in use; and
- (3) Regenerating natural systems



What do we offer?

The SEW research group is an inter-disciplinary team, offering a diverse range of skills and capabilities. These include:

Social ecological systems analysis and modelling

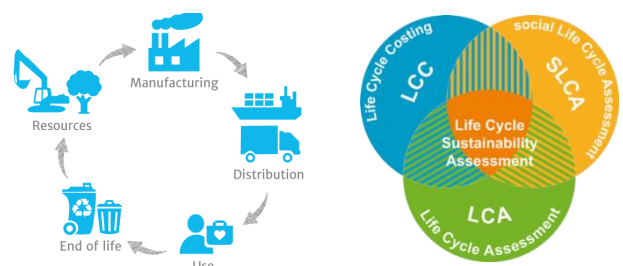
- Systems dynamics modelling
- Identification and evaluation of social ecological system risks
- Assessing systemic risks to business' supply chains and value chains, and supporting risk management and enhanced resilience.

Policy & scenario analysis and guideline development

- Policy analysis
- Scenario analysis
- Multi-criteria decision analysis (MCDA)
- Development of roadmaps, action plans and guidelines for transitioning towards a green / circular economy.

Environmental footprinting

- Life cycle assessment (LCA); including screening studies, ISO-compliant studies, comparative studies, and studies aimed at meeting PEF, EPD or EPR requirements
- Life cycle sustainability assessment (LCSA)
- Water & carbon footprinting
- Material flow analysis.



Environmental and resource economics

- Economic valuation of social and environmental impacts (externalities)
- Cost-benefit analysis (CBA)
- Economics of environmental policy
- Techno-economic feasibility assessment

What are our focus areas?

We are able to apply our capabilities to a broad range of contexts and sectors. Some of our main areas of focus include the following:

Agriculture and food systems

Providing decision support to enable sustainable agriculture and food supply systems (including green and regenerative agricultural practices).

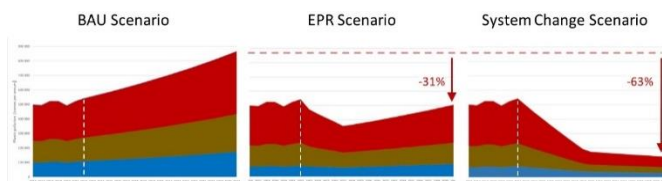
Energy

Assessment of alternative energy systems (including renewables, hydrogen and bio-energy).

Manufacturing and retail (including plastics)

Much of our recent work has focused on providing evidence-based solutions for plastic pollution. This includes LCA studies aimed at assessing and comparing the impacts of plastic products (and of alternative materials), quantifying the environmental and economic impacts of plastic pollution, and modelling the effectiveness of alternative intervention strategies.

To find out more, visit the #SolvePlasticsAfrica hub at www.csir.co.za/SolvePlasticsAfrica



Integrated waste management

- Waste governance (development, assessment and review of legislation, policy and regulations)
- Waste characterisations
- Waste data & information
- Assessing waste behaviour and behavioural change interventions
- Economics of waste management
- Assessing waste beneficiation opportunities.



Tourism

Supporting the transition towards sustainable tourism.

Examples of recent projects

- [Business risk and resilience](#)
- [Municipal Capability & Partnership Programme](#)
- [Steering towards a Green Economy: A reference guide](#)
- [A green economy project design and implementation framework for agriculture](#)
- [Quantifying the cost of food waste in South Africa](#)
- [Increasing reliable, scientific data on food losses and waste in South Africa](#)
- [South African Municipal Waste Management Systems: Challenges and Solutions](#)
- [Municipal waste management – Good practices toolkit](#)
- [The SASCOST Model: A decision support tool for implementing municipal waste separation at source](#)
- [Municipal waste separation at source: Implementation Guideline](#)
- [Incentives for municipalities to divert waste from landfill in South Africa](#)
- [Science, Technology and Innovation for a Circular Economy \(STI4CE\)](#)
- [Advancing circular economy in SA: Recommendations for advancing a circular plastics economy](#)
- [Supporting the transition from conventional plastics to more environmentally sustainable alternatives](#)
- [Comparative Life Cycle Sustainability Assessment on single-use plastic carrier bags in South Africa](#)
- [Reducing plastic pollution: an evidence-based strategy for SA based on application of the Pathways Tool](#)
- [Towards understanding the impacts of marine plastic debris on ecosystem services and the economy in SA](#)
- [Transformation of the SA tourism value chain towards sustainable and resource efficient and inclusive growth](#)
- [Sustainability of Rural Tourism Products in South Africa](#)

Some of our clients

- International institutions, including UNIDO, UNEP, The World Bank, and GIZ
- National government departments, including the Department of Science and Innovation; the Department of Forestry, Fisheries and the Environment; the Department of Trade, Industry and Competition; and the Department of Tourism.
- State-owned entities, including DBSA, Eskom, and the National Research Foundation (NRF).
- Provincial and local government, including metros
- Businesses and NGOs, including Anglo-American, Safripol, TetraPak, and WWF-SA.

Some of our collaborators

- Other science councils (e.g. HSRC), universities, NCPC-SA, GreenCape, SA Plastics Pact, WWF-SA, PEW Charitable Trusts, UNEP, UNIDO, PWC and others in the public and private sector.

For further information, please contact:

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www.csir.co.za/sustainability-economics-and-waste