

BRIEFING NOTE

June 2026

LIFE CYCLE ASSESSMENT GUIDELINES: PHASE II PILOTING

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KEY FINDINGS

The CSIR's [LCA Guidelines](#) were successfully piloted, through application to a real-world LCA study for paper packaging. The aim was to validate the recommendations put forward in the Guidelines, including the proposed “grouping” approach to operationalise the LCA requirement in the EPR Regulations. Following the pilot study, a number of updates have been made to Guideline 1 (Best Practice Guideline for Conducting LCA Studies in SA). The study also enabled development of an End-of-Life model for paper and paper packaging (Guideline 5), and actionable LCA results for industry use.

INTRODUCTION

Following publication of the Extended Producer Responsibility (EPR) regulations in 2020, which include a requirement for Life Cycle Assessment (LCA) studies to be conducted, the [CSIR LCA Guidelines series \(Russo et al., 2024\)](#) was developed to provide clear recommendations for conducting LCA studies in South Africa, in a harmonised and cost-effective way.



Figure 1: The CSIR LCA Guideline series Nov 2024 release

Following publication of the CSIR LCA Guideline series, several follow-up activities were identified by the project team. These included testing the methodological approach as outlined in Guideline 1 in a real-world context (in partnership with industry), and further development and refinement of the Guideline series.

The aim of the project was three-fold:

- Testing the guidelines with industry data: specifically, data for the paper sector were selected,

and a collaboration with Fibre Circle NPC and the University of the Witwatersrand was established.

- Refining the LCA Guidelines (as needed), based on lessons and insights from the case study.
- Developing a set of recommendations specifically for the sector under study, namely paper and paper packaging.

METHODOLOGY

The main objective of the project was to test the methodological approach as outlined in Guideline 1 in a real-world context. The elements tested were:

- The methodological recommendations provided in the Guidelines for conducting an LCA study in accordance with the EPR requirements and the local context.
- The proposed approach to “grouping” of similar products to enable LCAs to be conducted in a more efficient and pragmatic way. The LCA was conducted at the Producer Responsibility Organisation (PRO) level (*Collective principle*), and focused on a specific product (corrugated boxes and paperboard packaging) with the following characteristics:
 - Falling under a specific EPR Category (*Kraft and Box Board paper*)
 - Being primarily South African (strong local cradle-to-grave value chain)
 - Comprising a variety of wood fibres (virgin and recycled fibres; bleached and unbleached options)

- Being available in a wide range of designs, variations in thickness, layering, shapes, and colours; the selected products presented a solid foundation for conducting sensitivity and scenario analyses, cut-offs, and scaling tests
- The assessment was conducted on a defined quantity of product (1 tonne, as per the *Scaling Principle*), specifically bulk material that can be converted into any corrugated and paperboard box.

MAIN RESULTS

The main outcomes of the project were:

- **Updates to Guideline 1:** Best Practice Guideline for Conducting LCA Studies in SA (the main LCA Guideline); including:
 - Updated recommendations regarding the allocation method for recycling at End of Life
 - Updated recommendations for presentation of results using the 80% threshold and the Life Cycle Impact Assessment method that provides the widest spread of impact categories.
- Development of a **new accompanying Guideline** in the series, namely **Guideline 5: End of Life (EoL) Model for Paper and Paper Packaging in South Africa**. This new guideline provides an EoL model derived specifically for the paper and paper packaging sector; and provides recommendations for implementing the modelling in LCA studies. The model and recommendations provided can be considered the best available in terms of data coverage for paper and paper packaging in South Africa.

Furthermore, the LCA study of corrugated boxes and paperboard packaging is the first study conducted based on the recommendations in the CSIR LCA Guidelines, including the proposed “grouping” approach.



Figure 2: The CSIR LCA Guideline series June 2026 release

Both the “Scaling” and the “Collective approach” principles were tested, and recommendations for actionable LCA results for industry use were provided. The results of the study (and likewise for future studies conducted using a collective approach) can be used in one of two ways:

1. Using the results “As Is” – i.e. using the results of the LCA report directly (based on the functional unit chosen for the study/report in question);
2. Scaling the LCA results to the actual mass (weight) of the specific product(s) in question, using the environmental scores and the working examples provided.

Acknowledgements: The authors acknowledge the funding received from the Department of Science, Technology and Innovation (DSTI) through Circular Innovation South Africa (CISA). The LCA study was carried out in collaboration with LCA experts from the University of the Witwatersrand (Assoc. Prof. K Harding and PhD candidate, Mr E. Botha) and Fibre Circle NPC (PRO representing the paper and paper packaging sector).

Disclaimer: The content and views included in this Briefing Note are based on independent analysis and do not necessarily reflect the position of DSTI or the CSIR.

This Briefing Note is produced as part of the DSTI/CSIR (CISA) Briefing Note Series, an initiative of the Department of Science, Technology and Innovation managed by the CSIR. The Note stems from the findings of a grant project funded under CISA, entitled “Life Cycle Assessment Guidelines: Phase II Piloting”.