Critical review statement

Contact person
Michael Sturges
Associate consultant
+44 (0)7787 531141
michael.sturges@ri.se

Comparative assertion on climate change impacts of packaging solutions for plastic replacement

Review background

This document forms the critical review statement for a comparative life cycle study of packaging solutions ("Berry tray") manufactured from MetsäBoard Prime FBB EB with dispersion barrier coating compared to virgin and recycled PET packaging products as well as packaging solutions ("Takeaway tray") manufactured from MetsäBoard Pro FSB Cup tray with PE coating compared to a virgin PP packaging. The method and results are detailed in a report "Comparative assertion on climate change impacts of packaging solutions for plastic replacement", dated 16.06.2025.

The study was conducted and the report was prepared by Lari Oksala, Sustainability Manager and Tuula Kerkkänen, Product Safety Specialist from Metsä Board Corporation.

The critical review has been performed by a panel of two independent experts:

- Michael Sturges (chair of the review panel) – RISE Research Institutes of Sweden – a life cycle (LCA) assessment practitioner with specific experience of environmental studies relating to forest industry value chains and packaging solutions
- Gary Parker – SIM – a life cycle assessment expert with significant experience of LCA and carbon footprinting as applied to packaging value chains

The reviewers were contracted directly by Metsä Board Corporation and were independent of the LCA study.

RISE, Research Institute of Sweden

Postal address
RISE
Box 5609
SE-114 86
STOCKHOLM
Sweden

Office location
United Kingdom

Phone / Fax / E-mail
+44 (0)7787 531141

Critical review process

The review was performed based on the requirements of ISO14044:2006 Section 6.2, i.e., critical review by an external expert. In this case, a panel of two independent reviewers was selected.

The critical review was iterative in nature, being performed concurrently with the LCA study. The reviewers were in regular contact with the LCA study team and provided comments at the following stages of the study:

- First draft report including goal and scope, life cycle inventory and first draft results (provided as a MS PowerPoint document – report draft version 1.0 dated 7.10.2024) and calculations (provided as Microsoft Excel worksheets).
- Second draft report (provided as a pdf document – dated 31.01.2025) and revised calculations (provided as Microsoft Excel worksheets).
- Final report (provided as a pdf document – dated 16.06.2025) and revised calculations (provided as Microsoft Excel worksheets).

The second and third draft reports and calculations included amendments provided in response to the critical review panel's comments. The review panel provided written feedback using a MS Excel feedback template. The feedback was also discussed during follow up video conference meetings with the LCA practitioners.

The LCA practitioners responded to the comments, providing further explanations as appropriate. This was an iterative process until the reviewers were satisfied that all points raised had been sufficiently addressed. The responses were detailed in the MS Excel feedback template. This approach provided a clear audit trail of the critical review panel's comments and the LCA practitioners' subsequent actions and responses.

The review panel has considered the responses and changes and is satisfied that appropriate clarifications have been provided.

Result of the critical review

The critical review concludes that the study was performed in accordance with ISO 14040 and ISO 14044. In addition, the reviewers find that the carbon footprint results have been produced in conformance with ISO14067.

Opinion of the reviewers

The reviewers conclude that the study's level of quality, detail and transparency is appropriate considering the goal and scope. The scientific methods applied and data used are acceptable and justified.

As with all LCA studies, there are methodological choices and modelling limitations that need to be understood when interpreting the results. All methodological choices are transparently documented; it is of course important that users of LCA reports take account of such aspects.

In this particular study, as with all LCA studies including systems for forest industry products, the treatment of biogenic carbon requires consideration. In the analysis, a +1/-1 approach has been applied, as required by ISO14067. This means that all flows of carbon (fossil GHG emissions, biogenic GHG emissions and removals, and emissions

associated with direct land use change) are transparently reported, including consideration of biogenic carbon contained in the product which will ultimately be released back into the atmosphere if final end-of-life of the fibres is considered (i.e., cradle-to-grave boundaries). The presentation of alternative end-of-life scenarios is particularly appreciated by the critical review panel.

It is stressed in the report that the results achieved and conclusions drawn are specific to the value chains considered for each of the solutions. The results may not be valid if different value chains are considered (e.g., different board grades or production sites) or if value chains evolve over time (e.g., different electricity mixes available, different production and converting technologies evolve).

Overall, the review panel concludes that the study's level of quality, detail and transparency is appropriate considering the goal and scope. Subsequently, the results presented and conclusions drawn are considered to be a sound and fair reflection of the potential environmental impacts of the studied systems representing the Metsä Board solutions and the competing products. The comparative assertions are appropriate considering the uncertainties inherent within the study.

In conclusion, it is the opinion of the reviewers that the report provides useful and realistic information for stakeholders interested in this topic.

Critical review sign-off

The review panel certifies that the statement provided is a fair reflection of the assessment and their views of the study.

Signed……. **Dated:** 9th July 2025

Michael Sturges, RISE Research Institutes of Sweden

Signed……. **Dated:** 9th July 2025

Gary Parker, SIM