# Unveiling the Complexities: Exploring LCAs of Reusable Packaging in the Take-Away Sector

## Why do they disagree and how can we determine their credibility?

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## Report For



## Author

Simon Hann

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**Eunomia Research & Consulting Ltd**
37 Queen Square
Bristol
BS1 4QS
United Kingdom

Tel +44 (0)117 9172250
Fax +44 (0)8717 142942
Web www.eunomia.co.uk

# Executive Summary

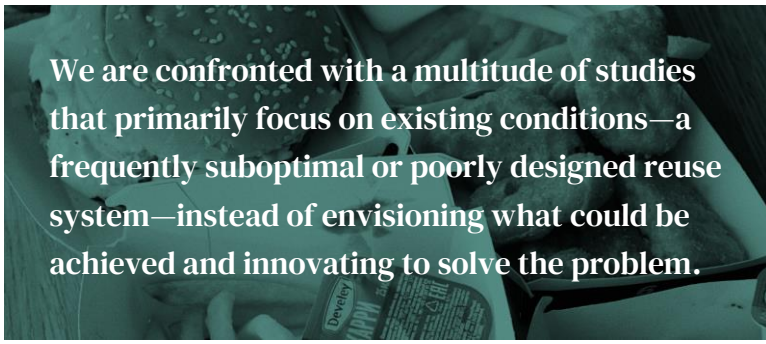
**The objective of this discussion paper is to draw attention to some of the challenges associated with Life Cycle Assessments (LCAs) that compare reusable packaging with single-use options, specifically focusing on the demanding take-away sector, which presents unique complexities for implementing reuse practices. By comparing two recent studies commissioned by the European Paper Packaging Alliance (EPPA) and McDonald's—both of which aim to challenge the case for reuse in the take-away sector—with an academic paper, we illustrate how analysis of the same issue can be approached differently to yield conflicting results. The key assumptions underlying these differences are identified, helping readers comprehend how these contrasting perspectives are achieved.**

Transparency is crucial in comparative LCAs to ensure scientifically valid results. Peer review and publication of complete studies allow for broader scrutiny and assessment of credibility. For non-LCAs, such as discussion papers, transparent presentation of data and assumptions is imperative. This report highlights key aspects of takeaway reuse studies that influence results and emphasises the need for scrutiny. The studies selected represent the transparency spectrum.

Static assumptions in reuse studies present challenges, particularly when empirical support is lacking. It is crucial to transparently state and test assumptions, and system trials can help validate findings. However, the McDonald's study falls short in terms of transparency regarding its methods and data, making it difficult to meaningfully validate its conclusions. As a result, caution should be exercised when considering the reliability of its findings.

Return rates, washing systems, and dedicated return journeys are critical assumptions that require scrutiny when assessing reuse for fast food packaging. It becomes evident that the EPPA study, despite undergoing peer review, is marred by a critical flaw: the creation of a baseline scenario that favours a particular outcome. Using pessimistic return rates of 50-70%, decentralised washing and excessive return transport leads to a poor outcome for reuse. However, by using the same underlying data, entirely opposite conclusions can be reached when these key assumptions are stacked in the favour of reuse.

Determining break-even points is therefore more informative than using static figures, particularly for behavioural aspects that are hard to predict. Studies that do not show the potential variation in results and highlight the dependencies are likely to be misleading.




Use of environmental indicators, such as water consumption or plastic use, need careful consideration. Water consumption alone does not indicate water impact or scarcity, and location matters. Proper comparative water footprinting methods are needed. Regarding packaging material used, paper and plastic encounter similar recyclability challenges in fast food due to food contamination. Transparent discussion on integrating fast food waste paper/card into paper recycling is necessary. But even if higher rates of recycling can be achieved, reliance on single-use paper needs to be considered in context of the wider impacts of raw materials production and consumption.

In summary, this report emphasises transparency, challenges static assumptions, and encourages asking the right questions in reuse studies. This is essential in interpreting published LCAs, which are often influenced by industry funding and biases. Transparent data, methodologies, and assumptions ensure credibility. Proper assessment of return rates, washing systems, water consumption, is crucial. The focus should shift from existing conditions to envisioning and innovating for better systems. Overcoming barriers requires designing systems for the future, not just the present. By considering these factors and scrutinising studies, better insights can be gained for effective policy decisions in the reuse sector.

## Conclusions

Some key findings are:

**Assumptions:**

Both the EPPA and McDonald's studies focus on suboptimal/ poorly designed reuse systems—instead of envisioning what could be achieved and innovating to solve the problem.

**(i) Return rates:**

Both studies have estimated a low average return rate for the packaging (70% McDonald's and 50% EPPA), which means the reusable packaging would undergo reuse only 3 or 2 times which is not a viable system to aim for.

**(ii) Washing:**

The EPPA study assumes the average of several different behaviours when it comes to the washing of reusable containers, instead of indicating what would be the encouraged behaviour for the system to perform optimally. This averaging exercise makes it uncredible and heavily influenced by data outliers. The McDonald's study provides no indication of the assumptions behind the washing process, so it is impossible to determine whether the results are based upon sound reasoning.

**(iii) Transport:**

The EPPA study assumes that 50% of return journeys are dedicated, with a "conservative" sensitivity set at 20%. These assumptions heavily contribute to more than 50% of the climate change impact in the study and strongly influence the resulting conclusions. However, considering the nature of convenience in fast food consumption, the suggestion that 20% of all individual containers would require a dedicated return journey does not appear highly credible, and 50% as a base case is a bold assumption in light of the lack of data. Also, these assumptions contrast heavily with those of academic paper Hitt et al., where the base case assumes no additional journeys are made, meaning containers are returned when picking up more food. A more transparent approach would be to investigate how pooling and sharing across the whole sector can address the need of dedicated journeys by ensuring drop-off/collection points are optimised among all participant operators.

**Parameterised Reuse Scenarios:**

While both the EPPA and McDonald's studies analysed nine containers in their respective analyses, they do not provide specific details on how each container performs in the results, highlighting the need for more comprehensive information to assess their performance accurately.

The EPPA study appears to have 'stacked' the pessimistic reuse assumptions in the baseline scenario which achieves a favourable result for single-use.

Given the different assumptions and parameters present in both single-use and reuse systems, it is more rational to indicate how these parameters can be optimised rather than providing a verdict favouring single-use over reuse systems.

**Material usage: the paper vs plastic debate:**

Both the EPPA and McDonald's studies fail to provide insights into effectively addressing poor separate collection rates or the food contamination issues with single-use packaging that must be overcome to significantly improve recycling. The Confederation of European Paper Industries (CEPI) indicates that full saturation of paper with grease is considered unacceptable (which is often the case with fast-food).

In contrast, it is feasible for a well-designed reuse system to achieve much higher rates of recycling and yield better-quality recycled materials, albeit not without the challenges of recycling plastics into food grade applications.

**Water Consumption:**

Simply comparing water consumption (or use) across the entire lifecycle does not provide a sufficient environmental indicator and, unless the two comparative systems are treated the same, the results could be unfairly influenced. Without conducting fair and robust comparative assessments of water footprint, it is unwarranted to draw conclusive findings in this way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