

*Critical Review of Pilario  
" Packaging Tool"  
(version 11 December 2024)  
and its methodological report*

according to ISO  
14040 & ISO 14044 and  
ISO TS 14071

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Report by Solinnen for

**Pilario/RDC Environment**

## 1. Introduction

Pilario and RDC Environment's objective is to have a review of one of their IT tools. The software tool under review, Pilario Packaging Tool, aims at assessing the environmental impacts of packaging in application of ISO 14040 and ISO 14044 standards. This tool is dedicated to be made available to Pilario and RDC Environment's clients.

The studies carried out with this tool are intended to meet two types of objectives:

- To provide support for internal decision (new packaging products eco-design, studies for the improvement of existing packaging products, improvement of the manufacturing process(es), management choices and overall improvement strategy).
- To communicate to stakeholders (type II environmental labelling, comparative LCA studies, performance performance tracking studies).

The web tool is accompanied by the following documents:

- A methodological report describing the tool development: LCA Packaging Tool -Methodological report - version December 2024 (confidential report). This methodological report focuses on 3 LCA models covering the packaging sector (generic packaging model, PET packaging model and Glass packaging model) and implemented in the tool.
- The web tool contains also a knowledge base that gathers user guidance articles on specific aspects of the tool. The methodological report is to be added within this knowledge base to be made accessible to the user.

There is no specific standard to cover the review of such IT tools for the assessment of environmental impacts according to the LCA methodology.

This tool and the methodological report have been produced using a methodology designed to comply with ISO 14040 and ISO 14044.

This review work will facilitate future critical review and/or verification of the deliverables of studies carried out using the Pilario LCA Packaging tool, as the result of the review work can be communicated to the experts who will carry out these critical reviews.

The review work is an "expert review" similar to what is required in ISO 14044, chapter 6.2. It is not a panel review (section 6.3), so this review work cannot conclude that the tool can be used to perform a comparative LCA study dedicated to be available to the public. This report, including its appendices, is intended to be included, at least, in the methodological report for the tool (Pilario LCA Packaging Tool -Methodological report - version December 2024).

## 2. Presentation of the expert

The expert who carried out the critical review is Delphine Bauchot, LCA expert and managing director of Solinnen (a company specialised in Life Cycle Assessment services). She is assisted in this review by Emma Fermond and Catherine VU, LCA experts at Solinnen.

The third party experts worked as independently as possible from Pilario/RDC Environment.

## 3. Nature of the Critical Review work, process and limitations

The experts worked in accordance with the requirements of the referenced standards. In addition, they took into account ISO TS 14071. In accordance with ISO 14044, the experts worked to verify the following statements:

- the methods used to carry out the LCA are consistent with the requirements of ISO 14044,
- the methods used to carry out the LCA are scientifically and technically sound,
- the data used are appropriate and reasonable in relation to the objectives of the study,
- the interpretations reflect the identified limitations and the objectives of the study,
- the study report is transparent and coherent.

The first objective of the critical review was to provide Pilario/RDC Environment with detailed comments to improve their work. These comments covered the methodological choices and the way in which the results were reported. The experts checked the plausibility of the data used through random tests on the tool. Finally, this final critical review report provides the future user of the tool and its accompanying documents with information that will enable him or her to better understand the tool and its results in order to analyse and use them appropriately.

The critical review work was performed from October to December 2024. Two critical processes performed on previous versions of the tool (developed initially by RDC Environment) took place in 2013 and 2020/2021.

This 2024 critical work started with the submission of a version of the online tool and its methodological report in October 2024. During the critical review period, oral and written exchanges took place between the review experts and Pilario/RDC Environment, including clarifications of the comments made, and the production of a second version of the tool (including online Knowledge base) and the methodological report by the practitioner. The practitioner took into account most of the experts' comments and significantly modified and improved the tool and accompanying documents (knowledge base articles and methodological report).

This critical review report is the final summary of the comments by the reviewer. Some key detailed comments are provided within this critical review report, as well as the complete discussion in the annex.

This report is delivered by the experts to Pilario and RDC Environment. The experts cannot be held responsible for the use of their work by third parties. The experts' conclusions cover all the elements presented by Pilario/RDC Environment mentioned above (web tool, online Knowledge base in their 11 December 2024 version and the methodological report- December 2024) and no other report, extract, publication, reuse or generalisation of any kind that could be made using the documents. Nor does it cover subsequent versions of the tool. The conclusions of the review expert were given in the context of the current state of the art, and the information he received during his work. These conclusions might have been different in a different context.

## 4. Conclusions of the review

The 82 detailed comments on the report and the 72 detailed comments on the tool (and its knowledge base) cover the following aspects:

- General : 48 comments;
- Methodology (ISO and science): 39 comments;
- Data and calculations: 47 comments;
- Report, editorial and other comments: 29 comments.

A great work was done by Pilario/RDC Environment to respond to the comments in detail, and to take them into account in the tool and the methodological report. The relevance of the proposed changes was discussed during the meeting and the actual implementation of the changes was checked in the final version of the tool and report. The critical review experts have noticed the effort of the practitioners at Pilario and RDC Environment who made, most of the time, changes in direct accordance with the comments of the review.

In view of the final tool and report version, the experts consider that the elements (tool and methodology report) allow LCA studies in the "packaging" sector to be carried out in an adequate and credible way, and within the limits defined in the methodological report, according to the objectives that will be mentioned in the accompanying report of each of these studies, the data related to the life cycle of packaging that will be used in the tool, and the results analysis.

The expert thus considers that **the methodological choices were made in accordance with the standards mentioned, and that the tool reflects the methodological choices described in the report.**

The methodological report "Pilario LCA Packaging Tool - Methodological report - version December 2024" displays the various limitations associated with the use of this tool, resulting from the methodological choices made, the default data proposed and the uncertainties associated with the various impacts studied. This methodological reference framework is therefore in line with the general requirements of ISO 14044 concerning LCA reports communicated to third parties.

In particular, the methodological report mentions the need to accompany any LCA study with a critical review in addition to this tool review.

*“In any cases, when LCA results based on the Packaging tool will be published in the future with the help of a project report, an additional critical review process can be run. Although not mandatory according to ISO 14040&44 standards, it is strongly recommended, especially when the tool user is not an LCA practitioner or has not referred to an LCA expert. This additional peer review aims at controlling the following aspects not yet covered by the present methodological report:*

- *the good description of the goal of the study*
- *the relevance of the selected parameter values*
- *the relevance of the conclusions*
  - *Are they in line with the results?*
  - *Do they reflect the uncertainty?*

*The additional peer review can be carried out by internal or external independent expert(s).*

*In case of comparative assertions disclosed to the public, critical review is mandatory. It shall be performed by a panel of at least three experts including interested parties. This additional verification shall also include additional verification of the tool itself with focus on the specifications of paragraph 5.3.1 of ISO 14044 (“For LCA studies supporting comparative assertions intended to be disclosed to the public”).*

*When not mandatory according to ISO 14040&44, the peer review is nevertheless recommended for increasing the reliability of the disclosure and for being in line with the principles of ISO 14025 (applicable to type III Environmental product declaration).”*

This note is essential, and the experts highlight it here again.

## 5. Detailed comments

The following paragraphs provide specific insights that a user of the tool and its methodological report can use to help him in understanding and using the tool. They also identify recommendations for improvement in future versions of the tool. The detailed comments, and corresponding responses, provided in the appendix are available for further understanding of the following points.

### 5.1 Adequacy of the methods with the requirements of the reference standards

In addition to ISO 14040 and ISO 14044 standards, the tool is mainly based on or highlight in its methodological reports and knowledge base site some recommendations from appropriate standards to assess packaging : the European Product Environmental Footprint method (especially for electricity modelling according to supplier specific data, consideration of biogenic carbon or the circular formula) , as well as the French guidance to compare packaging solutions (ADEME, “Cadre de Référence - ACV comparatives entre différentes solutions d'emballages”, 2022). The ISO 14067 is also mentioned for modelling electricity according to supplier-specific data.

### 5.2 Technical and scientific validity

The tool is built on several 3 LCA models : a generic packaging model, a PET packaging model and a Glass packaging model. The methodological report as well as the Knowledge base site give adequate information as well as link to additional bibliographical information for the user to select the appropriate data and LCIs.

### 5.3 Adequacy of the data proposed by default in the tool

#### Geographical coverage and representativeness

The tool is presented as being multi-country “since country-specific secondary data is used for electricity mixes and proposed recycling and incineration rates” (section 1.1 of the methodological report). However, a significant part of LCIs and activity data representative of Europe or even a specific European country (e.g. France) are used in many process steps. Therefore, the tool is more appropriate for European context and only offers a first approach for countries outside Europe. This is clearly reminded in the methodological report (chapter 2.3).

### Adjusted LCIs

The tool uses life cycle inventories on certain materials or processes from the literature and for which some adjustments have been made by RDC Environment to ensure consistency in the modelling. All discrepancies are clearly described in chapter 4.2.1 and 4.2.2. It is important in the interpretation of a study to keep this in mind if the concerned materials or processes are preponderant in the results.

## *5.4 Presentation of the tool limitations*

The limitations inherent in the methodology, data and hypotheses are fully explained in the methodological report (chapter 7) and the knowledge base site, in order to assist the user in the interpretations he or she may make of the studies.

Among limitations the following were discussed during the critical review and appropriate amendments were added to alert the user:

- The tool uses datasets from ecoinvent, as well as other sources, and is planned to be updated on a yearly or bi-annual basis. A recommended versioning process should be implemented enabling users to trace the version of the tool a study was performed with and if needed to recalculate the results for the new tool version. This is reminded in chapter 2.3.
- The tool is mainly dedicated to be used by packaging producers and therefore may be used by probably non LCA practitioners. The support of an LCA expert for any study in addition to the online support (knowledge base and methodological report) at some specific steps of the study (validation of data, result analysis and interpretation and conclusions) is strongly recommended.
- The requirement of a third-party critical review for external communication is also mentioned several times through the methodological report.

## *5.5 Transparency and consistency*

The transparency of the tool and the methodological report made available is strong.

A rich bibliography makes it possible to explain the assumptions made and to put the choice of values into perspective. Elements to facilitate the adequate use of the tool have been added. However, LCA requires the use of background data over which the practitioner has no control.

The versioning of the tool (as well as the methodological report) will help to maintain a high level of transparency and consistency.

## **6. Annexes**

The table of detailed comments exchanged during the critical review process, together with the practitioner's responses, is an annex to this critical review report.