



The partners of the LOOP4PACK project are pleased to announce that the D4.5 deliverable, “1st LCA coupled with valorization chain design and economic study”, is finished. The final document was sent to all partners on the 04/04/2022. This deliverable was written by Etienne Paul (INSA-TBI), Frédéric Merle (Euramaterials) and Estelle Grousseau (UM-IATE).

### Summary of the deliverable:

This deliverable aims at

- identifying and analyzing LCA (Life Cycle Analysis) or LCC (Life Cycle Cost) existing studies on PHAs (PolyHydroxyAlkanoates) material production
- and, thanks to this analysis, to reveal the best pathways to optimize the economic value and lower the environmental impacts of the new products put on the market.

If LCA or LCC supply essential information to evaluate the industrial impact of new process and new products, the use of these data as a repository turns out to be quite difficult; the selection of raw materials, scope perimeter, and functional units may vary deeply from one study to another. Nonetheless, the conjoint analysis of different publications dealing with different methods of PHAs production and processing makes it possible to highlight essential indicators concerning economic and environmental impact of PHA production all along the value chain.

This deliverable first considers the critical aspects of LCA and LCC methodology. Then 34 identified available publications (from 1998 to 2021) are summarized in a table where the following keypoints are highlighted: raw materials used, Pure Culture or Mixed Microbial Culture processing, “gate to gate” or “cradle to gate” or “cradle to crave”, integration into a biorefinery concept. This chronological summary will also facilitate the selection of relevant references according to the questions asked. The major publications in relation with LOOP4PACK project were analyzed and compared.

This work was presented during the 2<sup>nd</sup> annual meeting to all partners the 14<sup>th</sup> feb. 2022.

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