Comparative Life Cycle Assessment (LCA)

RE-ZIP Bag 2.0 against conventional single-use mailing bag

Summary Report

November 2022

Summary Report

This summary report compiles the main results from the LCA Background Report. The LCA Background Report is available from RE-ZIP management by request.

RE-ZIP is a small Danish enterprise providing circular packaging solutions for mailing purposes, which can be re-used up to 30 times.

RE-ZIP has commissioned a comparative life cycle assessment (LCA) study to 1) compare the environmental impacts of RE-ZIP Bag 2.0 with conventional single-use mailing bags. The purpose is to communicate the environmental savings to consumers, with a specific focus on GHG emissions and water consumption. In addition, RE-ZIP also uses the result to identify the environmental hotspots in the life cycle of RE-ZIP products.

The LCA Background Report has been compiled in accordance with the International Reference Life Cycle Data System (ILCD) Handbook and in alignment with ISO 14040 and 14044, with the exceptions that a critical review has not been performed by another third-party assurance provider and that uncertainty analysis has not been performed.

The comparisons are carried out based on the main function of the products, which is to contain and protect small-size goods during transport and storage. The functional unit is to contain and protect goods that are of maximum size 60cm (Length) x 45cm (Width) and to keep its original condition during transport and storage for 10 deliveries.

The reference flows are as follows:

RE-ZIP Bag 2.0: One RE-ZIP Bag 2.0

Conventional single-use mailing bag: 10 conventional single-use large HDPE bag of size 60cm (Length) x 50cm (Width)[1].

The LCA results for GHG emissions and water consumption are presented for one RE-ZIP Bag 2.0 (table S1), and one single-use mailing bag (table S2). The comparative LCA results for GHG emissions and waste consumption between RE-ZIP packaging and conventional mailing packaging are illustrated in table S3.

Table S1 LCA environmental impacts of one RE-ZIP Bag 2.0 in use 10 times

Impacts	Total	Production	Sorting and reuse	Transport
GHG emissions (gCO_2eq)	**353**	116	4	233
Water consumption (liter)	**8**	8	0	0

Table S2 LCA environmental impacts of one conventional single-use mailing bag

Impacts	One single-use mailing bag
GHG emissions (gCO_2eq)	167
Water consumption (liter)	1.5

[1] https://www.rajapack.dk/kuverter-paproer/forsendelsesposer/forsendelsesposer-plast-60my_skuPPBL50.html

Table S3 Savings: RE-ZIP Bag 2.0 in use 10 times vs. single-use mailing bag

Impacts	RE-ZIP Bag 2.0	10 single-use mailing bags	Absolute savings	Relative savings
GHG emissions (gCO_2eq)	353	1667	**1315**	**79%**
Water consumption (liter)	8	15	**6**	**44%**

The result shows that for the full lifecycle, a RE-ZIP Bag 2.0 used 10 times saves 1315 grams CO_2eq (79%) and 6 liters of water (44%), in comparison with 10 single-use mailing bags. More details on the LCA environmental impacts and savings are provided below.

Below we present the results of comparing the RE-ZIP Bag 2.0 in use N times (N is a number between 1 and 10) with single-use mailing bags. The result shows that if the RE-ZIP Bag 2.0 is in use more than once, it will save GHG emissions in comparison with single-use mailing bags. When it is in use for more than three times, the relative savings are greater than 60%. However, in order to save water consumption, the RE-ZIP Bag 2.0 needs to be in use for more than five times. Overall, the more times that RE-ZIP Bag 2.0 is reused, the more GHG emissions and water consumption are saved. More details on the LCA environmental impacts and savings are in the LCA Background Report.

Figure S1 GHG emissions relative savings of one RE-ZIP Bag 2.0 in use N times, in comparison with single-use bags. Note that the relative savings are the ratio between the absolute savings and N single-use mailing bags.

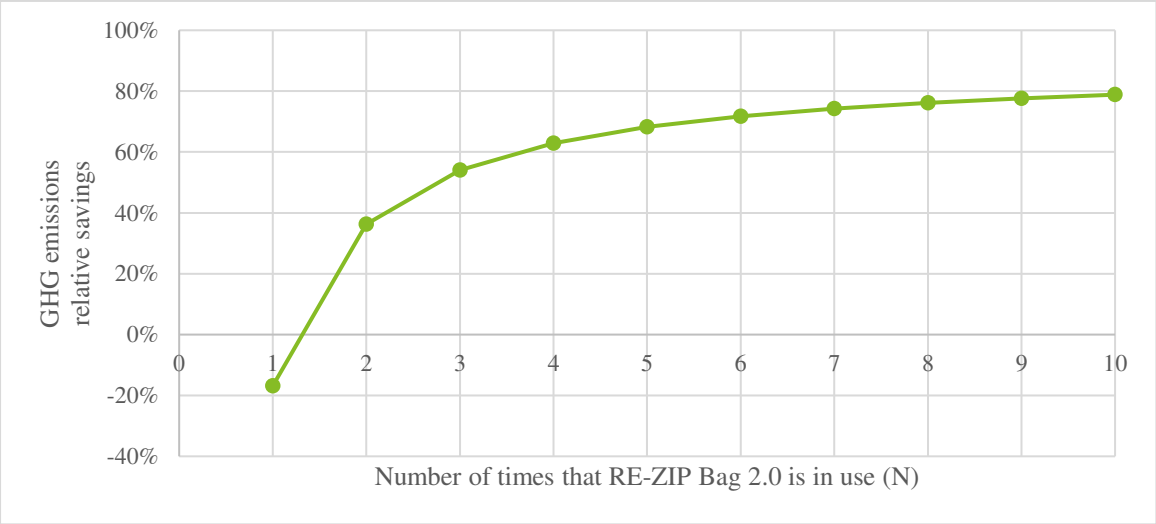
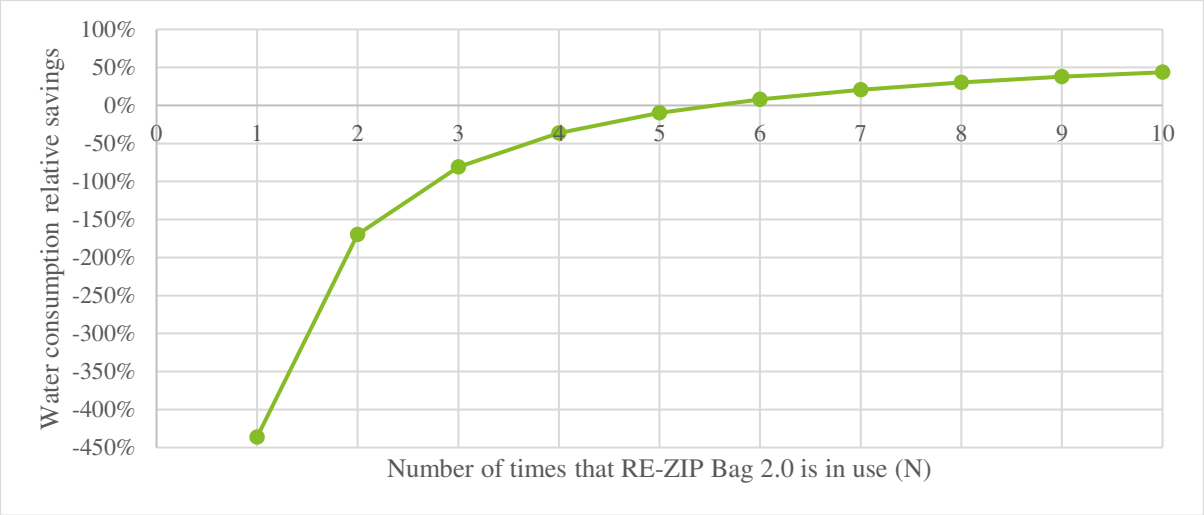


Figure S2 Water consumption relative savings of one RE-ZIP Bag 2.0 in use N times, in comparison with single-use bags. Note that the relative savings are the ratio between the absolute savings and N single-use mailing bags.



Statement by Management

RE-ZIP ApS Management has today considered and approved the comparative Life Cycle Assessment (LCA) Summary Report for RE-ZIP Bag 2.0.

The LCA Background Report has been prepared in accordance with the International Reference Life Cycle Data System (ILCD) Handbook and in alignment with ISO 14040 and 14044, with the exception that a critical review has not been performed by another third-party assurance provider, and that uncertainty analysis has not been performed.

This report is an accurate summary of the main results of the LCA Background Report.

In my opinion, the LCA Background Report is in accordance with International Reference Life Cycle Data System (ILCD) Handbook, and in alignment with ISO 14040 and 14044, with the exception noted above, and is free from material misstatement and omissions, whether due to fraud or error, including the accuracy and completeness of the data, sources and assumptions used.

Aarhus, 10 November 2022

Management

Bo Bach Boddum

CEO

Independent Auditor's Compilation Report on LCA Summary Report

To Management and other stakeholders of RE-ZIP ApS

We have been asked to compile the Comparative Life Cycle Assessment (LCA) Summary Report for RE-ZIP Bag 2.0 against other mailing packaging, hereafter called 'the LCA Summary Report'. The LCA compares the environmental impacts of one RE-ZIP Bag 2.0 against a conventional packaging solution. The LCA Summary Report has been compiled based on the information we have received from Management of RE-ZIP ApS and is a summary of the 'LCA Background Report'. The LCA Summary Report may be used for the purpose of general market communication.

We performed this compilation engagement in accordance with ISRS 4410, Compilation Engagements.

We have applied our expertise in non-financial reporting to assist Management in the preparation and presentation of the LCA Background Report in accordance with the International Reference Life Cycle Data System (ILCD) Handbook and in alignment with ISO 14040 and 14044, with the exception that a critical review has not been performed by another third-party assurance provider, and that uncertainty analysis has not been performed. We have complied with relevant provisions of the Danish Public Accountants Act and FSR - Danish Auditors' Code of Conduct for professional accountants, including principles of integrity, objectivity, professional competence and due care.

The LCA Summary Report is a summary of the LCA Background Report, and the accuracy and completeness of the information used to compile the LCA Summary Report and the LCA Background Report are Management's responsibility.

Since a compilation engagement is not an assurance engagement, we are not required to verify the accuracy or completeness of the information Management provided to us to compile the LCA Summary Report and the LCA Background Report. Accordingly, we do not express an audit opinion or a review conclusion about the LCA Summary Report or the LCA Background Report.

Our report is solely for the purpose set forth in the first paragraph of this Compilation Report and for your information and is not to be used for any other purpose.

Copenhagen, 10 November 2022

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