

**greenly**

2025-09-16

Lyreco LCA

# Life Cycle Assessment

*The methodology in this report is based on ISO 14040*

15.258.251 (sold in WI)

# Summary



**01** | Methodology



**02** | Results

# 01

## Methodology

# Environmental Impact Assessment

<b>Functional unit</b>	<p>The functional unit is a quantified performance of a product system for use as a reference unit. One of the primary purposes of a functional unit is to provide a reference to which the input and output data are normalized (in a mathematical sense).</p> <p>The functional unit of this analysis is "1 set(s) of bound pages of paper for the purpose of writing".</p>
<b>Impact Indicator</b>	<p>The impact is measured through the "IPCC 2013 GWP 100a" method.</p>
<b>Electricity impact calculation method</b>	<p>Following guidelines from the GHG Protocol, the impact of electricity is calculated using the location-based approach. This means that the emission factors used represent the average annual carbon intensity of the power grid in the country the processes take place in.</p>
<b>Hypothesis</b>	<p>The Product's material composition is supplemented, if necessary, by secondary information as shown in the list below.</p> <ul style="list-style-type: none"> <li>- pages: Paper 84%</li> <li>- cover: Cardboard 12%</li> <li>- binding: Metal 4%</li> </ul> <p>Manufacturing Processes and associated loss percentages are assumed based on materials in the product.</p> <p>The electricity is based on the average in the country of manufacturing.</p> <p>Transportation is based on the common routes between the country of manufacturing and the country of sale.</p> <p>No replacements during the lifetime, therefore there are no emissions corresponding to the usage phase of the clipboard.</p> <p>The End of Life is based on the average waste management process of the materials in the product.</p>

# Environmental Impact Assessment

## System Boundaries

The scope of this research includes the complete lifecycle of a notebook from raw material extraction to disposal options for each material, which is the cradle-to-grave perspective.

## Exclusions

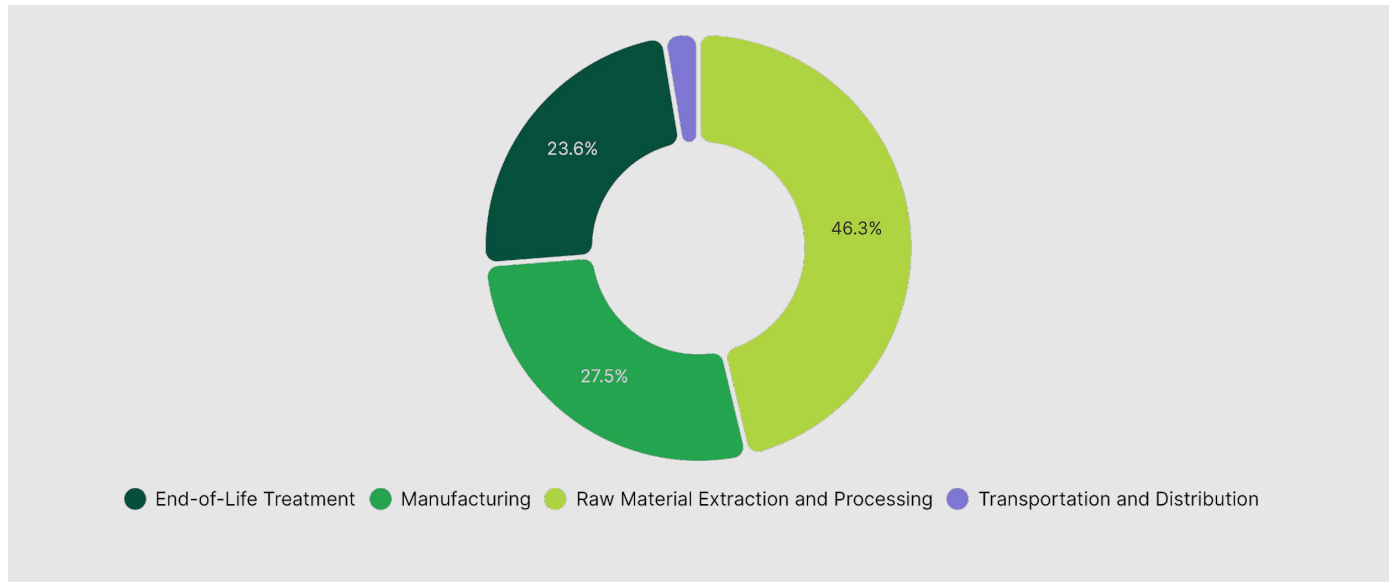
The impact of secondary packaging and writing utensils are excluded from this assessment.

# 02

## Results

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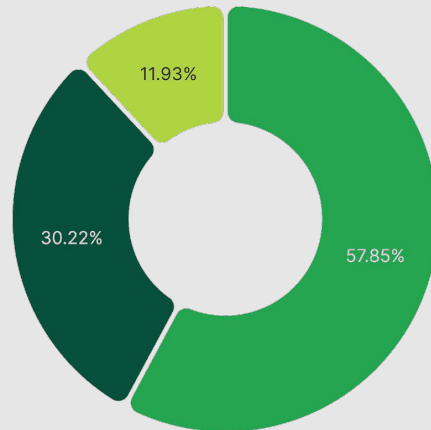
# Climate Change



Step	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Raw Material Extraction and Processing	397.92	46.26 %
Manufacturing	236.41	27.49 %
End-of-Life Treatment	203.34	23.64 %
Transportation and Distribution	22.47	2.61 %
<b>TOTAL</b>	<b>860.13</b>	<b>100.00 %</b>

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# Climate Change - Raw Material Extraction and Processing

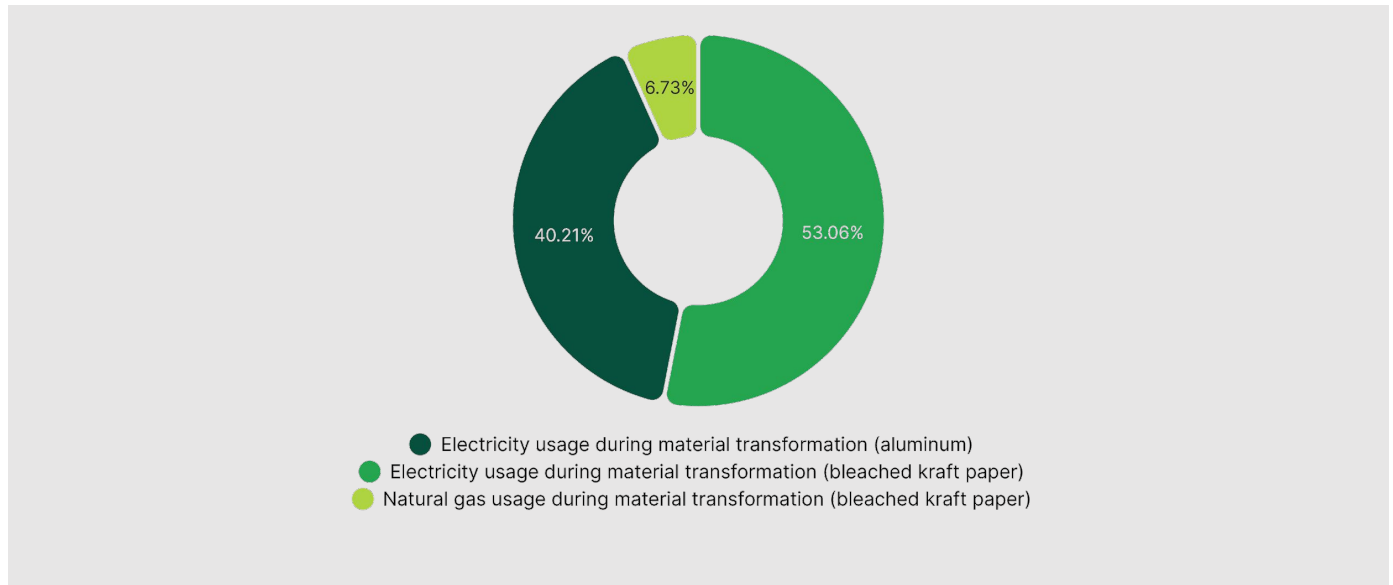


● Sourcing of raw material (aluminum) ● Sourcing of raw material (bleached kraft paper)

Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Sourcing of raw material (bleached kraft paper)	3	0.46	230.19	57.85 %
Sourcing of raw material (aluminum)	1	0.02	120.25	30.22 %
Sourcing of raw material (cardboard)	2	0.07	47.48	11.93 %
TOTAL			397.92	100.00 %

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# Climate Change - Manufacturing



Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Electricity usage during material transformation (bleached kraft paper)	4	0.16	125.45	53.06 %
Electricity usage during material transformation (aluminum)	4	0.12	95.06	40.21 %
Natural gas usage during material transformation (bleached kraft paper)	5	0.09	15.9	6.73 %
TOTAL			236.41	100.00 %

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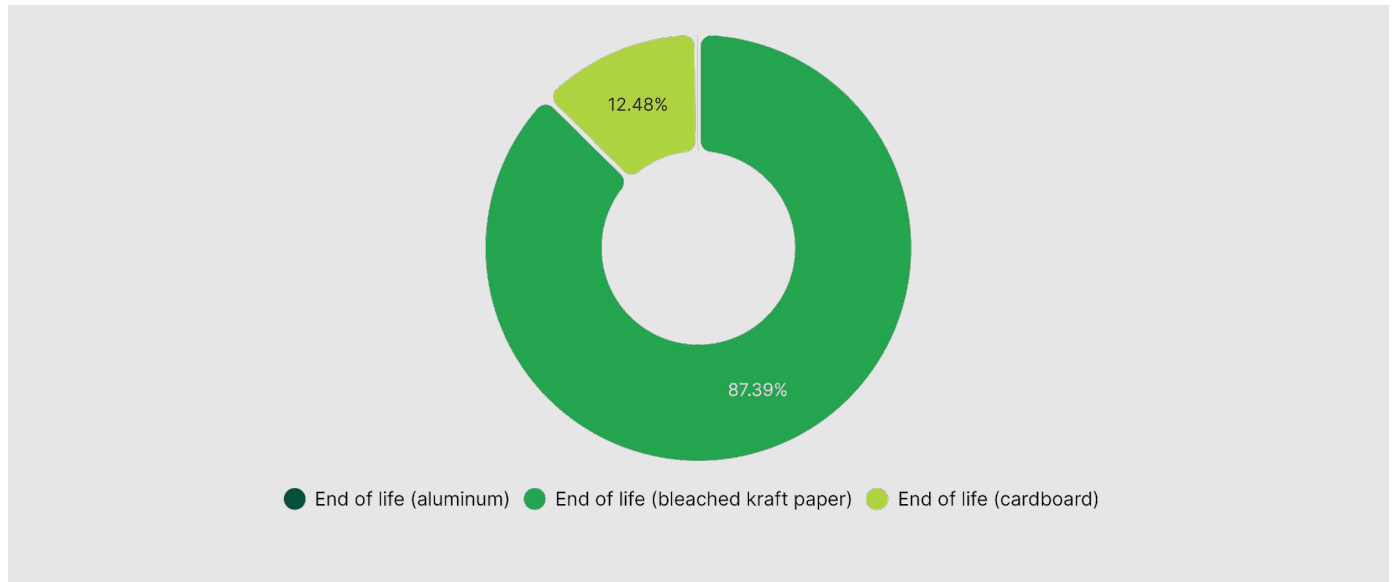
# Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Freight	6	0.37	22.47	100.00 %
TOTAL			22.47	100.00 %

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# Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
End of life (bleached kraft paper)	8	0.31	177.71	87.39 %
End of life (cardboard)	8	0.04	25.39	12.48 %
End of life (aluminum)	7	0.01	0.25	0.12 %
TOTAL			203.34	100.00 %

# Contact us

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[www.greenly.earth](http://www.greenly.earth)