

**greenly**

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Lyreco LCA

# Life Cycle Assessment

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

3.045.037 (sold in PL)

# Summary



**01** | Methodology



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# 01

## Methodology

# Environmental Impact Assessment

<p><b>Functional unit</b></p>	<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). The functional unit of this analysis is "250 page(s) of A4 paper for writing".</p>
<p><b>Impact Indicator</b></p>	<p>The impact is measured through the "IPCC 2013 GWP 100a" method.</p>
<p><b>Electricity impact calculation method</b></p>	<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>
<p><b>Hypothesis</b></p>	<p>Manufacturing Processes and associated loss percentages are assumed based on materials in the product. The electricity is based on the average in the country of manufacturing. Transportation is based on the common routes between the country of manufacturing and the country of sale. No replacements during the lifetime, therefore there are no emissions corresponding to the usage phase. 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 piece of paper from raw material extraction to disposal options for each material, which is the cradle-to-grave perspective.

## Exclusions

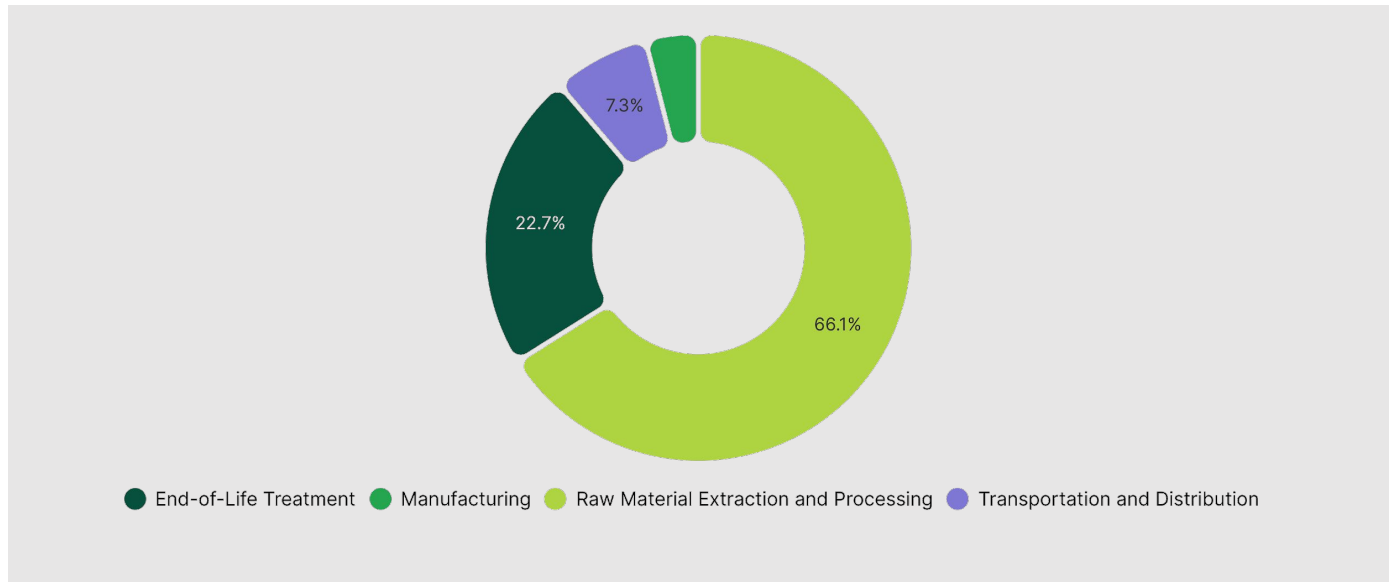
The impact of secondary packaging impact and writing utensils are excluded from this assessment.

# 02

## Results

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# Climate Change



Step	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Raw Material Extraction and Processing	4.24	66.07 %
End-of-Life Treatment	1.46	22.67 %
Transportation and Distribution	0.47	7.28 %
Manufacturing	0.26	3.98 %
<b>TOTAL</b>	<b>6.42</b>	<b>100.00 %</b>

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# Climate Change - Raw Material Extraction and Processing



Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Sourcing of raw material (coloured kraft paper)	1	3.79	4.24	100.00 %
TOTAL			4.24	100.00 %

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# Climate Change - Manufacturing



Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Natural gas usage during material transformation (coloured kraft paper)	3	0.72	130.25	51.03 %
Electricity usage during material transformation (coloured kraft paper)	2	1.34	125	48.97 %
TOTAL			255.25	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	4	2.53	467.5	100.00 %
TOTAL			467.5	100.00 %

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# Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
End of life (coloured kraft paper)	5	2.53	1.46	100.00 %
TOTAL			1.46	100.00 %

# Contact us

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