

**greenly**

2025-09-17

Lyreco LCA

# Life Cycle Assessment

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

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# Summary



**01** | Methodology



**02** | Results

# 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 "1 set(s) of bound pages of paper for the purpose of 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>	

# 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

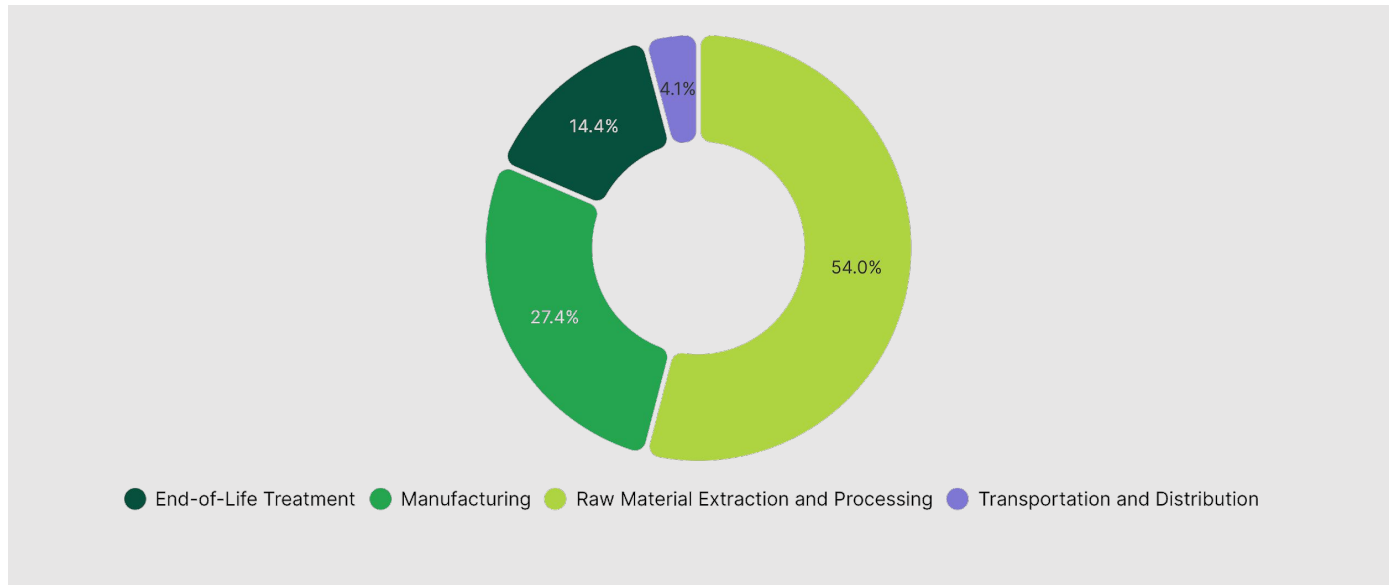
The impact of secondary packaging and writing utensils are excluded from this assessment.

# 02

## Results

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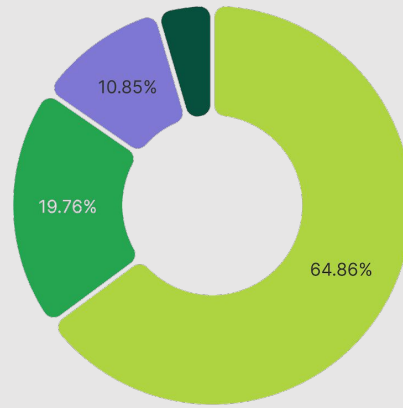
# Climate Change



Step	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Raw Material Extraction and Processing	0.93	54.04 %
Manufacturing	0.47	27.43 %
End-of-Life Treatment	0.25	14.43 %
Transportation and Distribution	0.07	4.10 %
<b>TOTAL</b>	<b>1.71</b>	<b>100.00 %</b>

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# Climate Change - Raw Material Extraction and Processing

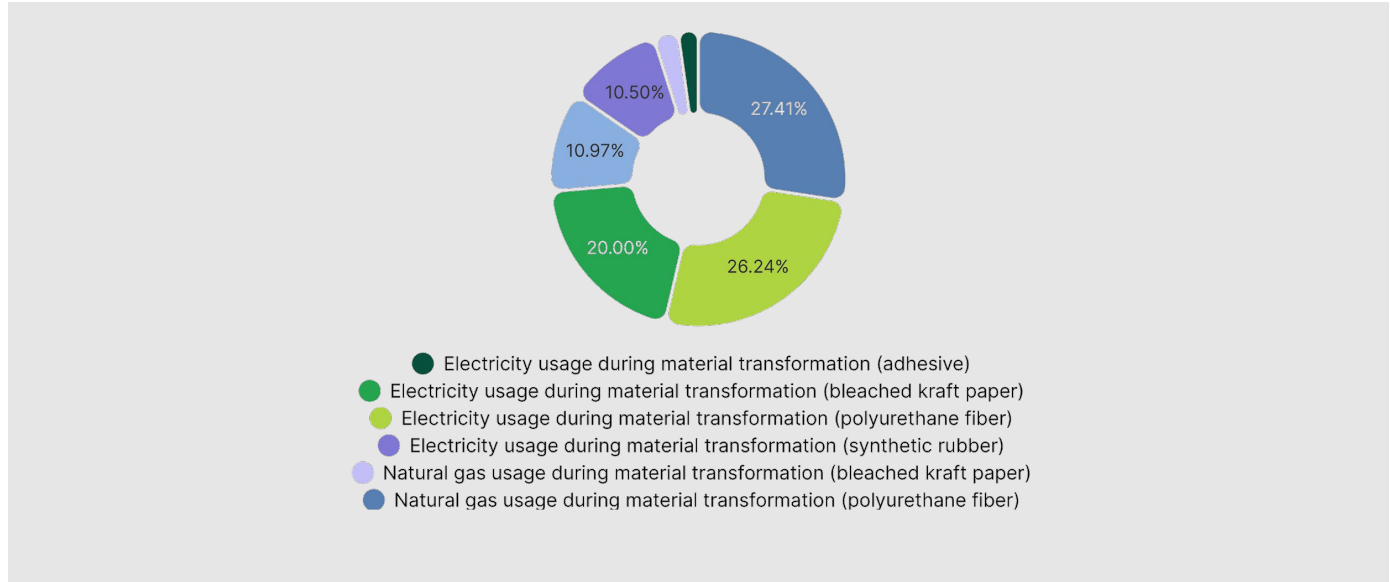


● Sourcing of raw material (adhesive) 
 ● Sourcing of raw material (bleached kraft paper) 
 ● Sourcing of raw material (polyurethane fiber) 
 ● Sourcing of raw material (synthetic rubber)

Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Sourcing of raw material (polyurethane fiber)	2	0.09	600.6	64.86 %
Sourcing of raw material (bleached kraft paper)	1	0.37	182.94	19.76 %
Sourcing of raw material (synthetic rubber)	4	0.04	100.47	10.85 %
Sourcing of raw material (adhesive)	3	7.7 · 10 <sup>-3</sup>	41.96	4.53 %
TOTAL			925.96	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 (polyurethane fiber)	6	0.71	128.85	27.41 %
Electricity usage during material transformation (polyurethane fiber)	5	0.17	123.33	26.24 %
Electricity usage during material transformation (bleached kraft paper)	5	0.13	94	20.00 %
Natural gas usage during material transformation (synthetic rubber)	6	0.28	51.54	10.97 %
Electricity usage during material transformation (synthetic rubber)	5	0.07	49.33	10.50 %
Natural gas usage during material transformation (bleached kraft paper)	6	0.07	12.64	2.69 %
Electricity usage during material transformation (adhesive)	5	0.01	10.33	2.20 %
<b>TOTAL</b>			<b>470.02</b>	<b>100.00 %</b>

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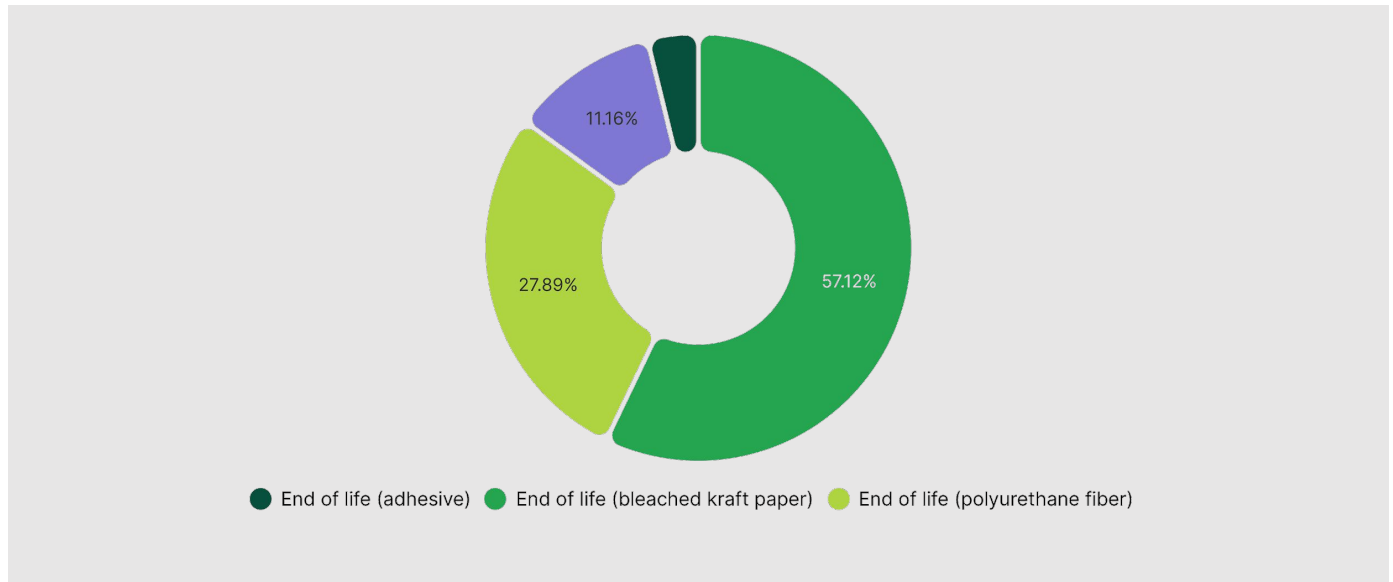
# Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Impact (g CO <sub>2</sub> eq)	Percentage (%)
Freight	7	0.35	70.26	100.00 %
TOTAL			70.26	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)	9	0.25	141.23	57.12 %
End of life (polyurethane fiber)	8	0.07	68.96	27.89 %
End of life (synthetic rubber)	8	0.03	27.58	11.16 %
End of life (adhesive)	10	6.99 · 10 <sup>-3</sup>	9.47	3.83 %
TOTAL			247.24	100.00 %

# Contact us

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