



2025-09-18

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

## Functional unit

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 "500 page(s) of A4 paper for writing".

## Impact Indicator

The impact is measured through the "IPCC 2013 GWP 100a" method.

## Electricity impact calculation method

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.

## Hypothesis

# 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.

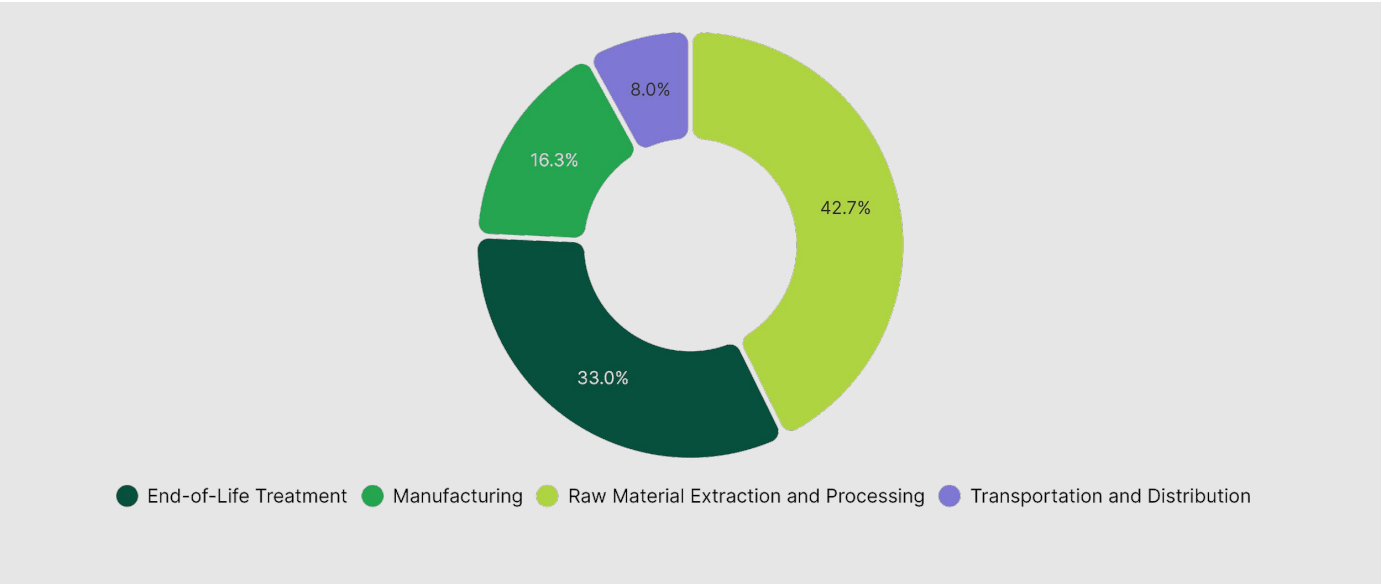
## Exclusions

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

# 02

## Results

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 Climate Change



| Step                                   | Impact<br>(kg CO <sub>2</sub> eq) | Percentage<br>(%) |
|----------------------------------------|-----------------------------------|-------------------|
| Raw Material Extraction and Processing | 0.94                              | 42.71 %           |
| End-of-Life Treatment                  | 0.73                              | 32.97 %           |
| Manufacturing                          | 0.36                              | 16.30 %           |
| Transportation and Distribution        | 0.18                              | 8.02 %            |
|                                        |                                   |                   |
| TOTAL                                  | 2.21                              | 100.00 %          |

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# Climate Change - Raw Material Extraction and Processing

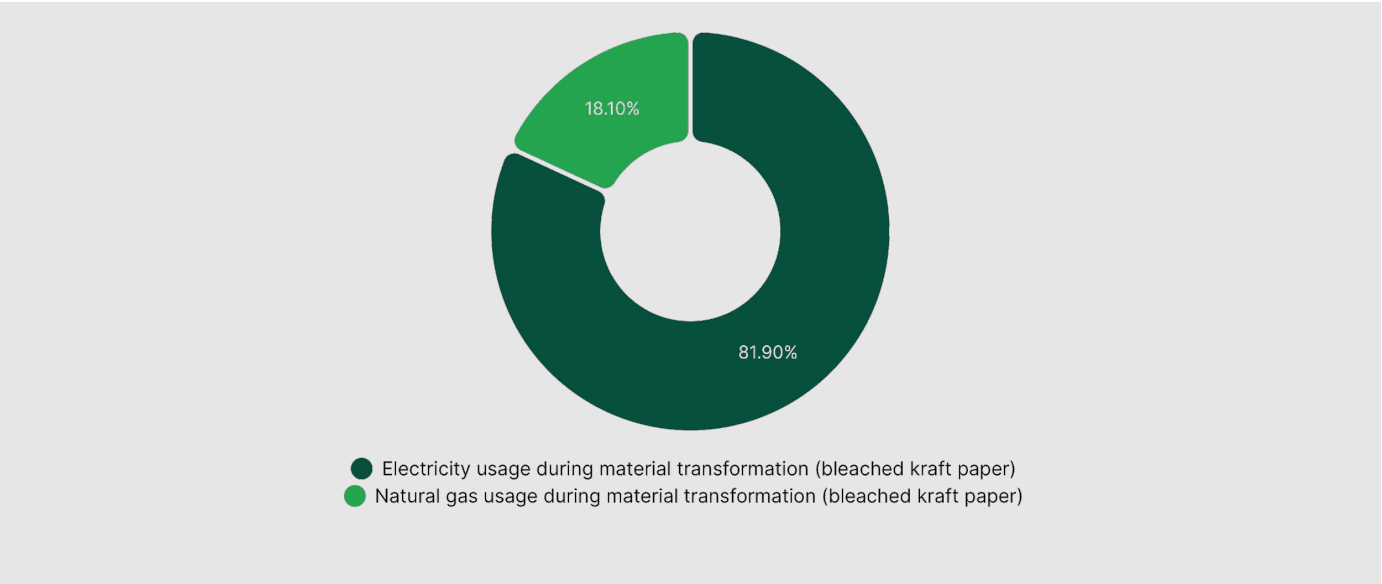


- Sourcing of raw material (bleached kraft paper)

| Activity                                        | Emission Factor Num | Quantity | Impact (g CO <sub>2</sub> eq) | Percentage (%) |
|-------------------------------------------------|---------------------|----------|-------------------------------|----------------|
| Sourcing of raw material (bleached kraft paper) | 1                   | 1.89     | 942.68                        | 100.00 %       |
|                                                 |                     |          |                               |                |
|                                                 |                     |          |                               |                |
|                                                 |                     |          |                               |                |
|                                                 |                     |          |                               |                |
| TOTAL                                           |                     |          | 942.68                        | 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) | 2                   | 0.67     | 294.62                        | 81.90 %        |
| Natural gas usage during material transformation (bleached kraft paper) | 3                   | 0.36     | 65.13                         | 18.10 %        |

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|       |  |  |        |          |
|-------|--|--|--------|----------|
| TOTAL |  |  | 359.75 | 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                   | 1.26     | 176.94                        | 100.00 %       |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
|          |                     |          |                               |                |
| TOTAL    |                     |          | 176.94                        | 100.00 %       |

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# Climate Change - End-of-Life Treatment



- End of life (bleached kraft paper)

| Activity                           | Emission Factor Num | Quantity | Impact<br>(g CO <sub>2</sub> eq) | Percentage (%) |
|------------------------------------|---------------------|----------|----------------------------------|----------------|
| End of life (bleached kraft paper) | 5                   | 1.26     | 727.76                           | 100.00 %       |
|                                    |                     |          |                                  |                |
|                                    |                     |          |                                  |                |
|                                    |                     |          |                                  |                |
| TOTAL                              |                     |          | 727.76                           | 100.00 %       |

# Contact us

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