# Life Cycle Analyses

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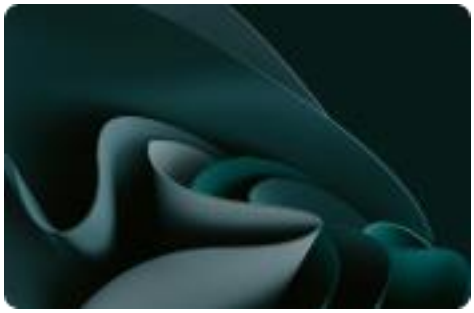
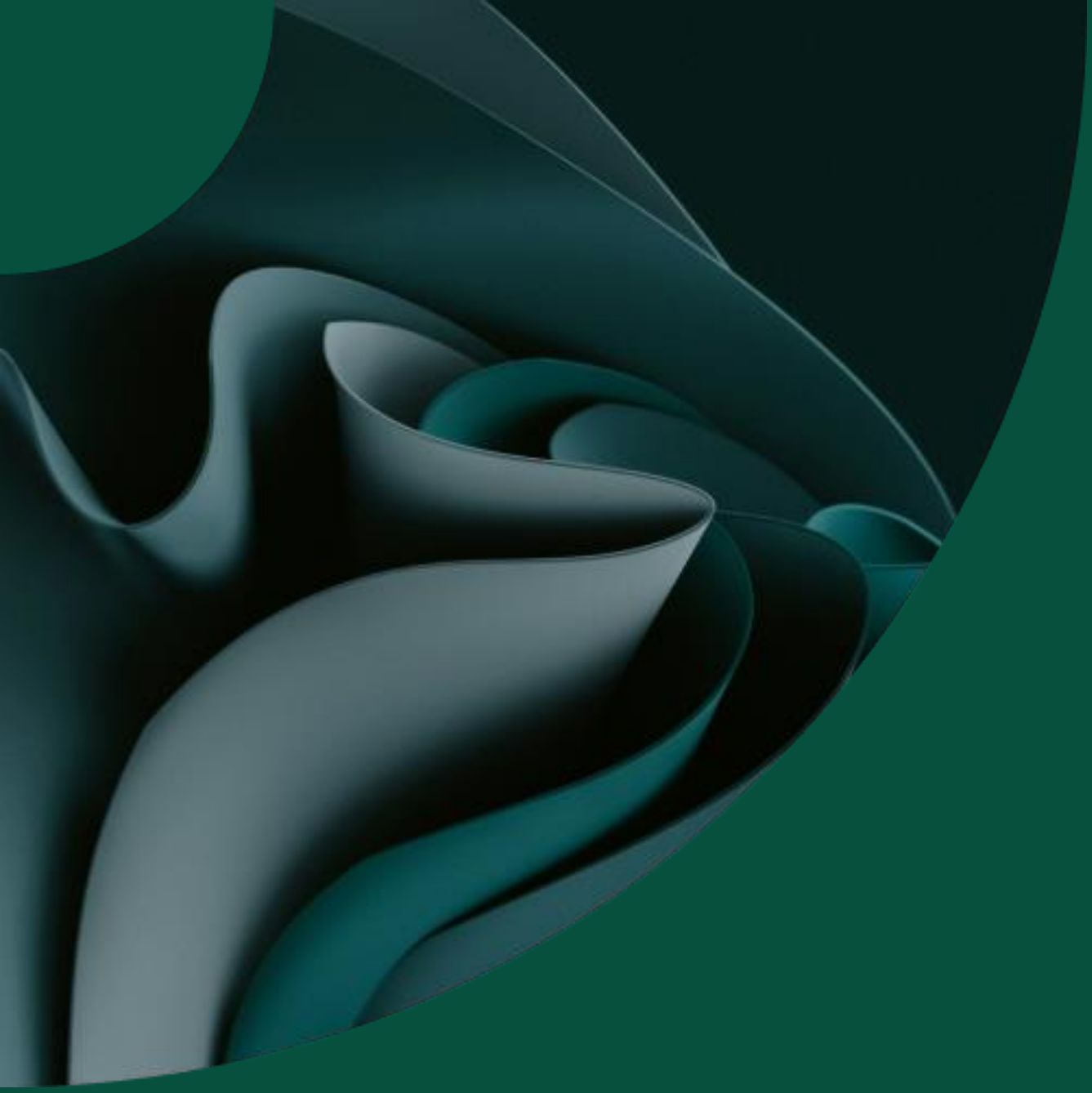
# Summary







# 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). Therefore, the functional unit shall be clearly defined and measurable. |
| **Impact Indicator** | The impact is measured through the "IPCC 2021 GWP100" 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. |
| **Life Cycle Analyses** | Cradle to grave |

# Emission Factor Inventory

| Num | Emission Factor | Source | Value | Unit |
|---|---|---|---|---|
| 1 | Steel, low-alloyed \| Ordinary transforming activity | ECOINVENT 3.10 | 2.203301567 | kg |
| 2 | Electricity \| Total (Scope 2 & 3) \| People's Republic of China | IEA 2023 | 0.7231 | kWh |
| 3 | Freight \| Boat \| From CN to FR | WELOW EXPERTS 1.0 | 0.25227278 | kg |
| 4 | Waste reinforcement steel \| Ordinary transforming activity | ECOINVENT 3.10 | 0.06273427595 | kg |

# 02 Results

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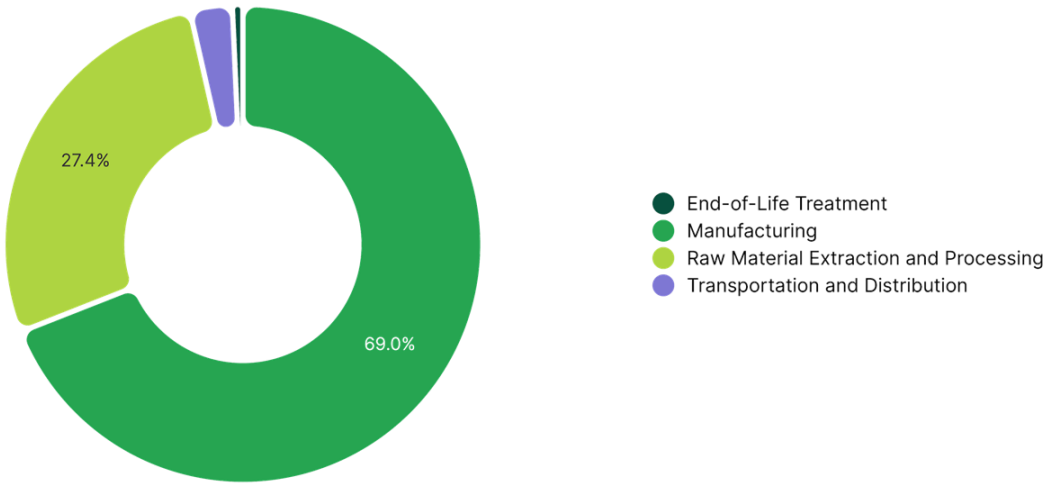
# Climate Change




| Step | Impact (kg $CO_2$ eq) | Percentage (%) |
|---|---|---|
| Manufacturing | 5.43 | 69.04 % |
| Raw Material Extraction and Processing | 2.16 | 27.40 % |
| Transportation and Distribution | 0.22 | 2.85 % |
| End-of-Life Treatment | 0.06 | 0.71 % |
| | | |
| **TOTAL** | **7.87** | **100.00 %** |

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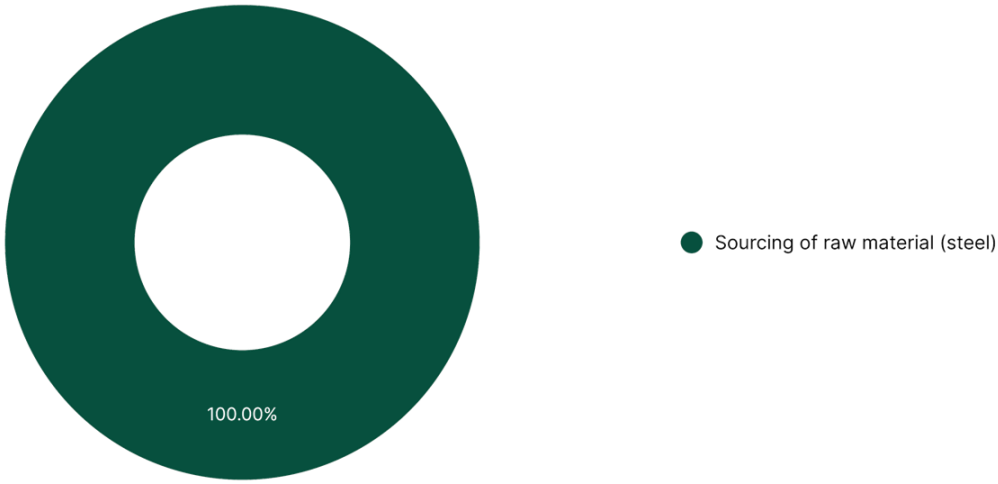
# Climate Change - Raw Material Extraction and Processing




| Activity | Emission Factor Num | Quantity | Impact (kg $CO_2$ eq) | Percentage (%) |
|---|---|---|---|---|
| Sourcing of raw material (steel) | 1 | 0.98 | 2.16 | 100.00 % |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL | | | 2.16 | 100.00 % |

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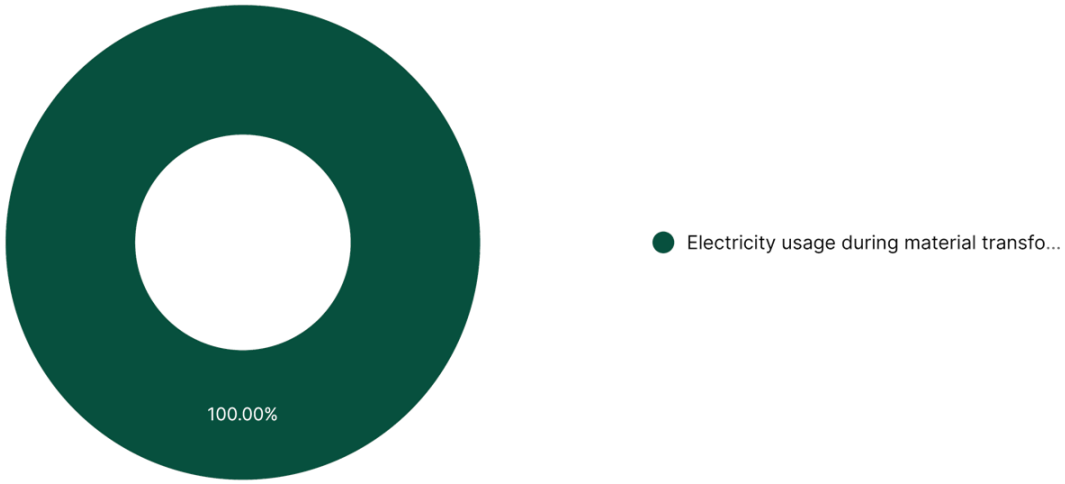
# Climate Change - Manufacturing




| Activity | Emission Factor Num | Quantity | Impact (kg $CO_2$ eq) | Percentage (%) |
|---|---|---|---|---|
| Electricity usage during material transformation (steel) | 2 | 7.52 | 5.43 | 100.00 % |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL | | | 5.43 | 100.00 % |

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# Climate Change - Transportation and Distribution


| Activity | Emission Factor Num | Quantity | Impact (g $CO_2$ eq) | Percentage (%) |
|---|---|---|---|---|
| Freight | 3 | 0.89 | 224.52 | 100.00 % |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL | | | 224.52 | 100.00 % |

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# Climate Change - End-of-Life Treatment


| Activity | Emission Factor Num | Quantity | Impact (g $CO_2$ eq) | Percentage (%) |
|---|---|---|---|---|
| End of life (steel) | 4 | 0.89 | 55.83 | 100.00 % |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL | | | 55.83 | 100.00 % |


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