

# Life Cycle Analyses

MHARMF N



# 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). 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

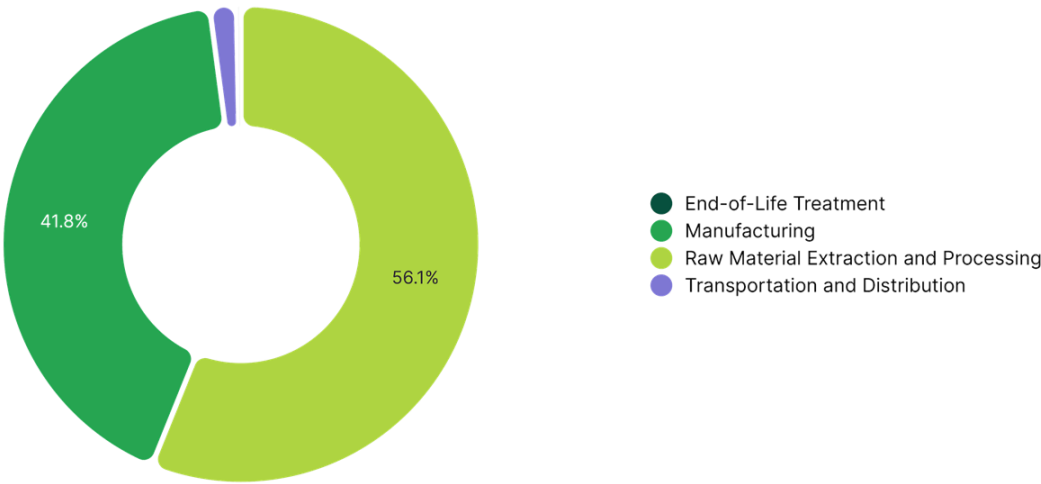
| Num | Emission Factor  | Source                        | Value         | Unit |
|-----|--|-------------------------------|---------------|------|
| 1   | Acrylonitrile–butadiene–styrene copolymer   Ordinary transforming activity           | ECOINVENT 3.10                | 4.533718346   | kg   |
| 2   | Aluminium, primary, ingot   Ordinary transforming activity                           | ECOINVENT 3.10                | 7.605623188   | kg   |
| 3   | market for cast iron   | ECOINVENT 3.10                | 1.93542914    | kg   |
| 4   | Electricity   Total (Scope 2 & 3)   People's Republic of China                       | IEA 2023                      | 0.7231        | kWh  |
| 5   | Freight   Boat   From CN to FR   | WELOW EXPERTS 1.0             | 0.25227278    | kg   |
| 6   | Waste aluminium   Ordinary transforming activity                                     | ECOINVENT 3.10                | 0.02555404932 | kg   |
| 7   | Waste disposal   Metal   Average   | UK GHG CONVERSION FACTOR 2024 | 0.0191        | kg   |
| 8   | Residues, MSWI, waste plastic, consumer electronics   Ordinary transforming activity | ECOINVENT 3.10                | 0.3620299477  | kg   |

# 02

## Results

Monitor arm

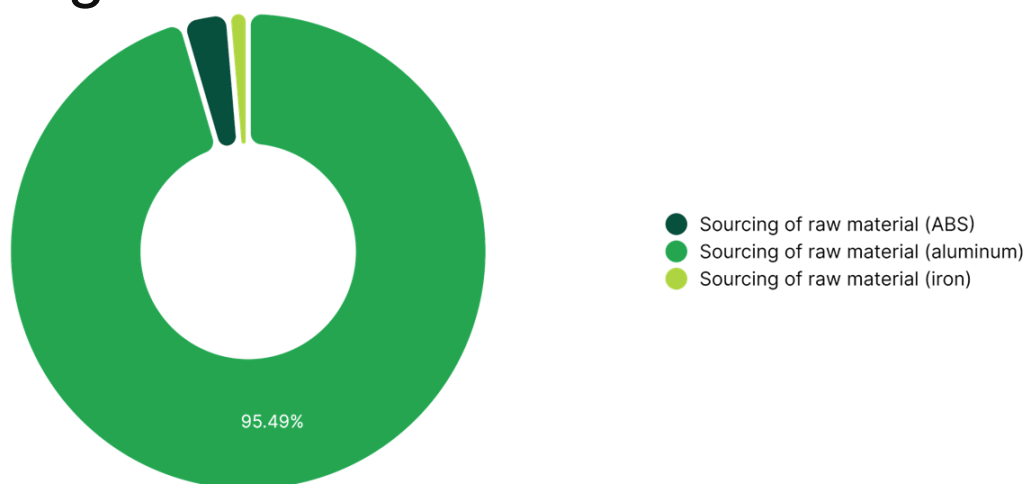
# Climate Change



| Step                                   | Impact (kg CO <sub>2</sub> eq) | Percentage (%) |
|--|--------------------------------|----------------|
| Raw Material Extraction and Processing | 26.26                          | 56.11 %        |
| Manufacturing                          | 19.56                          | 41.80 %        |
| Transportation and Distribution        | 0.84                           | 1.79 %         |
| End-of-Life Treatment                  | 0.14                           | 0.30 %         |
|  |                                |                |
| TOTAL                                  | 46,8                           | 100.00 %       |

## Monitor arm

# Climate Change - Raw Material Extraction and Processing

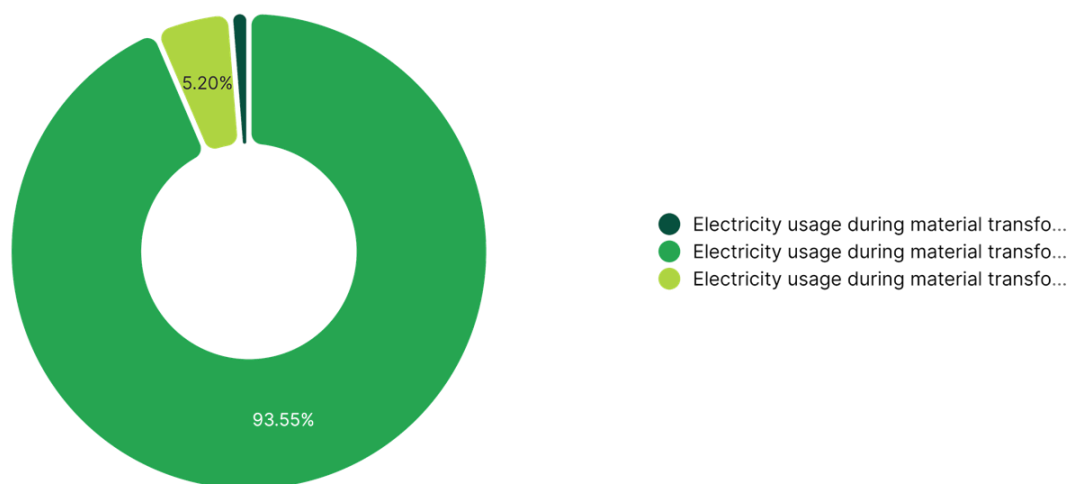


| Activity                            | Emission<br>Factor<br>Num | Quantity | Impact<br>(kg CO <sub>2</sub> eq) | Percentage<br>(%) |
|-------------------------------------|---------------------------|----------|-----------------------------------|-------------------|
| Sourcing of raw material (aluminum) | 2                         | 3.3      | 25.07                             | 95.49 %           |
| Sourcing of raw material (ABS)      | 1                         | 0.18     | 0.83                              | 3.16 %            |
| Sourcing of raw material (iron)     | 3                         | 0.18     | 0.35                              | 1.35 %            |
|                                     |                           |          |                                   |                   |
|                                     |                           |          |                                   |                   |
|                                     |                           |          |                                   |                   |
| TOTAL                               |                           |          | 26.26                             | 100.00 %          |



## Monitor arm

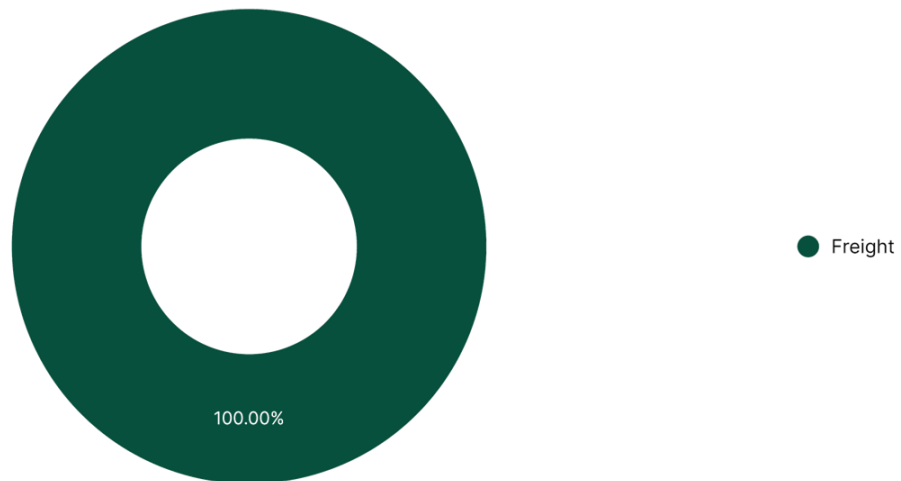
# Climate Change - Manufacturing



| Activity  | Emission Factor Num | Quantity | Impact (kg CO <sub>2</sub> eq) | Percentage (%) |
|---|---------------------|----------|--------------------------------|----------------|
| Electricity usage during material transformation (aluminum) | 4                   | 25.31    | 18.3                           | 93.55 %        |
| Electricity usage during material transformation (iron)     | 4                   | 1.41     | 1.02                           | 5.20 %         |
| Electricity usage during material transformation (ABS)      | 4                   | 0.34     | 0.25                           | 1.26 %         |
|   |                     |          |                                |                |
|   |                     |          |                                |                |
|   |                     |          |                                |                |
| TOTAL   |                     |          | 19.56                          | 100.00 %       |

Monitor arm

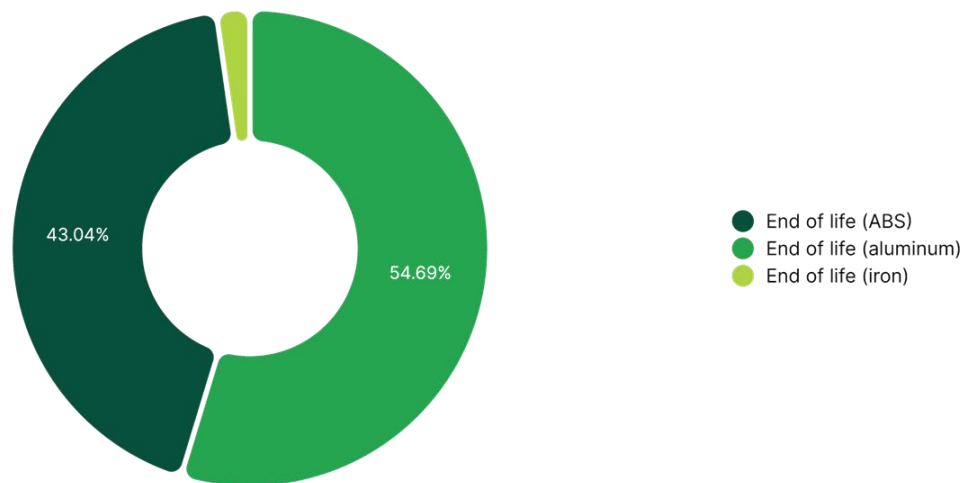
# Climate Change - Transportation and Distribution



| Activity | Emission Factor Num | Quantity | Impact<br>(g CO <sub>2</sub> eq) | Percentage (%) |
|----------|---------------------|----------|----------------------------------|----------------|
| Freight  | 5                   | 3.33     | 840.07                           | 100.00 %       |
|          |                     |          |                                  |                |
|          |                     |          |                                  |                |
|          |                     |          |                                  |                |
|          |                     |          |                                  |                |
| TOTAL    |                     |          | 840.07                           | 100.00 %       |

Monitor arm

# Climate Change - End-of-Life Treatment



| Activity               | Emission<br>Factor<br>Num | Quantity | Impact<br>(g CO <sub>2</sub> eq) | Percentage<br>(%) |
|------------------------|---------------------------|----------|----------------------------------|-------------------|
| End of life (aluminum) | 6                         | 3        | 76.59                            | 54.69 %           |
| End of life (ABS)      | 8                         | 0.17     | 60.28                            | 43.04 %           |
| End of life (iron)     | 7                         | 0.17     | 3.18                             | 2.27 %            |
|                        |                           |          |                                  |                   |
|                        |                           |          |                                  |                   |
|                        |                           |          |                                  |                   |
| TOTAL                  |                           |          | 140.04                           | 100.00 %          |

