

# Life Cycle Analyses

HIZIAPA



# 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

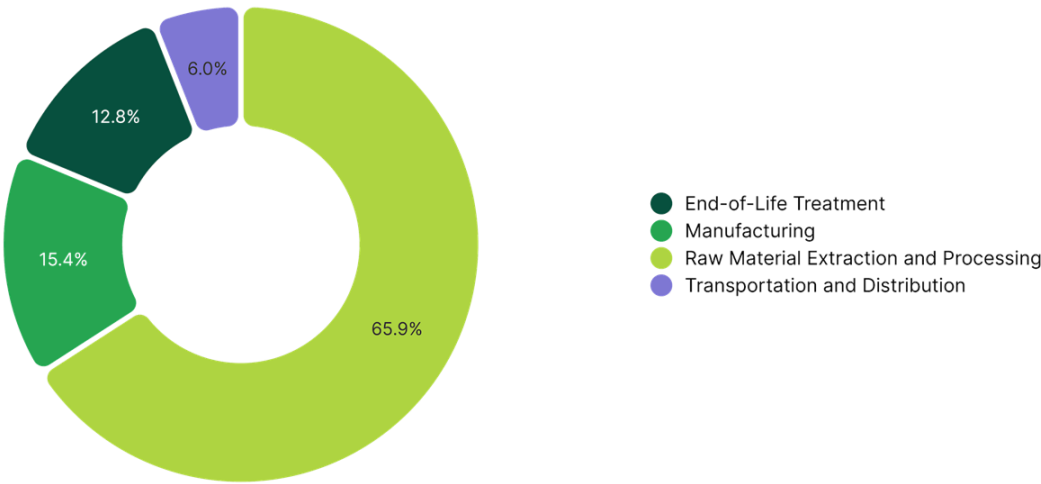
Num	Emission Factor	Source	Value	Unit
1	Polyurethane, rigid foam   Ordinary transforming activity	ECOINVENT 3.10	4.602684501	kg
2	Polyester filament   finished   at plant   100% polyester	BASE EMPREINTE ADEME 3.0	10.0285	kg
3	Polyethylene, linear low density, granulate   Ordinary transforming activity	ECOINVENT 3.10	3.073907294	kg
4	Steel, chromium steel 18/8   Ordinary transforming activity	ECOINVENT 3.10	4.730394052	kg
5	Hardwood lumber   1 inch   sustainable forestry   1kg   RER	BASE EMPREINTE ADEME 3.0	0.531144	kg
6	Electricity   Total (Scope 2 & 3)   People's Republic of China	IEA 2023	0.7231	kWh
7	Freight   Boat   From CN to FR Waste	WELOW EXPERTS 1.0	0.25227278	kg
8	polyethylene/polypropylene product   Ordinary transforming activity	ECOINVENT 3.10	1.783532575	kg
9	Packaging Material/Average end of life in the EPR scheme – Impacts	BASE CARBONE ADEME 22.0	0.269	kg
10	Waste reinforcement steel   Ordinary transforming activity	ECOINVENT 3.10	0.06273427595	kg
11	Waste yarn and waste textile   Ordinary transforming activity	ECOINVENT 3.10	0.004657246015	kg

# 02

## Results

Modular sofa

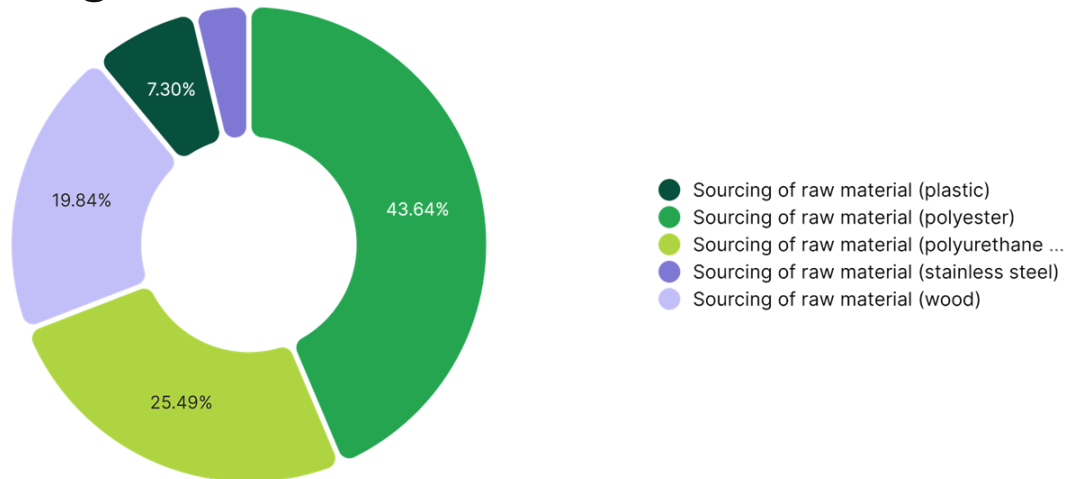
# Climate Change



Step	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Raw Material Extraction and Processing	31.98	65.90 %
Manufacturing	7.45	15.36 %
End-of-Life Treatment	6.2	12.77 %
Transportation and Distribution	2.9	5.98 %
TOTAL	48.53	100.00 %

Modular sofa

# Climate Change - Raw Material Extraction and Processing

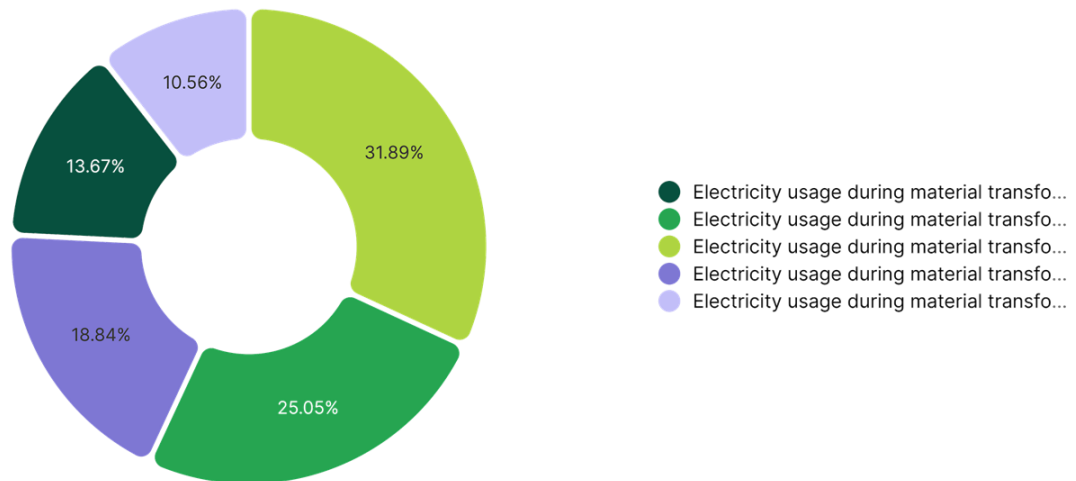


Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Sourcing of raw material (polyester)	2	1.39	13.95	43.64 %
Sourcing of raw material (polyurethane foam)	1	1.77	8.15	25.49 %
Sourcing of raw material (wood)	5	11.94	6.34	19.84 %
Sourcing of raw material (plastic)	3	0.76	2.33	7.30 %
Sourcing of raw material (stainless steel)	4	0.25	1.2	3.74 %
TOTAL			31.98	100.00 %



## Modular sofa

## Climate Change - Manufacturing



Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Electricity usage during material transformation (polyurethane foam)	6	3.29	2.38	31.89 %
Electricity usage during material transformation (polyester)	6	2.58	1.87	25.05 %
Electricity usage during material transformation (stainless steel)	6	1.94	1.4	18.84 %
Electricity usage during material transformation (plastic)	6	1.41	1.02	13.67 %
Electricity usage during material transformation (wood)	6	1.09	0.79	10.56 %

TOTAL			7.45	100.00 %
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Modular sofa

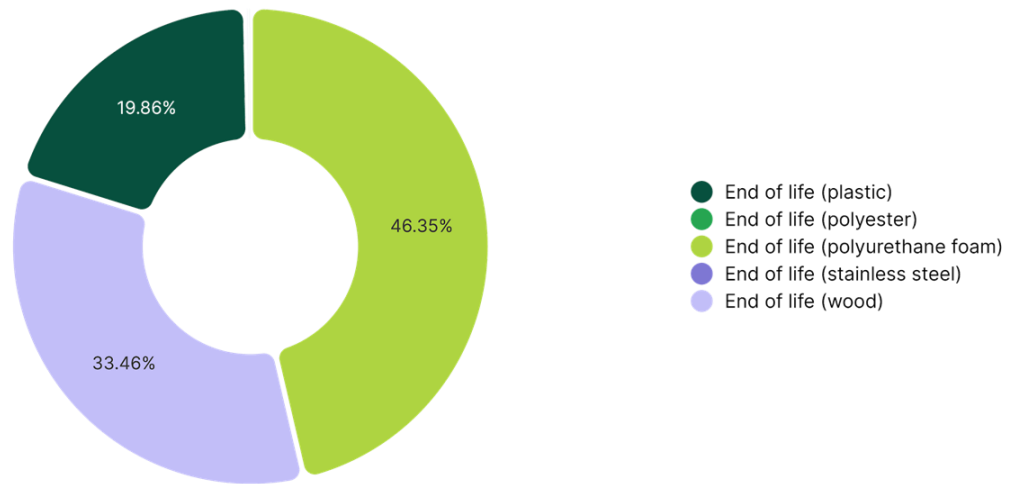
# Climate Change - Transportation and Distribution



Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
Freight	7	11.5	2.9	100.00 %
TOTAL			2.9	100.00 %

Modular sofa

## Climate Change - End-of-Life Treatment



Activity	Emission Factor Num	Quantity	Impact (kg CO <sub>2</sub> eq)	Percentage (%)
End of life (polyurethane foam)	8	1.61	2.87	46.35 %
End of life (wood)	9	7.71	2.07	33.46 %
End of life (plastic)	8	0.69	1.23	19.86 %
End of life (stainless steel)	10	0.23	0.01	0.23 %
End of life (polyester)	11	1.26	$5.89 \cdot 10^{-3}$	0.10 %
TOTAL				6.2 100.00 %

