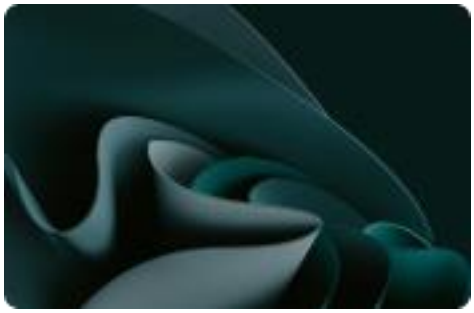
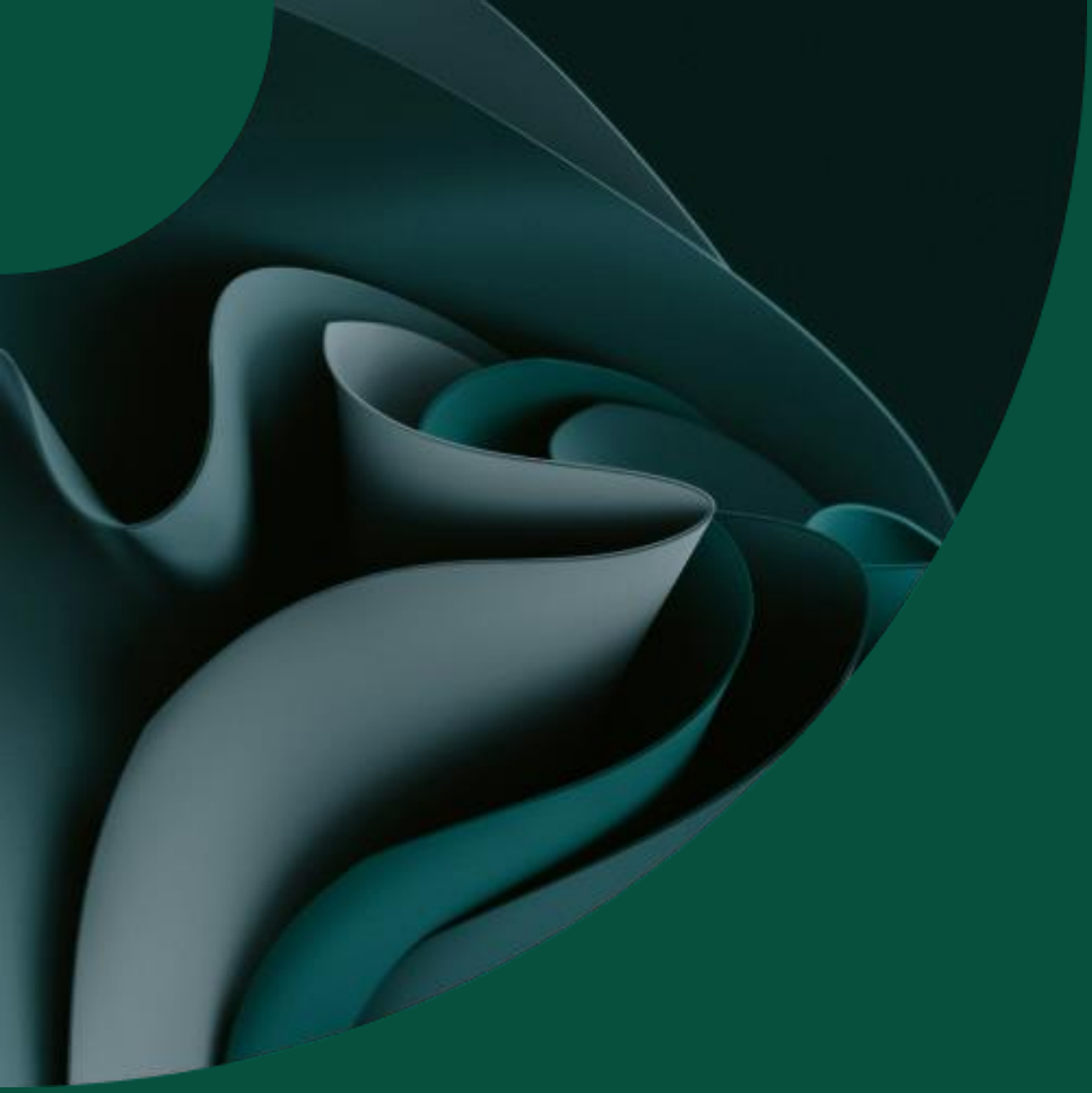
Life Cycle Analyses

MHBALL

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

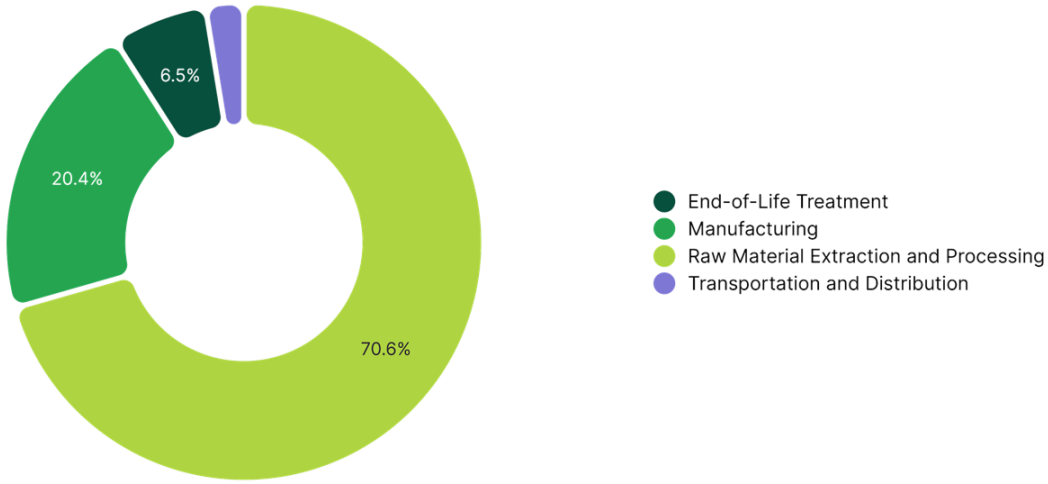
Emission Factor Inventory

Num	Emission Factor	Source	Value	Unit
1	Polyvinylchloride, emulsion polymerised | Ordinary transforming activity	ECOINVENT 3.10	2.62843892	kg
2	Polypropylene, granulate | Market activity	ECOINVENT 3.10	3.516196993	kg
3	Polyester filament | finished | at plant | 100% polyester	BASE EMPREINTE ADEME 3.0	10.0285	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 polyethylene/polypropylene product | Ordinary transforming activity	ECOINVENT 3.10	1.783532575	kg
7	Waste polyvinylchloride product | Ordinary transforming activity	ECOINVENT 3.10	1.213152213	kg
8	Waste yarn and waste textile | Ordinary transforming activity	ECOINVENT 3.10	0.004657246015	kg

02 Results

Dynamic seating ball

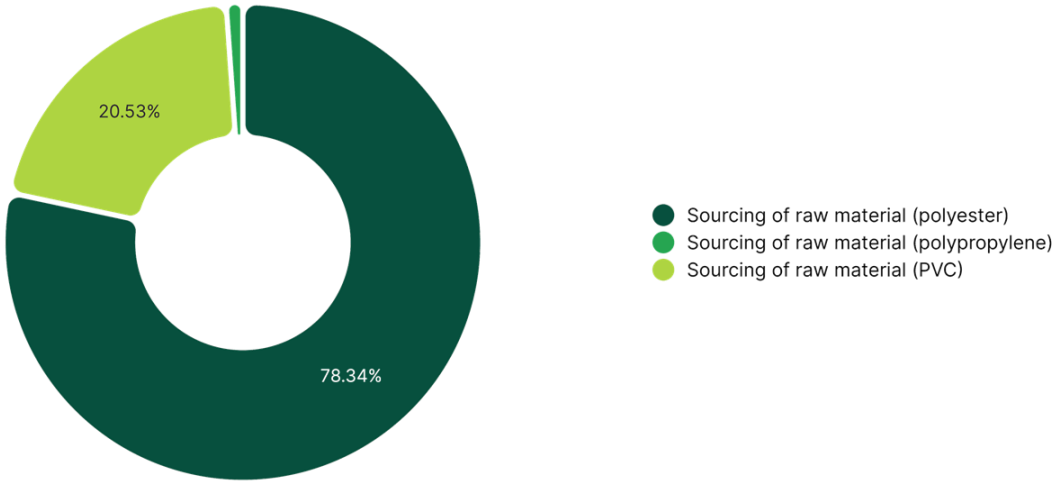
Climate Change



Step	Impact (kg CO_2 eq)	Percentage (%)
Raw Material Extraction and Processing	13.38	70.57 %
Manufacturing	3.87	20.38 %
End-of-Life Treatment	1.23	6.47 %
Transportation and Distribution	0.49	2.58 %
TOTAL	**18.97**	**100.00 %**

Dynamic seating ball

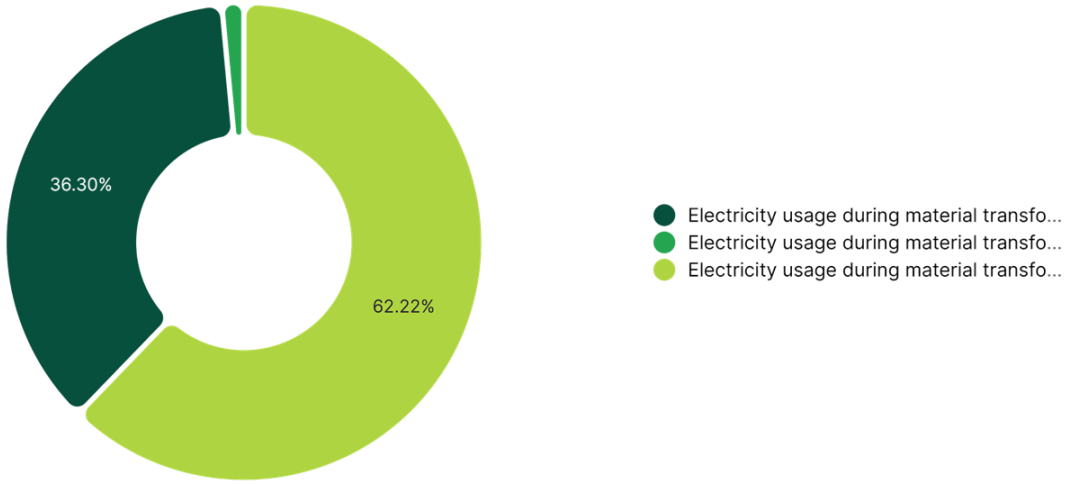
Climate Change - Raw Material Extraction and Processing



Activity	Emission Factor Num	Quantity	Impact (kg CO_2 eq)	Percentage (%)
Sourcing of raw material (polyester)	3	1.05	10.49	78.34 %
Sourcing of raw material (PVC)	1	1.05	2.75	20.53 %
Sourcing of raw material (polypropylene)	2	0.04	0.15	1.12 %
TOTAL			13.38	100.00 %

Dynamic seating ball

Climate Change - Manufacturing



Activity	Emission Factor Num	Quantity	Impact (kg CO_2 eq)	Percentage (%)
Electricity usage during material transformation (PVC)	4	3.33	2.41	62.22 %
Electricity usage during material transformation (polyester)	4	1.94	1.4	36.30 %
Electricity usage during material transformation (polypropylene)	4	0.08	0.06	1.48 %
TOTAL			3.87	100.00 %

Dynamic seating ball

Climate Change - Transportation and Distribution

Activity	Emission Factor Num	Quantity	Impact (g CO_2 eq)	Percentage (%)
Freight	5	1.94	489.41	100.00 %
TOTAL			489.41	100.00 %

Dynamic seating ball

Climate Change - End-of-Life Treatment

Activity	Emission Factor Num	Quantity	Impact (kg CO_2 eq)	Percentage (%)
End of life (PVC)	7	0.95	1.15	94.00 %
End of life (polypropylene)	6	0.04	0.07	5.64 %
End of life (polyester)	8	0.95	4.42 · 10^-3	0.36 %
TOTAL			1.23	100.00 %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