O MY BAG | ANALYSIS OF THE LUNA AND LUCY BAGS

Life Cycle Assessment Report

Contents

1. Glossary

Handbag	Leather	In the case of O My Bag: cow leather.
	Vegetable tanned leather	Leather that was tanned with vegetable tannins, natural extracts derived exclusively from vegetable sources.
	Wet white tanned leather	Leather tanned with synthetic tannins (not to be confused with chrome-tanning). Name derives from the color that the hides acquire after having completed the process.
	Lining	Material that covers and protects the inside of the bag.
	Hardware	Metal components of a bag, such as buckles, clasps, rivets or buttons.
	Zipper	Fastening consisting of three components: tape, teeth, and puller.
	Thread	Used for stitching, holds leather and lining together.
	Hangtag	A tag attached to the product giving information about the brand O My Bag and the product price.
	Woven Label	Labels inside the bag with the O My Bag logo and batch number.
	Edge paint	Paint used to color the leather edges of the bag.
	Raw Materials	Materials used to create the individual bag components listed above, for example cotton or chemicals.
Packaging	Dust bag	Cotton bag with string that comes with every bag to protect it from dust and scratches.
	Packaging	Materials used to transport the bag without damaging them.
Processes	Tanning	The process by which raw hides are processed into durable leather. The decay of the natural material is stopped. Includes the dyeing of the leather.
	Manufacturing	Assembly of the single components to the final bag, carried out by tier 1 manufacturing partners.

General terms	Greenhouse gas (GHG) emissions	Greenhouse gases, including the carbon containing gases carbon dioxide and methane, can be emitted through the burning of fossil fuels, land clearance and the production and consumption of food, manufactured goods, materials, wood, roads, buildings, transportation and other services.
	Monetized impact	Monetization of environmental footprint: translates the impact of all impact categories into environmental costs in Euro, in order to aggregate and compare the environmental impacts.
	Tier 1, 2, 3, x suppliers	Tiers indicate where suppliers can be located in the supply chain. The higher the tier, the further "away" a supplier is. Tier 1 suppliers directly supply products to O My bag, our tier 2 suppliers are the tier 1 / direct suppliers of our tier 1 suppliers.
	B2B	Business to Business, meaning when selling to retailers.
	B2C	Business to (End) Consumer.
	Bill of Materials	List of all main components of a product.
	Cradle to Gate	Assessment of a partial product life cycle from resource extraction (cradle) to the factory gate (ie, before it is transported to the consumer).
	Cut-off waste	Material left over at the end when components are cut during the manufacturing of the end product, for example fabric scraps.
	Ecoinvent 3.6	The ecoinvent database is the world's leading Life Cycle Inventory database, providing well documented process data for thousands of products and their environmental impact.
	Environmental Product Declaration (EPD)	An independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products in a credible way.
	Higg Index	The Higg Index is an apparel and footwear industry self-assessment standard for assessing environmental and social sustainability throughout the supply chain
	ReCiPe hierarchy assessment method	ReCiPe is a method for the impact assessment (LCIA) in a LCA. Life cycle impact assessment (LCIA) translates emissions and resource extractions into a limited number of environmental impact scores by means of so-called characterisation factors (Source: Rijksinstituut voor Volksgezondheid en Milieu - RIVM).
	Midpoint and end point indicators	Midpoint indicators focus on single environmental problems, for example climate change or acidification. Endpoint indicators show the environmental impact on three higher aggregation levels, being the 1) effect on human health, 2) biodiversity and 3) resource scarcity. Converting midpoints to endpoints simplifies the interpretation of the LCIA results. However, with each aggregation step, uncertainty in the results increases (Source: RIVM). In this study, we focus on midpoint indicators.

2. Summary

This report comprises the methods and the results of the Life Cycle Assessment (LCA) commissioned by O My Bag. An LCA is a methodology used to assess the environmental impact of a product throughout its entire life cycle, including raw materials, production and transport. The goal of the study is to know, understand and ultimately reduce the environmental impact of O My Bag's operations and products, and to be transparent about what we do.
For the assessment, the bags Luna and Lucy have been selected since they are deemed especially representative of the O My Bag collection, being bestsellers and of average size, containing a range of different materials and being made at different factories. To assess the environmental impact, Sustainalize has developed an LCA tool. The goal of the tool is to reveal insights into where major impacts in the life cycle of the products occur, so impact can be reduced accordingly.

For the Luna, transport from the manufacturing site to the warehouse has the highest impact in terms of GHG emissions, accounting for 36% of all CO_2-eq emitted in the life cycle of the bag. With a total of 30.2%, the range of raw materials contribute almost as much to the carbon footprint as the shipping. The nylon used for the thread was the most impactful material with 13.7%, followed by the raw hides creating an impact of 4.6%. The third most impactful stage was in tier 2, with the component processing contributing to 19%. Here, the production of the thread and the lining stand out, with 7,5% and 4,5% of emitted GHG emissions respectively.

For the Lucy, the main impacts relate to shipping to the warehouse with 26% of the total GHG emissions, followed by component processing with 24%, including tanning and lining production with both around 11%. Transport to the tier 1 manufacturing facility is the third highest with 19% of total emitted GHG emissions.

Looking at the monetized impact to make it comparable across all impact categories, the majority of the impact occurs at tier 2 during the processing stage for both bags.

Impact categories included in the study: Agricultural land occupation, Climate change, Fossil depletion, Freshwater ecotoxicity, Freshwater eutrophication, Human toxicity, Ionizing radiation, Marine ecotoxicity, Marine eutrophication, Metal depletion, Natural land transformation, Ozone depletion, Particulate matter formation, Photochemical oxidant formation, Terrestrial acidification, Terrestrial ecotoxicity, Urban land occupation, Water depletion, Monetized Impact.

3. General Statement

3. 1 LCA PRACTITIONER AND COMMISSIONER

This LCA has been commissioned by O My Bag and performed by Sustainalize.

O MY BAG

O My Bag is a leather bag and accessory brand based in Amsterdam. It was founded in 2011 as a social enterprise with the aim to not only be profitable, but also give back by approaching business in a fair, environmentally friendly and responsible manner. Creating a positive impact in the world is one of the company's core values and is rooted in everything it does.

O My Bag provides fair job opportunities in developing countries and promotes a shift towards sustainability of the leather and fashion industry. The brand believes that by supporting conscious trade it can contribute to a better world with fair and decent employment, gender equality, safe working environments, equal opportunities and respect for the environment.

SUSTAINALIZE

Sustainalize is a sustainability consultancy based in Utrecht. The company helps connect sustainability themes to business strategies, and ensures efficient and transparent communication with the outside world, with measurable reporting cycles and benchmark information that meets all relevant standards.

3. 2 TIME PERIOD COVERED AND STANDARDS USED

The study commenced in February 2020 and was completed in October 2020[1]. It covers the sales and production data of 2019 (01.01.2019 – 31.12.2019). The LCA is performed in accordance with ISO 14040 and ISO 14044.

[1] The study was delayed due to the Covid-19 pandemic and took longer than originally planned.

4. Goal of the Study

4. 1 REASONS FOR CARRYING OUT THE STUDY

The goal of the study is to know and understand the environmental impact of two bags: the Lucy and the Luna. The two bags have been selected since they are bestsellers, are comprised of leather from both of O My Bag's leather suppliers, assembled by two different manufacturers and are of average size. Hence they are deemed as representative of the O My Bag collection.

O My Bag aims to reduce its environmental impact continuously. This can be achieved in a more effective and efficient manner by knowing and better understanding the impact along the supply chain. Based on the findings of the study, data driven priorities, targets and concrete action points can be set.
Environmental impact reduction is seen as a continuous and iterative process, where impact assessment plays a key role in assessing the status quo and monitoring progress over time.

The aim is to concentrate on the processes O My Bag can influence. The main focus is hence on manufacturing of the bags, materials used, production processes involved as well as transportation.

4. 2 INTENDED APPLICATIONS

The findings of the study are intended to help identify high impact processes and materials, and to set priorities and action points to reduce O My Bag's environmental impact. The study outcome is to be communicated to O My Bag's stakeholders.

5. Scope of the Study

This section of the report details the object of the analysis as well as the system boundary, specifying which elements of the life cycle inventory analysis are part of the product system.

5.1 FUNCTIONAL UNIT

The study covers two types of bags: the Luna and the Lucy, including a cotton dust bag for each of them. The bags are visualized below:

Luna Bag - Camel - Hunter Leather

Lucy Bag - Cognac - Classic Leather

Cotton dust bag

The total average weight as shipped from the manufacturing facility to the warehouse is 681 grams for the Luna, and 804 grams for the Lucy.

The analysis takes a cradle-to-gate approach, and does not include the use phase and end-of- life phase.

The use phase of the bags can look very different; critical influencing factors are how frequently and intensively a bag is used, which, how much, and how often cleaning and care products are used, and whether the bag is repaired in case of defects. Consequently, the lifetime of a bag can vary widely. Little is known to date about the end-of-life phase of a bag. It is assumed that it differs, especially depending on the respective waste management systems in the location countries of bag users.

In consequence of the uncertainty of use phase and end-of-life phase, they are not within the scope of the study which focuses on materials and production processes.
Accordingly, the defined functional units are

1) The production of 1 Luna bag, including a dust bag and packaging
2) The production of 1 Lucy bag, including a dust bag and packaging

The declared units are in line with the goal and scope to create insight that will support O My Bag in understanding its environmental impact along the supply chain, and will enable communication of these impacts to stakeholders

5. 2 SYSTEM BOUNDARIES

The system boundary describes which life cycle stages of the product are part of the LCA. In the analysis of the Luna and Lucy bag, this study takes into account the raw materials, energy, and transportation that is required to produce the products as well as the waste generated during the production processes. All life cycle stages are considered until the product has been delivered to the warehouse and stores and before the ownership of the product shifts to the consumer.
Services, materials, and energy that are not directly connected to the bags during its life cycle (e.g. they do not become the product, make the product, or directly carry the product through its life cycle) are defined as non-attributable processes. These processes are therefore not included in the analysis.
Non-attributable processes of this study include:

- Research & Design
- Sampling
- O My Bag energy consumption
- Transport of employees to and from work
- Corporate activities (like sales and marketing)
- Business flights

5. 3 IMPACT CATEGORIES

The study assesses the impact of the Luna and the Lucy on 18 environmental indicators. The indicators are derived from the 2016 ReCiPe method and are listed below:

- Agricultural land occupation
- Climate change
- Fossil depletion
- Freshwater ecotoxicity
- Freshwater eutrophication
- Human toxicity
- Ionising radiation
- Marine ecotoxicity
- Marine eutrophication
- Metal depletion
- Natural land transformation
- Ozone depletion
- Particulate matter formation
- Photochemical oxidant formation
- Terrestrial acidification
- Terrestrial ecotoxicity
- Urban land occupation
- Water depletion

5. 4 DESCRIPTION & VISUALIZATION OF PRODUCT SYSTEM

The Luna and the Lucy are both manufactured in Kolkata, India, and each at a different factory. Here, the components that compose the bags are assembled and stitched together. Components include leather, lining, zippers, hardware and thread, among others. The graphs below show the bill of material for both products.

Bill of materials
Luna bag

Bill of materials
Lucy bag

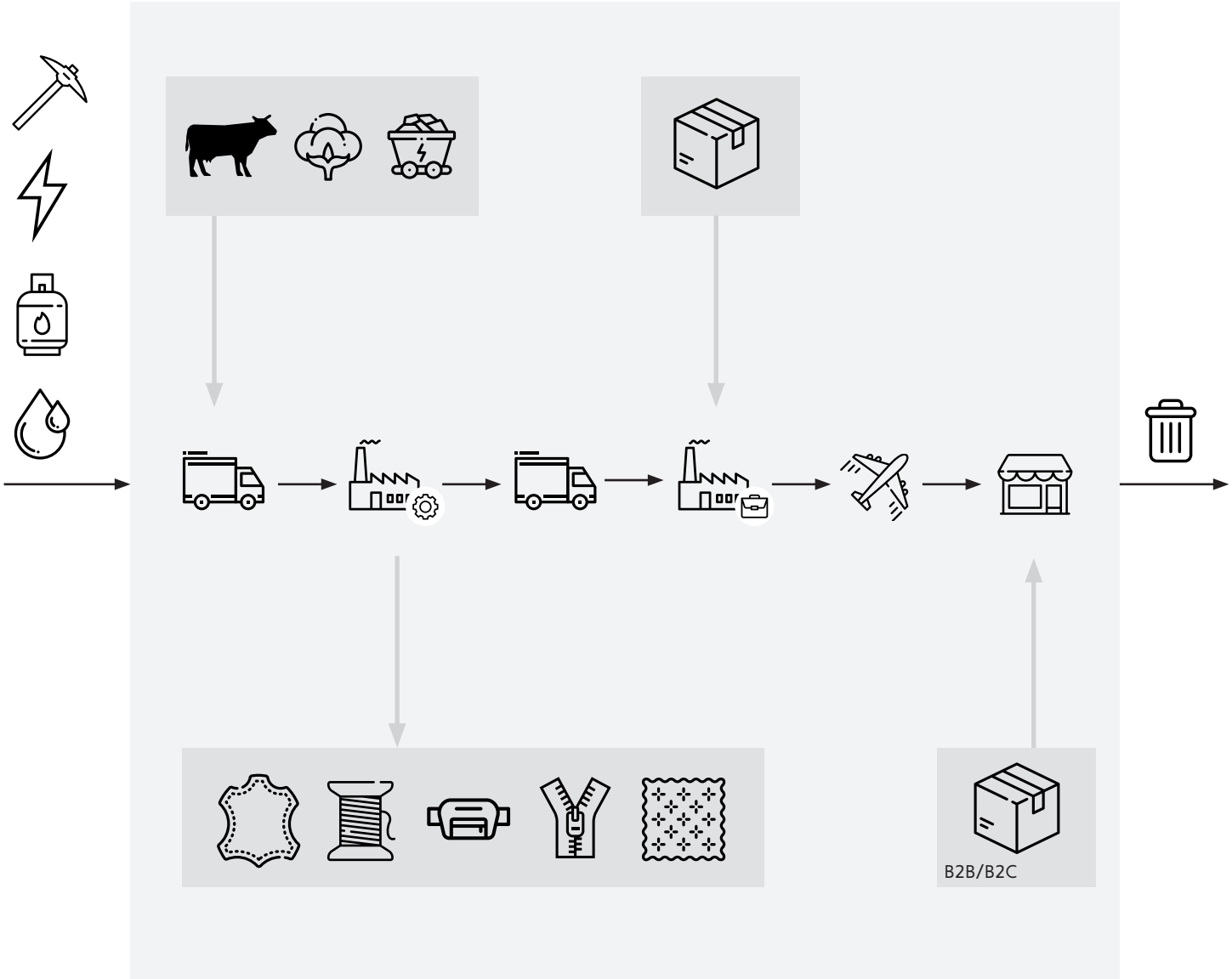
During the final assembly at the manufacturing site, some cut-off waste is generated. The LCA accounts for this: the material is modelled as waste and attributed with a country-specific waste treatment conversion factor from Ecoinvent.

For the Luna, most components are locally sourced, with some of the hardware being imported from China. For the Lucy, many components stem from India, however, the finished vegetable tanned leather is imported from Italy, and zippers as well as hardware are imported from China.

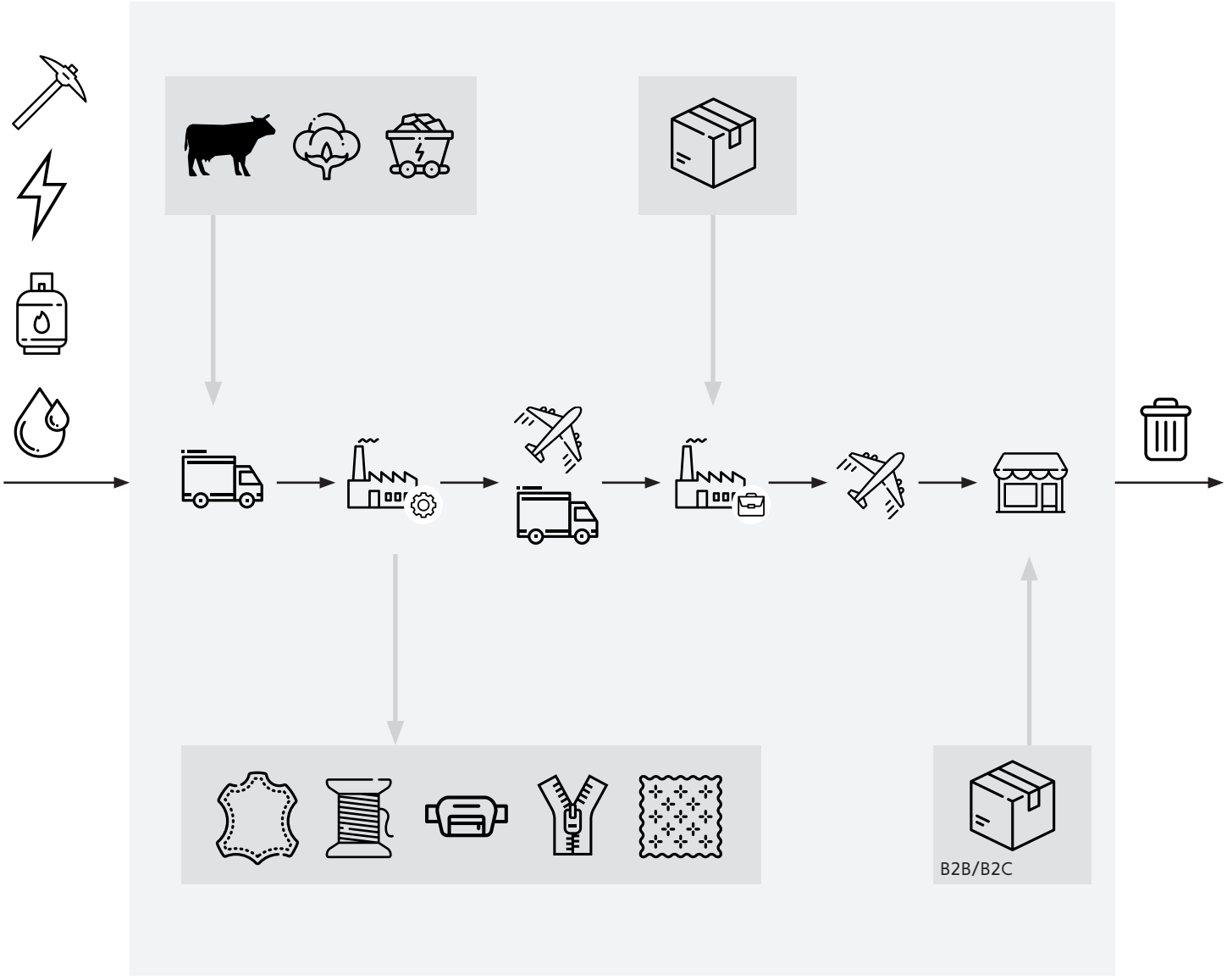
The transport of the raw materials to the material processor and component supplier has been taken into account whenever data was available (for example, the transport of the raw hide to the tannery). Transport from material processors and component suppliers to the final manufacturing site have been included (for example the transport of finished leather from the tannery to the manufacturing site).

The ready assembled bags are shipped to the warehouse in The Netherlands.
The figures on next pages visualize the system boundaries of the Luna and the Lucy.

SYSTEM BOUNDARY OF THE LUNA



SYSTEM BOUNDARY OF THE LUCY



6. Life cycle inventory analysis

6.1 DATA COLLECTION

Data from O My Bag operations and from supply chain partners has been considered for this study.
All processes within the system boundaries were taken into account in the analysis. Due to the high amount of different materials used and hence the complexity of the bags, focus has been on the materials that account for large parts of the bag. Primary data has not been requested from suppliers of materials that make up only a small part of the bag (e.g. glue). In addition, not all contacted suppliers were able to provide all necessary data. To account for the missing data, industry averages have been used and were modelled using Ecoinvent version 3.6 for the production of raw materials and the processing of these materials.

O MY BAG OPERATIONS

Emissions creating an environmental impact that can be attributed to O My Bag relate to the operation of O My Bag's warehouse. Utilities broken down per bag have been taken into account. When data was only partially available, it was extrapolated to account for the entire time period covered by the analysis, and an average per bag was created.
B2B and B2C packaging, its actual weight and cut-offs, as well as transport mode and distance from the supplier to the warehouse have been included.
O My Bag does not own or operate any assets related to the production of the bags.

SUPPLIERS

All tier 1 suppliers, the manufacturing factories of the Luna and the Lucy, have been requested to send relevant product information for this analysis. In addition, information has been requested from suppliers of key bag components, hence components that make up a large part of the bag.

The following data has been requested:

- An LCA/EPD of the material if available, if not:
- Bill of material
  - Type of material
  - Weight (gross and net) of the materials
- Utilities required to produce the product (type and amount)
- Waste or emission discharges occurring to air, water and soil
- Transport details (mode of transport and distance)

Primary data was obtained from O My Bag, both tier 1 suppliers, one tannery (Luna) and one zipper supplier (Lucy).

6. 2 CALCULATION METHODOLOGY

To consistently calculate the environmental impact, the Ecoinvent v3.6 cut-off database was used. Ecoinvent v3.6 is the latest version of the Ecoinvent database that provides well documented process data for thousands of products. To be able to model all processes for which no supplier specific data has been available, Ecoinvent was used in this study. Data provided by suppliers on amounts of materials, waste, transport and energy use was directly used in the model.
Impact categories have been calculated in the following way:
All environmental emissions from the inventory (emissions related to all materials and processes related to the bags within the system boundary) have been multiplied by the characterization factors from the ReCiPe Hierarchy midpoint impact assessment method v1.13 (no long term).

All supplier data (if available) was multiplied with conversion factors of Ecoinvent to get to environmental emissions in all 18 environmental categories. If no supplier data is available, the weight of the material to be processed was multiplied with the conversion factors of the market average processes, as found in Ecoinvent.

In a subsequent step, these emissions were then summed up and multiplied with the ReCiPe characterization factors.

ReCiPe is a method for the impact assessment (LCIA) in an LCA. The model translates emissions and resource extractions into a limited number of environmental impact scores. The model has been chosen since it is comprised of an up to date range of environmental impact categories that are deemed relevant to the products assessed in this analysis.

In addition, conversion factors from an LCA commissioned by Kering as well as conversion factors from the Higg Index were used to build a benchmark for the leather tanning process of the vegetable tanned leather used for the Lucy.
In a final step, the total impacts of the 18 environmental indicators were monetized using the weighting factors of CE Delft – Environmental Prices Handbook 2017.

6. 3 ALLOCATION

CUT-OFF CRITERIA

In this LCA Ecoinvent cut-off processes, including waste treatment processes, are used. The cut-off model of Ecoinvent dictates that the primary (first) production of materials is always allocated to the primary user of a material. Consequently, secondary (e.g. recycled) materials bear only the impacts of the recycling processes. For example, recycled cotton only bears the impacts of the cotton collection of the used cotton and the recycling process of turning it into useable cotton again. It is free of any burdens of the agricultural activities and processing required for the primary production of the cotton.

LEATHER

The default (economic) allocation as set by the production Environmental Footprint Category rules of Leather of the European Union have been followed. This means 3.5% of the impact of cattle slaughtering is allocated to the production of raw hides.

7. Life cycle interpretation

7.1 RESULTS

The tables below show the LCIA results per bag.

LCIA Luna Bag

		O My Bag operations	Transport to warehouse	Tier 1 - Bag manufacturer	Transport to tier 1	Tier 2 - Component producer	Transport to tier 2	Tier 3 - Raw materials	TOTAL
Agricultural land occupation:ALOP	AL (m2a)	8,73E-01	4,41E-03	5,76E-02	7,82E-05	1,04E+00	2,84E-04	2,64E+00	**4,61E+00**
Climate change:GWP100	(kg CO2-Eq)	3,87E-01	1,99E+00	3,83E-01	8,21E-03	1,03E+00	2,67E-02	1,69E+00	**5,52E+00**
Fossil depletion:FDP	(kg oil-Eq)	1,30E-01	6,84E-01	1,53E-01	3,00E-03	2,50E-01	9,71E-03	4,86E-01	**1,72E+00**
Freshwater ecotoxicity:FETPinf	FE (kg 1,4-DC.)	9,31E-04	8,77E-04	6,65E-04	5,93E-06	2,37E-01	1,95E-05	3,39E-03	**2,43E-01**
Freshwater eutrophication:FEP	(kg P-Eq)	5,18E-05	4,16E-06	1,41E-05	8,23E-08	6,10E-04	3,08E-07	1,08E-03	**1,76E-03**
Human toxicity:HTPinf	HT (kg 1,4-DC.)	4,30E-02	2,17E-01	2,82E-02	1,88E-03	1,18E-01	6,10E-03	7,25E-01	**1,14E+00**
Ionising radiation:IRP_HE	(kg U235-Eq)	1,24E-02	1,23E-01	1,16E-03	5,17E-04	4,12E-02	1,69E-03	2,09E-02	**2,01E-01**
Marine ecotoxicity:METPinf	(kg 1,4-DB.)	6,00E-04	1,35E-03	2,68E-04	3,21E-05	8,92E-03	1,02E-04	3,33E-03	**1,46E-02**
Marine eutrophication:MEP	(kg N-Eq)	1,13E-03	3,93E-04	2,72E-05	1,08E-06	2,61E-02	3,52E-06	9,89E-03	**3,75E-02**
Metal depletion:MDP	(kg Fe-Eq)	3,35E-02	7,26E-03	1,89E-03	3,71E-04	5,90E-02	1,22E-03	1,72E-01	**2,75E-01**
Natural land transformation:NLTP	(m2)	-2,11E-05	-1,39E-05	-2,25E-04	-8,14E-07	-1,01E-04	-2,63E-06	-3,83E-05	**-4,03E-04**
Ozone depletion:ODPinf	(kg CFC-11.)	3,25E-08	3,60E-07	1,35E-08	1,45E-09	6,38E-08	4,74E-09	4,04E-08	**5,16E-07**
Particulate matter formation:PMFP	(kg PM10-Eq)	1,29E-03	2,93E-03	7,06E-04	1,53E-05	2,97E-03	5,04E-05	2,91E-03	**1,09E-02**
Photochemical oxidant formation:POFP	(kg NMVOC-.)	1,77E-03	1,09E-02	7,99E-04	3,48E-05	3,94E-03	1,12E-04	5,14E-03	**2,27E-02**
Terrestrial acidification:TAP100	(kg SO2-Eq)	2,12E-03	8,01E-03	1,04E-03	2,64E-05	1,01E-02	8,66E-05	8,35E-03	**2,98E-02**
Terrestrial ecotoxicity:TETPinf	TE (kg 1,4-DC.)	4,93E-03	6,83E-05	1,44E-05	4,07E-06	4,33E-02	1,30E-05	5,07E-03	**5,34E-02**
Urban land occupation:ULOP	UL (m2a)	8,82E-03	4,09E-03	1,25E-03	5,72E-04	9,03E-03	1,82E-03	7,68E-03	**3,33E-02**
Water depletion:WDP	(m3 water-.)	3,73E-02	9,29E-04	2,84E-03	1,29E-05	6,81E-01	5,08E-05	2,62E-01	**9,85E-01**
Monetized impact	(Euro, €)	0,22	0,45	0,09	0,002	0,89	0,01	0,67	

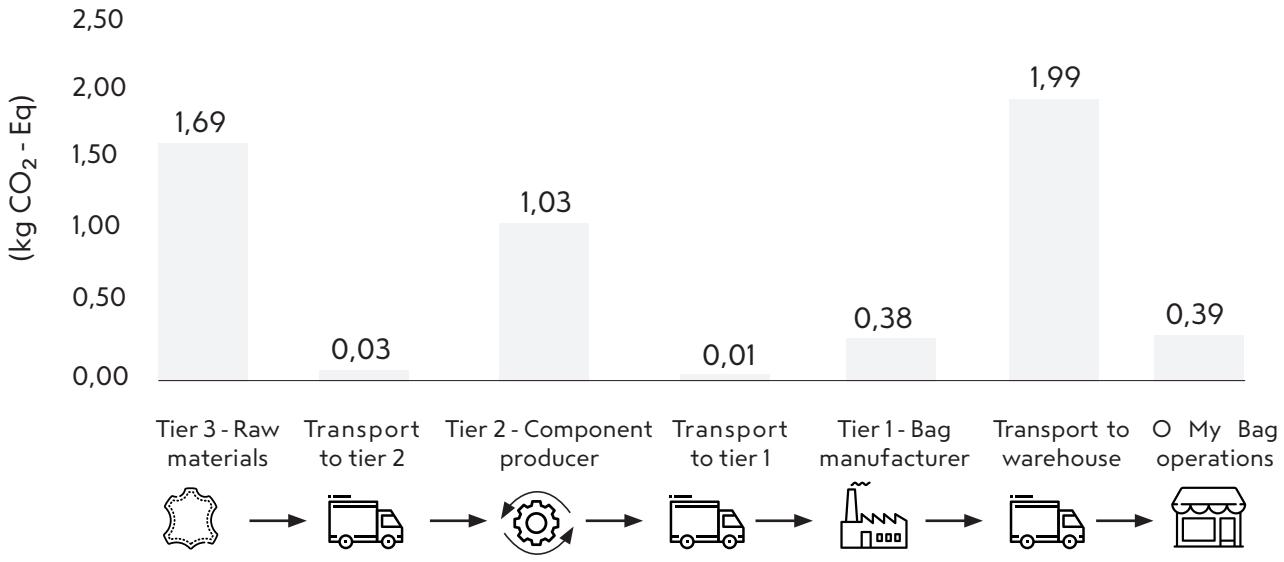
LCIA Lucy Bag

		O My Bag operations	Transport to warehouse	Tier 1 - Bag manufacturer	Transport to tier 1	Tier 2 - Component producer	Transport to tier 2	Tier 3 - Raw materials	TOTAL
Agricultural land occupation:ALOP	AL (m2a)	1,41E+00	5,19E-03	2,14E-01	3,75E-03	1,37E+00	1,05E-06	3,38E+00	**6,38E+00**
Climate change:GWP100	(kg CO2-Eq)	6,05E-01	2,35E+00	1,42E+00	1,71E+00	2,16E+00	1,10E-04	8,16E-01	**9,08E+00**
Fossil depletion:FDP	(kg oil-Eq)	2,04E-01	8,07E-01	5,70E-01	5,88E-01	2,68E-01	4,03E-05	1,25E-01	**2,56E+00**
Freshwater ecotoxicity:FETPinf	FE (kg 1,4-DC.)	1,31E-03	1,03E-03	2,47E-03	7,53E-04	1,33E-02	7,97E-08	6,42E-03	**2,53E-02**
Freshwater eutrophication:FEP	(kg P-Eq)	7,15E-05	4,90E-06	5,23E-05	3,53E-06	8,12E-04	1,11E-09	2,69E-03	**3,64E-03**
Human toxicity:HTPinf	HT (kg 1,4-DC.)	6,73E-02	2,56E-01	1,05E-01	1,86E-01	1,39E-01	2,52E-05	3,26E-01	**1,08E+00**
Ionising radiation:IRP_HE	(kg U235-Eq)	1,95E-02	1,45E-01	4,33E-03	1,06E-01	5,02E-02	6,96E-06	9,17E-03	**3,35E-01**
Marine ecotoxicity:METPinf	(kg 1,4-DB.)	8,97E-04	1,59E-03	9,97E-04	1,15E-03	4,52E-03	4,32E-07	8,73E-03	**1,79E-02**
Marine eutrophication:MEP	(kg N-Eq)	1,28E-03	4,64E-04	1,01E-04	3,38E-04	3,50E-02	1,46E-08	1,87E-02	**5,59E-02**
Metal depletion:MDP	(kg Fe-Eq)	5,38E-02	8,51E-03	7,04E-03	6,02E-03	6,33E-02	4,99E-06	3,76E-01	**5,15E-01**
Natural land transformation:NLTP	(m2)	-3,34E-05	-1,62E-05	-8,38E-04	-1,14E-05	-5,24E-05	-1,09E-08	-2,86E-05	**-9,80E-04**
Ozone depletion:ODPinf	(kg CFC-11.)	5,13E-08	4,25E-07	5,01E-08	3,09E-07	7,54E-08	1,94E-11	2,02E-08	**9,31E-07**
Particulate matter formation:PMFP	(kg PM10-Eq)	2,04E-03	3,46E-03	2,62E-03	2,52E-03	3,65E-03	2,05E-07	2,33E-03	**1,66E-02**
Photochemical oxidant formation:POFP	(kg NMVOC-.)	2,80E-03	1,29E-02	2,97E-03	9,41E-03	4,87E-03	4,67E-07	2,66E-03	**3,56E-02**
Terrestrial acidification:TAP100	(kg SO2-Eq)	3,24E-03	9,45E-03	3,87E-03	6,89E-03	1,31E-02	3,55E-07	8,55E-03	**4,51E-02**
Terrestrial ecotoxicity:TETPinf	TE (kg 1,4-DC.)	7,16E-03	8,00E-05	5,37E-05	5,63E-05	5,60E-02	5,47E-08	2,52E-03	**6,58E-02**
Urban land occupation:ULOP	UL (m2a)	1,41E-02	4,74E-03	4,67E-03	3,16E-03	1,05E-02	7,69E-06	6,50E-03	**4,36E-02**
Water depletion:WDP	(m3 water-.)	4,62E-02	1,10E-03	1,05E-02	7,93E-04	9,23E-01	1,73E-07	2,87E-02	**1,01E+00**
Monetized impact	(Euro, €)	0,34	0,53	0,33	0,38	1,18	0,00	0,55	

To give a better understanding of the environmental impact, the impact on climate change and the monteized impact of the Luna and Lucy are visualized below.

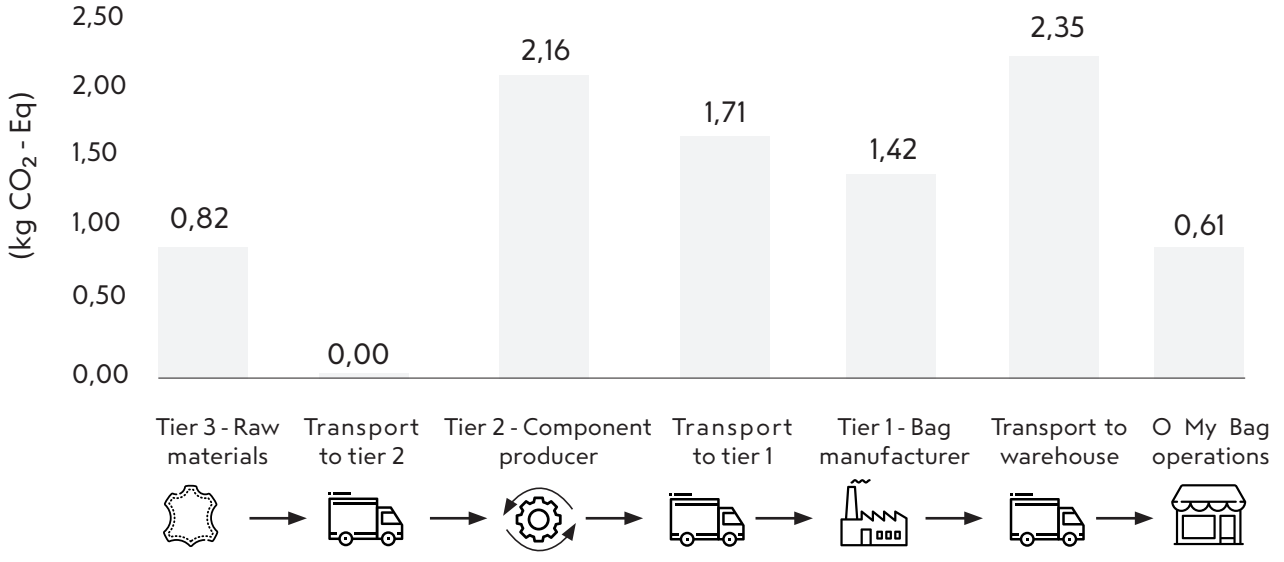
Climate Change Impact Luna

Total impact: 5,52 kg CO_2 - Eq



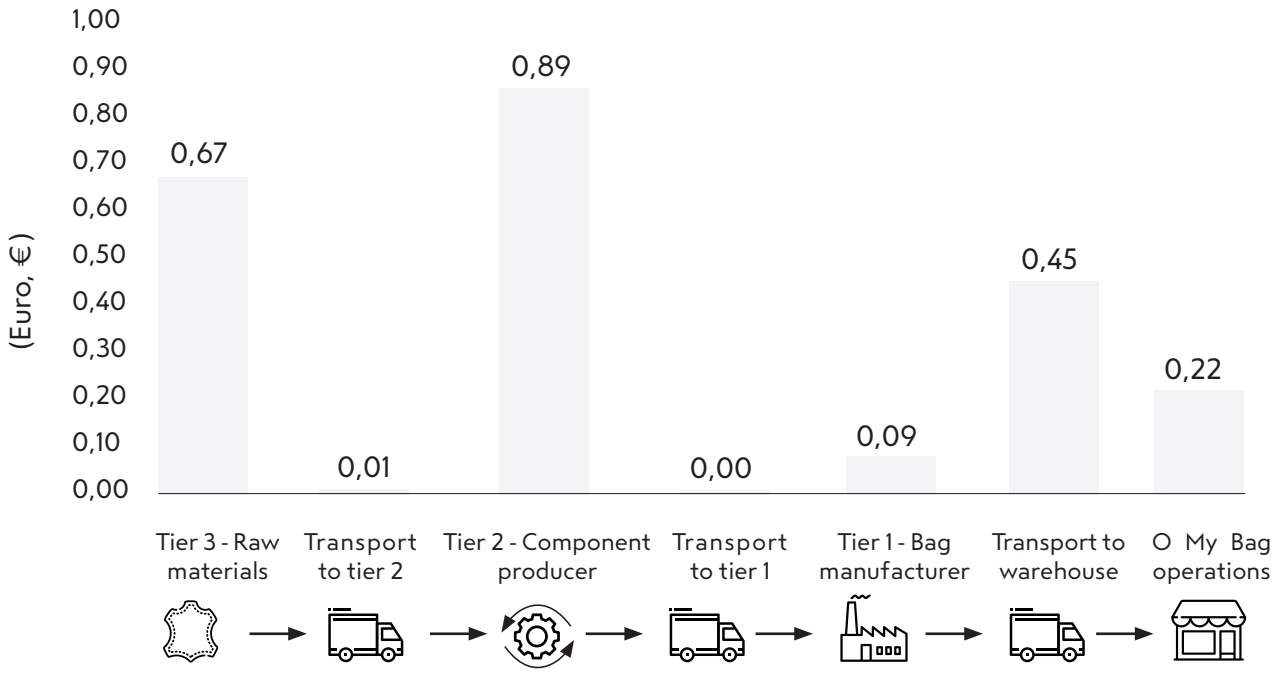
Climate Change Impact Lucy

Total impact: 9,08 kg CO_2 - Eq



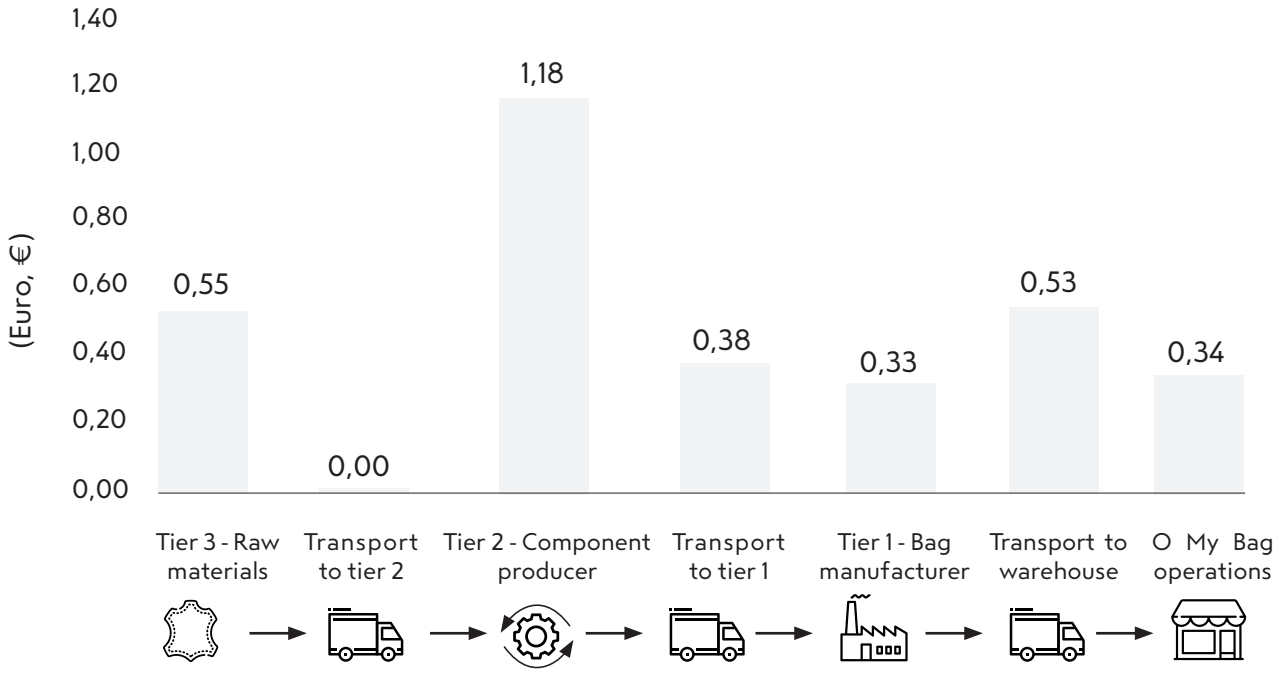
Monetized Impact Luna

Total impact: 2,32 €



Monetized Impact Lucy

Total impact: 3,30 €



7.2 INTERPRETATION AND NEXT STEPS

The results of the Life Cycle Assessment reveal where high impacts in the life cycle of the products occur.

Due to the energy, chemical and water intensive processes related to Tier 2 where components are produced, this stage is the most impactful. High impact occurs during transportation of the products from India to the warehouse using air freight. A comparison between the manufacturing at Tier 1 reveals that one of the tier 1 manufacturers has a significantly higher energy usage than the other, which causes a difference in environmental impact.

In addition, looking at the raw materials used for the components of the bags, the results clearly show considerable difference in their impact. Zamak used for the hardware of the Lucy is, for example, extremely impactful in comparison to iron and brass. Similarly, nylon has a higher impact than cotton or recycled polyester.

The insights gained with the LCA results will be used by the O My Bag team to strategically lower environmental impact. The Sustainability Manager will oversee this process.

Product Management will use the results to adjust O My Bag's Preferred Material Matrix and ensure material preferences are reflected in design and product specifications and implemented in the final products.

Logistics and operations will aim to reduce air shipping and packaging. Together with suppliers, results will be reviewed, and solutions discussed on how to improve processes and the performance of materials.

This means more concretely:

- Shipping
  - Increasing inbound sea shipments to at least 20% by 2021
  - Reducing outbound emissions by looking into low emission options like electric vehicles and efficiency measures
- Sustainable materials
  - Lower the footprint per product by 10%[2] by 2022
    - Increasing the amount of recycled and certified components and raw materials
- Reduce energy use at the office by 15% by 2022

O My Bag will keep track of its environmental footprint and reevaluate its reduction targets on a bi-annual basis.

[2] The target 10% relates to the raw materials and production processes, and does not include emission reductions via the increase of sea shipments.

8. Assumptions and limitations

SUPPLIER DATA

It proved difficult to collect primary data from suppliers. As a consequence, the LCA heavily relies on market average process and material impacts. This makes it more difficult to draw conclusions on what materials and processes contribute most to the total impact of the bags. This applies especially to the more complex processes such as leather tanning.

The weights of the materials and (sub-) components are corrected for their weights in the final product as reported by the bag manufacturers. It is assumed the reported weights are correct. The impacts in tier 2 and 3 depend on these weights.

CONVERSION FACTOR SELECTION

It was difficult to find the chemical composition of some of the chemicals used in the tanning process as reported by the tannery. This led to the necessity to make some assumptions related to the selection of the applicable conversion factors and prevented some conversion factors from being found at all.

Unfortunately, Ecoinvent does not contain conversion factors for leather or leather tanning. Alternatives have been found from Kering and the Higg Index, but these conversion factors are limited to a few environmental categories.

CONTACT DETAILS

O My Bag
Ceintuurbaan 117-H
1072 EZ Amsterdam
0031 (0)207724464

sustainability@omybag.nl