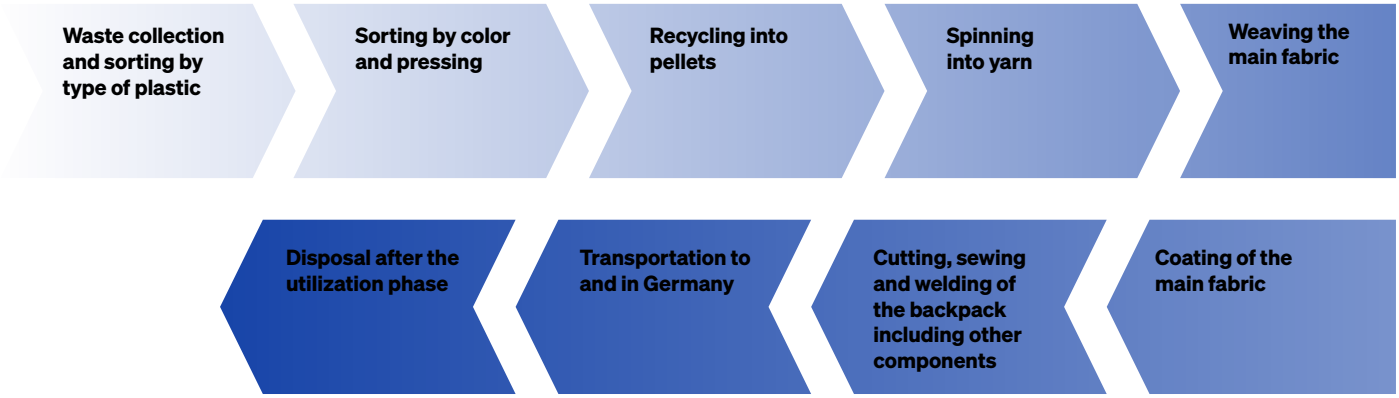
Life Cycle Assessment ROLLTOP 2.0 black

What is a life cycle assessment and what is it used for?
A life cycle assessment can be used to measure the environmental impact of a product. It not only serves as transparent information for consumers, but also forms the basis for actions to strategically minimize a company's environmental impact. The following LCA in style of ISO 14044 was realized in cooperation with ConClimate GmbH.

Functional unit
The aim of the life cycle assessment study is to better understand the impact of our products on the environment and to identify opportunities for optimization in the value chain. The life cycle assessment relates to the new ROLLTOP 2.0 in black, which is a further development of the previous bestseller ROLLTOP and therefore the product most frequently purchased by our community. Many parameters are included in the calculation, so the result for a ROLLTOP LITE 2.0 or the ROLLTOP 2.0 in other colors may differ slightly.

Process description
For the assessment, we considered the entire process, from the collection of the plastic as part of our clean-up program, through the production of the backpack, all transport including the assumption of a purchase in our online store, to disposal in Germany. Unlike clothing, our backpack does not need to be washed in everyday life, so the use phase was excluded from the life cycle assessment. The process step of cutting, sewing, and welding the backpack also includes the emissions of the other components in addition to the main textile material. These were only excluded and categorized differently for the comparison with a fictitious backpack without the use of recycled materials (see below).

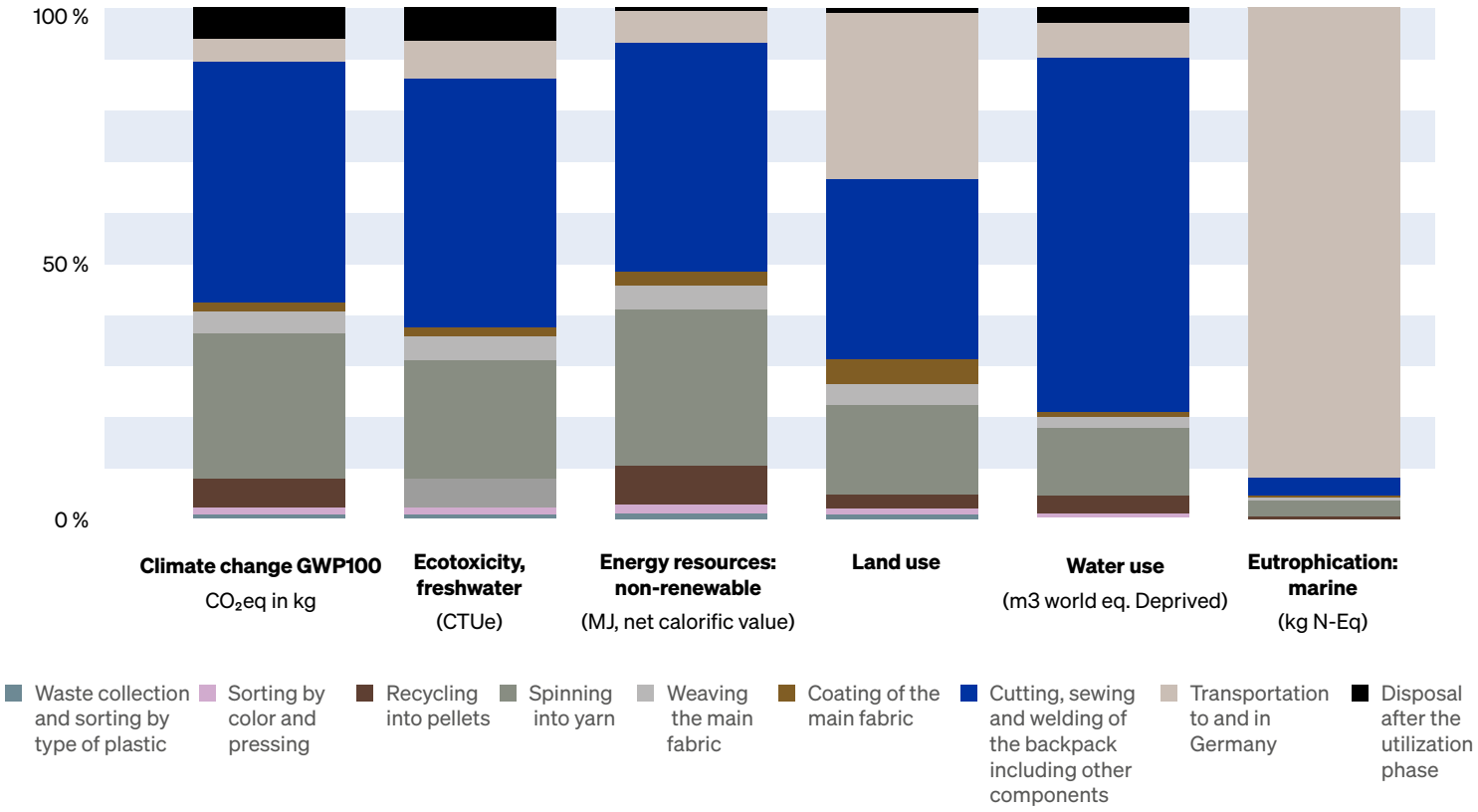
Impact categories
There are various impact categories, such as the impact of a product on global warming. This is specified in the unit CO_2 equivalent (CO_2eq). All greenhouse gases, for example methane as well as carbon dioxide, are combined here. In addition to greenhouse gas emissions, other environmental impacts such as land and water use or marine eutrophication can also be accounted for. The emission factors were taken from the Econivent 3.10 database for this purpose.



Results of the life cycle assessment of the ROLLTOP 2.0 in black

The following figure visualizes the various impact categories in proportion to the process steps.
The absolute values are shown in the table below.

Source: according to LCA study by ConClimate GmbH, 2024

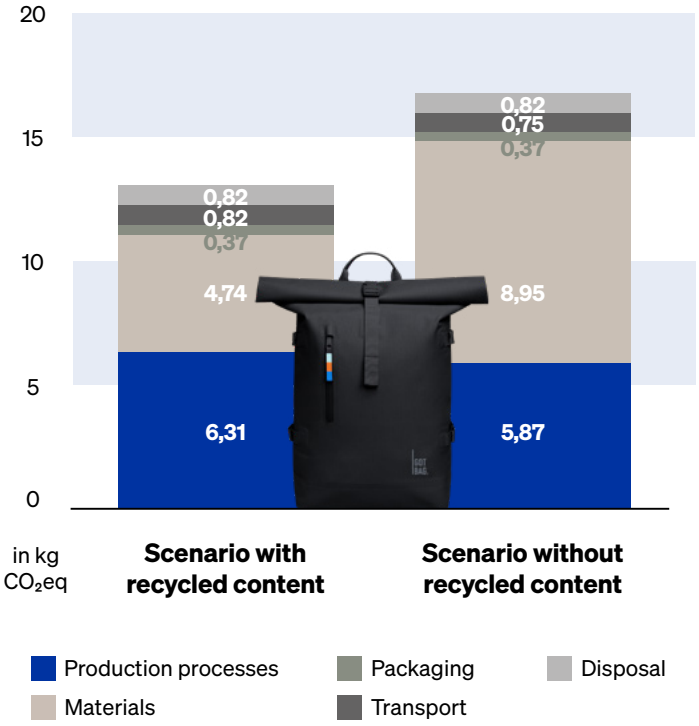


	Climate change GWP100 CO_2eq in kg	**Ecotoxicity, freshwater** (CTUe)	**Energy resources: non-renewable** (MJ, net calorific value)	**Land use**	**Water use** (m3 world eq. Deprived)	**Eutrophication: marine** (kg N-Eq)
Waste collection and sorting by type of plastic	0,10	0,35	1,29	0,36	0,01	0,00
Sorting by color and pressing	0,18	0,66	2,02	0,41	0,03	0,00
Recycling into pellets	0,73	2,72	8,89	1,13	0,12	0,00
Spinning into yarn	3,72	10,83	36,25	7,24	0,45	0,01
Weaving the main fabric	0,55	2,21	5,48	1,74	0,07	0,00
Coating of the main fabric	0,24	0,85	3,21	1,96	0,03	0,00
Cutting, sewing and welding of the backpack including other components	6,12	22,85	52,86	14,63	2,35	0,01
Transportation to and in Germany	0,56	3,56	7,51	13,35	0,23	0,18
Disposal after the utilization phase	0,81	3,05	0,77	0,47	0,11	0,00
Total	**13,06**	**47,07**	**118,28**	**41,28**	**3,39**	**0,20**

Source: according to LCA study by ConClimate GmbH, 2024

ROLLTOP 2.0 scenario without recycled content
Another scenario was calculated for the greenhouse gas emissions impact dimension. This shows the greenhouse gas emissions that would be produced if we were to manufacture the exact same ROLLTOP 2.0 in black conventionally from 100 % new raw materials.

For a better overview, the results for this scenario were divided into different categories. These are the production processes, the materials used, transportation, packaging, and disposal after the use phase. The following table and graph show the absolute values and the visual comparison



Source: according to LCA study by ConClimate GmbH, 2024

	ROLLTOP 2.0 black with recycled content	ROLLTOP 2.0 black without recycled content
Production processes	6,31	5,87
Materials	4,74	8,95
Packaging	0,37	0,37
Transport	0,82	0,75
Disposal	0,82	0,82
Total	**13,05**	**16,74**

Source: according to LCA study by ConClimate GmbH, 2024

The calculation shows that the use of materials made from Ocean Impact Plastic and other recycled plastics leads to significantly lower emissions at material level. At the same time, emissions from transportation and the production process are slightly higher due to the longer transportation distances. Due to the savings at material level, the overall balance is approx. 22 % lower than for the same fictitious backpack without recycled content.

And now?
The life cycle assessment forms a scientific basis for strategically minimizing the environmental impact of our products. As the comparison with the backpack without recycled materials shows, the recycled materials used already make an initial and significant contribution to reducing our environmental impact. At the same time, however, the life cycle assessment study also shows that the materials used, with an impact share of approx. 35 %, are not the only factor. To further reduce emissions, we will therefore focus on production processes, particularly energy efficiency and the energy mix at the various production sites.

Do you have any questions, comments or ideas?
Feel free to send us an e-mail: hello@got-bag.de