Report 2025

LCA of Oatly Barista variants and comparison with cow's milk

Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022

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Executive summary

Introduction

A Life Cycle Assessment (LCA) has been performed to compare the environmental performance of four Oatly Barista variants to cow's milk in multiple key sales markets:

- Oatly Barista 1.5L in Austria, Germany, Ireland, Switzerland, United Kingdom;
- Oatly Barista 2L in the United States;
- Oatly Oat Drink for Coffee & Tea 0.02 L in Austria, Finland, Germany, Ireland, Sweden, Switzerland and the United Kingdom; and
- Oatly Barista Lighter Taste 1L in Austria, Denmark, Finland, Germany, Norway, Ireland, Sweden, Switzerland and the United Kingdom.

This study is an addendum to the main report "LCA of Oatly Barista and comparison with cow's milk", which was published by Blonk Consultants on December 7th 2022 (Blonk Consultants, 2022). This addendum should be read in conjunction with the main report. The methodology, data choices, and assumptions made, are described in detail in the main report, and have remained mostly unchanged for this report. The change that applies to the products in scope for this addendum concerns an update of primary data: energy and water use in the Oatly factories, the product formulations, packaging types and distribution scenarios of the Oatly Barista variants.

The functional unit considered for this study is 1 liter of Oatly product/cow's milk at retail, including packaging manufacturing and packaging end of life. For cow's milk, a country-specific average market mix of skimmed, semi-skimmed, and whole milk was considered, as well as the most common heat treatment type (HTST or UHT) and packaging format (plastic, beverage carton, aseptic/chilled) in each country. The foreground data for Oatly Barista is based on company-specific data from Oatly; for Oatly Barista 1.5L, it refers to production from Oatly's hybrid factory in Vlissingen, the Netherlands[1]; for Oatly Barista 2L, it refers to production from Oatly's hybrid factory in Ogden, the United states; for Oatly Oat Drink for Coffee & Tea it refers to production from Oatly's E2E factories in Landskrona, Sweden; and for Oatly Barista Lighter Taste it refers to production from both Oatly's E2E factories in Landskrona, Sweden, and Oatly's hybrid factory in Vlissingen, the Netherlands. For the cow's milk, data and statistics at a national level were used.

Like the main report, this study has been performed and critically reviewed according to ISO 14040/14044/14071 standards for comparative assertions to be disclosed to the public and is in line with LCA guidelines including the European Product Environmental Footprint Category Rules (PEFCR). The analysis was done for key impact categories from the ReCiPe 2016 impact assessment method (including an uncharacterised land occupation indicator). The study was conducted between December 2024 and April 2025.

Results

Barista 1.5L and 2L

As can be seen in TABLE 1 below, Oatly Barista 1.5L and 2L products in scope have a lower impact than cow's milk for climate change (56% to 67% lower for the 1.5L and 46% lower for the 2L), fine particulate matter formation (83% to 94% lower for the 1.5L and 62% lower for the 2L), terrestrial acidification (55% to 92% lower for the 1.5L and 61% lower for the 2L), marine eutrophication (63% to 73% lower for the 1.5L and 41% lower for the 2L) and water consumption (61% to 88% lower for the 1.5L and 81% lower for the 2L). The conclusions for the remaining impact categories (freshwater eutrophication, land use, land occupation, mineral resource scarcity and fossil resource scarcity) varied

[1] End-to-End (E2E) Factory: The entire production chain happens within Oatly's own factory. From grains to the finished product. Hybrid Factory: A Hybrid factory is an Oatly oatbase factory that pumps the oatbase through a pipe to a contract manufacturer next door. The contract manufacturer-neighbour fills and packs the products for Oatly.

depending on the case, being either higher, similar or lower for Oatly Barista 1.5L and/or 2L compared to cow's milk. For freshwater eutrophication, Oatly Barista 1.5L has a lower impact than cow's milk in Austria, Germany, Ireland and Switzerland and a comparable impact in the UK. The 2L in the US has a comparable impact to cow's milk, mainly due to phosphorus and phosphate emissions[2] to water resulting from the application of fertilizers. For land use and land occupation, Oatly Barista 1.5L has a lower impact than cow's milk in all the countries in scope for this packaging size (Austria, Germany, Ireland, Switzerland and the UK) however, the 2L in the US has a comparable impact on freshwater eutrophication, land use and land occupation to cow's milk.

The difference in impact for fossil resource scarcity is in favour of Oatly Barista 1.5L in Ireland (14% lower impact), and the results are comparable in Austria, Germany, the UK and Switzerland. The 2L in the US however shows a 39% higher impact for Oatly Barista compared to cow's milk. This is mainly related to different distribution distances and the use of natural gas as fuel for processing at the US factory. For mineral resource scarcity, Oatly Barista 1.5L has a lower impact for Austria (19%) and Switzerland (50%), it has a 11% higher impact than cow's milk in the UK. This is attributable to the use of aluminium in ambient packaging for the Oatly product compared to a HDPE bottle for the milk. Using solar and wind electricity at factories also contributes to the impact due to the use of metals in the production of wind turbines and solar panels. For Germany and Ireland 1.5L, the results are comparable. This is mainly because the comparable milk packaging in these geographies does not use minerals such as aluminium.

TABLE 1: RELATIVE DIFFERENCES OF OATLY BARISTA 1.5L AND 2L COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -58% INDICATES THAT OATLY BARISTA HAS A 58% LOWER IMPACT COMPARED TO COW'S MILK. THE DIFFERENCES HAVE BEEN COLOR-CODED AS FOLLOWS: GREEN – MORE THAN 10% DIFFERENCE FAVORING OATLY BARISTA, YELLOW – THE DIFFERENCE IS 10% OR LOWER INDICATING SIMILAR PERFORMANCE FOR THE COMPARED PRODUCTS, RED – MORE THAN 10% DIFFERENCE FAVORING COW'S MILK. COW'S MILK REPRESENTS AN AVERAGE MILK PRODUCT AT POINT OF SALE FOR EACH COUNTRY. ABBREVIATION USED: NL=NETHERLANDS, US = UNITED STATES

Country of sale	Impact category	Climate change	Fine particulate matter	Terrestrial acidifi-cation	Freshwater eutrophi-cation	Marine eutrophi-cation	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consum-ption
	Product	*kg CO2 eq*	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Barista 1.5L – NL factory	-56%	-90%	-92%	-66%	-73%	-41%	-58%	-19%	2%	-72%
Germany	Oatly Barista 1.5L – NL factory	-67%	-89%	-89%	-45%	-72%	-29%	-48%	-3%	4%	-61%
Ireland	Oatly Barista 1.5L – NL factory	-60%	-83%	-55%	-34%	-72%	-14%	-33%	0%	-14%	-62%
Switzerland	Oatly Barista 1.5L – NL factory	-59%	-94%	-91%	-50%	-72%	-38%	-53%	-50%	3%	-88%
United Kingdom	Oatly Barista 1.5L – NL factory	-61%	-88%	-82%	-5%	-63%	-25%	-39%	11%	-10%	-61%
United States	Oatly Barista 2L - US Ogden factory	-46%	-62%	-61%	10%	-41%	4%	-9%	-15%	39%	-81%

[2] Characterization factors for phosphorus emissions to water have been regionalized in a 2024 update of the ReCiPe method (v.1.09). As a result, relative emissions have increased more significantly for Canadian crops (for oats), and a relatively smaller increase is observed for U.S. crops (for cow's feed). More specifically, they have been geographically spatialised with the phosphorous emission evolving from 1 kg Peq/kg P emitted (non-spatialised characterization factor in the 2022 report) to about 7 in for Canada (Oatly ingredient cultivation),and 5 in the US (feed for cow's milk in the US).

FIGURE 1 shows the contribution of all life cycle stages to the climate change impact of Oatly Barista 1.5 L and 2 L and cow's milk, showing that raw materials are the main contributor to the climate change impact of all products in scope. For Oatly Barista, the impact of the raw materials is mainly determined by oats and rapeseed oil, whereas for cow's milk, feed and cow's emissions (linked to enteric fermentation and manure management) are the main contributors.

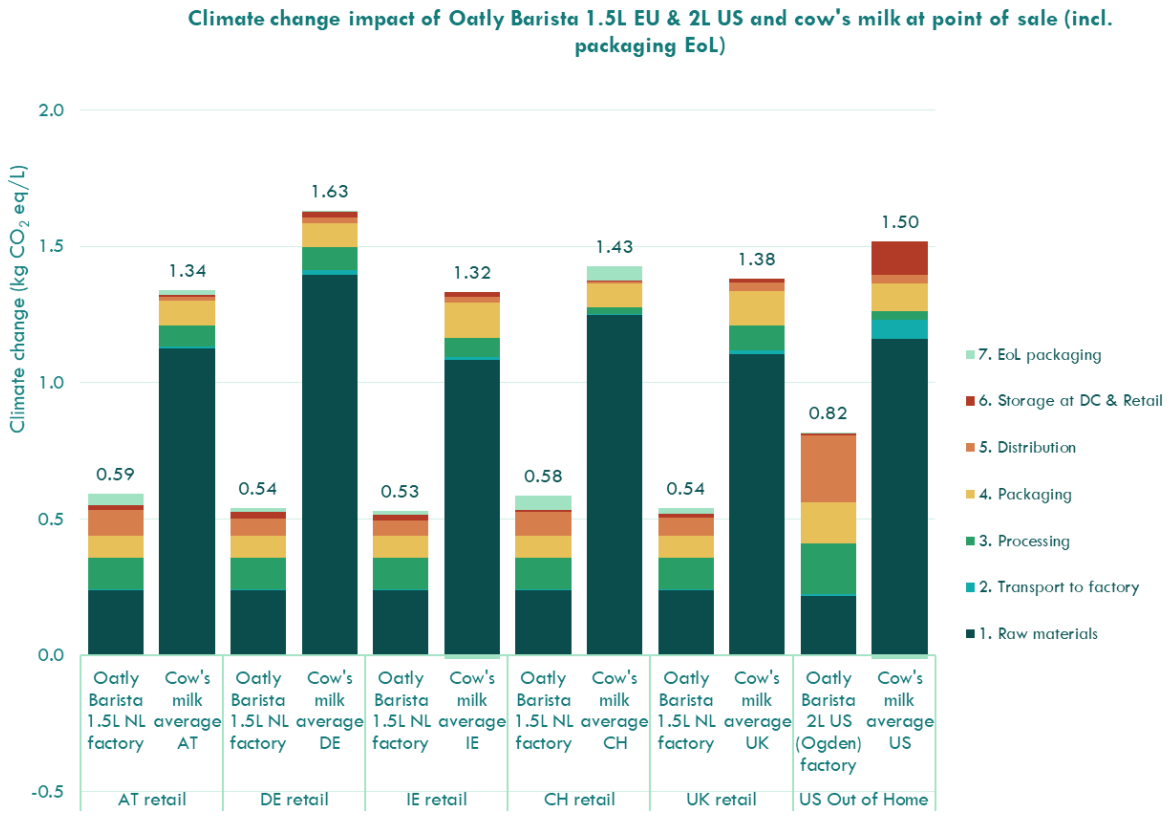


FIGURE 1: CLIMATE CHANGE IMPACT OF OATLY BARISTA 1.5L AND 2L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATION USED: AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH = SWITZERLAND, UK = THE UNITED KINGDOM, US = THE UNITED STATES

Oatly Oat Drink for Coffee & Tea 0.02 L

As can be seen in TABLE 2 below, Oatly Oat Drink for Coffee & Tea has a lower impact than cow's milk for climate change (51% to 75% lower), fine particulate matter formation (53% to 91% lower), terrestrial acidification (55% to 90% lower), freshwater eutrophication (14% to 68% lower), marine eutrophication (59% to 72% lower), land occupation (17% to 47% lower), fossil resource scarcity (26% to 73% lower) and water consumption (43% to 79% lower). For land use, Oatly Oat Drink for Coffee & Tea has a lower impact than cow's milk in most countries (17% to 46% lower) except for Ireland, where results are comparable. This is due to the relatively low impact of cow's feed production in Ireland and a relatively high occupation of land for oat and rapeseed cultivation in Sweden as well as the use of carton board for the Oatly packaging, compared to plastic cups for milk. For mineral resource scarcity, Oatly Oat Drink for Coffee & Tea has a lower impact than cow's milk in most countries (15% to 75% lower), except for Sweden, where results are comparable[3].

[3] Packaging is driving the mineral resource scarcity impact category, and the same aseptic carton packaging was used to model both the Oatly and dairy product for products sold in Sweden and Finland.

TABLE 2: RELATIVE DIFFERENCES OF OATLY OAT DRINK FOR COFFEE AND TEA COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -58% INDICATES THAT OATLY BARISTA HAS A 58% LOWER IMPACT COMPARED TO COW'S MILK. THE DIFFERENCES HAVE BEEN COLOR-CODED AS FOLLOWS: GREEN – MORE THAN 10% DIFFERENCE FAVORING OATLY BARISTA, YELLOW – THE DIFFERENCE IS 10% OR LOWER INDICATING SIMILAR PERFORMANCE FOR THE COMPARED PRODUCTS, RED – MORE THAN 10% DIFFERENCE FAVORING COW'S MILK. COW'S MILK REPRESENTS AN AVERAGE COW'S MILK PRODUCT AT POINT OF SALE FOR EACH COUNTRY. ABBREVIATION USED: SE = SWEDEN

Country of sale / Impact category / Product	Climate change	Fine particulate matter	Terrestrial acidifi-cation	Freshwater eutrophi-cation	Marine eutrophi-cation	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consum-ption
	kg CO2 eq	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Oat Drink for coffee and tea - SE factory	-69%	-88%	-90%	-68%	-72%	-33%	-46%	-75%	-73%	-66%
Finland	Oatly Oat Drink for coffee and tea - SE factory	-65%	-59%	-63%	-33%	-64%	-46%	-47%	-15%	-26%	-44%
Germany	Oatly Oat Drink for coffee and tea - SE factory	-75%	-88%	-88%	-33%	-71%	-20%	-34%	-74%	-71%	-62%
Ireland	Oatly Oat Drink for coffee and tea - SE factory	-68%	-78%	-55%	-14%	-68%	-4%	-17%	-63%	-70%	-62%
Sweden	Oatly Oat Drink for coffee and tea - SE factory	-51%	-53%	-72%	-31%	-60%	-39%	-39%	-8%	-26%	-43%
Switzer-land	Oatly Oat Drink for coffee and tea - SE factory	-68%	-91%	-89%	-55%	-71%	-28%	-38%	-67%	-70%	-79%
United Kingdom	Oatly Oat Drink for coffee and tea - SE factory	-67%	-82%	-78%	-48%	-59%	-17%	-24%	-62%	-68%	-59%

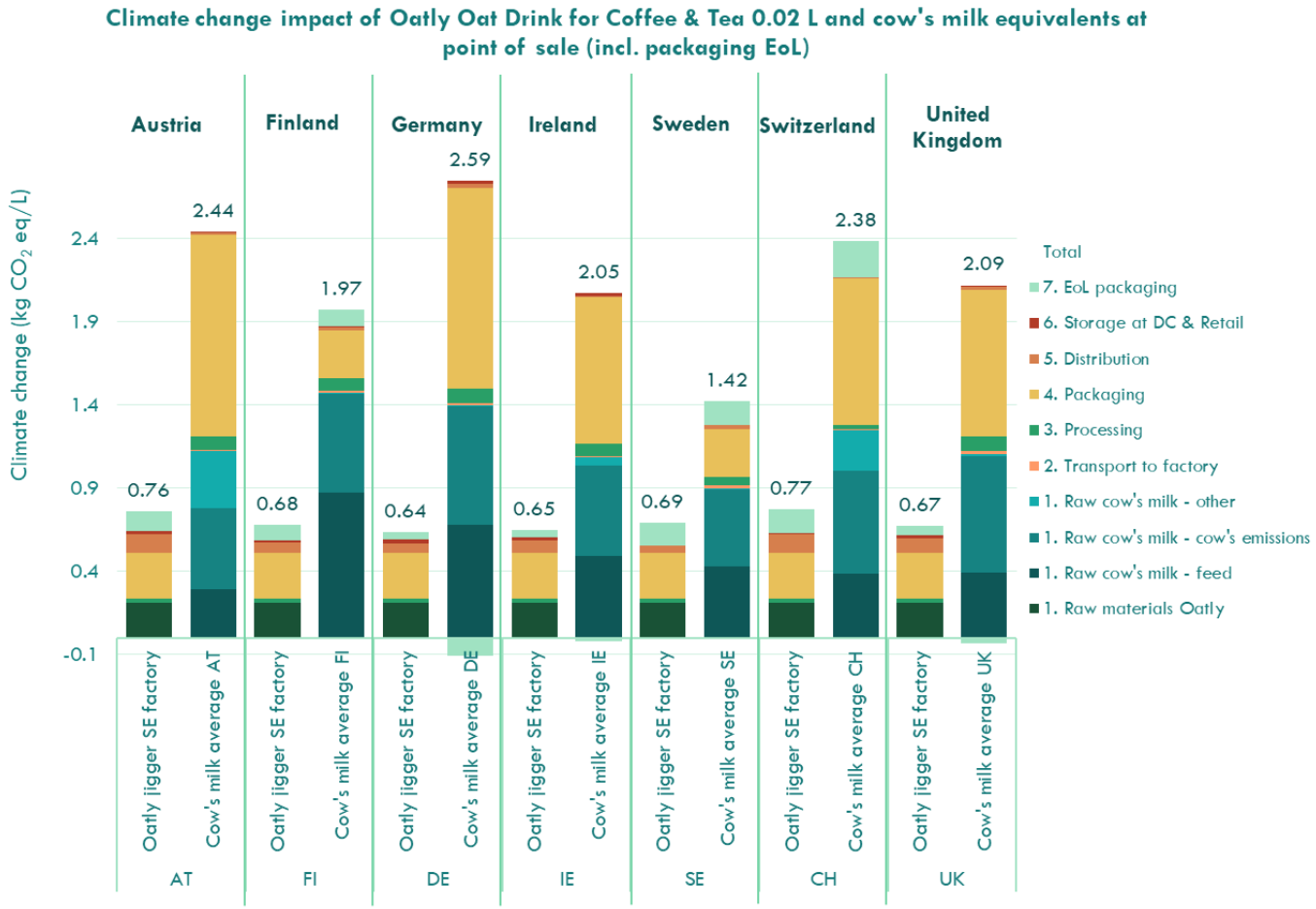


FIGURE 2 shows the contribution of all life cycle stages to the climate change impact of Oatly Oat Drink for Coffee & Tea and cow's milk, showing that packaging is the main contributor to the climate change impact of all products in scope followed by raw materials. For Oatly Barista, the impact of the packaging is mainly determined by its aluminum content and the impact of raw materials is mainly determined by oats and rapeseed oil, whereas for cow's milk, packaging (especially the single use plastic cups used in Austria, Germany, Ireland, Switzerland and the UK), feed and cow's emissions (linked to enteric fermentation and manure management) are the main contributors.

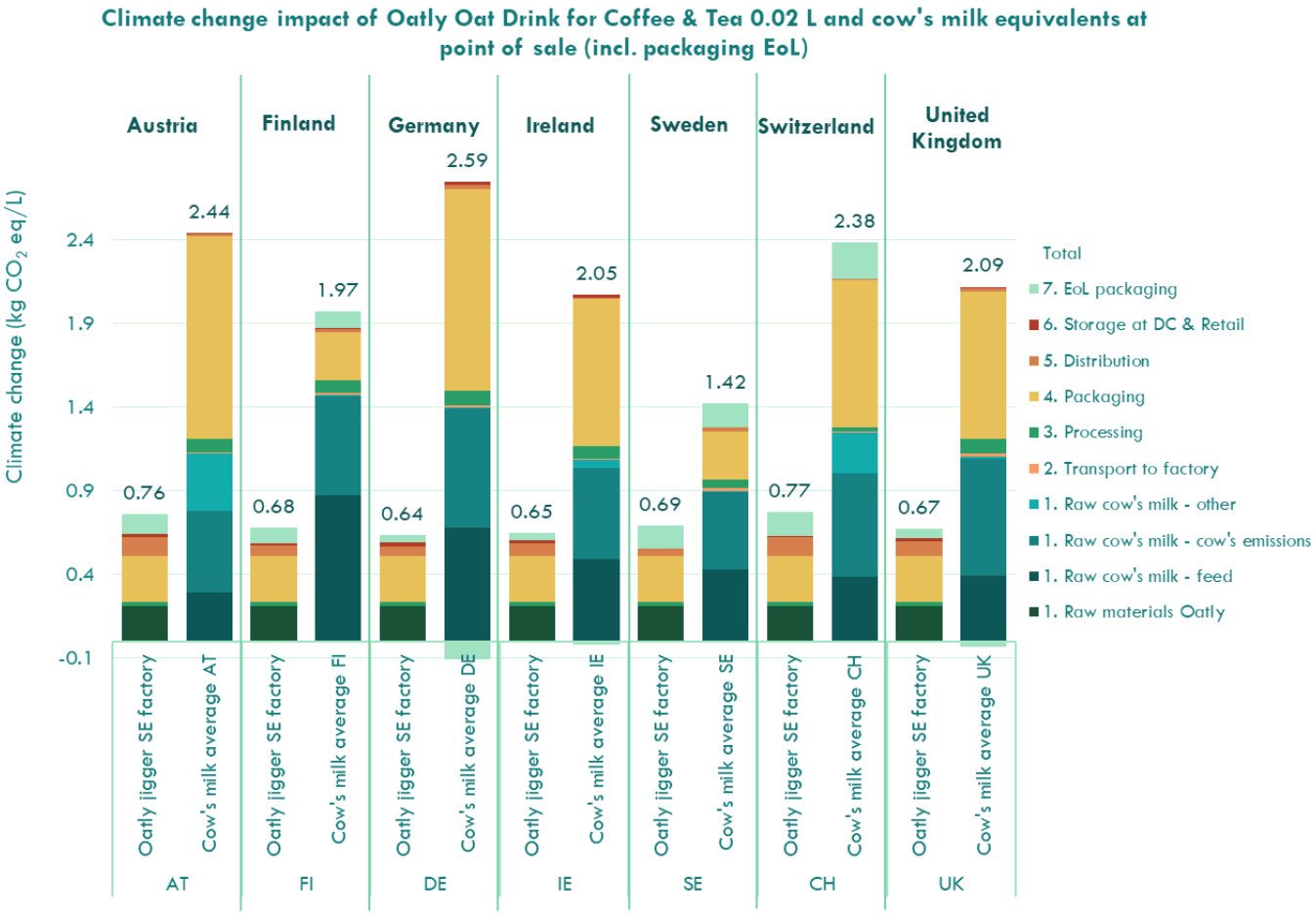


FIGURE 2 CLIMATE CHANGE IMPACT OF OATLY OAT DRINK FOR COFFEE AND TEA AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATION USED: AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH = SWITZERLAND, UK = UNITED KINGDOM

Oatly Barista Lighter Taste 1L

As can be seen in TABLE 3 below, Oatly Barista Lighter Taste has a lower impact than cow's milk for climate change (58% to 79% lower), fine particulate matter formation (55% to 94% lower), terrestrial acidification (60% to 93% lower), freshwater eutrophication (24% to 69% lower), marine eutrophication (48% to 82% lower), land occupation (14% to 72% lower) and water consumption (49% to 87% lower). The conclusions for the remaining impact categories (land use, mineral resource scarcity and fossil resource scarcity) varied depending on the case, being either higher, comparable or lower for Oatly Barista Lighter Taste compared to cow's milk. For land use, Oatly Barista Lighter Taste has lower impact than cow's milk (21% to 75% lower) in most markets except in Denmark where results are comparable (9% lower impact for the Oatly product), which is related to the relatively high milk yield yet relatively low feed intake of Danish dairy cows. The difference of impact for fossil resource scarcity is in favour of Oatly Barista Lighter Taste in Denmark (29% lower impact), Finland (49% lower impact), Norway (44% lower impact), Ireland (18% lower impact), Sweden (48% lower impact) and the United Kingdom (13% lower impact) and the results are comparable in Austria, Germany, and Switzerland. This is mainly related to different distribution distances. For mineral resource scarcity, Oatly Barista Lighter Taste has a 64% higher impact than cow's milk in Denmark. This is attributable to a combination of factors (aluminium use in ambient packaging of Oatly Barista; the use of minerals for the generation of renewable energy in Oatly's factories; and the relatively high milk yields yet low feed intake, thus relatively low use of mineral fertilizers, of Danish dairy systems). For Austria, Germany, Ireland, Sweden

and the United Kingdom, results are comparable. For Finland, Norway and Switzerland, Oatly Barista Lighter Taste has a lower impact than cow's milk (12% to 50% lower).

TABLE 3: RELATIVE DIFFERENCES OF OATLY BARISTA LIGHTER TASTE COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -58% INDICATES THAT OATLY BARISTA HAS A 58% LOWER IMPACT COMPARED TO COW'S MILK. THE DIFFERENCES HAVE BEEN COLOR-CODED AS FOLLOWS: GREEN – MORE THAN 10% DIFFERENCE FAVORING OATLY BARISTA, YELLOW – THE DIFFERENCE IS 10% OR LOWER INDICATING SIMILAR PERFORMANCE FOR THE COMPARED PRODUCTS, RED – MORE THAN 10% DIFFERENCE FAVORING COW'S MILK. COW'S MILK REPRESENTS AN AVERAGE MILK PRODUCT AT RETAIL FOR EACH COUNTRY. ABBREVIATION USED: NL = THE NETHERLANDS, SE = SWEDEN

Country of sale / Impact category / Product	Climate change	Fine particulate matter	Terrestrial acidification	Freshwater eutrophication	Marine eutrophication	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consumption
	kg CO2 eq	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Barista Lighter Taste 1L - NL factory	-59%	-91%	-93%	-70%	-77%	-47%	-62%	1%	5%	-72%
Denmark	Oatly Barista Lighter Taste 1L - SE factory	-61%	-55%	-84%	-27%	-48%	-9%	-14%	64%	-29%	-49%
Finland	Oatly Barista Lighter Taste 1L - SE factory	-78%	-71%	-70%	-55%	-71%	-52%	-56%	-12%	-49%	-54%
Germany	Oatly Barista Lighter Taste 1L - NL factory	-69%	-89%	-90%	-48%	-76%	-35%	-52%	-4%	0%	-60%
Norway	Oatly Barista Lighter Taste 1L - SE factory	-79%	-73%	-89%	-62%	-82%	-75%	-72%	-20%	-44%	-72%
Ireland	Oatly Barista Lighter Taste 1L - NL factory	-62%	-83%	-60%	-49%	-76%	-21%	-38%	1%	-18%	-61%
Sweden	Oatly Barista Lighter Taste 1L - SE factory	-67%	-66%	-78%	-47%	-66%	-46%	-48%	7%	-48%	-53%
Switzerland	Oatly Barista Lighter Taste 1L - NL factory	-61%	-94%	-92%	-53%	-75%	-43%	-57%	-50%	2%	-87%
United Kingdom	Oatly Barista Lighter Taste 1L - NL factory	-63%	-88%	-84%	-24%	-69%	-32%	-44%	10%	-13%	-59%

FIGURE 3 shows the contribution of all life cycle stages to the climate change impact of Oatly Barista Lighter Taste and cow's milk, showing that raw materials are the main contributor to the climate change impact of all products in scope. For Oatly Barista, the impact of the raw materials is mainly determined by oats and rapeseed oil, whereas for cow's milk, feed and cow's emissions (linked to enteric fermentation and manure management) are the main contributors.

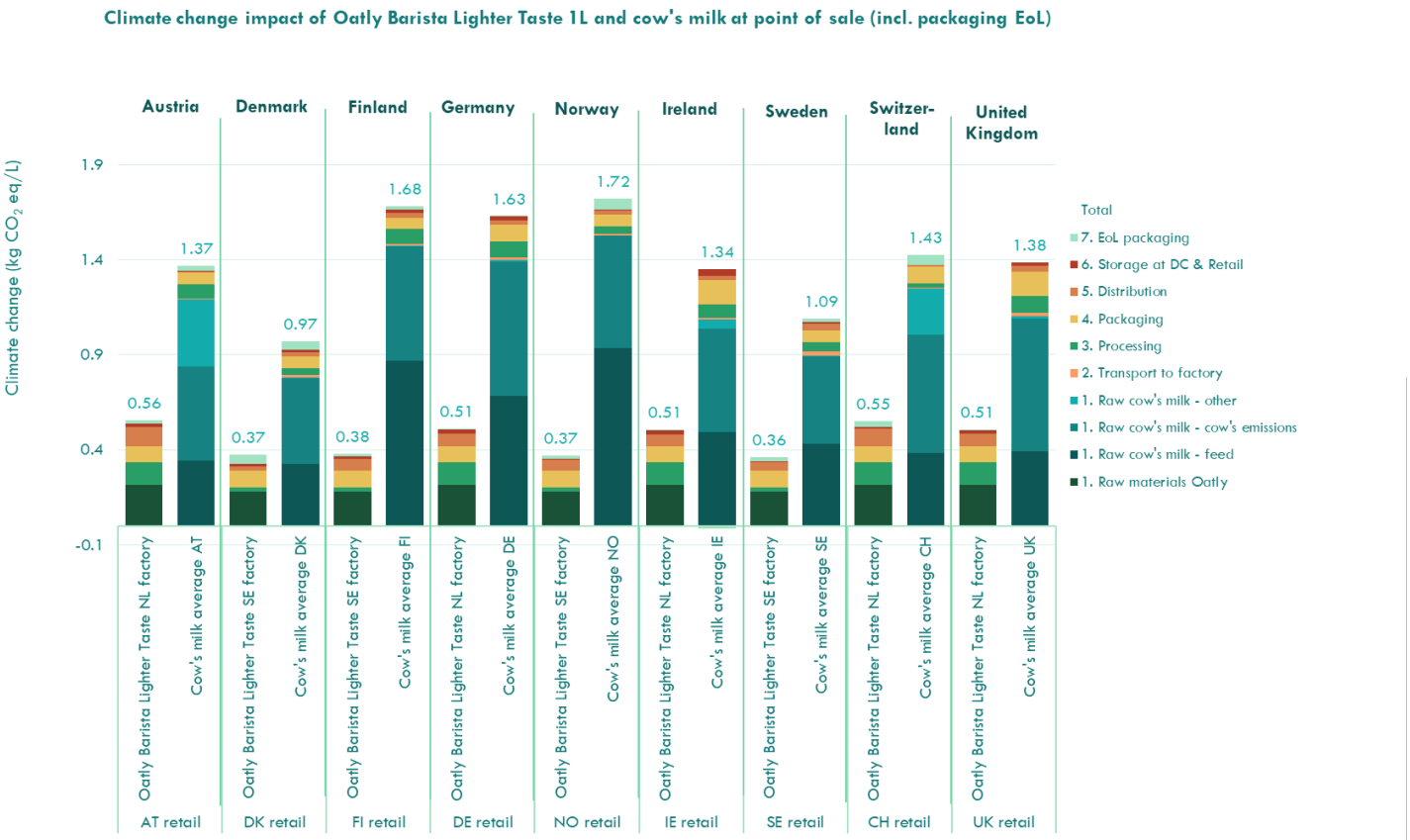


FIGURE 3 CLIMATE CHANGE IMPACT OF OATLY BARISTA LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATION USED: AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH = SWITZERLAND, UK = UNITED KINGDOM

The significance of the differences between Oatly products and cow's milk has been determined by an uncertainty analysis and is integrated in the conclusions below.

The main report included sensitivity analyses, which also apply to the products evaluated in this addendum, as these products are very similar and show a comparable or lower impact than Oatly Barista produced in the same factories. These sensitivity analyses pointed out that using a different impact assessment method (ReCiPe endpoint, EF3.0 single score) confirmed the overall higher environmental footprint of cow's milk compared to Oatly Barista for all countries in scope. It also showed that results in the impact categories land use, mineral resource scarcity and water impact categories are less robust, as they result in different trends when using a different impact assessment method (EF3.0). Furthermore, the sensitivity analyses in the main report concluded that using different product characteristics (chilled distribution, inclusion of use stage, using economic allocation for cow's milk, a functional unit based on nutritional characteristics), did not lead to different conclusions on the environmental footprint of Oatly Barista compared to cow's milk.

Conclusions

Based on the results, the following conclusions can be drawn for the Oatly variants in this study:

Oatly Barista 1.5L and 2L:

- Oatly 1.5L has a lower impact than cow's milk for all countries in scope for the impact categories climate change, fine particulate matter formation, terrestrial acidification, marine eutrophication, land use, land occupation, and water consumption. Oatly 1.5L has also a lower impact on freshwater eutrophication except in the UK where results are comparable. For mineral resource

scarcity and fossil resource scarcity, the differences between Oatly 1.5L and cow's milk vary between significantly higher, lower, or insignificant.

- Oatly 2L has a lower impact than cow's milk in the US for the impact categories climate change, fine particulate matter formation, terrestrial acidification, marine eutrophication, mineral resource scarcity, and water use. Oatly 2L has a comparable impact for freshwater eutrophication, land use and land occupation and a higher impact than cow's milk for fossil resource scarcity.

Oatly Oat Drink for Coffee & Tea 0.02 L:

- Oatly Oat Drink for Coffee & Tea has a significantly lower impact than cow's milk for all 10 key impact categories and countries in scope, except for land use in Ireland and for mineral resource scarcity in Sweden, where results are comparable.

Oatly Barista Lighter Taste 1L:

- Oatly Lighter Taste has a lower impact than cow's milk for all countries in scope for the impact categories climate change, fine particulate matter formation, terrestrial acidification, freshwater eutrophication, marine eutrophication, land occupation, and water consumption. Oatly Lighter Taste has also a lower impact on land use except in the Denmark where results are comparable. For mineral resource scarcity and fossil resource scarcity, the differences between Oatly Lighter Taste and cow's milk vary between significantly higher, lower, or insignificant.

Overall, the analysis of Oatly Barista (in the main report) and Barista variants in the markets assessed in this report lead to similar conclusions when comparing to cow's milk.

A detailed analysis of the main drivers and opportunities linked to the environmental impact of Oatly products can be found in the main report.

1. Goal & Scope

1.1 Introduction

This report is an addendum to the report “LCA of Oatly Barista and comparison with cow's milk”, which was published by Blonk Consultants on December 7th, 2022, (Blonk Consultants, 2022)[4] and will from now on be referred to in this addendum as the “main report”. This addendum investigates four further products from Oatly:

- The Barista recipe presented in alternative packaging options (1.5L and 2L aseptic beverage carton)
- The Oatly Oat drink for coffee and tea jiggers for use in out of home occasions (0.02 L aseptic beverage carton).

The Barista Edition Lighter Taste (1 L aseptic beverage carton), These variations of Oatly Barista are produced in Landskrona (located in Sweden) Vlissingen (located in the Netherlands) and Ogden (located in the US) factories. The exact products and markets in scope are listed in TABLE 4, TABLE 5 and TABLE 6 below. Like with Oatly Barista in the main report, these products are compared to cow’s milk produced in the country of sale.

The methodology, data choices, and assumptions made, are described in detail in the main report, and have remained unchanged for this report. The following has been updated in this report as to be further described in Chapter 3 (Life Cycle Inventory):

- The use of utilities at the American, Dutch and Swedish factories has been updated to 2023 data.
- The new recipes for the Oat Drink for Coffee & Tea, and Barista Lighter Taste products.
- New packaging in scope have been included.
- Transport means and distances from suppliers have been updated to 2024 data (these products were launched in 2024).
- Background data has been updated to the following database versions: Agri-footprint 3.6, and Ecoinvent 3.10.
- Country-specific distribution data from the Dutch, Swedish and American factories to markets in Austria, United Kingdom, Ireland, Finland, Germany, Norway, Denmark, Sweden, Switzerland and the United States has been updated to 2024 data.

Like the main report, this addendum has been subject to a critical review according to ISO 14040/14044 and ISO/TS 14071:2014 standards (ISO, 2006b, 2006a, 2014), carried out by a review panel consisting of three LCA experts (two of which had already reviewed the main report). The review of the addendum focused particularly on elements that were added or changed compared to the main report and assessed the overall conformance with ISO 14040/14044 standards.

This addendum is not a stand-alone report and should be read in conjunction with the main report. It should be noted that the climate change impact results from this study do not always correspond with those mentioned on Oatly’s packaging/web page as the latter are calculated by a different LCA provider that uses different background data and/or different system boundaries.

[4] Link to the publication: https://website-production-s3bucket-1nevfd7531z8u.s3.eu-west-1.amazonaws.com/public/website/download/fabc1628-d8e1-4cf8-aacc-1a9694908a42/LCA%20Oatly%20and%20comparison%20to%20cow's%20milk%20(07-12-2022)%20-%20final.pdf

1.2 Goal and scope

1.2.1 Goal

The goal of this study is in line with the goal mentioned in section 1.2 of the main report: To assess the environmental impact of a selection of Oatly Barista products and compare them to cow's milk in their respective markets. Further details on the intended use of this study can be found in section 1.2 of the main report.

1.2.2 Scope

The function based on which the two systems are compared is defined as follows: the provision of cow's milk or oat-based drinks, to be added to food and beverage items for taste and texture, provided in different packaging sizes at point of sale.

The functional units associated with both systems are:

- Oat drink: 1 liter of Oatly product (either Oat Drink Barista 1.5L and 2L, or Oatly Oat drink for coffee and tea 0.02 L or Oatly Barista Edition Lighter Taste 1L) including packaging, at point of sale.
- Cow's milk: 1 liter of HTST (high temperature short time pasteurization) or UHT (ultra-high temperature pasteurization) whole, and (semi-)skimmed cow's milk (using a country-average mix of these three milk types), including packaging, at point of sale (chilled or ambient storage)

TABLE 4, TABLE 5 and TABLE 6 list the reference flows related to the Oatly products in scope, as well as for their cow's milk equivalents.

The system boundaries considered for this addendum are from cradle-to-point of sale (including packaging end-of-life), in line with the main report. More details on the system boundaries can be found in section 1.3.2 from the main report.

TABLE 4 REFERENCE FLOWS, LOCAL NAME, STORAGE CONDITION, TYPE, PRODUCTION LOCATION AND COUNTRY OF SALE OF THE OATLY OAT DRINK BARISTA EDITION 1.5 & 2L PRODUCTS AND COW'S MILK

Oatly Barista 1.5L and 2L …					…Compared with cow's milk			
Reference flow	Local name and packaging type	Storage condition	Produced in	Sold in	Reference flow	Cow's milk and packaging type	Storage condition	Produced and sold in
1 liter	Oatly Haferdrink Barista Edition (1.5 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Austria	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (aseptic beverage carton)	Chilled	Austria
1 liter	Oatly Haferdrink Barista Edition (1.5 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Germany	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (aseptic beverage carton)	Ambient	Germany
1 liter	Oatly Oat Drink Barista Edition (1.5 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Ireland	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (plastic bottle)	Chilled	Ireland
1 liter	Oatly Haferdrink Barista Edition (1.5 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Switzerland	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (aseptic beverage carton)	Ambient	Switzerland
1 liter	Oatly Oat Drink Barista Edition (1.5 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	United Kingdom	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (plastic bottle)	Chilled	United Kingdom
1 liter	Oatly Oat Drink Barista Edition 2 L (2 L aseptic beverage carton)	Ambient	Ogden, Utah, United States	United States	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (HDPE container)	Chilled	United States

TABLE 5 REFERENCE FLOWS, LOCAL NAME, STORAGE CONDITION, TYPE, PRODUCTION LOCATION AND COUNTRY OF SALE OF THE OATLY OAT DRINK FOR COFFEE AND TEA 0.02 L PRODUCTS AND COW'S MILK. OATLY OAT DRINK FOR COFFEE & TEA IS MAINLY SOLD WHOLESALE FOR OUT OF HOME USE.

Oatly Oat drink for coffee and tea…					…Compared with cow's milk			
Reference flow	Local name and packaging type	Storage condition	Produced in	Sold in	Reference flow	Cow's milk and packaging type	Storage condi-tion	Produced and sold in
1 liter	Oatly Haferdrink für Kaffee und Tee (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Austria	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.0075 L single serving plastic cup)	Ambient	Austria
1 liter	Oatly Haferdrink für Kaffee und Tee (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Germany	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.0075 L single serving plastic cup)	Ambient	Germany
1 liter	Oatly Oat drink for coffee and tea (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Ireland	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.012 L single serving plastic cup)	Ambient	Ireland
1 liter	Oatly Haferdrink für Kaffee und Tee (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Switzer-land	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.012 L single serving plastic cup)	Ambient	Switzer-land
1 liter	Oatly Oat drink for coffee and tea (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	United Kingdom	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.012 L single serving plastic cup)	Ambient	United Kingdom
1 liter	Kaurajuoma kahviin ja teehen (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Finland	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.02 L aseptic beverage carton)	Ambient	Finland
1 liter	Oatly Havredryck För Kaffe och Te (0.02 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Sweden	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (0.02 L aseptic beverage carton)	Ambient	Sweden

TABLE 6 REFERENCE FLOWS, LOCAL NAME, STORAGE CONDITION, TYPE, PRODUCTION LOCATION AND COUNTRY OF SALE OF THE OATLY BARISTA EDITION LIGHTER TASTE PRODUCTS AND COW'S MILK

Oatly Barista Edition Lighter Taste…					…Compared with cow's milk			
Reference flow	Local name and packaging type	Storage condition	Produced in	Sold in	Reference flow	Cow's milk and packaging type	Storage condition	Produced and sold in
1 liter	Oatly Haferdrink Barista Edition Lighter Taste (1 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Austria	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (beverage carton)	Chilled	Austria
1 liter	Oatly Haferdrink Barista Edition Lighter Taste (1 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Germany	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (beverage carton)	Ambient	Germany
1 liter	Oatly Barista Edition Lighter Taste (1 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Ireland	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (plastic bottle)	Chilled	Ireland
1 liter	Oatly Haferdrink Barista Edition Lighter Taste (1 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	Switzer-land	1 liter	Mix of UHT-treated whole and (semi-) skimmed milk (beverage carton)	Ambient	Switzer-land
1 liter	Oatly Barista Edition Lighter Taste (1 L aseptic beverage carton)	Ambient	Vlissingen, the Netherlands	United Kingdom	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (plastic bottle)	Chilled	United Kingdom
1 liter	Oatly iKaffe Light (1 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Denmark	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (beverage carton)	Chilled	Denmark
1 liter	Oatly iKaffe Light (1 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Finland	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (beverage carton)	Chilled	Finland
1 liter	Oatly iKaffe Light (1 L aseptic beverage carton)	Ambient	Landskrona, Sweden	Norway	1 liter	Mix of HTST-treated whole and (semi-) skimmed milk (beverage carton)	Chilled	Norway
1 liter	Oatly iKaffe Light	Ambient	Landskrona, Sweden	Sweden	1 liter	Mix of HTST-treated whole	Chilled	Sweden

(1 L aseptic beverage carton)	and (semi-) skimmed milk (beverage carton)

Oatly Barista/Oat Drink for Coffee and Tea

Oatly Barista is an oat-based drink that is fortified with calcium, vitamin D, riboflavin, vitamin B12 (or vitamin E in the case of Barista for coffee and tea), and iodine. Next to that, oil is added as a functional ingredient that provides structure and texture to the drink. "Barista" refers to the oat drink's functionality in coffee, for which Oatly Barista's foamability and stability are leading properties.

Oatly Barista is available in larger packaging sizes, 1.5L for European markets and 2L for markets in the United States. Oatly Barista is known under different market names in the countries in scope (as mentioned in TABLE 4). In the remainder of this report, Oatly Oat Drink Barista will be consistently referred to as "Oatly Barista 1.5L" for all countries except the United States, in which it will be referred to as "Oatly Barista 2L". The Oatly Barista 1.5L is produced in Oatly's hybrid factory[5] located in Vlissingen, the Netherlands, which supplies to markets in Austria, Germany, Ireland, Switzerland, and the United Kingdom. Oatly Barista 2L is produced in Oatly's hybrid factory[6] located in Ogden, United States and distributed to markets within the United States.

The Oatly Oat drink for coffee and tea, is similar in ingredients to the original Oatly Barista with a slight variation in ingredients and vitamins. The drink is designed for single servings and is therefore packaged in 0.02L pyramid-shaped aseptic, multilayer beverage carton containers, differentiating it from the original Oatly Barista carton. The drink is known under different market names in the countries in scope (as mentioned in TABLE 5), but in this report will be referred to as "Oatly Oat Drink for Coffee & Tea". Oatly Oat Drink for Coffee & Tea is solely produced in Oatly's End-to-End factory located in Landskrona, Sweden, and from there distributed to the Austrian, Finnish, German, Irish, Swedish, Swiss and United Kingdom markets.

Oatly Barista Edition Lighter Taste version differs from the original Barista version in its fat content, due to the fact that rapeseed oil is added in lower quantities. The drink is known under different market names in the countries in scope (as mentioned in TABLE 6), but in this report they are consistently referred to as "Oatly Barista Lighter Taste". For markets in Denmark, Finland, Norway, Sweden, Oatly Barista Lighter Taste is produced in Oatly's End-to-End factory located in Landskrona, Sweden and distributed accordingly. For markets in Austria, Germany, Ireland, Switzerland, and the United Kingdom Oatly Barista Lighter Taste is produced in Oatly's hybrid factory located in Vlissingen, the Netherlands.

Cow's milk

Since the Oatly products in this study can replace both (semi-)skimmed and whole cow's milk, the country-average mix of (semi-)skimmed and whole cow's milk has been selected for the comparison. Section 1.3 of the main report describes which data has been used to define this country-average mix of cow's milk.

Due to packaging deviations from the main report, the dominant single serving cow's milk package was selected for each country in scope. For Finland and Sweden, the most common single serve was an aseptic, multilayer beverage carton similar to the Oatly Oat Drink for Coffee & Tea jigger. For the remaining countries, the most common single serve was a plastic polypropylene cup covered with a foil lid with varying sizes of either 0.012L or 0.0075L (described in TABLE 7). For the Oatly Barista 1.5L and 2L, packaging was corrected for weight due to having the same material composition as 1L cow's milk packaging.

[5] Hybrid Factory: A Hybrid factory is an Oatly oatbase factory that pumps the oatbase through a pipe to a contract manufacturer next door. The contract manufacturer-neighbour fills and packs the products for Oatly.
[6] End-to-End (E2E) Factory: The entire production chain happens within Oatly's own factory. From grains to the finished product.

TABLE 7: PACKAGING SPECIFICATIONS FOR SINGLE-SERVE COW'S MILK

	Austria	*Finland*	*Germany*	*Ireland*	*Sweden*	*Switzerland*	*United Kingdom*
Packaging Type	Single serving cup 0.0075L	Jigger 0.02L	Single serving cup 0.0075L	Single serving cup 0.012L	Jigger 0.02L	Single serving cup 0.012L	Single serving cup 0.012L
Packaging Composition							
Aseptic, multilayer beverage carton		x			x		
Plastic cup with aluminium cover	x		x	x		x	x

1.2.3 Critical review

A critical review has been carried in accordance with ISO 14040/14044 and ISO/TS 14071:2014 standards (ISO, 2014), to assess whether this study is consistent with LCA principles and meets all criteria related to methodology, data, interpretation and reporting. Because of the comparative nature of this LCA, the review is conducted by a panel.

A review panel of three independent and qualified reviewers has been compiled, reflecting a balanced combination of qualifications (LCA, dairy, nutrition) and backgrounds (academic, research institute, non-governmental organisation).

- Jasmina Burek (chair): Assistant Professor at University of Massachusetts Lowell (based in the US)
- Joseph Poore: Food Sustainability expert at the University of Oxford (based in the UK), with assistance of Valentina Caldart, Agri-environmental data lead (HESTIA), University of Oxford (based in the UK)
- Hayo van der Werf: LCA expert (based in France)

The full review statement and report can be found in Appendix VI of the main report. This addendum includes a shortened review statement applying specifically to this addendum.

The critical review statement and report can be found in Appendix III.

2. Calculation method

This addendum follows the exact same methodological standards and approaches as listed in chapter 2 of the main report. Differences to the main report include the addition of the land occupation indicator as additional impact category (instead of only in the appendix), updates of the ReCiPe methodology[7] and ecoinvent database and the modelling of the raw milk's production data for Switzerland and Austria[8]. In the ReCiPe impact assessment method, land use is expressed as intensity of the land use relative to annual crops (see M. A. J. Huijbregts, Steinmann, Elshout, & Stam, 2016 for more information), and hence the unit used is m^2a crop-eq. Due to several flaws related to the methodology of this indicator,[9] the land occupation indicator was added, which shows land occupation results without characterization, with the unit m^2a, and thus reflects the surface area needed to produce the products in scope. Table 8 provides an overview of the impact categories used in this study, including a description of the indicators and characterisation factors belonging to these categories.

TABLE 8 OVERVIEW OF KEY IMPACT CATEGORIES (CLASSES OF ENVIRONMENTAL IMPACT TO WHICH LIFE CYCLE INVENTORY DATA ARE RELATED) USED FOR THIS STUDY. IT ALSO INCLUDES RESPECTIVE INDICATORS (QUANTIFIABLE REPRESENTATION OF AN IMPACT CATEGORY) AND CHARACTERISATION FACTORS (FACTORS THAT REPRESENT THE IMPACT INTENSITY OF A SUBSTANCE RELATIVE TO THE COMMON UNIT OF THE IMPACT CATEGORY'S INDICATOR)

Impact category	Indicator	Characterisation Factor	Unit	Description
Impact categories belonging to the ReCiPe impact assessment method				
Climate change	Infrared radiative forcing increase	Global warming potential (GWP)	kg CO_2-eq to air	Increase in global average temperature by the emission of greenhouse gases. The widely used global warming potential (GWP) quantifies the integrated infrared radiative forcing increase of a greenhouse gas (GHG), expressed in kg CO_2-eq. Emissions related to peat oxidation (abbreviated as peat ox in tables and figures) as well as land use change (abbreviated as LUC in tables and figures) are included, but reported separately as required by LCA guidelines such as the PEFCR
Fine particulate matter formation	PM2.5 population intake increase	Particulate matter formation potential (PMFP)	kg PM2.5-eq to air	Fine Particulate Matter with a diameter of less than 2.5 µm (consisting of organic and inorganic substances) affects the respiratory tract and lungs when inhaled. Particulate matter formation potentials (PMFP) are expressed in kg primary PM2.5-equivalents.
Terrestrial acidification	Proton increase in natural soils	Terrestrial acidification potential (TAP)	kg SO_2-eq to air	Inorganic acids released into the atmosphere—such as sulphates, nitrates, and phosphates—which cause changes in the acidity of the soil. Acidification potentials considers the fate of a pollutant in the atmosphere and the soil.
Freshwater eutrophication	Phosphorus increase in freshwater	Freshwater eutrophication potential (FEP)	kg P-eq to freshwater	Accumulation of nutrients in water overstimulate plant growth, which reduces the level of oxygen. FEP is based on the fate of phosphorus, which is the limiting nutrient in freshwater.
Marine eutrophication	Dissolved inorganic nitrogen increase in marine water	Marine eutrophication potential (MEP)	kg N-eq to marine water	Accumulation of nutrients in water overstimulates plant growth, which reduces the level of oxygen. MEP is based on the fate of and exposure to nitrogen, which is the limiting nutrient in marine waters.

[7] In the main report, the ReCiPe 2016 v 1.01 method (Huijbregts et al., 2016) was used. In this report the method used is ReCiPe 2016 v 1.1. Several updates have taken place in between, such as regionalization of phosphorus emissions to water (affecting freshwater eutrophication results) and update of ammonia and nitrogen oxides emissions (affecting terrestrial acidification results).

[8] For the raw cow's milk from Austria and Switzerland, data from literature has been used and modelled using the same methodology as the cow's milk datasets used in the main report. However, in this report a newer version of APS- footprint has been used for the modelling of the cow's milk in Austria and Switzerland (more details can be found in Oatly Barista for Austria and Switzerland addendum (2025)).

[9] The ReCiPe 2016 method for land use considers species richness in different land uses by applying a characterization factor (CF) by land type. Certain land types like forests, grassland and permanent crops get a lower characterisation factor (CF < 1) than annual crops (CF = 1). However, this method is somewhat outdated and only provides one global CF per land use type, without differentiating by location/geography, whereas biodiversity varies substantially by geography. Furthermore, the unit m2a crop-eq can be hard to interpret. To also provide an indication of the actual land surface used for each of the products, this addendum adds a land occupation indicator (m^2 of total land occupied per year), which does not characterise land use (CF = 1 for all land use types). Additional land impact assessment methods were evaluated in the sensitivity analysis in the main report, including the EF 3.0 method which uses the LANCA model to quantify land use.

Land use	Occupation and time-integrated land transformation	Agricultural land occupation potential (LOP)	m^2 × yr annual cropland-eq	The characterisation factor refers to the relative species loss caused by a specific land use type (e.g. annual crops, permanent crops, forestry, urban land, pasture) proportionate to the relative species loss resulting from annual crop production.
Water use	Increase of water consumed	Water consumption potential (WCP)	m^3 water-eq consumed	Quantity of water used, expressed as m3 of water consumed per m^3 of water extracted
Mineral resource scarcity	Increase of ore extracted	Surplus ore potential (SOP)	kg Cu-eq	The primary extraction of a mineral resource will lead to an overall decrease of the concentration of that resource in ores worldwide. The SOP expresses the average extra amount of ore produced in the future caused by the extraction of a mineral resource considering all future production of that mineral resource.
Fossil resource scarcity	Upper heating value	Fossil fuel potential (FFP)	kg oil-eq	Depletion of resources that contain hydrocarbons, such as coal, oil or natural gas. FFP is defined as the ratio between the higher heating value of a fossil resource and the energy content of crude oil.
Additional impact category				
Land occupation	Land area	N/A	m^2 a	Occupation or use of a certain area of land for a certain period of time. The inventory data is not characterised.

Since the products in scope of this addendum are very similar to the products investigated in the main report, this report contains no sensitivity analyses. Only an uncertainty analysis is included.

The main report can be consulted to obtain more insight into results of the sensitivity analyses with regard to applying different impact assessment methods (EF 3.1, 20-year timeframe for global warming), applying a different scope (cradle-to-grave), applying different allocation methods (economic allocation for cow's milk) and applying a different functional unit (including nutritional characteristics).

3. Life Cycle Inventory

This addendum covers Oatly Barista 1.5L produced at the hybrid factory located in Vlissingen. Oatly Barista 2L produced at Oatly's hybrid factory in Ogden, United States, Oatly Oat Drink for Coffee & Tea produced at Oatly's end-to-end factory located in Landskrona, Sweden and Oatly Barista Lighter Taste produced at Oatly's end-to-end factory located in Landskrona, Sweden and the hybrid factory located in Vlissingen, the Netherlands. More details on these factories and the production process can be found in section 3.1.1 of the main report.

The data used for the manufacturing of the Oatly products of this addendum is identical to Oatly Barista as described in section 3.1.2 of the main report, except for the following:

- The proportions of oat base and rapeseed oil for the Barista Lighter Taste and Oat Drink for Coffee & Tea Oat drinks, are slightly different than those for Oatly Barista.
- The recipes of Oat Drink for Coffee & Tea and Lighter Taste have been adapted as they are slightly different than those for Oatly Barista
- The utilities at the factories (energy and water use) has been updated with 2023 data (2024 were not released at the time of this report but are expected to be similar).
- The packaging has been adjusted to the various packaging sizes in scope (different composition of material and suppliers)
- The sourcing countries for oats have been updated for the Dutch factory (they have remained the same for the Swedish factory)
- Distribution distances have been updated with 2024 data (the products launched in 2024).

For the cow's milk, the same data as in previous Oatly reports[10] has been used. Deviations occurred during the packaging stage: for Austria, Germany, Ireland, Switzerland, United Kingdom, Finland and

[10] https://blonksustainability.nl/news/LCAs-Oatly
Below reports:

Sweden for the comparison with Oat Drink for Coffee & Tea; and Austria, Germany, Ireland, Switzerland, United Kingdom and United States for the comparison with Barista 1.5L and 2L. For all other life cycle stages, the exact same data has been used as in previous critically reviewed LCA studies performed for Oatly (Blonk Consultants, 2022; 2024;2025) depending on the country. An overview of the data that was used to generate these datasets can be found in the respective reports. Section 3.2 of the main report contains further information on how the subsequent life cycle stages were modelled.

4. Life Cycle Impact Assessment (LCIA)

This chapter provides an overview of the key results for all products in scope, whereas the next chapter (Life Cycle Interpretation) provides a more detailed account of the stages and processes contributing most to the impact.

TABLE 9 lists the results for the key impact categories for the Oatly Barista 1.5L and 2L products, TABLE 16 provides the same for the Oatly Oat Drink for Coffee & Tea , TABLE 17 provides those results for Oatly Barista Lighter Taste. The results for all impact categories are included in Appendix II. Table 18, Table 19 and Table 20 provide an overview of the relative differences of the Oatly products and cow's milk.

Below are the high level results for the Barista product variants analysed i.e. Oatly Barista 1.5L and 2L, Oatly Oat Drink 0.02 L Coffee & Tea, and Oatly Barista 1 L Lighter Taste in different key markets (22 variants in total):

Oatly products perform **mostly better:**

- **Climate change:** for 22 out of 22 product variants
- **Fine particulate matter formation:** for 22 out of 22 product variants
- **Terrestrial acidification**: for 22 out of 22 product variants
- **Marine eutrophication:** for 22 out of 22 product variants
- **Water consumption**: for 22 out of 22 product variants
- **Freshwater eutrophication:** for 20 out of 22 product variants (results are comparable[11] for the UK 1.5 L product and the US 2L product)
- **Land occupation:** for 21 out of 22 product variants (results are comparable for the US 2L)
- **Land use**: for 19 out of 22 product variants (results are comparable for the US 2 L, comparable for Oatly Oat drink for Coffee & Tea in Ireland, and comparable in Denmark for Lighter taste)

Oatly products have **comparable or higher impact in some cases**:

- **Mineral Resources scarcity**: 8 out of 22 product variants[12] have comparable impact and 2 have higher impact[13] than cow's milk for mineral resource scarcity (12 variants have lower impact). This trend is in most cases attributed to the use of minerals (e.g. aluminium). When

Blonk Consultants, 2022. LCA Oatly Barista and comparison to cow's milk. (US, UK, SE, FI, DE, NL)
Blonk Consultants, 2024. LCA of Oatly Barista for Poland, Ireland and France, and comparison with cow's milk.
Blonk Consultants, 2024. LCA of Oatly Barista for Denmark, Norway, Belgium, Italy and Spain, and comparison with cow's milk.
Blonk Consultants, 2025. LCA of Oatly Barista for Austria and Switzerland, and comparison with cow's milk.

[11] This category has been affected by a methodological change between the main report and this new report (new spatialised characterised factors for freshwater eutrophication).
[12] 1.5 L sold in Germany and Ireland, 0.02 L sold in Sweden, 1 L sold in Austria, Germany, Ireland, Sweden, UK.
[13] 1.5 L sold in UK, 1 L sold in Denmark.

both Oatly and dairy products use aluminium (usually related to ambient products), the results are comparable, while when the dairy products use chilled packaging that does not contain aluminium, Oatly performs worse. Chilled packaging without aluminium could be a trade-off to higher climate impact due to chilled transport, when distances are long. Mineral resource scarcity can also be higher when renewable electricity is used (metals in the production of wind turbines and solar panels), which is also a trade-off for lower impact for climate change.

- **Fossil Resources Scarcity**: 7 out of 22 product variants[14] have comparable impact and 1 has higher impact[15] (14 have lower impact). This is mainly attributed to natural gas used for heating in the Dutch and US factories, and longer road distribution distances with fossil-based fuels. Renewable heat and renewable transport fuels are not accessible in all geographies yet and cow's milk productions facilities are more local as opposed to few Oatly factories distributing across multiple countries or states.

A further explanation of what causes the differences that can be observed between products can be found in the next chapter (Life Cycle Interpretation).

TABLE 9 (9-A to 9-F): RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5L AND 2L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING. PRODUCTS FOR EUROPEAN MARKETS ARE PRODUCED IN THE HYBRID FACTORY LOCATED IN VLISSINGEN, THE NETHERLANDS AND IN OATLY'S HYBRID FACTORY, LOCATED IN OGDEN, UNITED STATES AND DISTRIBUTED TO MARKETS WITHIN THE UNITED STATES.

TABLE 10A: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN AUSTRIA

Retail Austria				
Impact category	Unit	**Oatly Barista 1.5L**	**Cow's milk AT**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.591	1.339	*-56%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.489	1.257	*-61%*
Climate change – only LUC	kg CO_2 eq	0.012	0.075	*-84%*
Climate change – only peat ox	kg CO_2 eq	0.091	0.007	*1276%*
Fine particulate matter formation	kg PM2.5 eq	0.0005	0.0048	*-90%*
Terrestrial acidification	kg SO_2 eq	0.003	0.041	*-92%*
Freshwater eutrophication	kg P eq	0.0002	0.0005	*-66%*
Marine eutrophication	kg N eq	0.001	0.002	*-73%*
Land use	m^2a crop eq	0.642	1.084	*-41%*
Land occupation	m^2a	0.720	1.729	*-58%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*-19%*
Fossil resource scarcity	kg oil eq	0.128	0.125	*2%*
Water consumption	m^3	0.004	0.013	*-72%*

[14] 1.5 L sold in Austria, Germany, Switzerland and UK, 1 L sold in Austria, Germany, Switzerland.
[15] 2 L sold in the US

TABLE 11B: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN GERMANY

Retail Germany				
Impact category	Unit	**Oatly Barista 1.5L**	**Cow's milk DE**	*Difference compared to cow's milk*
Climate change – incl LUC and peat ox	kg CO_2 eq	0.540	1.628	*-67%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.437	1.223	*-64%*
Climate change – only LUC	kg CO_2 eq	0.012	0.096	*-87%*
Climate change – only peat ox	kg CO_2 eq	0.091	0.309	*-71%*
Fine particulate matter formation	kg PM2.5 eq	0.0004	0.0039	*-89%*
Terrestrial acidification	kg SO_2 eq	0.003	0.028	*-89%*
Freshwater eutrophication	kg P eq	0.0002	0.0003	*-45%*
Marine eutrophication	kg N eq	0.001	0.002	*-72%*
Land use	m^2a crop eq	0.633	0.888	*-29%*
Land occupation	m^2a	0.690	1.323	*-48%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*-3%*
Fossil resource scarcity	kg oil eq	0.122	0.118	*4%*
Water consumption	m^3	0.004	0.009	*-61%*

TABLE 12C: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN IRELAND

Retail Ireland				
Impact category	Unit	**Oatly Barista 1.5L**	**Cow's milk IE**	*Difference compared to cow's milk*
Climate change – incl LUC and peat ox	kg CO_2 eq	0.530	1.316	*-60%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.427	1.099	*-61%*
Climate change – only LUC	kg CO_2 eq	0.012	0.048	*-74%*
Climate change – only peat ox	kg CO_2 eq	0.091	0.170	*-47%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.003	*-83%*
Terrestrial acidification	kg SO_2 eq	0.004	0.008	*-55%*
Freshwater eutrophication	kg P eq	0.0003	0.0004	*-34%*
Marine eutrophication	kg N eq	0.001	0.002	*-72%*
Land use	m^2a crop eq	0.641	0.743	*-14%*
Land occupation	m^2a	0.717	1.074	*-33%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*0%*
Fossil resource scarcity	kg oil eq	0.123	0.142	*-14%*
Water consumption	m^3	0.003	0.009	*-62%*

TABLE 13D: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN SWITZERLAND

Retail Switzerland				
Impact category	Unit	**Oatly Barista 1.5L**	**Cow's milk CH**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.584	1.426	*-59%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.481	1.321	*-64%*
Climate change – only LUC	kg CO_2 eq	0.012	0.095	*-87%*
Climate change – only peat ox	kg CO_2 eq	0.091	0.009	*855%*
Fine particulate matter formation	kg PM2.5 eq	0.0005	0.0076	*-94%*
Terrestrial acidification	kg SO_2 eq	0.003	0.036	*-91%*
Freshwater eutrophication	kg P eq	0.0002	0.0003	*-50%*
Marine eutrophication	kg N eq	0.001	0.002	*-72%*
Land use	m^2a crop eq	0.641	1.027	*-38%*
Land occupation	m^2a	0.717	1.524	*-53%*
Mineral resource scarcity	kg Cu eq	0.001	0.002	*-50%*
Fossil resource scarcity	kg oil eq	0.126	0.122	*3%*
Water consumption	m^3	0.004	0.030	*-88%*

TABLE 14E: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 1.5 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN THE UNITED KINGDOM

Retail United Kingdom				
Impact category	Unit	**Oatly Barista 1.5L**	**Cow's milk UK**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.538	1.378	*-61%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.435	1.228	*-65%*
Climate change – only LUC	kg CO_2 eq	0.012	0.093	*-87%*
Climate change – only peat ox	kg CO_2 eq	0.091	0.057	*59%*
Fine particulate matter formation	kg PM2.5 eq	0.0004	0.0036	*-88%*
Terrestrial acidification	kg SO_2 eq	0.003	0.018	*-82%*
Freshwater eutrophication	kg P eq	0.0003	0.0003	*-5%*
Marine eutrophication	kg N eq	0.001	0.002	*-63%*
Land use	m^2a crop eq	0.642	0.858	*-25%*
Land occupation	m^2a	0.719	1.181	*-33%*
Mineral resource scarcity	kg Cu eq	0.0011	0.0010	*11%*
Fossil resource scarcity	kg oil eq	0.124	0.137	*-10%*
Water consumption	m^3	0.004	0.009	*-61%*

TABLE 15F: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY BARISTA 2 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN THE UNITED STATES

Out of Home United States				
Impact category	Unit	**Oatly Barista 2L**	**Cow's milk US**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.815	1.503	*-46%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.761	1.470	*-48%*
Climate change – only LUC	kg CO_2 eq	0.053	0.018	*201%*
Climate change – only peat ox	kg CO_2 eq	0.001	0.015	*-94%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.002	*-62%*
Terrestrial acidification	kg SO_2 eq	0.007	0.019	*-61%*
Freshwater eutrophication	kg P eq	0.0011	0.0010	*10%*
Marine eutrophication	kg N eq	0.0006	0.0011	*-41%*
Land use	m^2a crop eq	0.828	0.797	*4%*
Land occupation	m^2a	0.905	0.994	*-9%*
Mineral resource scarcity	kg Cu eq	0.0016	0.0019	*-15%*
Fossil resource scarcity	kg oil eq	0.234	0.168	*39%*
Water consumption	m^3	0.005	0.028	*-81%*

TABLE 16 (16-A to 16-G): RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING. ALL PRODUCTS ARE PRODUCED IN AND IN OATLY'S END-TO-END FACTORY, LOCATED IN LANDSKRONA, SWEDEN.

TABLE 16-A: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN AUSTRIA

Point of sale Austria				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk AT**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.759	2.428	*-69%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.644	2.345	*-73%*
Climate change – only LUC	kg CO_2 eq	0.033	0.077	*-57%*
Climate change – only peat ox	kg CO_2 eq	0.081	0.007	*1131%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.006	*-88%*
Terrestrial acidification	kg SO_2 eq	0.004	0.044	*-90%*
Freshwater eutrophication	kg P eq	0.000	0.001	*-68%*
Marine eutrophication	kg N eq	0.001	0.002	*-72%*
Land use	m^2a crop eq	0.712	1.061	*-33%*
Land occupation	m^2a	0.889	1.641	*-46%*
Mineral resource scarcity	kg Cu eq	0.002	0.009	*-75%*
Fossil resource scarcity	kg oil eq	0.125	0.464	*-73%*
Water consumption	m^3	0.006	0.019	*-66%*

TABLE 16-B: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN FINLAND

Point of sale Finland				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk FI**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.680	1.951	*-65%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.566	1.370	*-59%*
Climate change – only LUC	kg CO_2 eq	0.033	0.069	*-52%*
Climate change – only peat ox	kg CO_2 eq	0.081	0.513	*-84%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.002	*-59%*
Terrestrial acidification	kg SO_2 eq	0.004	0.011	*-63%*
Freshwater eutrophication	kg P eq	0.0004	0.0007	*-33%*
Marine eutrophication	kg N eq	0.001	0.002	*-64%*
Land use	m^2a crop eq	0.713	1.319	*-46%*
Land occupation	m^2a	0.892	1.691	*-47%*
Mineral resource scarcity	kg Cu eq	0.002	0.003	*-15%*
Fossil resource scarcity	kg oil eq	0.116	0.158	*-26%*
Water consumption	m^3	0.006	0.011	*-44%*

TABLE 16-C: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN GERMANY

Point of sale Germany				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk DE**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.638	2.594	*-75%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.524	2.188	*-76%*
Climate change – only LUC	kg CO_2 eq	0.033	0.097	*-66%*
Climate change – only peat ox	kg CO_2 eq	0.081	0.309	*-74%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.005	*-88%*
Terrestrial acidification	kg SO_2 eq	0.004	0.032	*-88%*
Freshwater eutrophication	kg P eq	0.0003	0.0004	*-33%*
Marine eutrophication	kg N eq	0.001	0.002	*-71%*
Land use	m^2a crop eq	0.694	0.872	*-20%*
Land occupation	m^2a	0.829	1.258	*-34%*
Mineral resource scarcity	kg Cu eq	0.002	0.009	*-74%*
Fossil resource scarcity	kg oil eq	0.118	0.412	*-71%*
Water consumption	m^3	0.006	0.016	*-62%*

TABLE 16-D: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN IRELAND

Point of sale Ireland				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk IE**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.647	2.027	-68%
Climate change – excl LUC and peat ox	kg CO_2 eq	0.533	1.809	-71%
Climate change – only LUC	kg CO_2 eq	0.033	0.049	-31%
Climate change – only peat ox	kg CO_2 eq	0.081	0.170	-52%
Fine particulate matter formation	kg PM2.5 eq	0.001	0.004	-78%
Terrestrial acidification	kg SO_2 eq	0.005	0.010	-55%
Freshwater eutrophication	kg P eq	0.001	0.001	-14%
Marine eutrophication	kg N eq	0.001	0.002	-68%
Land use	m^2a crop eq	0.710	0.743	-4%
Land occupation	m^2a	0.884	1.065	-17%
Mineral resource scarcity	kg Cu eq	0.002	0.006	-63%
Fossil resource scarcity	kg oil eq	0.128	0.428	-70%
Water consumption	m^3	0.006	0.016	-62%

TABLE 16-E: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN SWEDEN

Point of sale Sweden				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk SE**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.694	1.424	-51%
Climate change – excl LUC and peat ox	kg CO_2 eq	0.579	1.211	-52%
Climate change – only LUC	kg CO_2 eq	0.033	0.088	-62%
Climate change – only peat ox	kg CO_2 eq	0.081	0.125	-35%
Fine particulate matter formation	kg PM2.5 eq	0.0007	0.0014	-53%
Terrestrial acidification	kg SO_2 eq	0.004	0.014	-72%
Freshwater eutrophication	kg P eq	0.0002	0.0004	-31%
Marine eutrophication	kg N eq	0.0006	0.0015	-60%
Land use	m^2a crop eq	0.710	1.163	-39%
Land occupation	m^2a	0.883	1.450	-39%
Mineral resource scarcity	kg Cu eq	0.002	0.003	-8%
Fossil resource scarcity	kg oil eq	0.101	0.137	-26%
Water consumption	m^3	0.006	0.011	-43%

TABLE 16-F: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN SWITZERLAND

Point of sale Switzerland				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk CH**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.772	2.382	*-68%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.657	2.277	*-71%*
Climate change – only LUC	kg CO_2 eq	0.033	0.096	*-65%*
Climate change – only peat ox	kg CO_2 eq	0.081	0.009	*755%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.009	*-91%*
Terrestrial acidification	kg SO_2 eq	0.004	0.038	*-89%*
Freshwater eutrophication	kg P eq	0.0003	0.0006	*-55%*
Marine eutrophication	kg N eq	0.001	0.002	*-71%*
Land use	m^2a crop eq	0.710	0.991	*-28%*
Land occupation	m^2a	0.884	1.420	*-38%*
Mineral resource scarcity	kg Cu eq	0.002	0.007	*-67%*
Fossil resource scarcity	kg oil eq	0.129	0.433	*-70%*
Water consumption	m^3	0.006	0.031	*-79%*

TABLE 16-G: RESULTS FOR KEY IMPACT CATEGORIES FOR OATLY OAT DRINK FOR COFFEE & TEA 0.02 L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN THE UNITED KINGDOM

Point of sale United Kingdom				
Impact category	Unit	**Oatly Oat Drink for Coffee & Tea**	**Cow's milk UK**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.673	2.063	*-67%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.558	1.912	*-71%*
Climate change – only LUC	kg CO_2 eq	0.033	0.094	*-65%*
Climate change – only peat ox	kg CO_2 eq	0.081	0.057	*42%*
Fine particulate matter formation	kg PM2.5 eq	0.001	0.005	*-82%*
Terrestrial acidification	kg SO_2 eq	0.004	0.020	*-78%*
Freshwater eutrophication	kg P eq	0.0005	0.0010	*-48%*
Marine eutrophication	kg N eq	0.001	0.002	*-59%*
Land use	m^2a crop eq	0.711	0.852	*-17%*
Land occupation	m^2a	0.885	1.157	*-24%*
Mineral resource scarcity	kg Cu eq	0.002	0.006	*-62%*
Fossil resource scarcity	kg oil eq	0.131	0.416	*-68%*
Water consumption	m^3	0.006	0.015	*-59%*

TABLE 17 (17-A to 17-I): RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING. PRODUCTS ARE PRODUCED IN OATLY'S END-TO-END FACTORY IN LANDSKRONA, SWEDEN FOR MARKETS IN DENMARK, FINLAND, NORWAY AND SWEDEN; AND IN THE HYBRID FACTORY LOCATED IN VLISSINGEN, THE NETHERLANDS FOR MARKETS IN AUSTRIA, GERMANY, IRELAND, SWITZERLAND AND THE UNITED KINGDOM.

TABLE 17-A.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN AUSTRIA

Retail Austria				
Impact category	Unit	**Cow's milk average AT**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.342	0.555	-59%
Climate change – excl LUC and peat ox	kg CO_2 eq	1.259	0.455	-64%
Climate change – only LUC	kg CO_2 eq	0.077	0.018	-76%
Climate change – only peat ox	kg CO_2 eq	0.007	0.082	1121%
Fine particulate matter formation	kg PM2.5 eq	0.0049	0.0005	-91%
Terrestrial acidification	kg SO_2 eq	0.041	0.003	-93%
Freshwater eutrophication	kg P eq	0.0005	0.0002	-70%
Marine eutrophication	kg N eq	0.002	0.001	-77%
Land use	m^2a crop eq	1.106	0.587	-47%
Land occupation	m^2a	1.768	0.665	-62%
Mineral resource scarcity	kg Cu eq	0.001	0.001	1%
Fossil resource scarcity	kg oil eq	0.119	0.125	5%
Water consumption	m^3	0.013	0.004	-72%

TABLE 17-B.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN DENMARK

Retail Denmark				
Impact category	Unit	**Cow's milk average DK**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	0.972	0.375	-61%
Climate change – excl LUC and peat ox	kg CO_2 eq	0.799	0.280	-65%
Climate change – only LUC	kg CO_2 eq	0.095	0.022	-77%
Climate change – only peat ox	kg CO_2 eq	0.078	0.072	-7%
Fine particulate matter formation	kg PM2.5 eq	0.0008	0.0004	-55%
Terrestrial acidification	kg SO_2 eq	0.017	0.003	-84%
Freshwater eutrophication	kg P eq	0.0002	0.0001	-27%
Marine eutrophication	kg N eq	0.0010	0.0005	-48%
Land use	m^2a crop eq	0.655	0.595	-9%
Land occupation	m^2a	0.819	0.701	-14%
Mineral resource scarcity	kg Cu eq	0.0006	0.0011	64%
Fossil resource scarcity	kg oil eq	0.064	0.046	-29%
Water consumption	m^3	0.008	0.004	-49%

TABLE 17-C.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN FINLAND

Retail Finland				
Impact category	Unit	**Cow's milk average FI**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.681	0.377	*-78%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.133	0.283	*-75%*
Climate change – only LUC	kg CO_2 eq	0.035	0.022	*-37%*
Climate change – only peat ox	kg CO_2 eq	0.513	0.072	*-86%*
Fine particulate matter formation	kg PM2.5 eq	0.0014	0.0004	*-71%*
Terrestrial acidification	kg SO_2 eq	0.010	0.003	*-70%*
Freshwater eutrophication	kg P eq	0.0004	0.0002	*-55%*
Marine eutrophication	kg N eq	0.002	0.001	*-71%*
Land use	m^2a crop eq	1.230	0.585	*-52%*
Land occupation	m^2a	1.507	0.668	*-56%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*-12%*
Fossil resource scarcity	kg oil eq	0.115	0.059	*-49%*
Water consumption	m^3	0.009	0.004	*-54%*

TABLE 17-D.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN GERMANY

Retail Germany				
Impact category	Unit	**Cow's milk average DE**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.629	0.511	*-69%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.224	0.411	*-66%*
Climate change – only LUC	kg CO_2 eq	0.096	0.018	*-81%*
Climate change – only peat ox	kg CO_2 eq	0.309	0.082	*-73%*
Fine particulate matter formation	kg PM2.5 eq	0.0039	0.0004	*-89%*
Terrestrial acidification	kg SO_2 eq	0.028	0.003	*-90%*
Freshwater eutrophication	kg P eq	0.0003	0.0002	*-48%*
Marine eutrophication	kg N eq	0.002	0.001	*-76%*
Land use	m^2a crop eq	0.888	0.577	*-35%*
Land occupation	m^2a	1.323	0.634	*-52%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*-4%*
Fossil resource scarcity	kg oil eq	0.118	0.118	*0%*
Water consumption	m^3	0.009	0.004	*-60%*

TABLE 17-E.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN NORWAY

Retail Norway				
Impact category	Unit	**Cow's milk average NO**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.720	0.369	*-79%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.186	0.274	*-77%*
Climate change – only LUC	kg CO_2 eq	0.072	0.022	*-69%*
Climate change – only peat ox	kg CO_2 eq	0.462	0.072	*-84%*
Fine particulate matter formation	kg PM2.5 eq	0.0014	0.0004	*-73%*
Terrestrial acidification	kg SO_2 eq	0.026	0.003	*-89%*
Freshwater eutrophication	kg P eq	0.0004	0.0001	*-62%*
Marine eutrophication	kg N eq	0.0027	0.0005	*-82%*
Land use	m^2a crop eq	2.299	0.579	*-75%*
Land occupation	m^2a	2.341	0.646	*-72%*
Mineral resource scarcity	kg Cu eq	0.0013	0.0011	*-20%*
Fossil resource scarcity	kg oil eq	0.103	0.058	*-44%*
Water consumption	m^3	0.017	0.005	*-72%*

TABLE 17-F.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN IRELAND

Retail Ireland				
Impact category	Unit	**Cow's milk average IE**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.338	0.509	*-62%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.121	0.409	*-64%*
Climate change – only LUC	kg CO_2 eq	0.048	0.018	*-62%*
Climate change – only peat ox	kg CO_2 eq	0.170	0.082	*-52%*
Fine particulate matter formation	kg PM2.5 eq	0.003	0.001	*-83%*
Terrestrial acidification	kg SO_2 eq	0.008	0.003	*-60%*
Freshwater eutrophication	kg P eq	0.0004	0.0002	*-49%*
Marine eutrophication	kg N eq	0.002	0.001	*-76%*
Land use	m^2a crop eq	0.743	0.585	*-21%*
Land occupation	m^2a	1.073	0.663	*-38%*
Mineral resource scarcity	kg Cu eq	0.0011	0.0011	*1%*
Fossil resource scarcity	kg oil eq	0.147	0.121	*-18%*
Water consumption	m^3	0.009	0.004	*-61%*

TABLE 17-G.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN SWEDEN

Retail Sweden				
Impact category	Unit	**Cow's milk average SE**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.088	0.360	*-67%*
Climate change – excl LUC and peat ox	kg CO_2 eq	0.909	0.265	*-71%*
Climate change – only LUC	kg CO_2 eq	0.054	0.022	*-59%*
Climate change – only peat ox	kg CO_2 eq	0.125	0.072	*-42%*
Fine particulate matter formation	kg PM2.5 eq	0.0011	0.0004	*-66%*
Terrestrial acidification	kg SO_2 eq	0.013	0.003	*-78%*
Freshwater eutrophication	kg P eq	0.0003	0.0001	*-47%*
Marine eutrophication	kg N eq	0.0015	0.0005	*-66%*
Land use	m^2a crop eq	1.075	0.584	*-46%*
Land occupation	m^2a	1.270	0.663	*-48%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*7%*
Fossil resource scarcity	kg oil eq	0.094	0.049	*-48%*
Water consumption	m^3	0.008	0.004	*-53%*

TABLE 17-H.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN SWITZERLAND

Retail Switzerland				
Impact category	Unit	**Cow's milk average CH**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.427	0.550	*-61%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.322	0.450	*-66%*
Climate change – only LUC	kg CO_2 eq	0.095	0.018	*-81%*
Climate change – only peat ox	kg CO_2 eq	0.009	0.082	*764%*
Fine particulate matter formation	kg PM2.5 eq	0.0076	0.0004	*-94%*
Terrestrial acidification	kg SO_2 eq	0.036	0.003	*-92%*
Freshwater eutrophication	kg P eq	0.0003	0.0001	*-53%*
Marine eutrophication	kg N eq	0.002	0.001	*-75%*
Land use	m^2a crop eq	1.026	0.586	*-43%*
Land occupation	m^2a	1.524	0.662	*-57%*
Mineral resource scarcity	kg Cu eq	0.002	0.001	*-50%*
Fossil resource scarcity	kg oil eq	0.122	0.125	*2%*
Water consumption	m^3	0.030	0.004	*-87%*

TABLE 17-I.: RESULTS FOR KEY IMPACT CATEGORIES FOR BARISTA 1 L LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING IN THE UNITED KINGDOM

Retail United Kingdom				
Impact category	Unit	**Cow's milk average UK**	**Oatly Barista Lighter Taste**	***Difference compared to cow's milk***
Climate change – incl LUC and peat ox	kg CO_2 eq	1.382	0.508	*-63%*
Climate change – excl LUC and peat ox	kg CO_2 eq	1.232	0.408	*-67%*
Climate change – only LUC	kg CO_2 eq	0.093	0.018	*-81%*
Climate change – only peat ox	kg CO_2 eq	0.057	0.082	*44%*
Fine particulate matter formation	kg PM2.5 eq	0.0036	0.0004	*-88%*
Terrestrial acidification	kg SO_2 eq	0.018	0.003	*-84%*
Freshwater eutrophication	kg P eq	0.0003	0.0002	*-24%*
Marine eutrophication	kg N eq	0.002	0.001	*-69%*
Land use	m^2a crop eq	0.858	0.586	*-32%*
Land occupation	m^2a	1.181	0.665	*-44%*
Mineral resource scarcity	kg Cu eq	0.001	0.001	*10%*
Fossil resource scarcity	kg oil eq	0.138	0.119	*-13%*
Water consumption	m^3	0.009	0.004	*-59%*

Table 18: RELATIVE DIFFERENCES OF OATLY BARISTA 1.5L AND 2L COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -56% INDICATES THAT OATLY BARISTA 1.5L AND 2L HAVE A 56% LOWER IMPACT COMPARED TO COW'S MILK. THE DIFFERENCES HAVE BEEN COLOR -CODED AS FOLLOWS: GREEN – MORE THAN 10% DIFFERENCE FAVORING OATLY BARISTA, YELLOW – THE DIFFERENCE IS 10% OR LOWER INDICATING SIMILAR PERFORMANCE FOR THE COMPARED PRODUCTS, RED – MORE THAN 10% DIFFERENCE FAVORING COW'S MILK. ABBREVIATIONS USED: NL = NETHERLANDS, US = UNITED STATES.

Country of sale / Impact category / Product	Climate change	Fine particulate matter	Terrestrial acidifi-cation	Freshwater eutrophi-cation	Marine eutrophi-cation	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consum-ption
	kg CO2 eq	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Barista 1.5L – NL factory	-56%	-90%	-92%	-66%	-73%	-41%	-58%	-19%	2%	-72%
Germany	Oatly Barista 1.5L – NL factory	-67%	-89%	-89%	-45%	-72%	-29%	-48%	-3%	4%	-61%
Ireland	Oatly Barista 1.5L – NL factory	-60%	-83%	-55%	-34%	-72%	-14%	-33%	0%	-14%	-62%
Switzerland	Oatly Barista 1.5L – NL factory	-59%	-94%	-91%	-50%	-72%	-38%	-53%	-50%	3%	-88%
United Kingdom	Oatly Barista 1.5L – NL factory	-61%	-88%	-82%	-5%	-63%	-25%	-39%	11%	-10%	-61%
United States	Oatly Barista 2L - US Ogden factory	-46%	-62%	-61%	10%	-41%	4%	-9%	-15%	39%	-81%

Table 19: RELATIVE DIFFERENCES OF OATLY BARISTA 0.02 L COFFEE & TEA COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -69% INDICATES THAT OATLY OAT DRINK FOR COFFEE & TEA HAS A 69% LOWER IMPACT COMPARED TO COW'S MILK. THE COLOUR SCALE USES GREEN TONES TO SHOW WHERE HAS A LOWER IMPACT THAN COW'S MILK, AND RED TONES WHERE COW'S MILK HAS A LOWER IMPACT THAN OATLY OAT DRINK FOR COFFEE & TEA. ABBREVIATION USED: SE = SWEDEN

Country of sale / Impact category / Product	Climate change	Fine particulate matter	Terrestrial acidifi-cation	Freshwater eutrophi-cation	Marine eutrophi-cation	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consum-ption
	kg CO2 eq	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Oat Drink for coffee and tea - SE factory	-69%	-88%	-90%	-68%	-72%	-33%	-46%	-75%	-73%	-66%
Finland	Oatly Oat Drink for coffee and tea - SE factory	-65%	-59%	-63%	-33%	-64%	-46%	-47%	-15%	-26%	-44%
Germany	Oatly Oat Drink for coffee and tea - SE factory	-75%	-88%	-88%	-33%	-71%	-20%	-34%	-74%	-71%	-62%
Ireland	Oatly Oat Drink for coffee and tea - SE factory	-68%	-78%	-55%	-14%	-68%	-4%	-17%	-63%	-70%	-62%
Sweden	Oatly Oat Drink for coffee and tea - SE factory	-51%	-53%	-72%	-31%	-60%	-39%	-39%	-8%	-26%	-43%
Switzer-land	Oatly Oat Drink for coffee and tea - SE factory	-68%	-91%	-89%	-55%	-71%	-28%	-38%	-67%	-70%	-79%
United Kingdom	Oatly Oat Drink for coffee and tea - SE factory	-67%	-82%	-78%	-48%	-59%	-17%	-24%	-62%	-68%	-59%

Table 20: RELATIVE DIFFERENCES OF OATLY BARISTA 1 L LIGHTER TASTE COMPARED TO COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. FOR EXAMPLE, -58% INDICATES THAT OATLY BARISTA LIGHTER TASTE HAS A 58% LOWER IMPACT COMPARED TO COW'S MILK. THE COLOUR SCALE USES GREEN TONES TO SHOW WHERE OATLY OAT DRINK HAS A LOWER IMPACT THAN COW'S MILK, AND RED TONES WHERE COW'S MILK HAS A LOWER IMPACT THAN OATLY OAT DRINK. ABBREVIATIONS USED: NL = NETHERLANDS, SE = SWEDEN

Country of sale / Impact category / Product	Climate change	Fine particulate matter	Terrestrial acidifi-cation	Freshwater eutrophi-cation	Marine eutrophi-cation	Land use	Land occupation	Mineral resource scarcity	Fossil resource scarcity	Water consum-ption
	kg CO2 eq	*kg PM2.5 eq*	*kg SO2 eq*	*kg P eq*	*kg N eq*	*m2a crop eq*	*m2a*	*kg Cu eq*	*kg oil eq*	*m3*
Austria	Oatly Barista Lighter Taste 1L - NL factory	-59%	-91%	-93%	-70%	-77%	-47%	-62%	-1%	-5%	-72%
Denmark	Oatly Barista Lighter Taste 1L - SE factory	-61%	-55%	-84%	-27%	-48%	-9%	-14%	64%	-29%	-49%
Finland	Oatly Barista Lighter Taste 1L - SE factory	-78%	-71%	-70%	-55%	-71%	-52%	-56%	-12%	-49%	-54%
Germany	Oatly Barista Lighter Taste 1L - NL factory	-69%	-89%	-90%	-48%	-76%	-35%	-52%	-4%	0%	-60%
Norway	Oatly Barista Lighter Taste 1L - SE factory	-79%	-73%	-89%	-62%	-82%	-75%	-72%	-20%	-44%	-72%
Ireland	Oatly Barista Lighter Taste 1L - NL factory	-62%	-83%	-60%	-49%	-76%	-21%	-38%	1%	-18%	-61%
Sweden	Oatly Barista Lighter Taste 1L - SE factory	-67%	-66%	-78%	-47%	-66%	-46%	-48%	7%	-48%	-53%
Switzer-land	Oatly Barista Lighter Taste 1L - NL factory	-61%	-94%	-92%	-53%	-75%	-43%	-57%	-50%	2%	-87%
United Kingdom	Oatly Barista Lighter Taste 1L - NL factory	-63%	-88%	-84%	-24%	-69%	-32%	-44%	10%	-13%	-59%

5. Life Cycle Interpretation

A contribution analysis shows the contribution of individual life cycle stages to the overall impact results. Contribution analyses are provided for all products in scope and for all key impact categories. Section 5.1.1 of the main report explains in detail which processes contribute to the different impact categories and can be consulted to better understand what is behind the results and the differences that can be observed between the Oatly products and cow's milk. Notable differences from the main report are included below.

Most of the results are consistent with those reported in the main report on Oatly Barista (Pas & Westbroek, 2022) with the exception of the Oatly Oat Drink for Coffee & Tea results. This is mainly due to the packaging contribution coming from the resources needed per litre product in producing the single use packaging both for the Oatly product and the cow's milk and in some cases different packaging material used in the single use sizes than in the standard sizes used in the main report.
The freshwater eutrophication indicator results (especially for the Oatly Barista 2L and the 1.5L in the UK) differ from the main report due to updates of the ecoinvent background datasets and the ReCiPe methodology[16].

5.1 Contribution analysis Oatly Barista 1.5L and 2L

5.1.1 Comparison of Oatly Barista 1.5L and 2L and cow's milk

The contribution analysis for the climate change impact category is shown in FIGURE 4. FIGURE 5 shows the contribution analysis for the other impact categories.

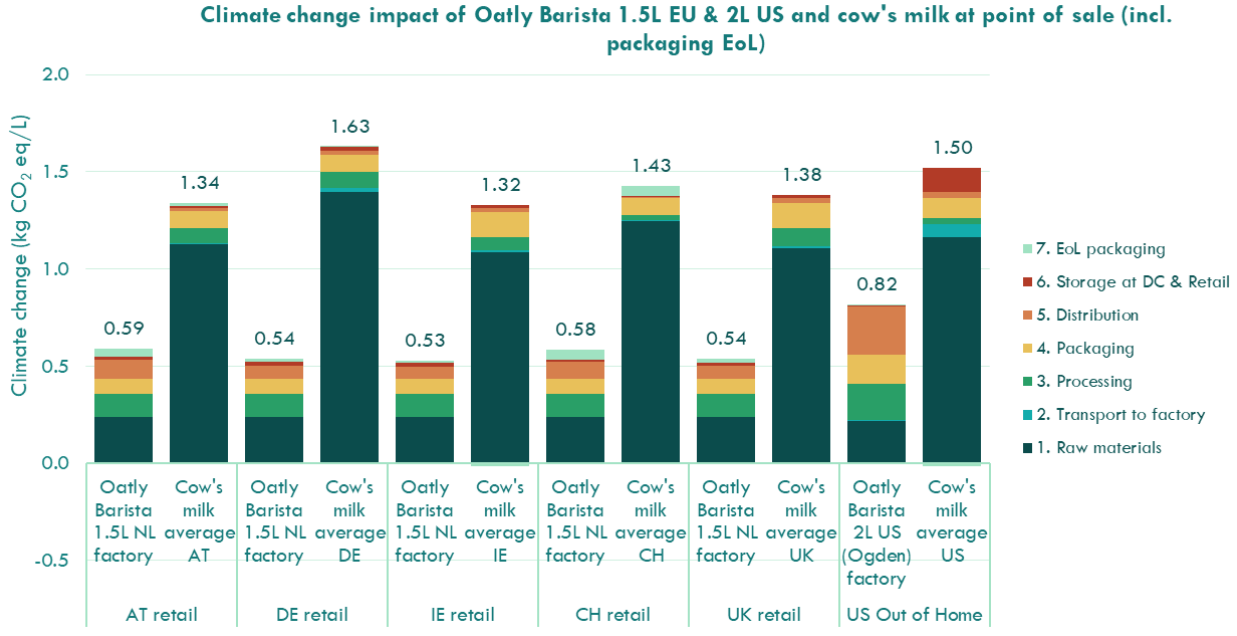
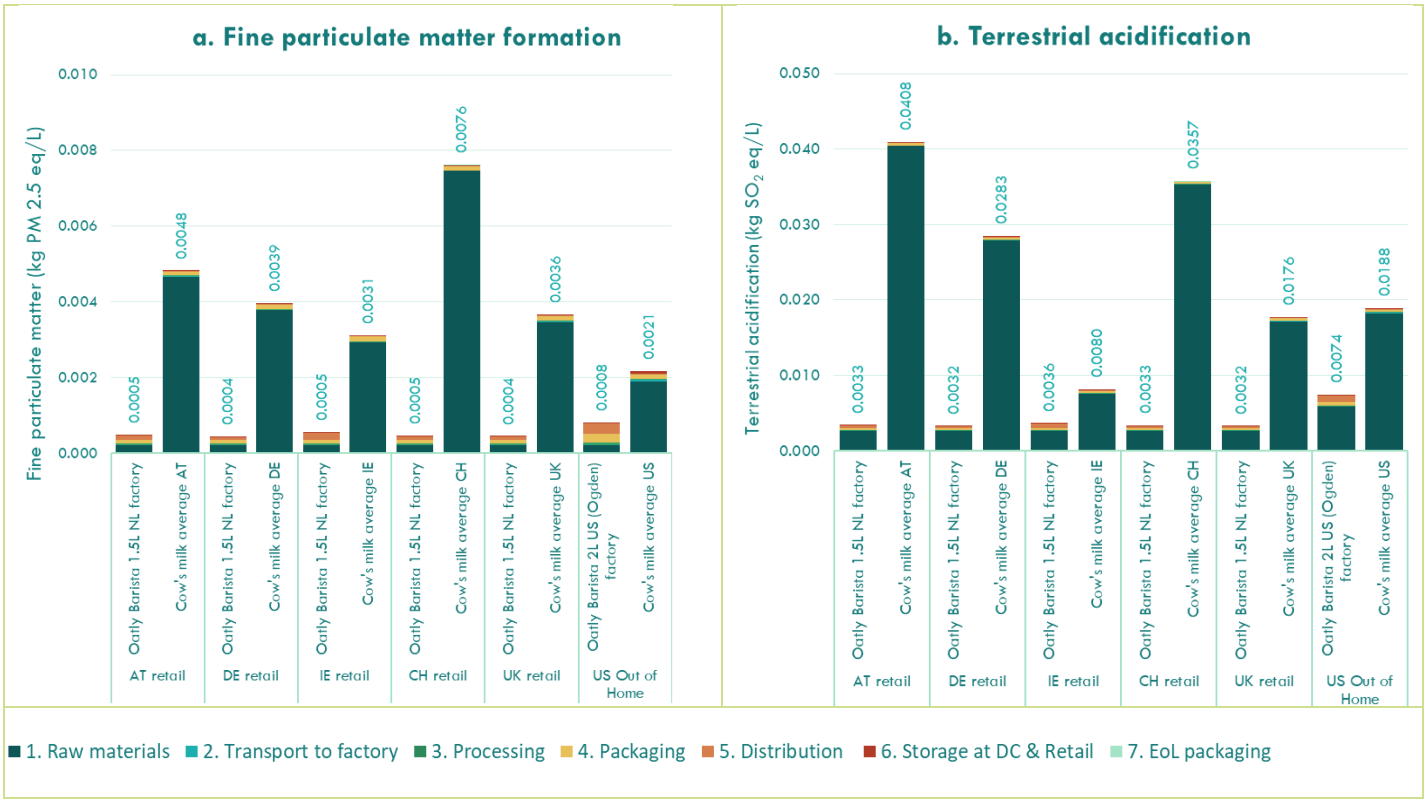
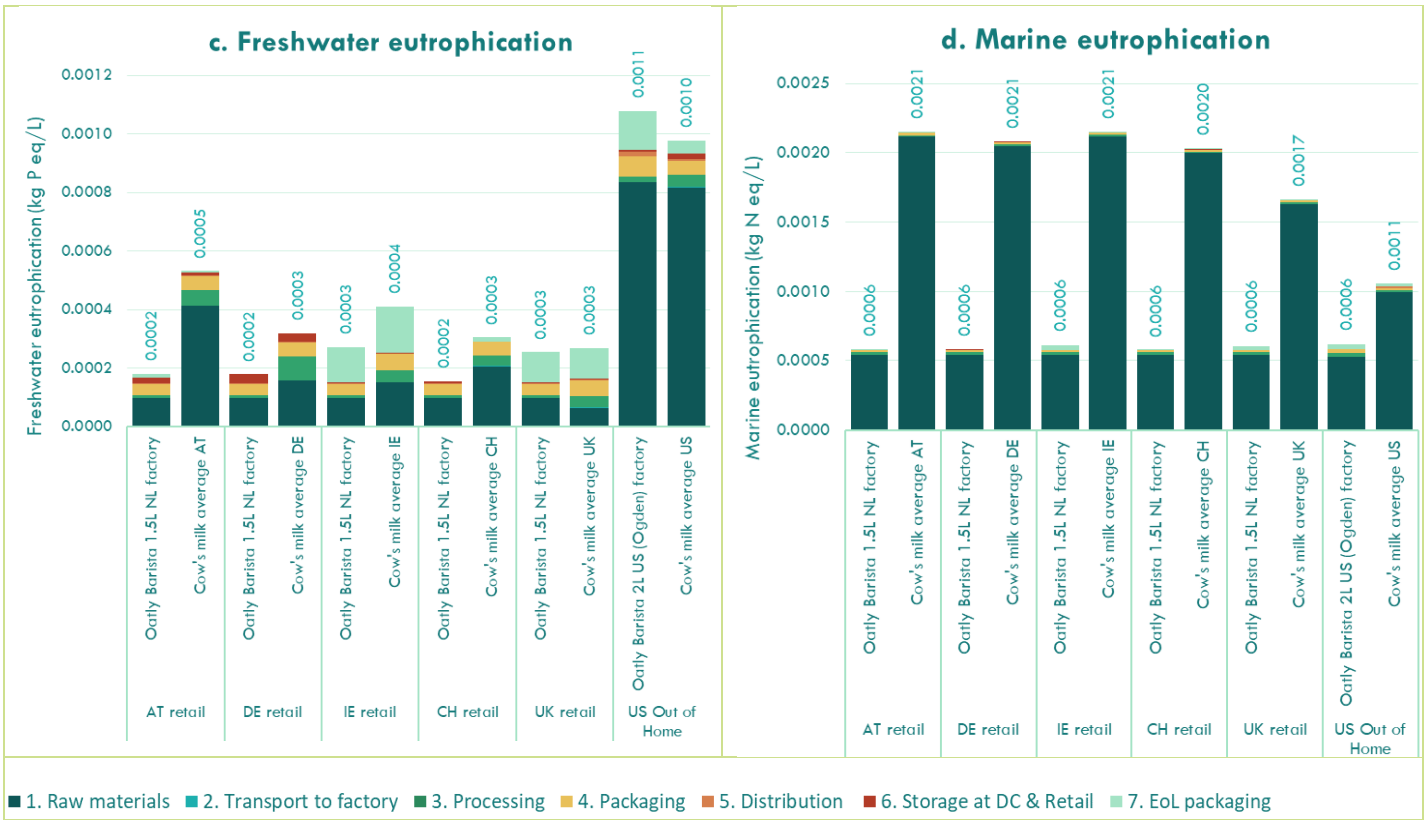


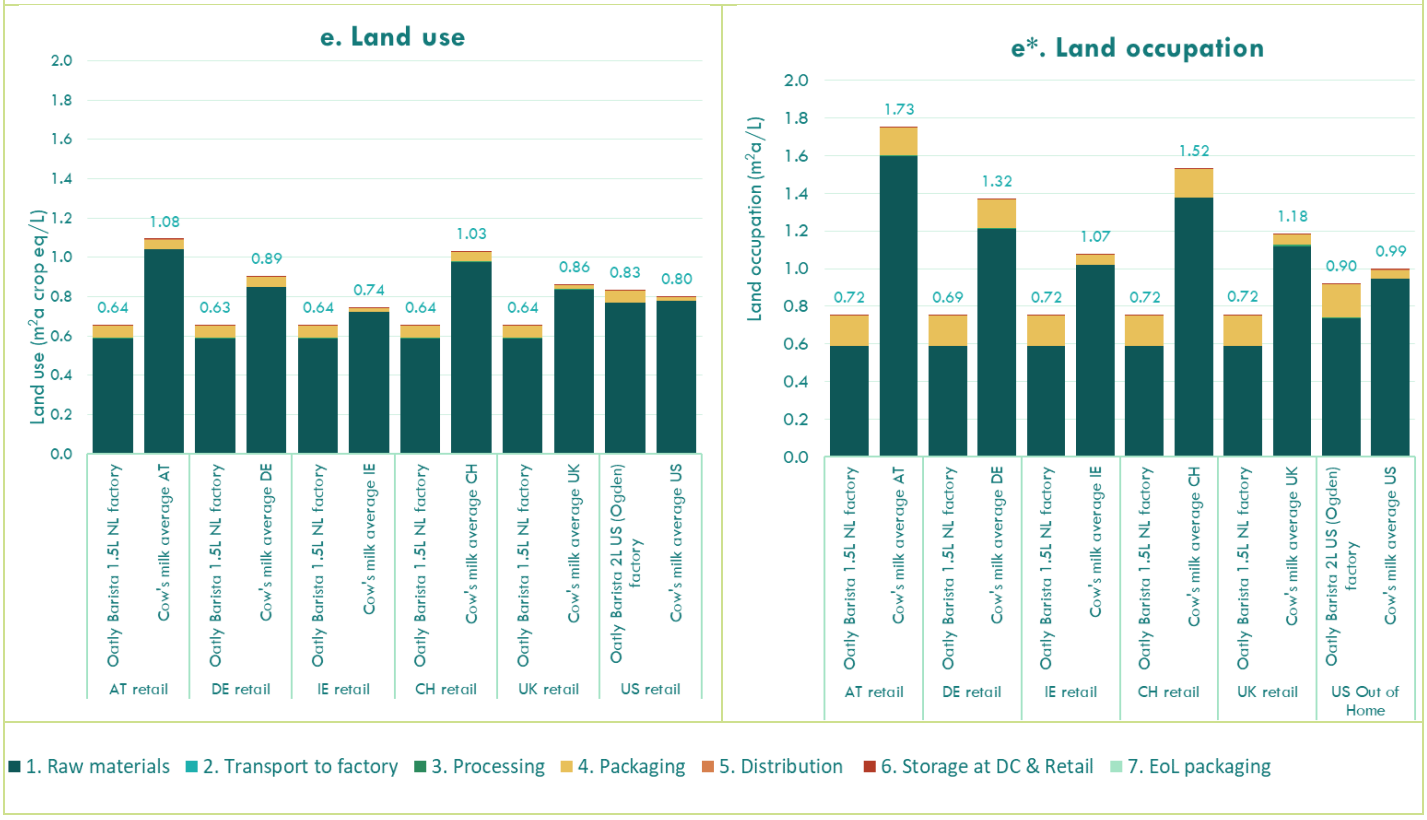
FIGURE 4: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF BARISTA 1.5L AND 2L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ALL OATLY BARISTA 1.5L IS PRODUCED IN THE HYBRID FACTORY IN VLISSINGEN, THE NETHERLANDS AND ALL BARISTA 2L IS PRODUCED OATLY'S HYBRID FACTORY IN OGDEN. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH = SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES.

[16] The characterization factors of phosphorus and phosphate emissions to water for freshwater eutrophication have been updated in the ReCiPe methodology since the first study published in 2022, affecting the conclusions.

The results show that, similar to the results in the main report, the raw material stage is for the Oatly products the largest contributor to the climate change impact category in the European markets in scope, as well as to most other impact categories. In line with the main report Oatly products have a consistently lower impact on almost all impact categories. Also in line with the main report, some products have a higher mineral resource scarcity impact which is mainly linked to packaging (with a high impact for the ambient beverage carton due to use of aluminium compared to e.g. a lower impact of HDPE bottle for the milk in the UK), and higher fossil resource scarcity impact, which is either linked to distribution (with Oatly products having longer distribution distances than the locally produced cow's milk), or the use of natural gas for processing at the Dutch factory. In contrast to the main report, Oatly products sold in the US have a higher freshwater eutrophication impact, mainly due to the regionalization of characterization factors for phosphorus emissions to water in the ReCiPe methodology.




c. Freshwater eutrophication
Freshwater eutrophication (kg P eq/L)
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
0.0002
0.0005
0.0002
0.0003
0.0003
0.0004
0.0002
0.0003
0.0003
0.0003
0.0011
0.0010
Oatly Barista 1.5L NL factory
Cow's milk average AT
Oatly Barista 1.5L NL factory
Cow's milk average DE
Oatly Barista 1.5L NL factory
Cow's milk average IE
Oatly Barista 1.5L NL factory
Cow's milk average CH
Oatly Barista 1.5L NL factory
Cow's milk average UK
Oatly Barista 2L US (Ogden) factory
Cow's milk average US
AT retail
DE retail
IE retail
CH retail
UK retail
US Out of Home
d. Marine eutrophication
Marine eutrophication (kg N eq/L)
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.0006
0.0021
0.0006
0.0021
0.0006
0.0021
0.0006
0.0020
0.0006
0.0017
0.0006
0.0011
Oatly Barista 1.5L NL factory
Cow's milk average AT
Oatly Barista 1.5L NL factory
Cow's milk average DE
Oatly Barista 1.5L NL factory
Cow's milk average IE
Oatly Barista 1.5L NL factory
Cow's milk average CH
Oatly Barista 1.5L NL factory
Cow's milk average UK
Oatly Barista 2L US (Ogden) factory
Cow's milk average US
AT retail
DE retail
IE retail
CH retail
UK retail
US Out of Home
1. Raw materials
2. Transport to factory
3. Processing
4. Packaging
5. Distribution
6. Storage at DC & Retail
7. EoL packaging


e. Land use
Land use (m²a crop eq/L)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.64
1.08
0.63
0.89
0.64
0.74
0.64
1.03
0.64
0.86
0.83
0.80
Oatly Barista 1.5L NL factory
Cow's milk average AT
Oatly Barista 1.5L NL factory
Cow's milk average DE
Oatly Barista 1.5L NL factory
Cow's milk average IE
Oatly Barista 1.5L NL factory
Cow's milk average CH
Oatly Barista 1.5L NL factory
Cow's milk average UK
Oatly Barista 2L US (Ogden) factory
Cow's milk average US
AT retail
DE retail
IE retail
CH retail
UK retail
US retail
e*. Land occupation
Land occupation (m²a/L)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.72
1.73
0.69
1.32
0.72
1.07
0.72
1.52
0.72
1.18
0.90
0.99
Oatly Barista 1.5L NL factory
Cow's milk average AT
Oatly Barista 1.5L NL factory
Cow's milk average DE
Oatly Barista 1.5L NL factory
Cow's milk average IE
Oatly Barista 1.5L NL factory
Cow's milk average CH
Oatly Barista 1.5L NL factory
Cow's milk average UK
Oatly Barista 2L US (Ogden) factory
Cow's milk average US
AT retail
DE retail
IE retail
CH retail
UK retail
US Out of Home
1. Raw materials
2. Transport to factory
3. Processing
4. Packaging
5. Distribution
6. Storage at DC & Retail
7. EoL packaging

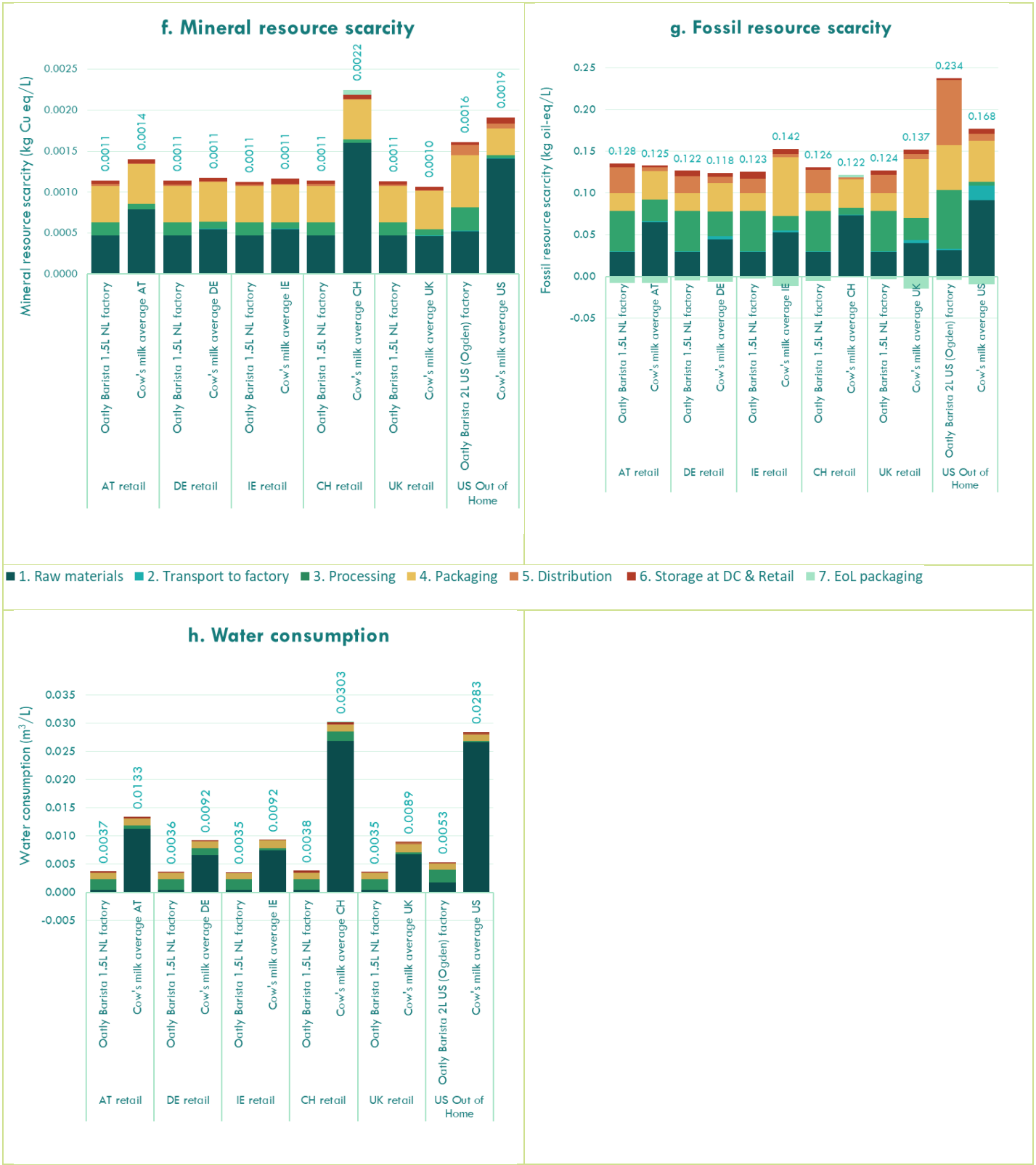
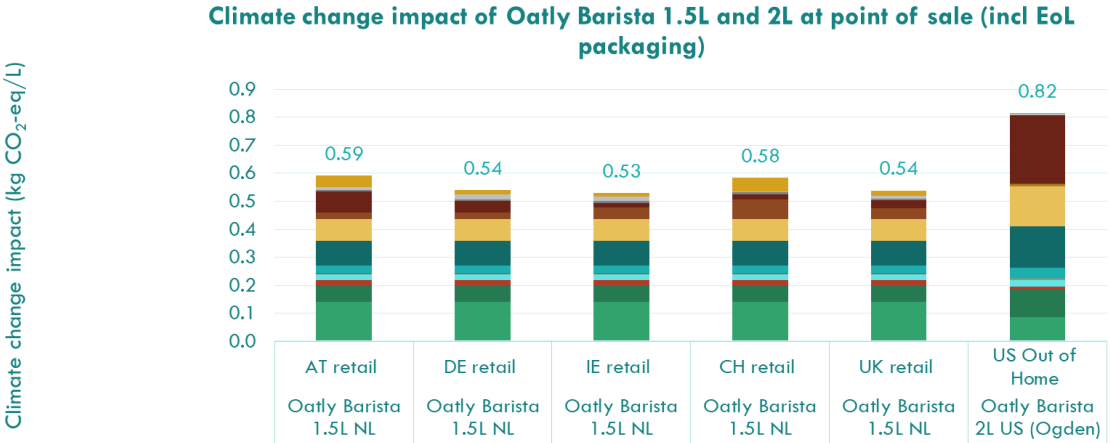


FIGURE 5: CONTRIBUTION ANALYSIS FOR KEY IMPACT CATEGORIES OF OATLY BARISTA 1.5L AND 2L AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. E* (LAND OCCUPATION) CONCERNS AN ADDITIONAL IMPACT CATEGORY AS EXPLAINED IN CHAPTER 2. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH= SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES.

5.1.2 Oatly Barista 1.5L and 2L

FIGURE 6 shows a detailed contribution analysis for the climate change impact category for Oatly Barista 1.5L and 2L. Top contributors for these variants in all markets are oat cultivation, processing of the Barista product, packaging, and distribution at point of sale. It is worth noting that in Europe the oat cultivation is the highest contributor to climate impact, while in the US, distribution to point of sale is the highest contributor.



	AT retail Oatly Barista 1.5L NL factory	DE retail Oatly Barista 1.5L NL factory	IE retail Oatly Barista 1.5L NL factory	CH retail Oatly Barista 1.5L NL factory	UK retail Oatly Barista 1.5L NL factory	US Out of Home Oatly Barista 2L US (Ogden) factory
10. End of Life of Packaging	0.041	0.015	0.013	0.050	0.018	0.002
9b. Storage at retail	0.012	0.018	0.015	0.002	0.011	0.005
9a. Storage at DC	0.006	0.006	0.008	0.008	0.005	0.002
8b. Distribution to Point of Sale	0.074	0.042	0.016	0.019	0.029	0.244
8a. Distribution to DC	0.023	0.023	0.042	0.070	0.039	0.003
7b. Transport of packaging material	0.001	0.001	0.001	0.001	0.001	0.008
7a. Packaging	0.077	0.077	0.077	0.077	0.077	0.141
6. Processing - Oatly Barista	0.087	0.087	0.087	0.087	0.087	0.149
5. Processing - oat base	0.030	0.030	0.030	0.030	0.030	0.037
4b. Transport of other ingredients to factory	0.001	0.001	0.001	0.001	0.001	0.001
4a. Transport of oats to factory	0.002	0.002	0.002	0.002	0.002	0.005
3. Oats milling	0.019	0.019	0.019	0.019	0.019	0.024
2. Oats transport to mill	0.018	0.018	0.018	0.018	0.018	0.010
1b. Other ingredient production	0.061	0.061	0.061	0.061	0.061	0.099
1a. Oat cultivation	0.140	0.140	0.140	0.140	0.140	0.086
Total	0.591	0.540	0.530	0.584	0.538	0.815

FIGURE 6: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF OATLY BARISTA 1.5L AND 2L AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH= SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES.

5.2 Contribution analysis Oatly Oat Drink for Coffee & Tea 0.02 L

5.2.1 Comparison of 0.02 L Oatly Oat Drink for Coffee & Tea and cow's milk

The contribution analysis for the climate change impact category is shown in FIGURE 7. FIGURE 8 shows the contribution analysis for the other impact categories.

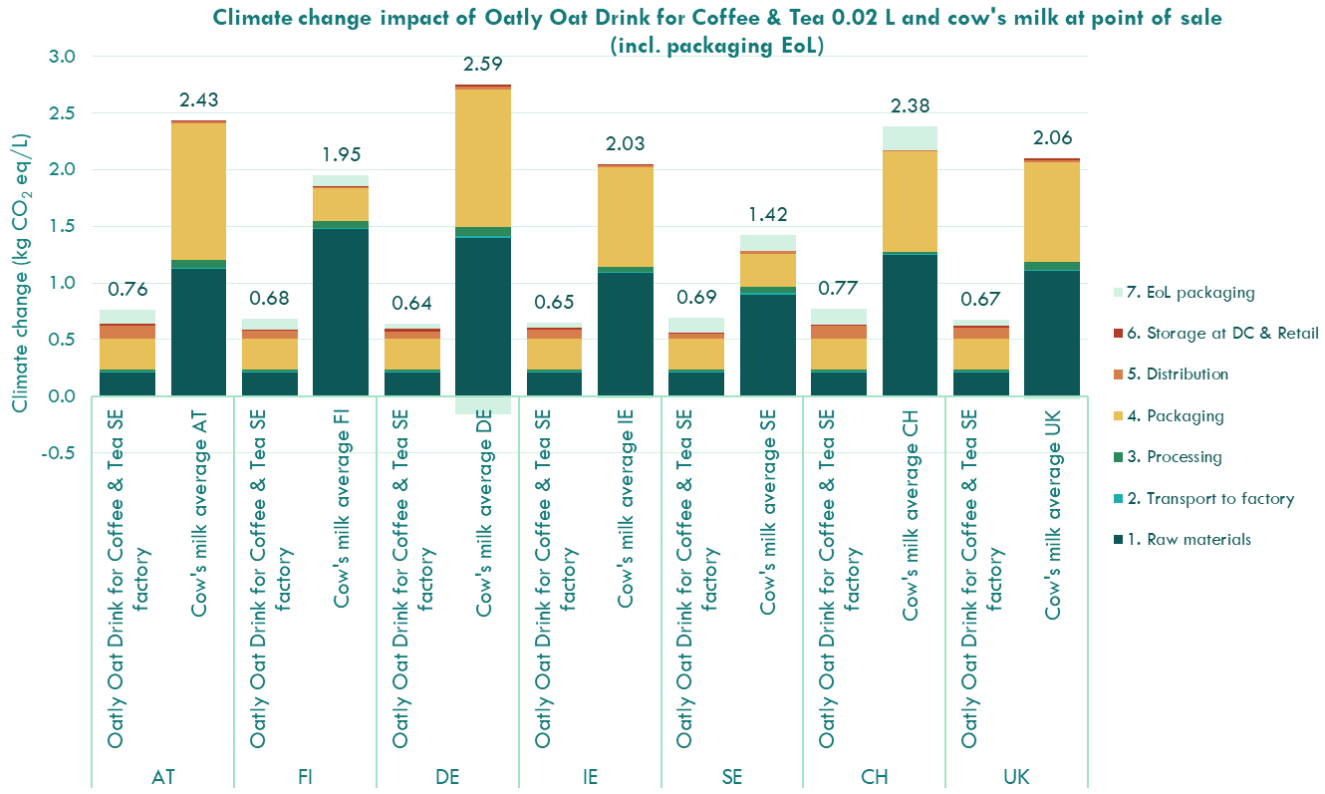


FIGURE 7: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF 0.02L OAT DRINK FOR COFFEE & TEA AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM.

The results show that, in contrast to the main report, for the Oatly Coffee & Tea products the packaging stage is the largest contributor to the climate change impact category in all markets in scope, followed by raw materials (mainly oats and rapeseed oil). This is also the case for mineral and fossil resource scarcity, water consumption and freshwater eutrophication (combined with a significant impact of the end of life of packaging for Finland, Ireland and the UK for the latter). This can be explained by the aluminium content of the packaging and the fact that the product is packaged in small portion cups, increasing significantly the packaging materials needed for 1L of reference flow.

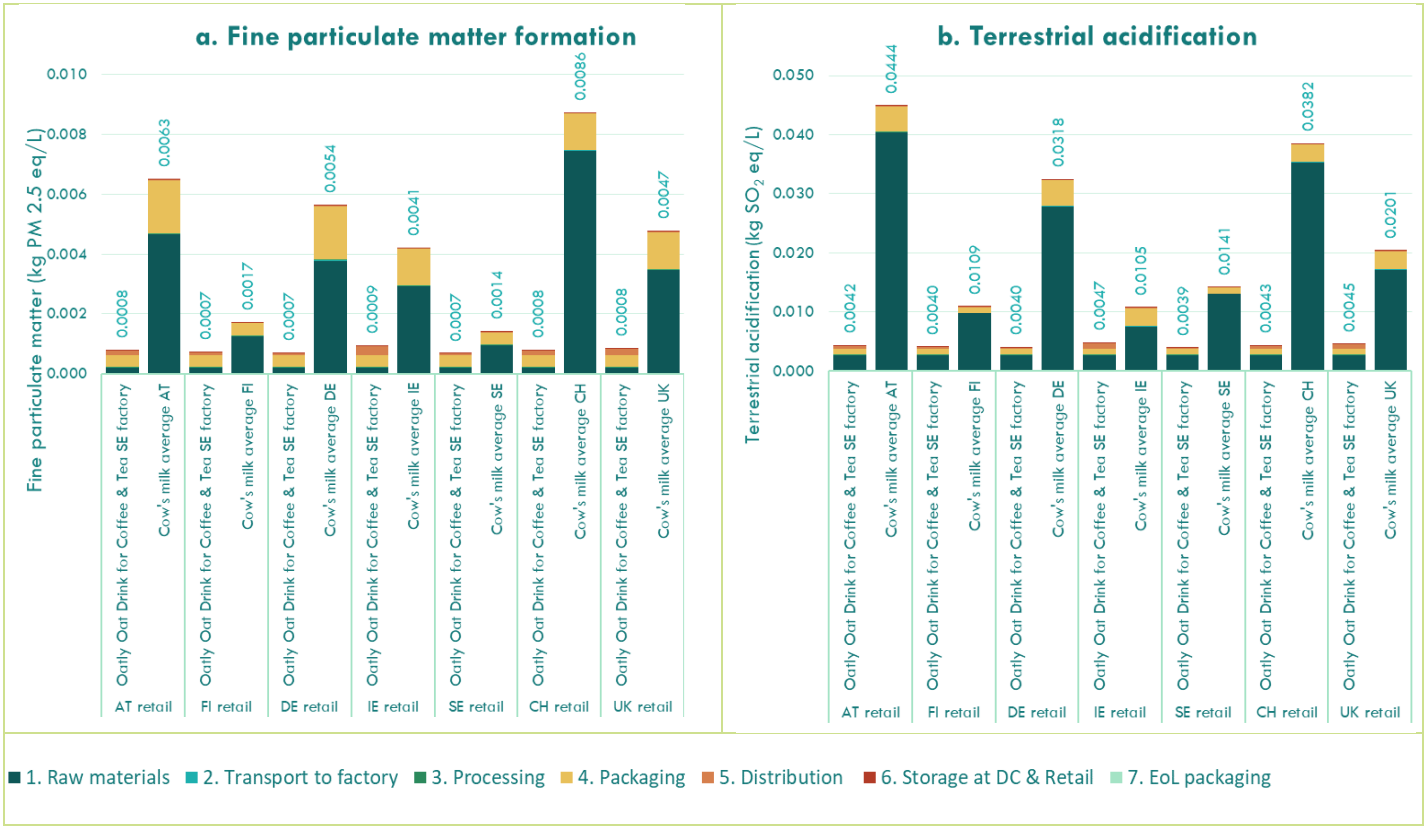
For the other impact categories (fine particulate matter formation, terrestrial acidification, marine eutrophication, land use and land occupation) the raw materials stage is the main driver of the impacts.

For climate change, fossil resource scarcity, and water consumption, the cow's milk packaging end of life contributes to avoided emissions. This is related to the recycling rates of the countries in scope.

For cow's milk, packaging (especially the single use plastic cups used in Austria, Germany, Ireland, Switzerland and the UK), feed and cow's emissions (linked to enteric fermentation and manure management) are the main contributors to the climate change impact.

In contrast to the main report, Oatly Coffee & Tea products have a lower impact on all impact categories except on land use for products sold in Ireland, and on mineral resource scarcity for products sold in Sweden, where results are comparable. Specifically for products sold in Ireland, land use and land occupation impacts are comparable for cow's milk and for the Oatly product. For cow's milk, the impact results for land use and land occupation are dominated by feed cultivation. The feed consumed by the cows in Ireland consists of a comparatively high share of grass, which has a low land occupation impact because of its high yields. For Oatly, oats and rapeseed cultivation in Sweden as well as the carton board used in the beverage cartons packaging contribute to the land use and land occupation impacts (for Irish cow's milk, single use plastic cups are considered).

On mineral resource scarcity, packaging is driving the impact, and the same aseptic carton packaging was used to model both the Oatly and dairy product for products sold in Sweden and Finland leading to the comparable results on this indicator.

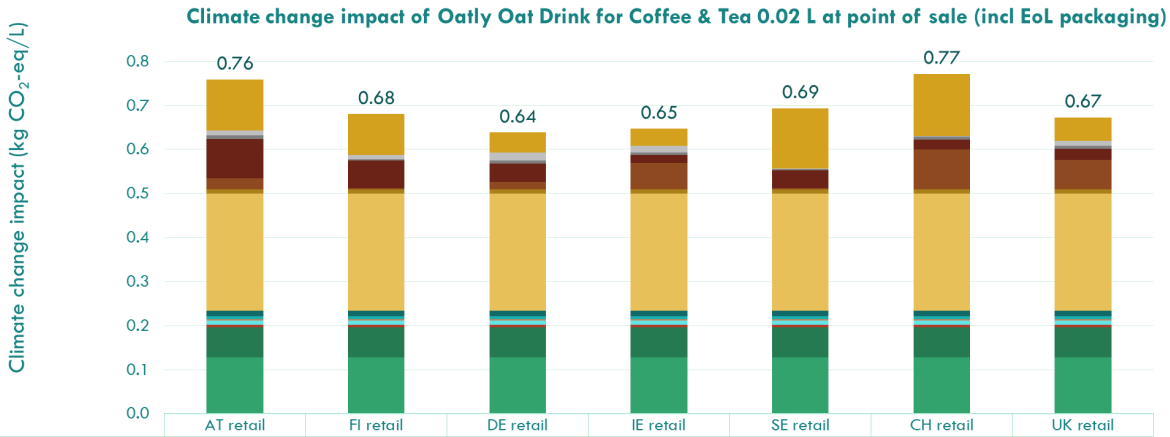



c. Freshwater eutrophication
Freshwater eutrophication (kg P eq/L)
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
-0.0002
-0.0004
0.0003
0.0009
0.0004
0.0007
0.0003
0.0004
0.0006
0.0007
0.0002
0.0004
0.0003
0.0006
0.0005
0.0010
Oatly Oat Drink for Coffee & Tea SE factory
Cow's milk average AT
Cow's milk average FI
Cow's milk average DE
Cow's milk average IE
Cow's milk average SE
Cow's milk average CH
Cow's milk average UK
AT retail
FI retail
DE retail
IE retail
SE retail
CH retail
UK retail
d. Marine eutrophication
Marine eutrophication (kg N eq/L)
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
0.0006
0.0021
0.0007
0.0018
0.0006
0.0021
0.0007
0.0022
0.0006
0.0015
0.0006
0.0020
0.0007
0.0017
1. Raw materials
2. Transport to factory
3. Processing
4. Packaging
5. Distribution
6. Storage at DC & Retail
7. EoL packaging
e. Land use
Land use (m²a crop eq/L)
1.8
1.3
0.8
0.3
0.2
0.71
1.06
0.71
1.32
0.69
0.87
0.71
0.74
0.71
1.16
0.71
0.99
0.71
0.85
e*. Land occupation
Land occupation (m²a/L)
0.89
1.64
0.89
1.69
0.83
1.26
0.88
1.07
0.88
1.45
0.88
1.42
0.88
1.16

FIGURE 8: CONTRIBUTION ANALYSIS FOR KEY IMPACT CATEGORIES OF 0.02L OATLY OAT DRINK FOR COFFEE & TEA AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LFIE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM.

5.2.2 Oatly Oat Drink for Coffee & Tea 0.02 L

FIGURE 9 shows a detailed contribution analysis for the climate change impact category for Oatly Oat Drink for Coffee and Tea. The main contribution comes from the packaging as more packaging materials are needed for 1L of end product when the product is packed in smaller volumes. Furthermore, the difference between products can be explained by the transport distances from the factories to the distribution centres and point of sale in the different countries.



	AT retail	FI retail	DE retail	IE retail	SE retail	CH retail	UK retail
Total	0.759	0.680	0.638	0.647	0.694	0.772	0.673
10. End of Life of Packaging	0.116	0.093	0.045	0.039	0.137	0.141	0.053
9b. Storage at retail	0.012	0.009	0.018	0.015	0.002	0.002	0.011
9a. Storage at DC	0.008	0.002	0.008	0.006	0.002	0.008	0.007
8b. Distribution to Retail	0.090	0.063	0.040	0.018	0.041	0.022	0.025
8a. Distribution to DC	0.024	0.002	0.017	0.060	0.002	0.089	0.067
7b. Transport of packaging material	0.011	0.011	0.011	0.011	0.011	0.011	0.011
7a. Packaging	0.265	0.265	0.265	0.265	0.265	0.265	0.265
6. Processing - Oatly Barista	0.013	0.013	0.013	0.013	0.013	0.013	0.013
5. Processing - oat base	0.007	0.007	0.007	0.007	0.007	0.007	0.007
4b. Transport of other ingredients to factory	0.001	0.001	0.001	0.001	0.001	0.001	0.001
4a. Transport of oats to factory	0.003	0.003	0.003	0.003	0.003	0.003	0.003
3. Oats milling	0.009	0.009	0.009	0.009	0.009	0.009	0.009
2. Oats transport to mill	0.006	0.006	0.006	0.006	0.006	0.006	0.006
1b. Other ingredient production	0.068	0.068	0.068	0.068	0.068	0.068	0.068
1a. Oat cultivation	0.128	0.128	0.128	0.128	0.128	0.128	0.128

FIGURE 9: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF 0.02 L OATLY OAT DRINK FOR COFFEE & TEA AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM.

5.3 Contribution analysis Oatly Barista Lighter Taste 1L

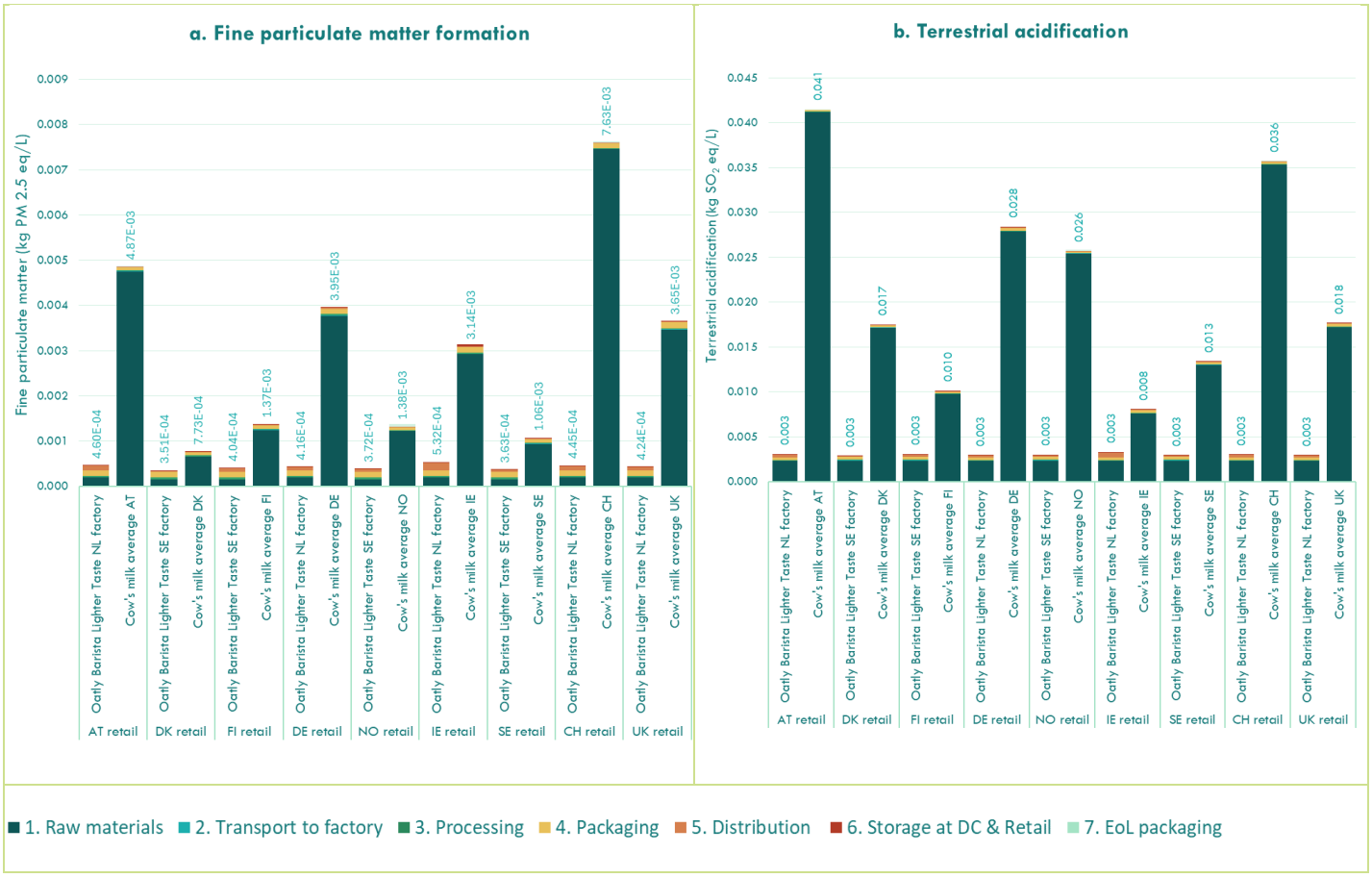
5.3.1 Comparison of 1 L Oatly Barista Lighter Taste and cow's milk

The contribution analysis for the climate change impact category is shown in FIGURE 10. FIGURE 11 shows the contribution analysis for the other impact categories.

FIGURE 10: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF 1L BARISTA LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY,NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM.

The results show that, similar to the results in the main report, the raw material stage is for the Oatly products the largest contributor to the climate change impact category in the markets in scope, as well as to most other impact categories. In line with the main report Oatly products have a consistently lower impact on almost all impact categories. Exceptions are the mineral resource scarcity category which is mainly linked to packaging (with a high impact for the ambient beverage carton due to use of aluminium), the use of minerals for the generation of renewable energy in Oatly's factories; and the relatively high milk yields yet low feed intake, thus relatively low use of mineral fertilizers, of Danish dairy systems.

Another exception is the fossil resource scarcity category, which is either linked to distribution (with Oatly products having longer distribution distances than the locally produced cow's milk), or the use of natural gas for processing at the Dutch factory. For land use, Oatly Barista Lighter Taste has lower impact than cow's milk in most markets except in Denmark where results are comparable, which is related to the relatively high milk yield yet relatively low feed intake of Danish dairy cows.




c. Freshwater eutrophication
Freshwater eutrophication (kg P eq/L)
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
0.0002
0.0005
0.0001
0.0002
0.0002
0.0004
0.0002
0.0003
0.0001
0.0004
0.0002
0.0004
0.0001
0.0003
0.0001
0.0003
0.0002
0.0003
Oatly Barista Lighter Taste NL factory
Cow's milk average AT
Oatly Barista Lighter Taste SE factory
Cow's milk average DK
Oatly Barista Lighter Taste SE factory
Cow's milk average FI
Oatly Barista Lighter Taste NL factory
Cow's milk average DE
Oatly Barista Lighter Taste SE factory
Cow's milk average NO
Oatly Barista Lighter Taste NL factory
Cow's milk average IE
Oatly Barista Lighter Taste SE factory
Cow's milk average SE
Oatly Barista Lighter Taste NL factory
Cow's milk average CH
Oatly Barista Lighter Taste NL factory
Cow's milk average UK
AT retail
DK retail
FI retail
DE retail
NO retail
IE retail
SE retail
CH retail
UK retail
d. Marine eutrophication
Marine eutrophication (kg N eq/L)
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.0005
0.0022
0.0005
0.0010
0.0005
0.0018
0.0005
0.0021
0.0005
0.0027
0.0005
0.0021
0.0005
0.0015
0.0005
0.0020
0.0005
0.0017
1. Raw materials
2. Transport to factory
3. Processing
4. Packaging
5. Distribution
6. Storage at DC & Retail
7. EoL packaging
e. Land use
Land use (m²a crop eq/L)
2.5
2.0
1.5
1.0
0.5
0.0
0.59
1.11
0.59
0.65
0.59
1.23
0.58
0.89
0.58
2.30
0.59
0.74
0.58
1.08
0.59
1.03
0.59
0.86
e*. Land occupation
Land occupation (m²a/L)
2.5
2.0
1.5
1.0
0.5
0.0
0.67
1.79
0.70
0.82
0.67
1.51
0.63
1.32
0.65
2.34
0.66
1.07
0.66
1.27
0.66
1.52
0.66
1.18
1. Raw materials
2. Transport to factory
3. Processing
4. Packaging
5. Distribution
6. Storage at DC & Retail
7. EoL packaging

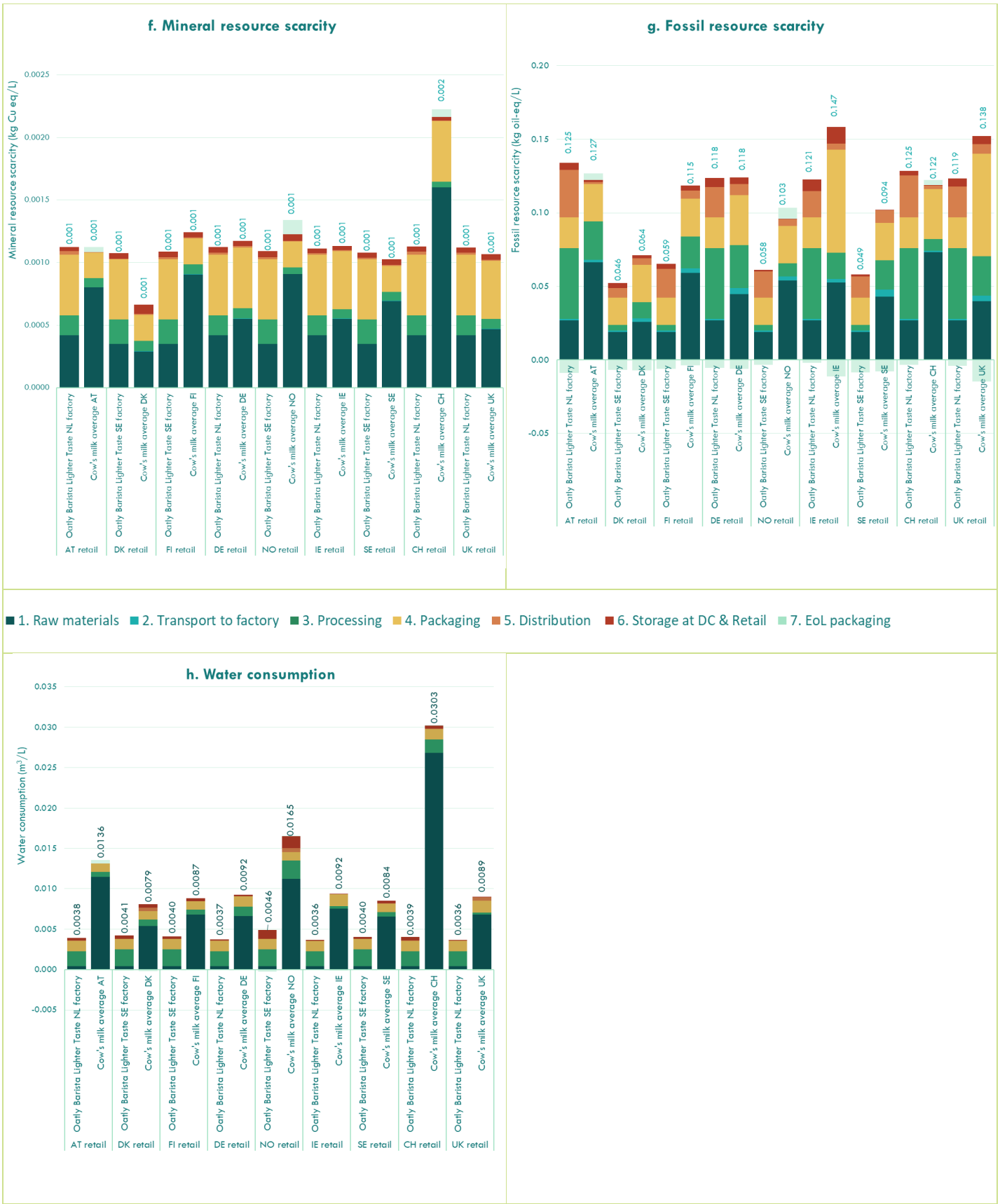
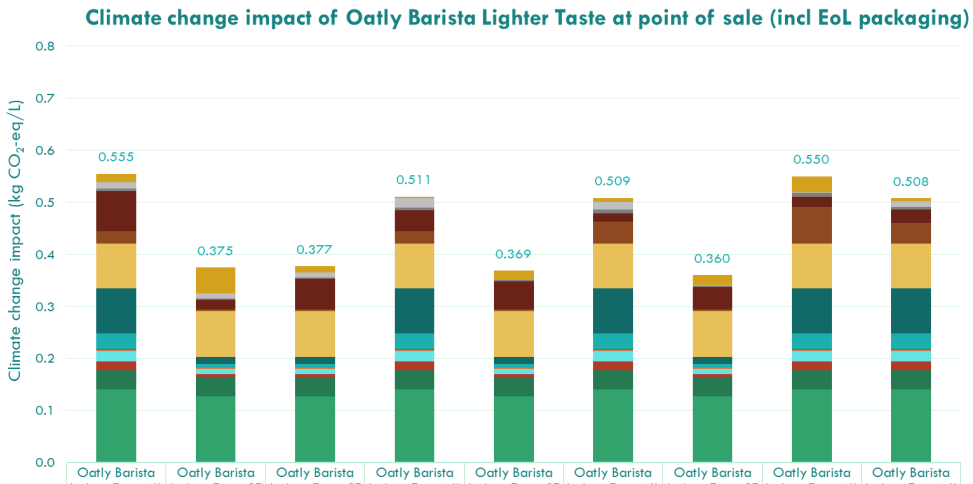


FIGURE 11: CONTRIBUTION ANALYSIS FOR KEY IMPACT CATEGORIES OF 1L OATLY BARISTA LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LFIE (EOL) OF PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM.

5.3.2 Oatly Barista Lighter Taste

FIGURE 6FIGURE 12 shows a detailed contribution analysis for the climate change impact category for Oatly Barista Lighter Taste. The production location (either Swedish or Dutch factory) is one of the main factors responsible for differences in the climate change impact of the products in scope. Where the Dutch factory uses thermal energy from fossil resources, the Swedish factory uses biogas. Also, a difference in the impact of the raw materials can be observed between the two production locations due to the different countries from which the oats are sourced.

Furthermore, the difference between products can be explained by the transport distances from the factories to the distribution centres and retail in the different countries.



	Oatly Barista Lighter Taste NL factory AT retail	Oatly Barista Lighter Taste SE factory DK retail	Oatly Barista Lighter Taste SE factory FI retail	Oatly Barista Lighter Taste NL factory DE retail	Oatly Barista Lighter Taste SE factory NO retail	Oatly Barista Lighter Taste NL factory IE retail	Oatly Barista Lighter Taste SE factory SE retail	Oatly Barista Lighter Taste NL factory CH retail	Oatly Barista Lighter Taste NL factory UK retail
10. End of Life of Packaging	0.017	0.050	0.012	0.003	0.018	0.007	0.019	0.030	0.006
9b. Storage at retail	0.012	0.010	0.009	0.018	0.001	0.015	0.002	0.002	0.011
9a. Storage at DC	0.006	0.002	0.002	0.006	0.002	0.008	0.002	0.008	0.005
8b. Distribution to Retail	0.077	0.018	0.059	0.041	0.054	0.016	0.043	0.020	0.026
8a. Distribution to DC	0.023	0.002	0.002	0.023	0.002	0.042	0.002	0.070	0.039
7b. Transport of packaging material	0.001	0.002	0.002	0.001	0.002	0.001	0.002	0.001	0.001
7a. Packaging	0.086	0.088	0.088	0.086	0.088	0.086	0.088	0.086	0.086
6. Processing - Oatly Barista	0.087	0.013	0.013	0.087	0.013	0.087	0.013	0.087	0.087
5. Processing - oat base	0.030	0.007	0.007	0.030	0.007	0.030	0.007	0.030	0.030
4b. Transport of other ingredients to factory	0.001	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.001
4a. Transport of oats to factory	0.002	0.003	0.003	0.002	0.003	0.002	0.003	0.002	0.002
3. Oats milling	0.019	0.009	0.009	0.019	0.009	0.019	0.009	0.019	0.019
2. Oats transport to mill	0.018	0.006	0.006	0.018	0.006	0.018	0.006	0.018	0.018
1b. Other ingredient production	0.036	0.037	0.037	0.036	0.037	0.036	0.037	0.036	0.036
1a. Oat cultivation	0.140	0.128	0.128	0.140	0.128	0.140	0.128	0.140	0.140
Total	0.555	0.375	0.377	0.511	0.369	0.509	0.360	0.550	0.508

FIGURE 12: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF 1 L OATLY BARISTA LIGHTER TASTE AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. OATLY BARISTA LIGHTER TASTE AVAILABLE AT RETAIL IN AUSTRIA, GERMANY, IERLAND, SWITZERLAND AND THE UNITED KINGDOM IS PRODUCED IN THE HYBRID FACTORY IN VLISSINGEN, THE NETHERLANDS, WHEREAS OATLY BARISTA LIGHTER TASTE AVAILABLE IN DENMARK, FINLAND, NORWAY AND SWEDEN IS PRODUCED IN OATLY'S END-TO-END FACTORY IN LANDSKRONA, SWEDEN. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM

5.4 Sensitivity and uncertainty analyses

Sensitivity analyses serve to evaluate the robustness of the results by assessing the influence of several assumptions and modelling choices that have been made. In the main report, sensitivity analyses were performed to evaluate the choice of impact assessment method, the choice of functional unit, the choice of allocation, as well as several choices with regard to characteristics of the systems under study (e.g. inclusion of use stage, comparison to chilled version of Oatly Barista, comparison to ambient version of cow's milk). Next to that, an uncertainty analysis has been performed to determine the range in outcomes when considering uncertainties with regard to data quality.

These sensitivity analyses in the main report demonstrated that using a different impact assessment method (ReCiPe endpoint, EF3.0 single score) confirmed the overall higher environmental footprint of cow's milk compared to Oatly Barista for all countries in scope. It also showed that results in the impact categories land use, mineral resource scarcity and water impact categories are less robust, as they result in different trends when using a different impact assessment method (EF 3.0) because of their different underlying metrics. Furthermore, the sensitivity analyses in the main report concluded that using different product characteristics (chilled distribution, inclusion of use stage) and methodological choices (using economic allocation for cow's milk), did not lead to different conclusions on the environmental footprint of Oatly Barista compared to cow's milk.

Considering how similar the Oatly products considered in this study are to the Oatly Barista investigated in the main report (the 1L Lighter taste products having a relatively lower impact for most categories[17]), it was not deemed necessary to repeat all sensitivity analyses. The conclusions that were drawn based on the sensitivity analyses in the main report also apply to the products in this addendum.

Uncertainty in inventory data has been determined using the pedigree matrix, as described in section 2.4.1 of the main report. With this data, a Monte Carlo analysis was run in SimaPro to assess the uncertainty range for each product.

FIGURE 13, FIGURE 14 and FIGURE 15 show the climate change impact results including uncertainty ranges for the 95% confidence interval; meaning that 95% of the results lay within this range. The graphs show a higher uncertainty range for cow's milk, which is caused by the higher uncertainty factors attributed to emissions from manure management and enteric fermentation and to feed intake (see section 2.7.1 of the main report). Oatly products have lower uncertainty ranges due to the use of primary (foreground) data.

[17] When comparing the average relative difference between Oatly Barista variants and cow's milk for the impact categories in scope, the Oatly Barista Lighter Taste products, 1 L in this report have on average a relative lower impact than the Oatly products in the main report for all impact categories except for freshwater eutrophication. The Oatly Barista 1.5L and 2L products in this report have on average a relative lower impact than the Oatly products in the main report for all impact categories except a slight increase in climate change, freshwater eutrophication and fossil resource scarcity. For Oatly Oat Drink Coffee & Tea, 0.02 L, results vary more due to the influence of the packaging on the results.

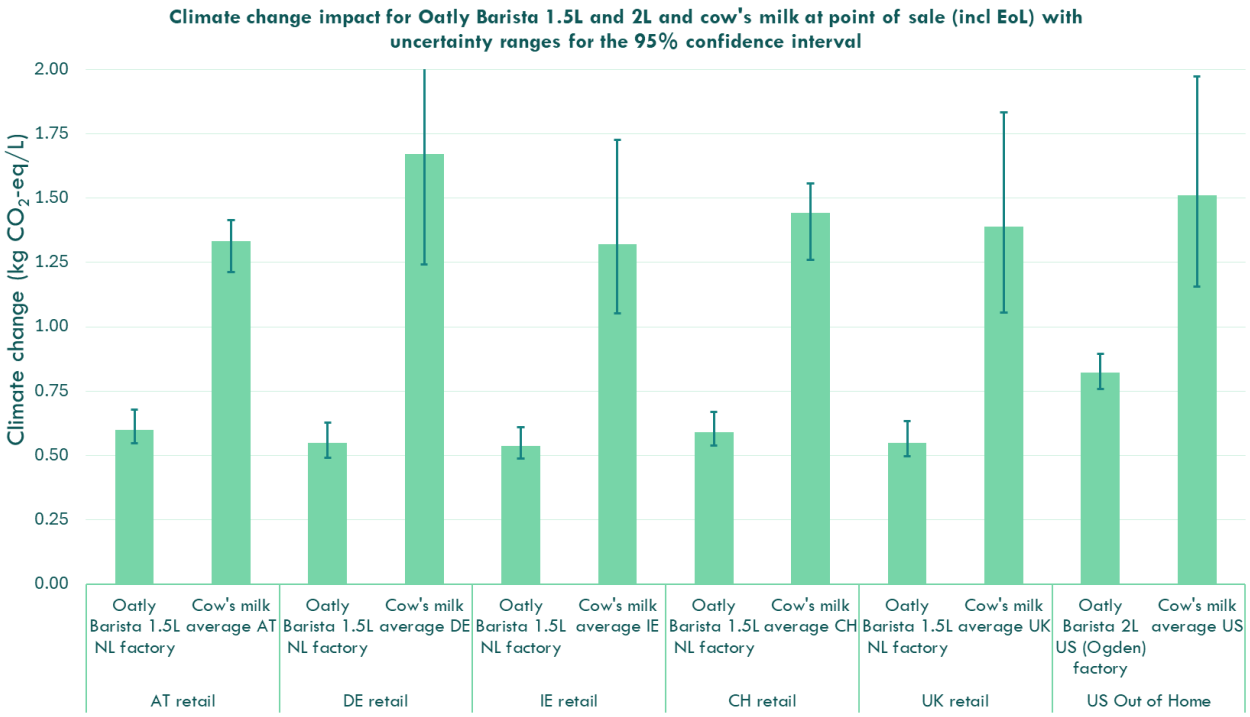


FIGURE 13: CLIMATE CHANGE IMPACT FOR OATLY BARISTA PACKED IN 1.5L AND 2L, AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING, WITH UNCERTAINTY RANGES FOR THE 95% CONFIDENCE INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH= SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES.

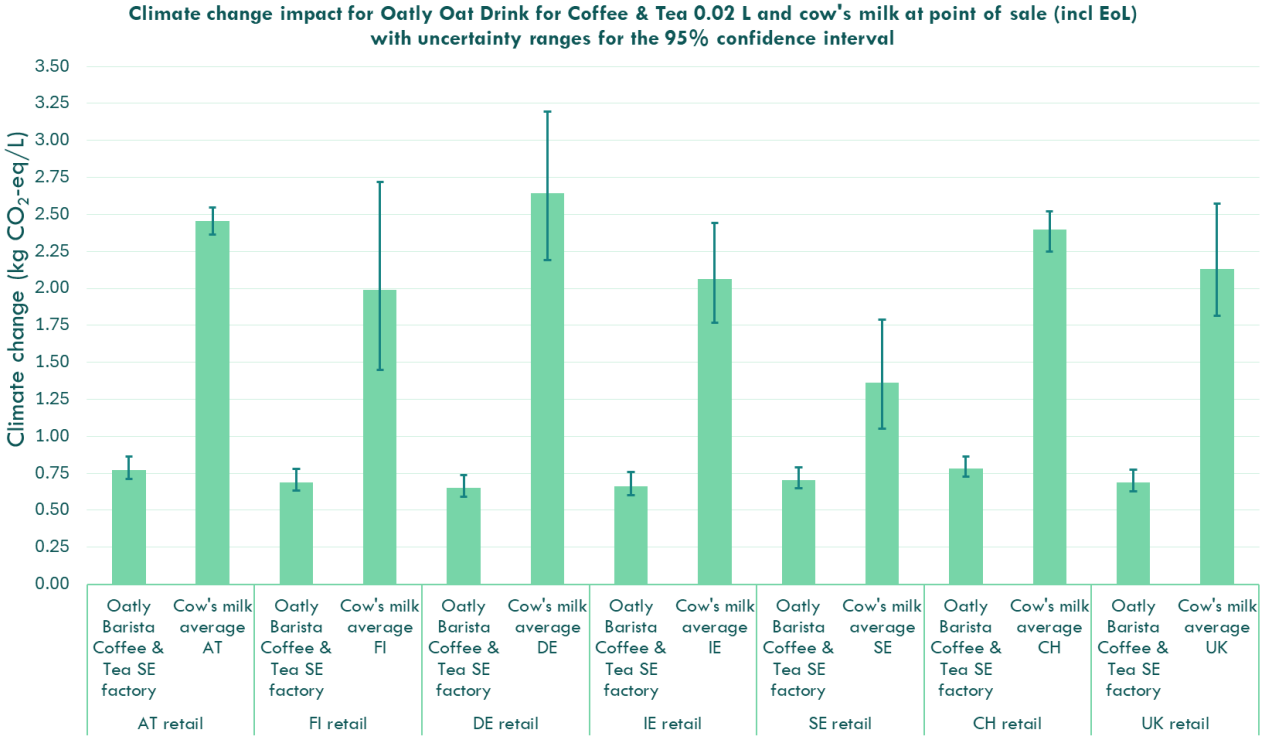


FIGURE 14: CLIMATE CHANGE IMPACT FOR OATLY OAT DRINK FOR COFFEE & TEA, AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING, WITH UNCERTAINTY RANGES FOR THE 95% CONFIDENCE INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM

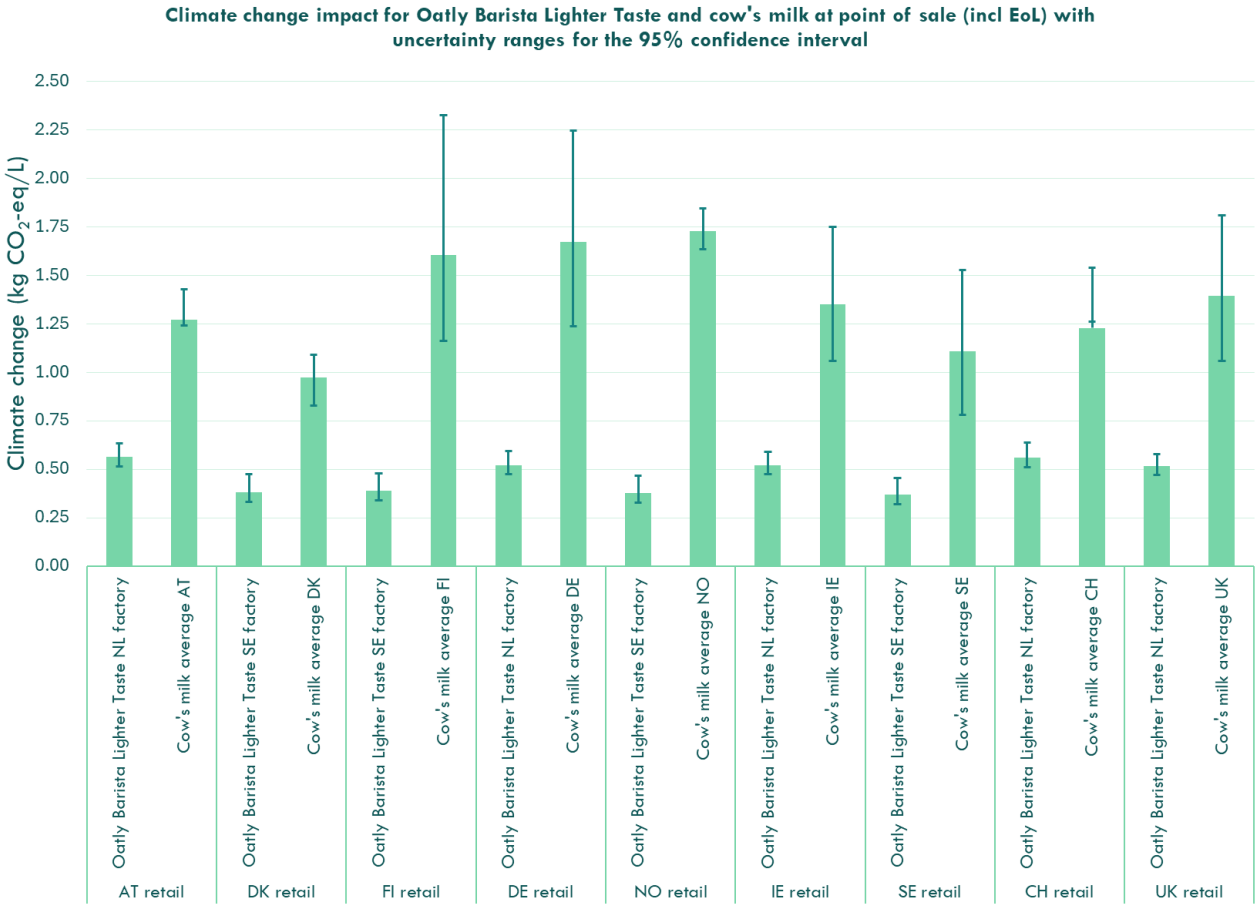


FIGURE 15: CLIMATE CHANGE IMPACT FOR 1L OATLY BARISTA LIGHTER TASTE, AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING, WITH UNCERTAINTY RANGES FOR THE 95% CONFIDENCE "INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM

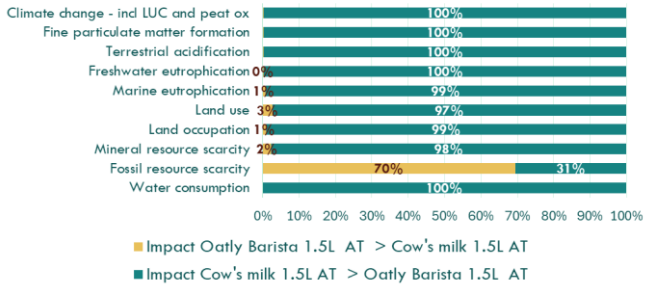
Figures 13, 14 and 15 show that the lower impact on most impact categories by Oatly compared to milk is statistically significant. Generally speaking, if the error bars of the 95% uncertainty interval do not overlap, one can assume differences between products are statistically significant (Payton et al., 2003). It should be noted that this is just an approximation, as uncertainty was estimated for the data.

A more accurate way to compare two products is a paired Monte Carlo analysis, which considers the uncertainty of the difference between two products (thus accounting for correlation in data). The number of runs (from the total of 1000 runs) is counted in which product A has a higher impact than product B. In general, it can be assumed that if >90% of the Monte Carlo runs are favourable for one product, the difference can be considered significant (Goedkoop et al., 2013).

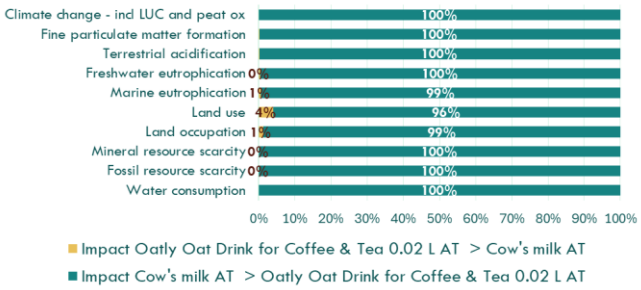
FIGURE 16 below shows the outcome of this paired Monte Carlo analysis for all products in scope, and for all impact categories. It shows that for climate change, fine particulate matter formation, terrestrial acidification, freshwater eutrophication (except for Oatly Oat drink for coffee and tea in Sweden, Oatly Barista 1.5 L in the UK and Oatly Barista 2L), marine eutrophication, and water consumption (except for Barista lighter taste in Norway) the impact of Oatly Barista variants is consistently and significantly lower than the impact of cow's milk. When it comes to land occupation, the impact of Oatly Barista 1.5L, Coffee & Tea and Lighter Taste is lower for all cases, yet not significant in four cases. On the contrary, the impacts of Oatly Barista 2L sold in the United States on freshwater eutrophication, land use and fossil resource scarcity are consistently and significantly higher than the impact of milk. For mineral resource scarcity and fossil resource scarcity, the differences between Oatly Barista 1.5L, 2L, Lighter Taste and cow's milk vary between significantly higher, lower or insignificant.

Austria

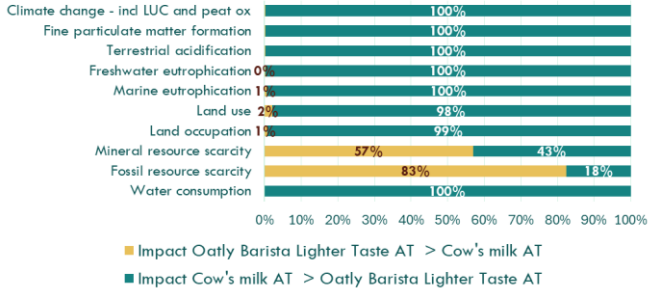
Oatly Barista 1.5L AT and Cow's milk 1.5L AT at retail



Oatly Oat Drink for Coffee & Tea 0.02 L AT and Cow's milk AT at retail

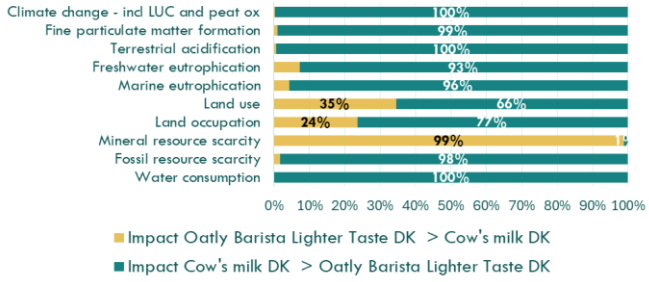


Oatly Barista Lighter Taste AT and Cow's milk AT at retail



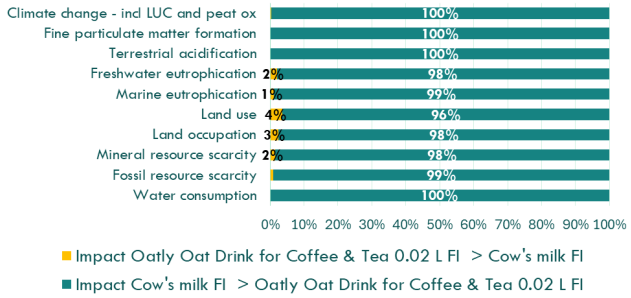
Denmark

Oatly Barista Lighter Taste DK and Cow's milk DK at retail

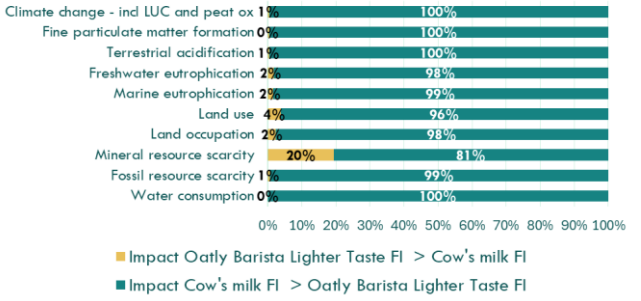


Finland

Oatly Oat Drink for Coffee & Tea 0.02 L FI and Cow's milk FI at retail

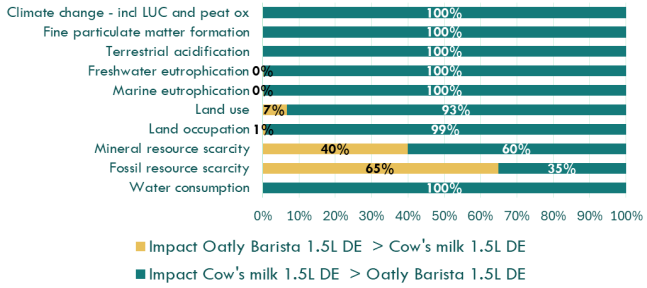


Oatly Barista Lighter Taste FI and Cow's milk FI at retail

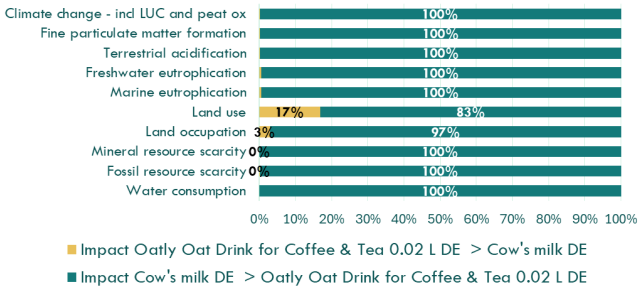


Germany

Oatly Barista 1.5L DE and Cow's milk 1.5L DE at retail

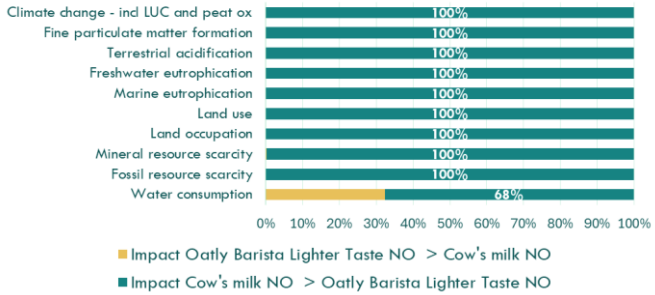


Oatly Oat Drink for Coffee & Tea 0.02 L DE and Cow's milk DE at retail



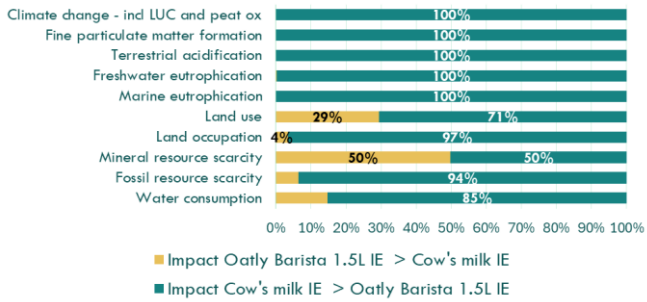
Norway

Oatly Barista Lighter Taste NO and Cow's milk NO at retail

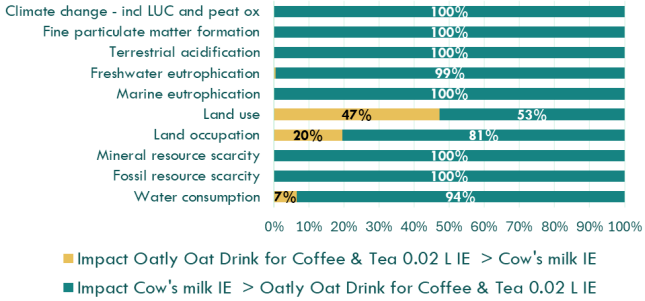


Ireland

Oatly Barista 1.5L IE and Cow's milk IE at retail

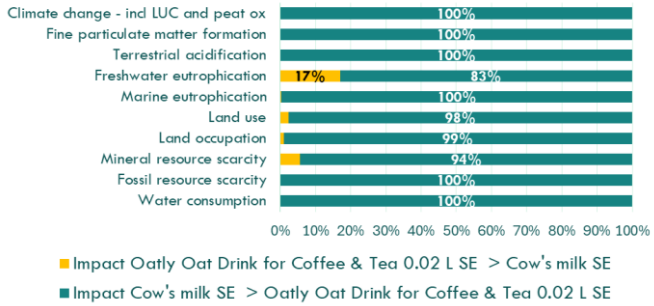


Oatly Oat Drink for Coffee & Tea 0.02 L IE and Cow's milk IE at retail

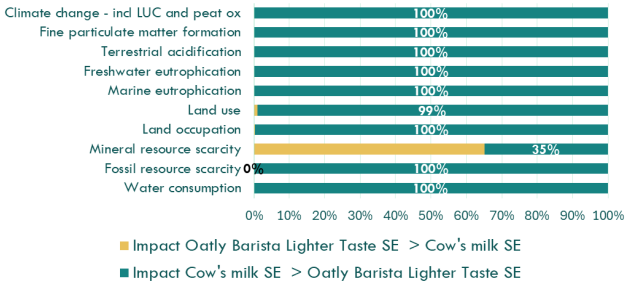


Sweden

Oatly Oat Drink for Coffee & Tea 0.02 L SE and Cow's milk SE at retail



Oatly Barista Lighter Taste SE and Cow's milk SE at retail



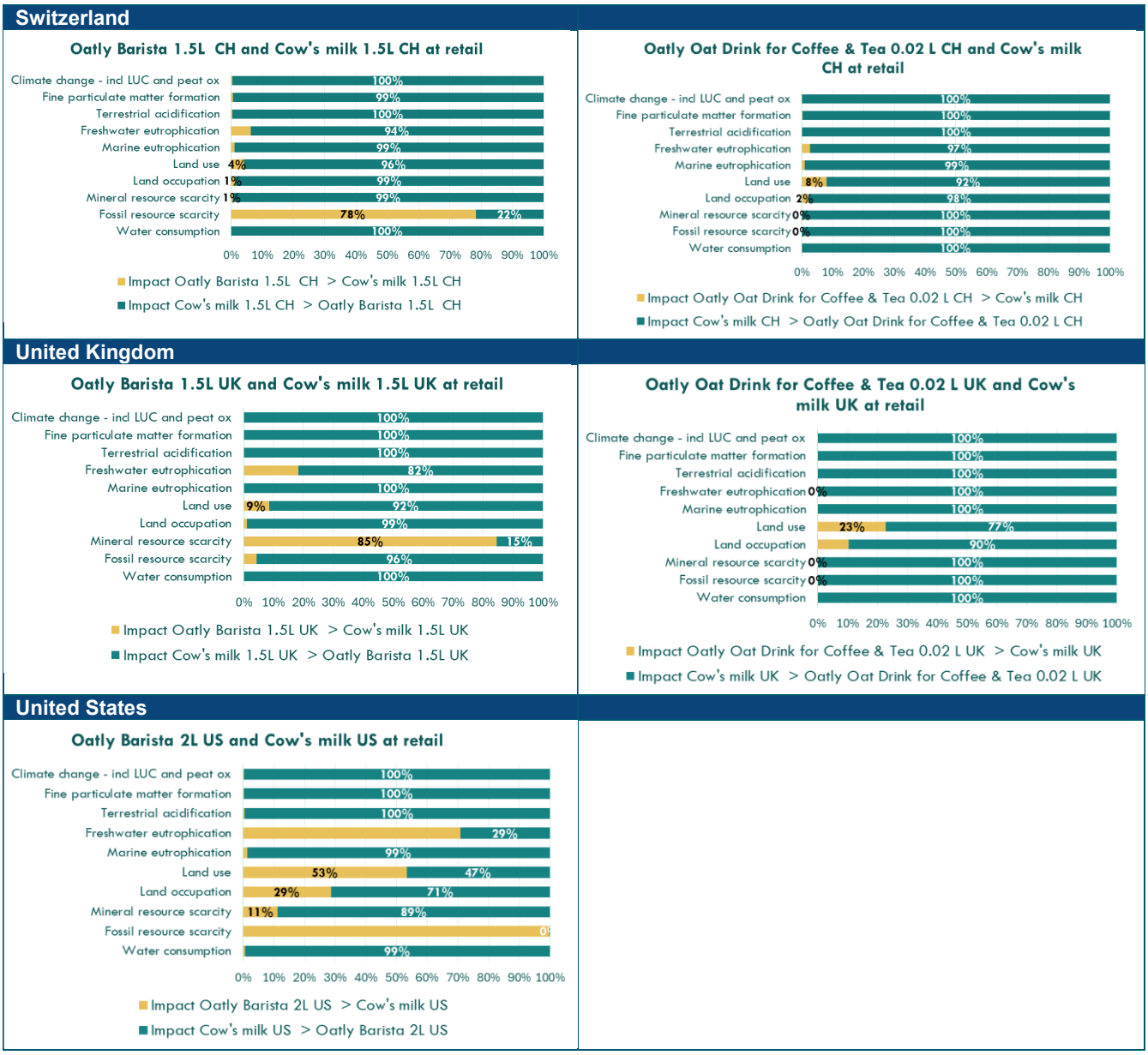


FIGURE 16: PAIRED MONTE CARLO ANALYSIS OF OATLY BARISTA 1.5L AND 2L, OAT DRINK FOR COFFEE & TEA, AND BARISTA LIGHTER TASTE AND COW'S MILK AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) PACKAGING, SHOWING THE PERCENTAGE OF MONTE CARLO RUNS IN WHICH ONE PRODUCT HAS A HIGHER IMPACT THAN THE OTHER. FOR EXAMPLE, FOR CLIMATE CHANGE, OATLY BARISTA 2L AT POINT OF SALE IN THE UNITED STATES HAS A LOWER IMPACT THAN COW'S MILK FOR 100% OF THE 1000 MONTE CARLO SIMULATIONS PERFORMED.

6. Conclusion

A Life Cycle Assessment (LCA) has been performed to compare the environmental performance of Oatly Barista 1.5L and 2L, Oatly Oat Drink for Coffee & Tea, and Oatly Barista Lighter Taste to cow's milk in multiple key sales markets in Europe and the United States. The functional unit considered for this study is 1 liter of Oatly product/cow's milk at the point of sale, including packaging manufacturing and packaging end of life. The study has been performed and critically reviewed according to ISO 14040/14044/14071 standards for comparative assertions to be disclosed to the public.

The results show that Oatly Barista 1.5L and 2L in most markets have a lower impact than cow's milk for the impact categories climate change, fine particulate matter formation, terrestrial acidification, marine eutrophication, land use (except for Barista 1.5L in Ireland, and Barista 2L), land occupation (except for Barista 2L), and water consumption (except for Barista 1.5L in Ireland). Oatly Barista 1.5L has also a lower impact on freshwater eutrophication except in the UK where results are comparable. For mineral resource scarcity and fossil resource scarcity, the differences between Oatly Barista 1.5L and cow's milk vary between significantly higher, lower, or insignificant. A higher impact on mineral resource scarcity than cow's milk can be mainly attributed to the use of aluminum in ambient beverage cartons.

Oatly Oat Drink for Coffee & Tea has a significantly lower impact than cow's milk for all 10 key impact categories and countries in scope, except for freshwater eutrophication in Sweden, land use in Germany, the UK and Ireland. This deviation from the main report on Oatly Barista, is due to the resources needed in producing the single use packaging for cow's milk in most countries in scope; especially since cow's milk comes in smaller containers needing more resources per liter.

Oatly Barista Lighter Taste has a lower impact than cow's milk for all countries in scope for the impact categories climate change, fine particulate matter formation, terrestrial acidification, freshwater eutrophication, marine eutrophication and land occupation. Oatly Lighter Taste has also a lower impact on water consumption, except in Norway, where results are comparable. Oatly Lighter Taste has also a lower impact on land use except in Denmark where results are comparable. For mineral resource scarcity and fossil resource scarcity, the differences between Oatly Lighter Taste and cow's milk vary between significantly higher, lower, or insignificant.

The main report concluded that using a different impact assessment method (ReCiPe endpoint, EF3.0 single score) confirmed the overall higher environmental footprint of cow's milk compared to Oatly products for all countries in scope. It also showed that results in the impact categories land use, mineral resource scarcity and water impact categories are less robust, as they result in different trends when using a different impact assessment method (EF 3.0). Furthermore, the sensitivity analyses in the main report concluded that using different product characteristics and methodological choices (chilled distribution, inclusion of use stage, using economic allocation for cow's milk, functional unit based on nutritional characteristics), did not lead to different conclusions on the environmental footprint of Oatly products compared to cow's milk.

A detailed analysis of the main drivers and opportunities linked to the environmental impact of Oatly products can be found in the main report.

Conclusions and recommendations presented here are subject to the assumptions and limitations addressed in this report and the main report. Any comparative assessment intended to be disclosed to the public, should transparently refer to the conclusions of these studies, and be accompanied by the critical review statement.

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Appendix I Oatly production modelling (confidential data)

This appendix is not available in this version of the report due to confidential data.

Appendix II Full LCIA Results

Oatly Barista 1.5L and 2L
All impact categories (FU : 1 l, at point of sale)

Impact category	Unit	Oatly Barista 1.5L AT	Oatly Barista 1.5L DE	Oatly Barista 1.5L IE	Oatly Barista 1.5L CH	Oatly Barista 1.5L UK	Oatly Barista 2L US
Climate change - incl LUC and peat ox	kg CO2 eq	5.91E-01	5.40E-01	5.30E-01	5.84E-01	5.38E-01	8.15E-01
Climate change - excl LUC and peat ox	kg CO2 eq	4.89E-01	4.37E-01	4.27E-01	4.81E-01	4.35E-01	7.61E-01
Climate change - only LUC	kg CO2 eq	1.22E-02	1.22E-02	1.22E-02	1.22E-02	1.22E-02	5.35E-02
Climate change - only peat ox	kg CO2 eq	9.07E-02	9.07E-02	9.07E-02	9.07E-02	9.07E-02	8.24E-04
Stratospheric ozone depletion	kg CFC11 eq	2.83E-06	2.80E-06	2.80E-06	2.82E-06	2.80E-06	2.47E-06
Ionizing radiation	kBq Co-60 eq	3.18E-02	3.24E-02	3.04E-02	3.34E-02	3.66E-02	1.26E-02
Ozone formation, Human health	kg NOx eq	1.57E-03	1.35E-03	1.70E-03	1.50E-03	1.38E-03	2.90E-03
Fine particulate matter formation	kg PM2.5 eq	4.66E-04	4.28E-04	5.41E-04	4.53E-04	4.36E-04	8.07E-04
Ozone formation, Terrestrial ecosystems	kg NOx eq	1.85E-03	1.64E-03	1.98E-03	1.78E-03	1.67E-03	3.93E-03
Terrestrial acidification	kg SO2 eq	3.32E-03	3.21E-03	3.57E-03	3.28E-03	3.23E-03	7.36E-03
Freshwater eutrophication	kg P eq	1.80E-04	1.71E-04	2.71E-04	1.53E-04	2.55E-04	1.08E-03
Marine eutrophication	kg N eq	5.82E-04	5.77E-04	6.11E-04	5.76E-04	6.07E-04	6.21E-04
Terrestrial ecotoxicity	kg 1,4-DCB	1.80E+00	1.73E+00	1.72E+00	1.83E+00	1.79E+00	3.10E+00
Freshwater ecotoxicity	kg 1,4-DCB	2.77E-02	2.60E-02	2.85E-02	2.65E-02	2.82E-02	4.83E-02
Marine ecotoxicity	kg 1,4-DCB	2.10E-02	1.87E-02	2.22E-02	1.96E-02	2.18E-02	3.16E-02
Human carcinogenic toxicity	kg 1,4-DCB	3.99E-02	3.95E-02	3.96E-02	4.00E-02	3.95E-02	6.01E-02
Human non-carcinogenic toxicity	kg 1,4-DCB	5.09E-01	4.80E-01	5.49E-01	4.90E-01	5.39E-01	5.74E-01
Land use (Total)	m2a crop eq	6.42E-01	6.33E-01	6.41E-01	6.41E-01	6.42E-01	8.28E-01
Land use (Transformation)	m2a crop eq	3.39E-03	3.04E-03	2.91E-03	3.11E-03	3.06E-03	3.81E-02
Land occupation	kg Cu eq	7.20E-01	6.90E-01	7.17E-01	7.17E-01	7.19E-01	9.05E-01
Mineral resource scarcity	kg oil eq	1.12E-03	1.11E-03	1.11E-03	1.12E-03	1.12E-03	1.60E-03
Fossil resource scarcity	m3	1.28E-01	1.22E-01	1.23E-01	1.26E-01	1.24E-01	2.34E-01
Water consumption	m2a	3.71E-03	3.59E-03	3.47E-03	3.75E-03	3.50E-03	5.29E-03

Oatly Oat Drink for Coffee & Tea
All impact categories (FU : 1 l, at point of sale)

Impact category	Unit	Oatly Oat Drink for Coffee & Tea AT	Oatly Oat Drink for Coffee & Tea FI	Oatly Oat Drink for Coffee & Tea DE	Oatly Oat Drink for Coffee & Tea IE	Oatly Oat Drink for Coffee & Tea SE	Oatly Oat Drink for Coffee & Tea CH	Oatly Oat Drink for Coffee & Tea UK
Climate change - incl LUC and peat ox	kg CO2 eq	7.59E-01	6.80E-01	6.38E-01	6.47E-01	6.94E-01	7.72E-01	6.73E-01
Climate change - excl LUC and peat ox	kg CO2 eq	6.44E-01	5.66E-01	5.24E-01	5.33E-01	5.79E-01	6.57E-01	5.58E-01
Climate change - only LUC	kg CO2 eq	3.32E-02	3.32E-02	3.32E-02	3.32E-02	3.32E-02	3.33E-02	3.32E-02
Climate change - only peat ox	kg CO2 eq	8.11E-02	8.11E-02	8.11E-02	8.11E-02	8.11E-02	8.11E-02	8.11E-02
Stratospheric ozone depletion	kg CFC11 eq	2.94E-06	2.90E-06	2.88E-06	2.88E-06	2.90E-06	2.92E-06	2.89E-06
Ionizing radiation	kBq Co-60 eq	4.12E-02	3.79E-02	4.05E-02	3.82E-02	3.74E-02	4.19E-02	4.25E-02
Ozone formation, Human health	kg NOx eq	2.17E-03	1.83E-03	1.71E-03	2.57E-03	1.63E-03	2.15E-03	2.38E-03
Fine particulate matter formation	kg PM2.5 eq	7.63E-04	6.99E-04	6.70E-04	9.05E-04	6.54E-04	7.67E-04	8.32E-04
Ozone formation, Terrestrial ecosystems	kg NOx eq	2.48E-03	2.14E-03	2.03E-03	2.89E-03	1.94E-03	2.46E-03	2.69E-03
Terrestrial acidification	kg SO2 eq	4.25E-03	4.04E-03	3.97E-03	4.73E-03	3.90E-03	4.26E-03	4.48E-03
Freshwater eutrophication	kg P eq	3.05E-04	4.35E-04	2.56E-04	5.81E-04	2.45E-04	2.56E-04	5.39E-04
Marine eutrophication	kg N eq	6.12E-04	6.53E-04	5.97E-04	6.96E-04	5.97E-04	5.97E-04	6.83E-04
Terrestrial ecotoxicity	kg 1,4-DCB	3.14E+00	3.08E+00	3.06E+00	3.09E+00	3.09E+00	3.22E+00	3.17E+00
Freshwater ecotoxicity	kg 1,4-DCB	4.57E-02	4.65E-02	4.00E-02	4.76E-02	4.37E-02	4.43E-02	4.72E-02
Marine ecotoxicity	kg 1,4-DCB	4.55E-02	4.68E-02	3.80E-02	4.84E-02	4.29E-02	4.38E-02	4.79E-02
Human carcinogenic toxicity	kg 1,4-DCB	1.01E-01	1.01E-01	9.98E-02	1.01E-01	1.01E-01	1.03E-01	1.01E-01
Human non-carcinogenic toxicity	kg 1,4-DCB	8.14E-01	8.72E-01	7.09E-01	9.37E-01	7.63E-01	7.85E-01	9.17E-01
Land use (Total)	m2a crop eq	7.12E-01	7.13E-01	6.94E-01	7.10E-01	7.10E-01	7.10E-01	7.11E-01
Land use (Transformation)	m2a crop eq	5.10E-03	4.60E-03	4.52E-03	4.72E-03	4.31E-03	4.61E-03	4.94E-03
Land occupation	kg Cu eq	8.89E-01	8.92E-01	8.29E-01	8.84E-01	8.83E-01	8.84E-01	8.85E-01
Mineral resource scarcity	kg oil eq	2.40E-03	2.38E-03	2.39E-03	2.40E-03	2.37E-03	2.41E-03	2.41E-03
Fossil resource scarcity	m3	1.25E-01	1.16E-01	1.18E-01	1.28E-01	1.01E-01	1.29E-01	1.31E-01
Water consumption	m2a	6.38E-03	6.20E-03	6.30E-03	6.02E-03	6.21E-03	6.35E-03	6.09E-03

Oatly Barista Lighter Taste
All impact categories (FU : 1 l, at point of sale)

Impact category	Unit	Oatly Barista Lighter Taste NL - AT	Oatly Barista Lighter Taste SE - DK	Oatly Barista Lighter Taste SE – FI	Oatly Barista Lighter Taste NL - DE	Oatly Barista Lighter Taste SE - NO	Oatly Barista Lighter Taste NL – IE	Oatly Barista Lighter Taste SE - SE	Oatly Barista Lighter Taste NL - CH	Oatly Barista Lighter Taste NL - UK
Climate change - incl LUC and peat ox	kg CO2 eq	5.55E-01	3.75E-01	3.77E-01	5.11E-01	3.69E-01	5.09E-01	3.60E-01	5.50E-01	5.08E-01
Climate change - excl LUC and peat ox	kg CO2 eq	4.55E-01	2.80E-01	2.83E-01	4.11E-01	2.74E-01	4.09E-01	2.65E-01	4.50E-01	4.08E-01
Climate change - only LUC	kg CO2 eq	1.80E-02	2.20E-02	2.20E-02	1.80E-02	2.20E-02	1.80E-02	2.20E-02	1.80E-02	1.80E-02
Climate change - only peat ox	kg CO2 eq	8.20E-02	7.25E-02	7.25E-02	8.20E-02	7.25E-02	8.20E-02	7.25E-02	8.20E-02	8.20E-02
Stratospheric ozone depletion	kg CFC11 eq	2.50E-06	2.39E-06	2.39E-06	2.48E-06	2.39E-06	2.48E-06	2.39E-06	2.49E-06	2.48E-06
Ionizing radiation	kBq Co-60 eq	3.15E-02	2.22E-02	2.90E-02	3.20E-02	2.12E-02	2.99E-02	2.99E-02	3.38E-02	3.64E-02
Ozone formation, Human health	kg NOx eq	1.56E-03	8.96E-04	1.19E-03	1.31E-03	1.09E-03	1.67E-03	1.03E-03	1.48E-03	1.33E-03
Fine particulate matter formation	kg PM2.5 eq	4.60E-04	3.51E-04	4.04E-04	4.16E-04	3.72E-04	5.32E-04	3.63E-04	4.45E-04	4.24E-04
Ozone formation, Terrestrial ecosystems	kg NOx eq	1.80E-03	1.14E-03	1.44E-03	1.55E-03	1.34E-03	1.91E-03	1.27E-03	1.72E-03	1.58E-03
Terrestrial acidification	kg SO2 eq	3.02E-03	2.85E-03	3.02E-03	2.89E-03	2.93E-03	3.27E-03	2.90E-03	2.97E-03	2.91E-03
Freshwater eutrophication	kg P eq	1.64E-04	1.46E-04	1.82E-04	1.60E-04	1.37E-04	2.16E-04	1.37E-04	1.42E-04	2.05E-04
Marine eutrophication	kg N eq	5.06E-04	4.98E-04	5.09E-04	5.03E-04	4.96E-04	5.25E-04	4.96E-04	5.02E-04	5.22E-04
Terrestrial ecotoxicity	kg 1,4-DCB	1.77E+00	1.68E+00	1.72E+00	1.67E+00	1.69E+00	1.63E+00	1.70E+00	1.75E+00	1.70E+00
Freshwater ecotoxicity	kg 1,4-DCB	2.39E-02	2.42E-02	2.39E-02	2.29E-02	2.25E-02	2.43E-02	2.32E-02	2.28E-02	2.40E-02
Marine ecotoxicity	kg 1,4-DCB	1.90E-02	1.96E-02	1.92E-02	1.76E-02	1.72E-02	1.95E-02	1.81E-02	1.76E-02	1.92E-02
Human carcinogenic toxicity	kg 1,4-DCB	4.16E-02	3.93E-02	3.81E-02	4.07E-02	3.75E-02	4.05E-02	3.79E-02	4.08E-02	4.04E-02
Human non-carcinogenic toxicity	kg 1,4-DCB	4.59E-01	4.55E-01	4.57E-01	4.43E-01	4.23E-01	4.79E-01	4.29E-01	4.42E-01	4.72E-01
Land use (Total)	m2a crop eq	5.87E-01	5.95E-01	5.85E-01	5.77E-01	5.79E-01	5.85E-01	5.84E-01	5.86E-01	5.86E-01
Land use (Transformation)	m2a crop eq	3.42E-03	2.26E-03	2.77E-03	3.00E-03	2.70E-03	2.90E-03	2.54E-03	3.18E-03	3.00E-03
Land occupation	kg Cu eq	6.65E-01	7.01E-01	6.68E-01	6.34E-01	6.46E-01	6.63E-01	6.63E-01	6.62E-01	6.65E-01
Mineral resource scarcity	kg oil eq	1.11E-03	1.06E-03	1.07E-03	1.10E-03	1.07E-03	1.10E-03	1.07E-03	1.11E-03	1.11E-03
Fossil resource scarcity	m3	1.25E-01	4.57E-02	5.89E-02	1.18E-01	5.80E-02	1.21E-01	4.94E-02	1.25E-01	1.19E-01
Water consumption	m2a	3.82E-03	4.05E-03	4.02E-03	3.67E-03	4.60E-03	3.57E-03	3.99E-03	3.88E-03	3.60E-03

Appendix III Critical Review Statement and Report

Critical Review Statement

The life cycle assessment (LCA) study *LCA of Oatly Barista variants and comparison with cow's milk,* addendum to the report *"LCA of Oatly Barista and comparison with cow's milk"* was commissioned by Oatly (commissioner of the study) and carried out by Merieux NutriSciences | Blonk (practitioner of the LCA study). Merieux NutriSciences | Blonk commissioned a panel of external experts to review the study *LCA of Oatly Barista variants and comparison with cow's milk*. The study was critically reviewed by an international panel of experts comprising:

- Jasmina Burek (chair): Assistant Professor at University of Massachusetts Lowell (based in the US)
- Joseph Poore: Food Sustainability expert at the University of Oxford (based in the UK), with assistance of Valentina Caldart, Agri-environmental data lead (HESTIA), University of Oxford (based in the UK)
- Hayo van der Werf: LCA expert (based in France)

All members of the review panel were independent of any party with a commercial interest in the study. The following is a final statement by the external review panel based on the review of the Draft Report, a version of the document submitted on June 4th, 2025.

Critical Review Process

The critical review was performed based on ISO 14044:2006 standard, by a panel of interested parties (ISO 14044, 2006). The critical review panel followed the ISO/TS critical review process guidelines (ISO/TS, 2014). The panel performed the critical review at the end of the LCA study, after LCA practitioners provided the full draft of the LCA report. This is because this study closely follows methods of previously peer reviewed report "*LCA of Oatly Barista and comparison with cow's milk*", reviewed by an expert panel comprising two members of the current panel (J. Burek and H. van der Werf). Two subsequent sets of review comments were performed after LCA practitioners provided the full draft of the LCA report to the critical review panel. The review excluded an assessment of the LCI models developed by Merieux NutriSciences | Blonk for this project and hence all the findings of the critical review are based solely on the LCA report that was made available to the panel during the critical review. However, the LCI was made available to the reviewers as an annex to the report, which is excluded from the published report because of confidentiality.

Chair Decision on Post-Review Corrections (July 14, 2025)

Following the completion of the critical review process, minor modeling errors were identified by the LCA practitioners in the published version of the report, specifically related to: (1) the end-of-life packaging modeling for cow's milk in Sweden, which had inadvertently used data from Germany; and (2) the use of refrigerants in UHT milk processing, which were not applicable in this context. These corrections were implemented and are reflected in updated results for specific tables: Table 2: Updates to 6 indicators for Sweden and climate change for the UK; Table 16 A-B-D-G: Updates to climate change results; Table 16 E: Inclusion of more impact categories; Table 19: Same update pattern as Table 2. These

changes affect some absolute values and visual comparisons but do not alter the conclusions of the study. Therefore, the chair agrees that the updated version of the report can replace the originally reviewed version dated June 4, 2025, without requiring a re-initiation of the critical review process. This approach is aligned with best practices and ISO standards, provided the version history and updates are transparently documented within the revised report. The chair recommends maintaining the original report date (June 4, 2025) to avoid confusion across communications and citations.

The critical review panel found the LCA study to be in conformance with ISO 14040 and ISO 14044 standards (ISO 14040, 2006; ISO 14044, 2006) including:

- the methods used to carry out the LCA were consistent with the applicable international standards
- the methods used to carry out the LCA were scientifically and technically valid
- the data used were appropriate and reasonable in relation to the goal of the study
- the interpretations reflected the limitations identified and the goal of the study, and
- the study report was transparent and consistent.

The critical review did not verify nor validate the goals that are chosen for an LCA by the commissioner of the LCA study, nor the ways in which the LCA results are used (ISO/TS, 2014). Finally, following the ISO standards this critical review in no way implies an endorsement of any comparative assertion that is based on an LCA study (ISO 14040, 2006; ISO 14044, 2006). The panel asserts conformity with the ISO standards followed (ISO 14040, 2006; ISO 14044, 2006; ISO/TS, 2014) and a scientifically and technically valid methodological approach and results interpretation.

The critical-review process involved the following:

- a review of a draft report according to the above criteria and recommendations for improvements to the study and the report (May 28th, 2025); and
- a review of the final version of the report, in which the authors of the study fully addressed the points as suggested in the draft critical review (June 3rd, 2025).

Because the *LCA of Oatly Barista variants and comparison with cow's milk* study builds on the foundations of the previous LCA studies study for Oatly, i.e., "*LCA of Oatly Barista and comparison with cow's milk",* reviewed by an external review panel comprising two members of the current panel, all reviewers' comments were provided via email including:

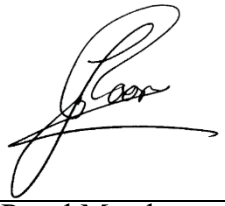
- May 28, 2025 – reviewers provided comments on the draft of the final LCA report via email.
- June 4, 2025- reviewers validated changes from the previous review and identified minor editorial changes on the final LCA report via email.

After each review, the LCA practitioner responded and/or and documented the adopted changes and implementation in the next version of the draft report. The Critical Review Report (Appendix III) includes panel review comments and recommendations, and the corresponding responses given by the practitioner of the LCA study.

The review panel concludes based on the goals set forth to review this study, that the study generally conforms to the applicable ISO standards as a comprehensive study that may be disclosed to the public.

The reviewers recognize the tremendous work of the LCA practitioners and stakeholder in completing this study.

June 4, 2025

Dr. Jasmina Burek	Dr. Joseph Poore	Dr. Hayo van der Werf
		
Panel Chair	Panel Member	Panel Member

LCA of Oatly Barista variants and comparison with cow's milk

Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022

Version of the document submitted on June 4, 2025

Critical Review Report

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Dr. Joseph Poore & MSc. Valentina Caldart (ISO Review panelist)
Agri-Food Sustainability experts
University of Oxford (based in the UK)

Dr. Hayo van der Werf (ISO Review panelist)
LCA expert
France

1. Introduction

The **Critical Review Report** is the summary report documenting the critical review process according to the ISO/TS 14071:2014 Standard - Environmental management -- Life cycle assessment -- Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006. The **Critical Review Report** provides details of the complete review process (ISO/TS, 2014) and includes all review comment iterations of the study "*LCA of Oatly Barista variants and comparison with cow's milk*" - Addendum to the report "*LCA of Oatly Barista and comparison with cow's milk*", published on 7 December 2022. The study "*LCA of Oatly Barista variants and comparison with cow's milk*" was commissioned by Oatly and life cycle assessment (LCA) was performed by Merieux NutriSciences | Blonk. The critical review was commissioned by the practitioners of the LCA study. A critical review was carried out by a panel of reviewers, as defined in ISO 14044:2006 (ISO 14044, 2006). The **Critical Review Report** was prepared by the critical review panel. The **Critical Review Report** applies to final version "*LCA of Oatly Barista variants and comparison with cow's milk*" published on June 4, 2025.

2. Critical Review Process

The critical review panel followed the ISO/TS critical review process guidelines (ISO/TS, 2014). Because this LCA study includes results which are intended to be used to support a comparative assertion intended to be disclosed to the public, per critical review process guidelines (ISO/TS, 2014), the critical review was conducted by a panel.

Two sets of reviewer comments were provided after LCA practitioners provided the full draft of the LCA report to the critical review panel. The critical review report includes panel review comments and recommendations, and the corresponding responses given by the practitioner of the LCA study.

Per critical review process guidelines (ISO/TS, 2014), the goal of this critical review was to verify that:

- the methods used to carry out the LCA study are consistent with the 14040/14044 International Standards (ISO 14040, 2006; ISO 14044, 2006),
- the methods used to carry out the LCA are scientifically and technically valid,
- the data used are appropriate and reasonable in relation to the goal of the study,
- the interpretations reflect the limitations identified and the goal of the study,
- the study report is transparent and consistent.

However, critical review can neither verify nor validate the goals that are chosen for an LCA by the commissioner of the LCA study, nor the ways in which the LCA results are used (ISO/TS, 2014). Finally, following the ISO standards this critical review in no way implies an endorsement of any comparative assertion that is based on an LCA study (ISO 14040, 2006; ISO 14044, 2006).

The review was performed by an independent expert panel composed of four members. The critical-review process involved the following:

- a review of a draft report according to the above criteria and recommendations for

improvements to the study and the report (May 28th, 2025); and

- a review of the final version of the report, in which the authors of the study fully addressed the points as suggested in the critical review (June 3rd, 2025)

3. Critical Review Results

This section includes summary of the critical review. A complete list of comments addressing specific statements on the draft LCA report provided by the critical review panelists and subsequent revisions is provided in Appendix III.

The reviewers recognize the remarkable effort by the LCA practitioners (Merieux NutriSciences | Blonk) in conducting the comparative LCA study as well as the stakeholder (Oatly) that provided primary data as well as critical comments. The critical review panel pointed out both the strengths as well as key areas of improvement necessary to conform to the 14040/14044 International Standards (ISO 14040, 2006; ISO 14044, 2006).

3.1. Consistency with 14040/14044 International Standards

The final LCA report is consistent with the 14040 and 14044 International Standards (ISO 14040, 2006; ISO 14044, 2006) and the European Product Environmental Footprint Category Rules (PEFCR) (European Commission, 2017). The authors appropriately defined the goal of the study and functional unit for comparison of one-liter of four Oatly Barista variants to cow's milk in multiple key sales markets including Oatly Barista 1.5 L in Austria, Germany, Ireland, Switzerland, United Kingdom; Oatly Barista 2L in the United States; Oatly Oat Drink for Coffee & Tea 0.02 L in Austria, Finland, Germany, Ireland, Sweden, Switzerland and the United Kingdom; and Oatly Barista Lighter Taste 1L in Austria, Denmark, Finland, Germany, Norway, Ireland, Sweden, Switzerland and the United Kingdom. It was not deemed necessary to repeat all sensitivity analyses, considering that the environmental impacts related to Oatly Barista (main report), are comparable to the results of Oatly Barista variants. Thus, the conclusions that were drawn based on the sensitivity analyses in the main report also apply to the products in this addendum.

The study is comprehensive in scope and contains a wealth of information and data related to Oatly Barista variants product supply chains in their respective production countries. The authors provided information why the critical review is being undertaken and what data collection covered and to what level of detail and how comparison with the cow milk was conducted in addition to performing uncertainty analysis.

3.2. Life Cycle Assessment Approach and Life Cycle Impact Assessment Method

The authors computed results following the attributional LCA approach. In a baseline scenario, Oatly Barista variants were compared to 1 l of cow milk at the point of sale. The life cycle impact assessment was performed using nine key midpoint environmental impact categories from the ReCiPe 2016 impact assessment method (Huijbregts et al., 2016) and an uncharacterised land occupation indicator. Overall, the methodology to evaluate the results of the impact assessment and support conclusion are considered appropriate for the goal and scope of the study

Since the products in scope of this addendum are very similar to the products investigated in the

main report, this report contains no sensitivity analyses. Only an uncertainty analysis is included. Uncertainty analysis was conducted to capture the variability in outcomes due to input data uncertainties, with Monte Carlo-based pairwise comparisons employed to evaluate the statistical significance of differences between product systems.

Overall, the methodology and the selection of the uncertainty analyses to evaluate the results of the impact assessment and support conclusion are considered appropriate for the goal and scope of the study.

3.3. Data Used for Life Cycle Inventory in Relation to the Goal of the Study

Overall, the data used is considered appropriate and reasonable for the goal and scope of the study. The study incorporated proprietary stakeholder life cycle inventory (LCI) data required to conduct the LCA of Oatly Barista variants across different markets. The LCI data for the cow milk supply chain was consistent with that used in the main report, "*LCA of Oatly Barista and Comparison with Cow's Milk*". The authors of the final report clearly described LCIs and data sources. Also, authors provided information about robustness and limitations of the data used for Oatly Barista variants and assumptions for uncertainty analyses.

3.4. Interpretation and Limitations within the Goal of the Study

The authors present a large variety of results addressing various aspects of the study. The selected results help to understand study's conclusions and adequately support derived interpretation. Uncertainty analyses further provide insights of the methodological and data choices and their influence on results, robustness of the conclusions, and the limitations of the results. Overall, interpretation of results and limitations of the study discussed in the report are considered appropriate for the goal of the study.

3.5. Transparency and Consistency of the Final Report

The authors provided an extensive report following the 14040/14044 International Standards (ISO 14040, 2006; ISO 14044, 2006) and supplemental information with information concerning the data and methodology used. The main report describes LCA framework including goal and scope, LCI, LCIA, results and interpretation, uncertainty analysis and conclusion. The key aspects of the data used is described in the LCI section and accompanied with the supplemental information, which provides more details on the data sources. Overall, the information given in the documentation is considered appropriate for understanding the methodology and data basis for most topics.

Literature

European Commission, 2017. Product Environmental Footprint Category Rules Guidance. PEFCR Guid. Doc. - Guid. Dev. Prod. Environ. Footpr. Categ. Rules (PEFCRs), version 6.3, December 2017. 238.

Huijbregts, M.A.J., Steinmann, Z.J.., Elshout, P.M.F., Stam, G., Verones, F., Vieira, M.D.., Zijp, M., van Zelm, R., 2016. ReCiPe 2016: A harmonized life cycle impact assessment method at midpoint and enpoint level - report 1 : characterization, National Institute for Public Health and the Environment.

ISO/TS, 2014. ISO/TS 14071:2014 - Environmental management -- Life cycle assessment --

Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006 [WWW Document]. URL https://www.iso.org/standard/61103.html (accessed 6.21.19).

ISO 14040, 2006. ISO 14040:2006 - Environmental management - life cycle assessment - principles and framework [WWW Document]. ISO. URL https://www.iso.org/standard/37456.html (accessed 2.22.17).

ISO 14044, 2006. Environmental management - Life cycle assessment — Requirements and guidelines (International Organization for Standardization).

4. List of Specific Reviewer Comments Recommendations and Corresponding Responses

Critical Review Panel provided comments on goal and scope document and 2 iterations of the draft report. These comments were addressed and/or incorporated in the final version of the report by the LCA partitioners. The review statement and review panel report including comments of the experts and any responses to recommendations made by the reviewers or by the panel have been included in the final LCA report.

Date: May 2025	Document: **LCA of Oatly Barista variants and comparison with cow's milk - Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022**	Project:

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
HW	7			ed	Change "0,02" to "0.02"	Can you adjust?	Changed	OK
HW	16			ed	Change "product formulations ," to "product formulations,"	Can you adjust?	Changed	OK
HW	47			ed	Change "Germany" to "Germany,"	Can you adjust?	Changed	OK
HW	48			ed	Change "a 10% higher impact than" to "a comparable impact as"	Can you adjust?	Changed to "a comparable impact to"	OK
HW	51			ed	Change "Germany" to "Germany,"	Can you adjust?	Changed	OK
HW	52			ed	Change "impact on land use and land occupation" to "impact on freshwater eutrophication, land use and land occupation"	Can you adjust?	Changed	OK
HW	54			ed	Change "lower impact) and the UK (10% lower impact) and the results are comparable in Austria, Germany, and Switzerland" to "lower impact), and the results are comparable in Austria, Germany, the UK and Switzerland"	Can you adjust?	Changed	OK
HW			Table 1	te	The difference for fossil resource scarcity in the UK is -10%, it is coded "green", but it should be coded "yellow". The difference for freshwater eutrophication in the US is 10%, it is coded "red", but it should be coded "yellow".	Can you adjust the colour in the table and modify the corresponding text?	This is due to rounding. The result is -9.7% for fossil resource scarcity in the UK, and +10.3% for freshwater eutrophication in the US. Changed to keep consistency	OK
HW	57			ed	Change "Dutch" to "US".	Can you adjust?	Changed	OK
HW	57			ed	Change" Oatly Barista 1.5L has a 11% higher" to "Oatly Barista 1.5L has a lower impact for Austria (19%) and Switzerland (50%), it has a 11% higher"	Can you adjust?	Changed	OK
HW			Figure 1	ed	The figure shown here is not for Oatly Barista, but for Oatly Oat drink for coffee and tea.	Can you change the figure?	Changed	OK
HW			Footnote 2	te	Footnote 2: *Characterization factors for phosphorus emissions to water have been regionalized in a 2024 update of the ReCiPe method (v.1.09), resulting in higher relative emissions for Canadian crops (for oats) and lower for US crops (for cow's*	Can you adjust?	Adjusted	OK

1 Initials of the **Reviewer**

2 **Type of comment: ge** = general **te** = technical **ed** = editorial

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
					feed). More specifically, they have been geographically spatialised with the phosphorous emission for Canada evolving from 1 kg Peq/kg P emitted (non-spatialised characterization factor in the 2022 report) to about 7 in for Canada (Oatly ingredient cultivation), 5 in the US (feed for cow's milk in the US). I did not notice this in the previous report, but the footnote says that P emissions to water were lower for the US, resulting from a change in the emission factor from 1 kg Peq/kg P to 5 kg Peq/kg P. This is not logical; it would be good to formulate this differently. Maybe it was meant to say that the US values increased less than the values for Canada?			
HW	112			ed	Delete "DK = DENMARK," and "NO = NORWAY"	Can you adjust?	Changed	OK
HW	158			ed	Change "are" to "is".	Can you adjust?	Changed	OK
HW	180			ed	Change "eutrophication," to "eutrophication, mineral resource scarcity	Can you adjust?	Changed	OK
HW	181			ed	Change "land occupation and mineral resource scarcity" to "freshwater eutrophication, land use and land occupation"	Can you adjust?	Changed	OK
HW	182			ed	Change "for freshwater eutrophication, land use and fossil resource scarcity" to "for fossil resource scarcity"	Can you adjust?	Changed	OK
HW	188			ed	Change "Sweden" to "Sweden,"	Can you adjust?	Changed	OK
HW	208			ed	Change "4" to "four".	Can you adjust?	Changed	OK
HW	258			ed	Change "0,02" to "0.02".	Can you adjust?	Changed	OK
HW			Table 6	ed	Change "Germ-any" to "Germany".	Can you adjust?	Changed	OK
HW			Table 6	ed	The local name for Finland does not look very "Finnish". Similar for local names for Norway en Sweden.	Can you check?	KAURAJUOMA just means "oat drink" in Finnish, but the pack says "iKaffe light", which is what we call the "local name". All Nordic countries share the same artwork, so the local product name for all is "iKaffe light". Another example: in DE the local name is "Barista Edition Lighter Taste" and the word	OK

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Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
							"haferdrink" on the website just means "oat drink" in German.	
HW	338			ed	"Since a review panel (with 2 of the above reviewers) has already reviewed the main report, and have verified the methodology, data and assumptions made there, for this addendum only one review round was needed." At this stage, we do not know whether this will be true. I think this sentence can be deleted, if it is maintained, it may need to be updated.	To be considered.	Adjusted	OK
HW	345			te	"This addendum follows the exact same methodological standards and approaches as listed in chapter 2 of the main report." You do not mention the APS footprint tool. If a newer version of this tool has been used (as in the Oatly Barista AT CH report), it should be mentioned here.	To be considered.	Adjusted	OK
HW	378			ed	Change "than Oatly" to "than those for Oatly"	Can you adjust?	Changed	OK
HW	380			ed	Change "than Oatly" to "than those for Oatly"	Can you adjust?	Changed	OK
HW	406			ed	Change "0.002" to "0.02".	Can you adjust?	Changed	OK
HW	408			ed	Change "performs" to "perform".	Can you adjust?	Changed	OK
HW	414			ed	Change "are higher for the US 2L, and comparable for the UK 1.5 L product" to "are comparable for the UK 1.5 L product and the US 2L product"	Can you adjust?	Changed	OK
HW	417			ed	Change "higher" to "comparable".	Can you adjust?	Changed	OK
HW	418			ed	Change "coffee & tea" to "Oatly drink for coffee & tea"	Can you adjust?	Changed	OK
HW	419			ed	Change "products" to "products have"	Can you adjust?	Changed	OK
HW	420			ed	Change "9" to "8".	Can you adjust?	Changed	OK
HW	422			ed	Change "aluminum" to "aluminium".	Can you adjust?	Changed	OK
HW			Footnote 11	ed	Change ", Ireland, and the US" to "and Ireland"	Can you adjust?	Changed	OK

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Date: May 2025	Document: **LCA of Oatly Barista variants and comparison with cow's milk - Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022**	Project:

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
HW			Footnote 13	ed	Change ", Switzerland, 1 L sold in Austria, Germany, Switzerland, 2 L sold in the US" to ", Switzerland and UK, 1 L sold in Austria, Germany, Switzerland"	Can you adjust?	Changed	OK
HW	421			ed	Change "11 variants" to "12 variants".	Can you adjust?	Changed	OK
HW	429			ed	Change "6" to "7".	Can you adjust?	Changed	OK
HW	440			ed	Change "IN IN" to "IN".	Can you adjust?	Changed	OK
HW			Table 9 Austria	te	Percentages for mineral resource scarcity and water consumption are not identical to those in Table 1.	Can you check?	Corrected to match correct values of table 1	OK
HW			Table 9 Germany	te	Percentages for fossil resource scarcity and water consumption are not identical to those in Table 1.	Can you check?	Corrected to match correct values of table 1	OK
HW			Table 9 Ireland	te	Percentages for mineral resource scarcity and water consumption are not identical to those in Table 1.	Can you check?	Corrected to match correct values of table 1	OK
HW			Table 9 UK	te	Percentage for freshwater eutrophication is not identical to that in Table 1.	Can you check?	Corrected to match correct values of table 1	OK
HW			Table 11 Austria	te	Percentages for climate change, freshwater eutrophication, land occupation and fossil resource scarcity are not identical to those in Table 3.	Can you check?	Table 3 results changed to match correct values of table 11	OK
HW			Table 12	te	The difference for fossil resource scarcity in the UK is -10%, it is coded "green", but it should be coded "yellow". The difference for freshwater eutrophication in the US is 10%, it is coded "red", but it should be coded "yellow".	Can you adjust the colour in the table and modify the corresponding text?	This is due to rounding. The result is -9.7% for fossil resource scarcity in the UK, and +10.3% for freshwater eutrophication in the US. Changed to keep consistency	OK
HW	551			ed	Change ""than" to "than in".	Can you adjust?	Changed	OK
HW	551			ed	Change "previous report" to "main report".	Can you adjust?	Changed	OK
HW	579			ed	Change "in the UK and in the US" to "in the US".	Can you adjust?	Changed	OK
HW	583			ed	Change "POINT OF SALEINCLUDING" to "POINT OF SALE INCLUDING".	Can you adjust?	Changed	OK

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Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
HW	590			ed	"Top contributors these" to "Top contributors for these".	Can you adjust?	Changed	OK
HW	596			ed	Change "SALEINCLUDING" to "SALE INCLUDING"	Can you adjust?	Changed	OK
HW	596			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH= SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES."	Can you adjust?	Changed	OK
HW	607			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM."	Can you adjust?	Changed	OK
HW	608			ed	Change "the packaging stage is for the Oatly Coffee & Tea products" to "for the Oatly Coffee & Tea products the packaging stage is"	Can you adjust?	Changed	OK
HW	610			ed	Change "the case for fine particulate matter formation, mineral" to "the case for mineral".	Can you adjust?	Changed	OK
HW	616			ed	Change "categories (terrestrial acidification" to "categories (fine particulate matter formation, terrestrial acidification"	Can you adjust?	Changed	OK
HW			Figures 7 and 8	te	Figure 7 shows avoided emissions for climate change for DE due to cow milk packaging end of life. For CH, FI and SE emissions for cow milk packaging end of life are positive. For Fossil resource scarcity Figure 8 shows avoided emissions for DE (as expected), but also, at a similar extent, for AT, IE, CH and UK, which is surprising, since we saw no avoided climate change emissions for these countries.	Can you check?	In the case of climate change, incineration is a significant contributor to emissions at the product's EoL. For most countries, this impact offsets the benefits gained from plastics, heat and electricity reuse. However, in DE, where the recycling rate is higher (see also the response to the comment from JP on Fig. 1/2 below), the net impact is more favourable. For fossil resource scarcity, the avoided impacts observed for AT, IE, CH, and the UK are primarily due to the reuse of plastics and the recovery of heat and electricity. These processes reduce reliance on virgin fossil-based resources, which explains the negative	OK

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Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
							values for fossil resource scarcity, even in cases where no significant climate change benefits are observed (due to the waste incineration having significant impacts on climate change and insignificant impacts on fossil resource scarcity).	
HW			Figure 8	te	Figure 8 shows fossil resource scarcity value for AT cow milk is 0.46 kg oil-eq/L, resulting from a positive value of approximately 0.64 and a negative value of approximately 0.05. However, 0.64 – 0.05 = 0.59, so this does not seem to add up. A similar discrepancy can be observed for DE, while such a discrepancy does not seem present for IE, CH and UK milk.	Can you check?	Figure 8's vertical axes bounds were not set correctly. They have been adjusted.	OK
HW	622			ed	Change "main contributors" to "main contributors to the climate change impact"	Can you adjust?	Changed	OK
HW	635			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM."	Can you adjust?	Changed	OK
HW	645			ed	Change "impact" to "contribution".	Can you adjust?	Changed	OK
HW	651			ed	The caption of Figure 9 indicates "AND OATLY BARISTA". It is not clear whether Oatly Barista is shown in the figure.	Can you check?	Deleted "AND OATLY BARISTA".	OK
HW	651			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, FI = FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM."	Can you adjust?	Changed	OK
HW	671			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY,NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM."	Can you adjust?	Changed	OK
HW	688			ed	Change "PACKAGING." to "PACKAGING. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE =	Can you adjust?	Changed	OK

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Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
					GERMANY,NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM."			
HW	692-699			ed	Not clear why Figure 6 is discussed here. It would be better to reposition this discussion to section 5.1.2, while avoiding redundancy.	Can you adjust?	Figure correct, number incorrect. Changed to Figure 12 & removed lines 699-700	OK
HW	701			ed	It would be good to add e few lines summarizing the results of Figure 12 here.	Can you adjust?	Lines 704-711 are summarizing the results of Figure 12.	OK
HW	709			ed	Change "SWEDEN." to "SWEDEN. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM".	Can you adjust?	Changed	OK
HW	747			ed	Change "INTERVAL." to "INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, DE = GERMANY, IE = IRELAND, CH= SWITZERLAND, UK = UNITED KINGDOM, US = UNITED STATES."	Can you adjust?	Changed	OK
HW	753			ed	Change "INTERVAL." to "INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, FI + FINLAND, DE = GERMANY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM".	Can you adjust?	Changed	OK
HW	758			ed	Change "INTERVAL." to "INTERVAL. ABBREVIATIONS USED AT = AUSTRIA, DK = DENMARK, FI = FINLAND, DE = GERMANY, NO = NORWAY, IE = IRELAND, SE = SWEDEN, CH= SWITZERLAND, UK = UNITED KINGDOM".	Can you adjust?	Changed	OK
HW	760			ed	Change "The three graphs above" to "Figures 13, 14 and 15".	Can you adjust?	Changed	OK
HW	771			ed	Change "except for Oatly Barista 2L" to "except for Oatly Oat drink for coffee and tea in Sweden, Oatly Barista 1.5 L in the UK and Oatly Barista 2L"	Can you adjust?	Changed	OK
HW	772			ed	Change "water consumption" to "water consumption (except for Barista lighter taste in Norway)".	Can you adjust?	Changed	OK
HW	774			ed	Change "a number of" to "four".	Can you adjust?	Changed	OK

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Date: May 2025	Document: **LCA of Oatly Barista variants and comparison with cow's milk - Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022**	Project:

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
HW	775			ed	Change "land occupation" to "land use".	Can you adjust?	Changed	OK
HW	806			ed	Change "except for Barista 2L" to "except for Barista 1.5 L in Ireland, and Barista 2L"	Can you adjust?	Changed	OK
HW	807			ed	Change "water consumption" to "water consumption (except for Barista 1.5 L in Ireland	Can you adjust?	Changed	OK
HW	813			ed	Change "for land use in Ireland" to "for freshwater eutrophication in Sweden, land use in Germany, the UK and Ireland"	Can you adjust?	Changed	OK
HW	813			ed	Change "Ireland and for mineral resource scarcity in Sweden where results are comparable" to "Ireland."	Can you adjust?	Changed	OK
HW	819			ed	Change ", and water consumption" to ".Oatly Lighter Taste has also a lower impact on water consumption, except in Norway, where results are comparable."	Can you adjust?	Changed	OK
HW	840			ed	There is a lay-out problem with the references.	Can you adjust?	Changed	OK
HW	886			te	Transport DC to point of sale is 906 + 50 km for Austria and 87 + 50 for Switzerland. The distance to Switzerland seems very short.	Can you check?	The products are first transported to distribution centres before that. I rephrased in the table "Transport from second DC to point of sale", to clarify that these distances are from the second DC to the Point of Sale.	OK
HW	941			te	Transport to point of sale Switzerland is 64 to 74 +50 km, seems very short.	Can you check?	Same response as above	OK
JP			Fig. 1/2	te	The negative emissions for EoL for the UK and Germany are surprising to me.	Can you provide some justification?	The negative emissions are on fig. 2 for Oatly Oat Drink for Coffee & Tea. This is due to a higher recycling rate for plastics in Germany (avoided burden of producing new PP and therefore also reduction of the impact of municipal incineration and landfill). Using the CFF terminology, R2 (Germany) = 0.35. (compared to AT and CH, for which R2 = 0.25) For UK, R2 = 0.29 and for IE R2 = 0.34, however the heat recovery is higher in the UK,	OK

1 Initials of the **Reviewer**

2 **Type of comment: ge** = general **te** = technical **ed** = editorial

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
							due to a higher emission factor for the production of heat from natural gas.	
JP	165			ed	Space between "EF" and "3.0" here but not before.	Check.	Adjusted	OK
JP	224			ed	Missing full stop at end of sentence.	Change this.	Adjusted	OK
JP			Table 4/6	te	Can you justify the comparison of ambient products to chilled products?	Provide justification.	The reasoning is to compare the Oatly product with the most representative product in each country, so the one being most probably replaced by the Oatly product. See main report: *"For cow's milk, a country specific average market mix of skimmed, semi-skimmed, and whole milk was considered, as well as the most common heat treatment type (HTST or UHT) and packaging format (plastic, beverage carton, aseptic/chilled) in each country"* this means that the most common storage conditions (chilled/ambient) for milk are used and can differ per country.	OK
JP	335			ed	Capitalise HESTIA	Change this.	Adjusted	OK
JP	420			ed	The footnotes on the numbers look a bit like exponents. Can you maybe put the footnote after the text instead?	Change this.	Adjusted	OK
JP			Table 9	ed	Can you round the numbers e.g., to three significant figures? Otherwise this table gives a sense of false precision and is hard to read.	Change this.	Adjusted	OK
JP			Table 9	ed	Each table should have its own caption, otherwise its quite hard to read and understand them.	Add captions per table.	Adjusted	OK
JP			Fig. 6	ed	Comma used instead of a dot in 1,5L	Change this.	Adjusted	OK
JP			Fig. 10	te	Maybe the lighter taste products should be compared to skimmed milk?	Consider adding a justification for the comparison.	See main report: *"For cow's milk, a country specific average market mix of skimmed, semi-skimmed, and whole milk was considered".* The reasoning for using the	OK

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Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
							consumption fat mix independently of the fat content of the Oatly product is that there is no data showing that a consumer switching from cow's milk to Oatly would necessarily pick the same fat content. This is because other factors might play a role in this decision, like taste or nutrition. For example, the fat of Oatly products is mostly unsaturated compared to cow's milk that is mostly saturated (see some facts here: https://www.oatly.com/random-answers/17-facts-about-oatly-and-nutrition). Thus, the same consumer might prefer a fuller taste at higher fat content, given they are unsaturated, for oatmilk while for cow's milk they might choose semi-skimmed milk. When used for foaming/latte art, skimmed cow's milk might be preferred by Barista's, but when using oatmilk, they would most probably choose the Oatly Barista product even if the fat content might be higher due to its properties. In addition to this argument, we have conducted a sensitivity analysis comparing to different types of fat content in the main report. This analysis did not change the outcomes and it showed that the fat content selection for cow's milk had a minor influence on the results. The analysis also showed that skimmed cow's milk has a lower impact than whole milk, so comparing Oatly Barista lighter taste to a mix- fat average milk is a conservative approach in this case.	
JP	809			ed	Double space in sentence	Change this.	Did not find it but changed "1.5 L" to "1.5L" in a few occurrences	OK
JP	880			ed	It would be clearer if you used L instead of dm3	Suggest changing this.	Adjusted	OK

1 Initials of the **Reviewer**

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Date: May 2025	Document: **LCA of Oatly Barista variants and comparison with cow's milk - Addendum to the report "LCA of Oatly Barista and comparison with cow's milk", published on 7 December 2022**	Project:

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of comment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
JP	884			ed	I recognise the Circular Economy formulas in here, but I am not sure why there are in the table?	Edit these for clarity.	The formulas are in the table to explain how packaging production and EoL was modelled	OK
JP	893			ed	I think the formulas would be better in the comments section. Same with tables below too…	Edit these for clarity.	Some parameters are dependent on the geography and others of the material type. This is why we kept the formulas in the table. A short description has been added.	OK
JB				te	It is unclear whether this addendum's expanded product list introduces materially different functions, which could challenge the assumption of equivalence for the selected functional unit.	Clarify equivalence when comparing all of the different products	All products included in this comparison—regardless of formulation or packaging sizes are marketed and used primarily as milk alternatives in coffee preparation. See main report: *"The comparative assertion of the oat-based and cow's milk-based products requires that all products are compared based on the same function. The main function fulfilled by Oatly Barista and cow's milk is that they are added to coffee and other food and beverage items to provide taste and texture."*	OK
JB			Appendix	ge	There are variables in formulae, for example .0008652041*((1-R1)+R1*(1-A)*Qsin/Qp), which were not defined of described	Describe the variable meaning.	Adjusted	OK
JB				ge	There is inconsistent naming for some of the products. For example, Oatly Barista Lighter Taste and Barista edition Lighter Taste.	Recommendation is to use same name across the document	As mentioned, line 304: "The drink is known under different market names in the countries in scope […] but in this report they are consistently referred to as "Oatly Barista Lighter Taste".	OK
Comments on the version dated 29 May 2025								
HW	430			te	Change "15" to "14"	Can you adjust?	Adjusted	OK
HW			Table 9		The new "sub-captions" of Table 9 state "FOR OATLY BARISTA 1.5L AND 2L". For European countries it is 1.5 L, for the USA it is 2 L.	Can you adjust?	Adjusted	OK

1 Initials of the **Reviewer**

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5. Self-declaration of independence

I, the signatory, hereby declare that:

- I am not a full-time or part-time employee of the commissioner or practitioner of the LCA study
- I have not been involved in defining the scope or carrying out any of the work to conduct the LCA study at hand, i.e. I have not been part of the commissioner's or practitioner's project team(s)
- I do not have vested financial, political, or other interests in the outcome of the study

I declare that the above statements are truthful and complete.

Date: June 5, 2025

Name: Jasmina Burek

Signature: 

Name: Hayo van der Werf

Signature: 

Name: Joseph Poore

Signature: 

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