Report May 2026

LCA of Oatly Barista In key markets and comparison with cow's milk

LCA update report

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Mérieux NutriSciences | Blonk is a leading international expert in food system sustainability, inspiring and enabling the agri-food sector to give shape to sustainability. Our purpose is to create a sustainable and healthy planet for current and future generations. We support organizations in understanding their environmental impact in the agri-food value chain by offering advice and developing tailored software tools based on the latest scientific developments and data.

Title	LCA of Oatly Barista in key markets and comparison with cow's milk	
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Introduction

In December 2022, Blonk Consultants conducted a Life Cycle Assessment (LCA) to evaluate the environmental performance of Oatly Barista (an oat-based drink) and compare it to cow's milk[1]. That report will be referred to as "Main Report" from now on.

The Main Report examined 6 variants of the Oatly Barista Product sold in different markets i.e. Germany, Finland, the Netherlands, Sweden, the UK, and the US. The main report analysed the ambient versions in each market, however the chilled versions were also assessed in the Sensitivity Analysis. In the US, the ambient variant was also analysed for two different channels: retail and foodservice.

The functional unit considered for the study was 1 liter of Oatly Barista/cow's milk at the point of sale, 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 and refers to production from Oatly's factories. For the cow's milk, data and statistics at a national level were used.

The study was performed and critically reviewed according to ISO 14040/14044 and ISO/TS 14071:2014 standards for comparative assertions that may 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 9 key impact categories from the ReCiPe 2016 impact assessment method. The study was conducted between January and November 2022.

This short report aims to refresh the operation data of Oatly Barista products sold in Germany, Finland the Netherlands, Sweden and the United Kingdom from 2021 in the Main Report to 2025 in this report. The reason behind this refresh is to better represent the impact of these products today due to changes in operations in the course of the last 4 years. In short, the most significant changes are the following:

1. **Decreases in energy consumption and change of energy sources**
2. **Changes in distribution distances**
3. **Changes in oat and rapeseed oil origins**

The changes summarized above refer to changes in Oatly operations. In addition, background processes were also updated with the use of more recent Ecoinvent and Agri-footprint databases (Ecoinvent version 3.11 instead of 3.6, and Agri-Footprint 7 instead of 6). Methodological changes included the updated version of the LCIA method (ReCiPe 2016 v 1.1. instead of ReCiPe 2016 v 1.01 method (Huijbregts et al., 2016)[2]. The modelling of the raw cow's milk production has also been updated for all geographies in scope. In comparison to the main report a new version of Mérieux NutriSciences | Blonk's tool is used: Animal Life Cycle Engine. This tool makes use of more recent databases (Ecoinvent 3.11 and Agri-footprint 7) and makes use of biophysical allocation as recommended and prescribed by the International Dairy Federation (IDF, 2022). Before, the biophysical allocation was based on the PEFCR for Dairy Products (The European

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[1] Blonk Sustainability, 2022. LCA Oatly Barista and comparison to cow's milk. https://website-productions3bucket-1nevfd7531z8u.s3.eu-west-1.amazonaws.com/public/website/download/fabc1628-d8e1-4cf8-aacc1a9694908a42/LCA%20Oatly%20and%20comparison%20to%20cow's%20milk%20(07-12-2022)%20%20final.pdf

[2] 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).

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Dairy Association, 2018). This updated way of allocating has higher accuracy as it considers the energy needed for milk production, energy needed for growth, mass of milk produced and mass of liveweight. Where, in the biophysical allocation used in the Main Report only the milk/meat ratio was considered. The result of this change is that more impact is now allocated to the milk produced. Table 1 shows an overview of the changes in allocation used in the previous Oatly reports and this report.

Table 1 Overview of changes in allocation used in the main report and this report.

	Allocation to milk (%)				
	DE	**NL**	**UK**	**SE**	**FI**
Main report and addenda (based on PEFCR for Dairy products, 2018)	84.54	87.60	85.96	85.52	83.99
This report (based on IDF, 2022)	86.69	88.61	87.93	89.28	86.23

More information and the updated formula can be found in Appendix I. The parameters necessary to model the dairy systems have not changed, except for milk produced in Sweden and Finland, for which several parameters were updated due to more recent data available. More details about these changes can be found in Appendix I and in the Oatly Baristamatic 2026 LCA report (Blonk Consultants, 2026). The new tool also makes use of different background data and an updated emission modelling according to the latest insights from the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2019).

All versions of retail Oatly Barista products (ambient and chilled) were affected by the changes in all European markets analyzed. Also, since the operations are better defined now, the secondary factory models presented in the Main Report (e.g. Swedish factory for Barista sold in Germany) will not be updated as they are only used minimally or not at all in some cases.

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Data Changes

The table below shows the material differences between 2021 and 2025 Operations for the Oatly Barista produced in the Netherlands (supplying Germany, Netherlands, and the UK) and in Sweden (supplying Sweden and Finland).

TABLE 2: OVERVIEW OF DIFFERENCES BETWEEN 2021 AND 2025 OPERATION DATA IN THE NL AND SE FACTORIES

NL Factory	
Indicator	**Difference**
Electricity Consumption oatbase	11% (wind instead of hydro)
Heat Consumption oatbase	-15%
Electricity Consumption finished product	-17% (wind instead of hydro)
Heat Consumption finished product	-16%
Water consumptionoatbase	9%
Water consumption finished product	-24%
Oat and rapeseed oil suppliers and origin (in increasing order)	Oats: 2025: SE, UK[3] vs 2021: SE, FI, EE Rapeseed oil: 2025: SE PL, AU,DE,UA, vs 2021: SE
SE Factory	
Indicator	**Difference**
Electricity Consumption oatbase	-9%
Heat Consumption oatbase	33% (biogas partially replaced by biomass combustion on site)
Electricity Consumption finished product	-20%
Heat Consumption finished product	-20% (biogas partially replaced by biomass combustion on site)
Water consumption oatbase	5%
Water consumption finished product	-9%
Distribution	
Sweden Retail (ambient; chilled)	(-23%; -21%)
Finland Retail (ambient; chilled)	(5%; -47%)
Germany Retail (ambient; chilled)	(-22%; -19%)
Netherlands Retail (ambient; chilled)	(-19%; -17%)
UK Retail (ambient; chilled)	(-30%; 69%)

[3] For UK products Oatly uses 100% segregated British oats while a mix of Swedish and British oats is used for Germany and Netherlands.

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Results

TABLE 3 to **TABLE 7** presents the full results for the Oatly Barista variants analysed and average cow's milk sold in Germany, Finland, the Netherlands, Sweden, the UK, for 2021 and 2025 for all impact categories. **TABLE 8 and TABLE 9** presents the relative differences of the Oatly Barista variants compared to cow's milk at point of sale, for 10 key impact categories. In addition, a figure with the contribution analysis for the climate change impact of Oatly Barista at point of sale including End-of-life of packaging can be found in Appendix II.

In this report the ReCiPe method, background databases and the animal system modelling method were updated simultaneously. The individual contribution of each change to the observed differences between the Main Report and this report cannot be isolated. However, the overall conclusions of the Main Report remain consistent with the updated results.

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TABLE 3: LCIA RESULTS USING 2021 DATA (MAIN REPORT FROM 2022) VS USING 2025 DATA (THIS REPORT) FOR GERMANY. THE RESULTS PRESENTED ARE AT POINT OF SALE INCLUDING END-OF-LIFE OF PACKAGING. ABBREVIATIONS USED: DE = GERMANY, NL = THE NETHERLANDS

		2021 Data			2025 Data		
	Factory	NL Factory	NL Factory	DE avg	NL Factory	NL Factory	DE avg
Impact category	Unit	Oatly Barista DE ambient	Oatly Barista DE chilled	Milk - DE (Retail)	Oatly Barista DE ambient	Oatly Barista DE chilled	Milk - DE (Retail)
Global warming - incl LUC and peat ox	kg CO2 eq	0.577	0.621	1.652	0.530	0.583	1.720
Global warming - excl LUC and peat ox	kg CO2 eq	0.448	0.485	1.247	0.432	0.475	1.297
Global warming - only LUC	kg CO2 eq	0.018	0.023	0.096	0.026	0.036	0.049
Global warming - only peat ox	kg CO2 eq	0.112	0.112	0.309	0.072	0.072	0.374
Stratospheric ozone depletion	kg CFC11 eq	0.00000302	0.00000307	0.00000941	0.00000302	0.00000307	0.00001030
Ionizing radiation	kBq Co-60 eq	0.0319	0.0323	0.0289	0.0356	0.0360	0.0313
Ozone formation, Human health	kg NOx eq	0.00137	0.00144	0.00182	0.0014	0.0015	0.0033
Fine particulate matter formation	kg PM2.5 eq	0.000487	0.000475	0.00401	0.0005	0.0005	0.0052
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.00163	0.00171	0.00379	0.0018	0.0019	0.0067
Terrestrial acidification	kg SO2 eq	0.00165	0.00165	0.00664	0.0044	0.0044	0.0378
Freshwater eutrophication	kg P eq	0.000187	0.000187	0.000433	0.0002	0.0002	0.0003
Marine eutrophication	kg N eq	0.000591	0.000594	0.00209	0.0007	0.0007	0.0016
Terrestrial ecotoxicity	kg 1,4-DCB	0.977	0.997	1.844	1.6280	1.8587	2.8995
Freshwater ecotoxicity	kg 1,4-DCB	0.0262	0.0253	0.079	0.0173	0.0164	0.0398
Marine ecotoxicity	kg 1,4-DCB	0.0178	0.0165	0.04	0.0224	0.0215	0.0403
Human carcinogenic toxicity	kg 1,4-DCB	0.0158	0.0122	0.0207	0.0487	0.0378	0.0672
Human non-carcinogenic toxicity	kg 1,4-DCB	0.5	0.488	0.795	0.6856	0.6733	0.5498
Land use	m2a crop eq	0.683	0.691	0.912	0.6150	0.6279	1.1644
Mineral resource scarcity	kg Cu eq	0.00108	0.000846	0.00113	0.0012	0.0010	0.0013
Fossil resource scarcity	kg oil eq	0.126	0.126	0.122	0.1158	0.1189	0.1269
Water consumption	m3	0.00772	0.00783	0.00911	0.0030	0.0034	0.0095
Land occupation	m2	0.74	Not available at time of study	1.404	0.6698	0.6836	1.5134

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TABLE 4: LCIA RESULTS USING 2021 DATA (MAIN REPORT FROM 2022) VS USING 2025 DATA (THIS REPORT) FOR THE NETHERLANDS. THE RESULTS PRESENTED ARE AT POINT OF SALE INCLUDING END-OF-LIFE OF PACKAGING. ABBREVIATION USED: NL = THE NETHERLANDS

		2021 Data			2025 Data		
	Factory	NL Factory	NL Factory	NL avg	NL Factory	NL Factory	NL avg
Impact category	Unit	Oatly Barista NL ambient	Oatly Barista NL chilled	Milk - NL (Retail)	Oatly Barista NL ambient	Oatly Barista NL chilled	Milk - NL (Retail)
Global warming - incl LUC and peat ox	kg CO2 eq	0.558	0.586	1.369	0.518	0.556	1.287
Global warming - excl LUC and peat ox	kg CO2 eq	0.428	0.451	1.093	0.420	0.448	1.032
Global warming - only LUC	kg CO2 eq	0.018	0.023	0.088	0.026	0.036	0.040
Global warming - only peat ox	kg CO2 eq	0.112	0.112	0.189	0.072	0.072	0.215
Stratospheric ozone depletion	kg CFC11 eq	0.00000302	0.00000305	0.00000742	0.00000303	0.00000307	0.00000780
Ionizing radiation	kBq Co-60 eq	0.0291	0.0295	0.0188	0.033528	0.033924	0.021295
Ozone formation, Human health	kg NOx eq	0.00112	0.00116	0.000963	0.001218	0.001283	0.001759
Fine particulate matter formation	kg PM2.5 eq	0.000429	0.000414	0.0052	0.000470	0.000459	0.005974
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.00138	0.00143	0.00174	0.001593	0.001666	0.003121
Terrestrial acidification	kg SO2 eq	0.00149	0.00147	0.005	0.004299	0.004289	0.023120
Freshwater eutrophication	kg P eq	0.000169	0.000166	0.000334	0.000192	0.000185	0.000181
Marine eutrophication	kg N eq	0.000591	0.000594	0.00149	0.000670	0.000674	0.001414
Terrestrial ecotoxicity	kg 1,4-DCB	0.879	0.89	1.197	1.533	1.750	2.157
Freshwater ecotoxicity	kg 1,4-DCB	0.0266	0.0255	0.0374	0.019	0.018	0.035
Marine ecotoxicity	kg 1,4-DCB	0.0182	0.0168	0.0234	0.025	0.024	0.034
Human carcinogenic toxicity	kg 1,4-DCB	0.0151	0.0114	0.0121	0.049	0.037	0.040
Human non-carcinogenic toxicity	kg 1,4-DCB	0.498	0.482	0.683	0.711	0.692	0.473
Land use	m2a crop eq	0.7	0.709	0.652	0.633	0.646	0.659
Mineral resource scarcity	kg Cu eq	0.000931	0.000707	0.000651	0.001	0.001	0.001
Fossil resource scarcity	kg oil eq	0.103	0.105	0.109	0.096	0.101	0.105
Water consumption	m3	0.00814	0.00828	0.011	0.003	0.004	0.011
Land occupation	m2	0.805	Not available at time of study	0.95	0.731	0.746	0.922

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TABLE 5: LCIA RESULTS USING 2021 DATA (MAIN REPORT FROM 2022) VS USING 2025 DATA (THIS REPORT) FOR THE UK. THE RESULTS PRESENTED ARE AT POINT OF SALE INCLUDING END-OF-LIFE OF PACKAGING. *ABBREVIATIONS USED: NL = THE NETHERLANDS, UK = THE UNITED KIINGDOM*

		2021 Data			2025 Data		
	Factory	NL Factory	NL Factory	UK avg	NL Factory	NL Factory	UK avg
Impact category	Unit	Oatly Barista UK ambient	Oatly Barista UK chilled	Milk - UK (Retail)	Oatly Barista UK ambient	Oatly Barista UK chilled	Milk - UK (Retail)
Global warming - incl LUC and peat ox	kg CO2 eq	0.584	0.555	1.374	0.509	0.506	1.535
Global warming - excl LUC and peat ox	kg CO2 eq	0.454	0.42	1.224	0.402	0.398	1.443
Global warming - only LUC	kg CO2 eq	0.018	0.023	0.093	0.076	0.076	0.035
Global warming - only peat ox	kg CO2 eq	0.112	0.112	0.057	0.031	0.031	0.057
Stratospheric ozone depletion	kg CFC11 eq	0.00000302	0.00000303	0.00000908	0.00000246	0.00000246	0.00001035
Ionizing radiation	kBq Co-60 eq	0.036	0.0372	0.0549	0.03891	0.03851	0.05451
Ozone formation, Human health	kg NOx eq	0.00147	0.00117	0.00118	0.00118	0.00117	0.00270
Fine particulate matter formation	kg PM2.5 eq	0.000495	0.000424	0.00365	0.00062	0.00062	0.00350
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.00173	0.00144	0.00207	0.00148	0.00147	0.00498
Terrestrial acidification	kg SO2 eq	0.00169	0.00149	0.00466	0.00319	0.00319	0.01368
Freshwater eutrophication	kg P eq	0.000217	0.000207	0.000393	0.00016	0.00017	0.00024
Marine eutrophication	kg N eq	0.000609	0.000608	0.00166	0.00061	0.00061	0.00193
Terrestrial ecotoxicity	kg 1,4-DCB	0.973	0.885	1.158	1.865	1.868	3.315
Freshwater ecotoxicity	kg 1,4-DCB	0.0266	0.0252	0.0381	0.019	0.020	0.041
Marine ecotoxicity	kg 1,4-DCB	0.0183	0.0165	0.0245	0.025	0.025	0.039
Human carcinogenic toxicity	kg 1,4-DCB	0.0147	0.0106	0.0119	0.048	0.048	0.061
Human non-carcinogenic toxicity	kg 1,4-DCB	0.514	0.49	0.688	0.677	0.677	0.620
Land use	m2a crop eq	0.692	0.698	0.855	0.534	0.534	1.026
Mineral resource scarcity	kg Cu eq	0.00102	0.000776	0.000772	0.001	0.001	0.001
Fossil resource scarcity	kg oil eq	0.13	0.113	0.134	0.110	0.108	0.157
Water consumption	m3	0.00785	0.00792	0.00907	0.003	0.003	0.010
Land occupation	m2	0.773	Not available at time of study	1.18	0.597	0.596	1.536

TABLE 6: LCIA RESULTS USING 2021 DATA (MAIN REPORT FROM 2022) VS USING 2025 DATA (THIS REPORT) FOR SWEDEN. THE RESULTS PRESENTED ARE AT POINT OF SALE INCLUDING END-OF-LIFE OF PACKAGING. *ABBREVIATION USED: SE = SWEDEN*

		2021 Data			2025 Data		
	Factory	SE Factory	SE Factory	SE avg	SE Factory	SE Factory	SE avg
Impact category	Unit	Oatly Barista SE ambient	Oatly Barista SE chilled	Milk - SE (Retail)	Oatly Barista SE ambient	Oatly Barista SE chilled	Milk - SE (Retail)
Global warming - incl LUC and peat ox	kg CO2 eq	0.406	0.431	1.124	0.392	0.433	1.033
Global warming - excl LUC and peat ox	kg CO2 eq	0.302	0.326	0.945	0.296	0.327	0.835
Global warming - only LUC	kg CO2 eq	0.022	0.024	0.054	0.014	0.024	0.045
Global warming - only peat ox	kg CO2 eq	0.082	0.082	0.125	0.082	0.082	0.153
Stratospheric ozone depletion	kg CFC11 eq	0.00000277	0.00000279	0.00000758	0.00000318	0.00000322	0.00000588
Ionizing radiation	kBq Co-60 eq	0.0255	0.0285	0.0859	0.029025	0.030789	0.065492
Ozone formation, Human health	kg NOx eq	0.00116	0.00118	0.00155	0.001130	0.001193	0.001960
Fine particulate matter formation	kg PM2.5 eq	0.000444	0.000421	0.00111	0.000408	0.000394	0.001003
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.00145	0.00147	0.00219	0.001508	0.001581	0.003084
Terrestrial acidification	kg SO2 eq	0.00157	0.00153	0.00622	0.004561	0.004539	0.020465
Freshwater eutrophication	kg P eq	0.00016	0.000155	0.000286	0.000205	0.000197	0.000308
Marine eutrophication	kg N eq	0.000573	0.000575	0.00147	0.000693	0.000698	0.001212
Terrestrial ecotoxicity	kg 1,4-DCB	1.04	1.038	1.314	1.103	1.322	2.574
Freshwater ecotoxicity	kg 1,4-DCB	0.0268	0.0257	0.0382	0.016	0.015	0.029
Marine ecotoxicity	kg 1,4-DCB	0.0189	0.0175	0.0254	0.021	0.020	0.027
Human carcinogenic toxicity	kg 1,4-DCB	0.016	0.0123	0.0115	0.038	0.027	0.043
Human non-carcinogenic toxicity	kg 1,4-DCB	0.475	0.458	0.588	0.691	0.674	0.638
Land use	m2a crop eq	0.652	0.654	1.1	0.648	0.660	0.928
Mineral resource scarcity	kg Cu eq	0.00108	0.000845	0.000941	0.001	0.001	0.001
Fossil resource scarcity	kg oil eq	0.0558	0.0573	0.0971	0.056	0.059	0.094
Water consumption	m3	0.00463	0.0046	0.00852	0.003	0.003	0.006
Land occupation	m2	0.733	Not available at time of study	1.366	0.739	0.752	1.112

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TABLE 7: LCIA RESULTS USING 2021 DATA (MAIN REPORT FROM 2022) VS USING 2025 DATA (THIS REPORT) FOR FINLAND. THE RESULTS PRESENTED ARE AT POINT OF SALE INCLUDING END-OF-LIFE OF PACKAGING *ABBREVIATIONS USED: SE = SWEDEN, FI = FINLAND*

		2021 Data			2025 Data		
	Factory	SE Factory	SE Factory	FI avg	SE Factory	SE Factory	FI avg
Impact category	Unit	Oatly Barista FI ambient	Oatly Barista FI chilled	Milk - FI (Retail)	Oatly Barista FI ambient	Oatly Barista FI chilled	Milk - FI (Retail)
Global warming - incl LUC and peat ox	kg CO2 eq	0.408	0.435	1.711	0.4065	0.4563	1.5768
Global warming - excl LUC and peat ox	kg CO2 eq	0.304	0.329	1.163	0.3104	0.3502	1.0713
Global warming - only LUC	kg CO2 eq	0.022	0.024	0.035	0.0139	0.0238	0.0270
Global warming - only peat ox	kg CO2 eq	0.082	0.082	0.513	0.0822	0.0823	0.4785
Stratospheric ozone depletion	kg CFC11 eq	0.00000277	0.0000028	0.000012	0.00000319	0.00000323	0.00001070
Ionizing radiation	kBq Co-60 eq	0.0255	0.0284	0.0824	0.031669	0.034136	0.049973
Ozone formation, Human health	kg NOx eq	0.00123	0.00126	0.00143	0.001291	0.001384	0.001806
Fine particulate matter formation	kg PM2.5 eq	0.000467	0.00045	0.00145	0.000443	0.000433	0.001545
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.00152	0.00155	0.00178	0.001671	0.001775	0.002924
Terrestrial acidification	kg SO2 eq	0.00164	0.00162	0.00737	0.004667	0.004659	0.006511
Freshwater eutrophication	kg P eq	0.000193	0.000192	0.000365	0.000238	0.000234	0.000395
Marine eutrophication	kg N eq	0.000585	0.000587	0.00177	0.000705	0.000709	0.001625
Terrestrial ecotoxicity	kg 1,4-DCB	1.034	1.033	1.467	1.1613	1.3995	4.0324
Freshwater ecotoxicity	kg 1,4-DCB	0.0273	0.0262	0.039	0.0171	0.0161	0.0289
Marine ecotoxicity	kg 1,4-DCB	0.0196	0.0183	0.0285	0.0220	0.0210	0.0294
Human carcinogenic toxicity	kg 1,4-DCB	0.016	0.0124	0.0131	0.0386	0.0277	0.0397
Human non-carcinogenic toxicity	kg 1,4-DCB	0.496	0.481	0.783	0.7178	0.7020	0.7698
Land use	m2a crop eq	0.653	0.656	1.26	0.6495	0.6617	1.1534
Mineral resource scarcity	kg Cu eq	0.00107	0.000841	0.00113	0.0011	0.0009	0.0011
Fossil resource scarcity	kg oil eq	0.0605	0.0623	0.119	0.0648	0.0684	0.1216
Water consumption	m3	0.00469	0.00468	0.00907	0.0030	0.0033	0.0073
Land occupation	m2	0.739	Not available at time of study	1.605	0.7445	0.7581	1.4121

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TABLE 8: RELATIVE DIFFERENCES OF <u>AMBIENT</u> OATLY BARISTA COMPARED TO COW'S MILK AT POINT OF SALE (INCL. END OF LIFE OF PACKAGING). FOR EXAMPLE, -65% INDICATES THAT OATLY BARISTA HAS A 65% 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: DE = GERMANY, NL = THE NETHERLANDS, UK = THE UNITED KIINGDOM, SE = SWEDEN, FI = FINLAND

Sales country	Factory	Year	Climate change	Fine particulate matter	Terrestrial acidification	Freshwater eutrophication	Marine eutrophication	Land use	Land occupation[4]	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*
Oatly Barista DE ambient	NL	2021	-65%	-88%	-75%	-57%	-72%	-25%	-47%	-4%	3%	-15%
Oatly Barista NL ambient	NL	2021	-59%	-92%	-70%	-50%	-60%	7%	-15%	43%	-6%	-26%
Oatly Barista UK ambient	NL	2021	-58%	-86%	-64%	-45%	-63%	-19%	-34%	32%	-3%	-13%
Oatly Barista SE ambient	SE	2021	-64%	-60%	-75%	-44%	-61%	-41%	-46%	15%	-42%	-46%
Oatly Barista FI ambient	SE	2021	-76%	-68%	-78%	-47%	-67%	-48%	-54%	-5%	-49%	-48%
Oatly Barista DE ambient	NL	2025	-69%	-91%	-88%	-41%	-58%	-47%	-56%	-8%	-9%	-68%
Oatly Barista NL ambient	NL	2025	-60%	-92%	-81%	6%	-53%	-4%	-21%	36%	-8%	-71%
Oatly Barista UK ambient	NL	2025	-67%	-82%	-77%	-33%	-68%	-48%	-61%	-5%	-30%	-65%
Oatly Barista SE ambient	SE	2025	-62%	-59%	-78%	-34%	-43%	-30%	-34%	7%	-40%	-52%
Oatly Barista FI ambient	SE	2025	-74%	-71%	-28%	-40%	-57%	-44%	-47%	2%	-47%	-58%

[4] Results in Appendix V of the Main Report

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TABLE 9: RELATIVE DIFFERENCES OF CHILLED OATLY BARISTA COMPARED TO COW'S MILK AT POINT OF SALE (INCL. END OF LIFE OF PACKAGING). FOR

EXAMPLE, -65% INDICATES THAT OATLY BARISTA HAS A 65% 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: DE = GERMANY, NL = THE NETHERLANDS, UK = THE UNITED KIINGDOM, SE = SWEDEN, FI = FINLAND

Sales country	Factory	Year	Climate change	Fine particulate matter	Terrestrial acidification	Freshwater eutrophication	Marine eutrophication	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
Oatly Barista DE chilled	NL	2021	-62%	-88%	-75%	-57%	-72%	-24%	Not available at time of study	-25%	3%	-14%
Oatly Barista NL chilled	NL	2021	-57%	-92%	-71%	-50%	-60%	9%	Not available at time of study	9%	-4%	-25%
Oatly Barista UK chilled	NL	2021	-60%	-88%	-68%	-47%	-63%	-18%	Not available at time of study	1%	-16%	-13%
Oatly Barista SE chilled	SE	2021	-62%	-62%	-75%	-46%	-61%	-41%	Not available at time of study	-10%	-41%	-46%
Oatly Barista FI chilled	SE	2021	-75%	-69%	-78%	-47%	-67%	-48%	Not available at time of study	-26%	-48%	-48%
Oatly Barista DE chilled	NL	2025	-66%	-91%	-88%	-42%	-57%	-46%	-55%	-22%	-6%	-64%
Oatly Barista NL chilled	NL	2025	-57%	-92%	-81%	2%	-52%	-2%	-19%	14%	-4%	-68%
Oatly Barista UK chilled	NL	2025	-67%	-82%	-77%	-32%	-68%	-48%	-61%	-5%	-31%	-65%
Oatly Barista SE chilled	SE	2025	-58%	-61%	-78%	-36%	-42%	-29%	-32%	-12%	-37%	-48%
Oatly Barista FI chilled	SE	2025	-71%	-72%	-28%	-41%	-56%	-43%	-46%	-15%	-44%	-55%

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Conclusions

The climate impact of the Oatly Barista products sold in Germany, the Netherlands and the UK has decreased by 5 to 13% for the ambient and chilled versions. For Oatly Barista sold in Finland, it has increased by 0.4 to 5% respectively for the ambient and chilled versions, and for Oatly Barista sold in Sweden, it has decreased by 3% for the ambient version and increased by 1% for the chilled version.

The decrease in climate change impacts is due to improvements in the efficiency of the factory and to smaller distribution distances[5]. The higher climate change impacts of background datasets for refrigerated transportation of chilled products in Finland and Sweden lead to an increase in the product's climate change impacts.

Comparing with cow's milk, there was no substantial change in the relative differences compared to the Main Report, as Oatly Barista shows a reduction of 58% to 74% using the 2025 data, compared to 58% to 76% using the 2021 data. In absolute values, the impact of cow's milk decreased in the Netherlands, Sweden, and Finland compared to the Main Report, reducing the relative differences between Oatly Barista and cow's milk climate change impacts. The decrease in the impact of cow's milk from Sweden and Finland is due to an update of input data. To the contrary, the impact of cow's milk increased in Germany and the UK, therefore also increasing the relative differences between Oatly Barista and cow's milk climate change impacts; the main driver for this being the change in the biophysical allocation, where more impact is now allocated to the milk produced.

In terms of other impact categories, comparing the results in the Main Report, we see the following changes in conclusions:

For the **ambient versions** of Oatly Barista, produced in the same factories:

- For Germany: in the Main Report, Oatly Barista ambient produced in the Netherlands had a comparable impact to cow's milk for both the mineral and fossil resource scarcity impact categories. This remains the case as the current results are in line with those presented in the Main Report.

- For the Netherlands, in the Main Report, Oatly Barista ambient produced in the Netherlands had a comparable impact to cow's milk for the land use and fossil resource scarcity impact categories. It remains comparable for the land use and fossil resource scarcity impact categories. Oatly Barista had a higher impact than cow's milk for the mineral resource scarcity impact category. It remains the case with the updated results. Oatly Barista had a lower impact than cow's milk for the freshwater eutrophication impact category. It is now comparable. All other impact categories remain lower for Oatly Barista.

- For the UK: in the Main Report, Oatly Barista ambient produced in the Netherlands had a higher impact than cow's milk for the mineral resource scarcity impact category. It is now comparable. Oatly Barista had a comparable impact for the fossil resource scarcity impact category, it is now lower. All other impact categories remain lower for Oatly Barista.

- For Sweden: in the Main Report, Oatly Barista ambient produced in Sweden had a higher impact than cow's milk for the mineral resource scarcity impact category. It is now comparable. All other impact categories remain lower for Oatly Barista.

- For Finland, in the Main Report, Oatly Barista ambient produced in Sweden had a comparable impact to cow's milk for the mineral resource scarcity impact category. All other impact categories were lower

[5] It should be noted that, in Sweden and the UK, distribution from distribution center to point of sale is conducted using HVO100 renewable diesel. This was not reflected in the model due to a lack of robust background data (it has been modelled using a diesel truck as proxy).

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for Oatly Barista. This remains the case as the current results are in line with those presented in the Main Report.

For the **chilled versions** of Oatly Barista, produced in the same factories:

- For Germany: in the Main Report, Oatly Barista ambient produced in the Netherlands had a comparable impact to cow's milk for the fossil resource scarcity impact category. All other impact categories remain lower for Oatly Barista. The current results are in line with those presented in the Main Report.

- For the Netherlands, in the Main Report, Oatly Barista ambient produced in the Netherlands had a comparable impact to cow's milk for the land use, mineral resource scarcity and fossil resource scarcity impact categories. It remains comparable for the land use and fossil resource scarcity impact categories; however Oatly Barista has now a comparable impact for freshwater eutrophication and a higher impact for mineral resource scarcity than cow's milk. All other impact categories remain lower for Oatly Barista.

- For the UK: in the Main Report, Oatly Barista ambient produced in the Netherlands had a comparable impact to cow's milk for the mineral resource scarcity impact category. All other impact categories remain lower for Oatly Barista. The current results are in line with those presented in the Main Report.

- For Sweden: in the Main Report, Oatly Barista ambient produced in Sweden had a lower impact than cow's milk for all impact categories. This remains the case as the current results are in line with those presented in the Main Report.

- For Finland, in the Main Report, Oatly Barista ambient produced in Sweden had a lower impact than cow's milk for all the impact categories. This remains the case as the current results are in line with those presented in the Main Report.

For the majority of the countries where Oatly Barista is sold ambient, the impact on mineral resources scarcity decreased and is connected to improvements in the factories and the decrease in the distance driven for distribution (except for the ambient version sold in Finland, due to similar distribution distances). For Oatly Barista chilled, the impact on mineral resources scarcity increased in Germany, the Netherlands and Finland due to the combination of similar distribution distances and a higher impact of refrigerated transportation. It decreased in the UK (due to a shift in oats sourcing) and Sweden (due to lower distribution distances).

The increase in freshwater eutrophication impact category is attributed to the change in the regionalization of characterization factors in the latest ReCiPe LCIA method, not to changes in Oatly operations.

As the updates to the Ecoinvent and Agri-footprint databases as well as the cow's milk emission methodology update were implemented all simultaneously, the individual contribution of each change to the observed differences cannot be isolated.

This document has been reviewed by the Chair of the panel of the Main Report, Jasmina Burek. Despite methodological changes being made, as well as foreground data for Oatly operations and database/LCIA method conversion to the latest version, the overall conclusion remains consistent. The outcome is still valid and can be used for external communications.

This report should be read in conjunction with the Main Report[6].

[6] Blonk Sustainability, 2022. LCA Oatly Barista and comparison to cow's milk. https://website-production-s3bucket1nevfd7531z8u.s3.eu-west-1.amazonaws.com/public/website/download/fabc1628-d8e1-4cf8-aacc1a9694908a42/LCA%20Oatly%20and%20comparison%20to%20cow's%20milk%20(07-12-2022)%20-%20final.pdf

References

Blonk Consultants (2026) https://blonksustainability.nl/news/LCAs-Oatly
LCA of Oatly Baristamatic and comparison with cow's milk

European Dairy Association (EDA) et al. (2025). *Product Environmental Footprint Category Rules (PEFCR) for dairy products: Updated version (Feb. 2025)*. https://eda.euromilk.org/wp-content/uploads/2025/02/PEFCR-DairyProducts_update_final.pdf

International Dairy Federation. (2022). *The IDF global Carbon Footprint standard for the dairy sector* (Bulletin of the IDF n° 520/2022). https://doi.org/10.56169/FKRK7166

Intergovernmental Panel on Climate Change (IPCC). (2019). *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*

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Appendix I Dairy production modelling

The tables below highlight the data used as well as calculations and assumptions made to model dairy systems in the countries in scope.

In comparison to the Main Report a new version of the Animal Life Cycle Engine is used. The parameters necessary to model the dairy systems have not changed, except for Sweden and Finland. However, the new tool makes use of different background data. The table below shows the difference between the tool used in the Main Report and this addendum.

TABLE: DIFFERENCES BETWEEN APS-FOOTPRINT MAIN REPORT AND ADDENDUM

APS-footprint Main Report	*Animal Life Cycle Engine used for this report*
IPCC 2006	IPCC 2019
Agri-footprint 5	Agri-footprint 7.0
Biophysical allocation based on PEFCR for Dairy Products (2018)	Biophysical allocation based on IDF 2022

Allocation at farm

Allocation is used to distribute the overall environmental impacts to the different outputs: milk and animal liveweight (aggregate of replaced dairy cows and sold calves). The dairy module of the new version of the Animal Life Cycle Engine uses biophysical allocation to calculate the environmental impact of the two co-products according to the latest biophysical allocation developed by the International Dairy Association (IDF, 2022) and was suggested by the dairy PEFCR (European Dairy Association, 2025). The formula is as below:

$$AF_{milk} = \frac{NE_L * M_{milk}}{NE_L * M_{milk} + NE_G * M_{meat}}$$

Where:

- AF_{milk} is the dairy farm milk allocation factor, the fraction of total farm emissions assigned to milk.
- NE_L is the net energy required for lactation (milk production) per unit of milk output (MJ/kg FPCM). This accounts for the energy cows expend to produce one kilogram of fat- and protein-corrected milk (FPCM).
- M_{milk} is the total mass of milk produced per year, expressed in kilograms of FPCM.
- NE_G is the net energy required for growth (meat production) per unit of live weight gain (MJ/kg live weight). This reflects the energy needed to produce one kilogram of meat (including cull cows and surplus calves).
- M_{meat} is the total mass (kg) of live weight of animals sold, per year.

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This way of allocating has higher accuracy as it considers the energy needed for milk production, energy needed for growth, mass of milk produced and mass of liveweight. Where, in the biophysical allocation used in the Main Report only the milk/meat ratio was considered. The biophysical allocation according to the International Dairy Association (IDF, 2022) results in a higher impact allocated to the milk produced.

Sweden

The data for Sweden is updated based on the data derived from the National Inventory Report (NIR) of Sweden and Managos 2026. The data on feed composition did not change compared to the Main Report. The main changes in data are the milk yield per cow, which increased by 7% compared to the Main Report, and a shift from manure management systems (liquid systems) with a higher methane conversion to manure management systems with a lower methane conversion (solid storage and deep bedding).

More details on the exact data sources used and assumptions made can be found in the table below.

Data point	Value (per year) - used in the Main Report from 2022	Value (per year) – updated in this report	Explanation/source for this report
General details			
Geography	Sweden	Sweden	
Climate type		Cool temperate moist	IPCC Climate Zones
Average annual temperature	2.1		
OUTPUTS			
Milk (total weight as is) (kg)	3,690,820,180	2,981,052,052	Milk yield (10071, from NIR 2025) multiplied by number of dairy cows (see below)
Protein content (%)	3.38	3.53	NIR 2025
Fat content (%)	4.25	4.26	NIR 2025
RESOURCE USE			
Electricity use	1,840,494,240 (MJ) (= 511,248,400 kWh)	384,800,000 (kWh)	Cederberg, 2009 (1300 kWh per dairy cow /year), modelled using Swedish electricity mix
Diesel use (MJ)	390,480,000	357,725,246	Cederberg, 2009
Water consumption (m3)	18,081,075.080	11,398,753.51	From SIK, 2013
HOUSING SYSTEMS			
Housing - Heifers	149000	30391	Average # animals present in stage. Based on input/output stage and mortality.
Housing - Calves 1-2 year	87000	102532	Average # animals present in stage. Based on input/output stage and mortality.
Housing - Calves <1 year	194000	104585	Average # animals present in stage. Based on input/output stage and mortality.
Housing - Dairy cows	393268	296000	NIR 2025
Housing system dairy cows			
RATION			Feed rations are based on a combination of data from Cederberg (2009) and Hendriksson (2013). Ingredients are modelled to represent Swedish conditions, thus using Swedish cultivation data from AFP as well as Swedish market mixes in case of feed from outside the farm. Transport from

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			cultivation country to Sweden, as well as within Sweden, is added.
Concentrate feed (kg as is)	1994	1994	Based on Cederberg. 10 main ingredients were included: rapeseed meal, beet pulp, soymeal, palmkernel exp, grain bran, distiller's dried gr, molasses, fatty acids, grain middlings, peas
Minerals (kg as is)	86	86	
Grass silage, grown on farm, SE (kg as is)	5350	5350	Adapted N fertilizer input grass based on Cederberg, 2009
Maize silage, grown on farm, SE (kg as is)	294	294	
Grass for grazing, permanent pasture, SE (kg as is)	1927	1927	Adapted N fertilizer input grass based on Cederberg, 2009
Wheat, via feed (kg as is)	133	133	Swedish cultivation
Triticale, via feed (kg as is)	114	114	Swedish cultivation
Barley, via feed (kg as is)	170	170	Swedish cultivation
Oats, via feed (kg as is)	57	57	Swedish cultivation
Barley (grain), grown on farm (kg as is)	652	652	
Oats (grain), grown on farm (kg as is)	639	639	
Super pressed pulp (kg as is)	172	172	sugar beet
Barley straw (kg as is)	66	66	
Total feed intake (kg/animal)	11654	11654	Total of the above
Gross energy intake (MJ/animal)	112959	112959	Calculated with values from feedipedia
Digestibility (% of GE)	70.2%	70.2%	Calculated with values from feedipedia
Crude protein in diet (% of DM)	17.9%	17.9%	Calculated with values from feedipedia
Percentage of silage (% of GE)	41.1%	41.1%	GE provided by silage/total GE
HOUSING			
Straw for bedding (kg/animal)	44	44	Based on Danish dairy system, as no Swedish data was available
Saw dust (kg/animal)	6.25	6.25	Based on Danish dairy system, as no Swedish data was available
Type (e.g. housed/ free ranging)	Housed	Housed	
MANURE MANAGEMENT			
Manure management system (select type, e.g. dry lot)	11% solid storage, 79% Liquid/slurry with natural crust cover	84.8% liquid system, 6.22% solid storage, 1.19% deep bedding, 7.78% digestion	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	21%	40%	NIR 2025
Time spent in buildings (%)	79%	60%	NIR 2025
Housing system Heifers and Calves 1-2 years			
RATION			Feed rations are based on a combination of data from Cederberg (2009) and Hendriksson (2013). Ingredients are modelled to represent Swedish conditions, thus using Swedish cultivation data from AFP as well as Swedish

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			market mixes in case of feed from outside the farm. Transport from cultivation country to Sweden, as well as within Sweden, is added.
Concentrate feed (kg as is)	366	366	
Minerals (kg as is)	16	16	
Grass silage, grown on farm, SE (kg as is)	2592	2592	
Grass for grazing, permanent pasture, SE (kg as is)	934	934	
Wheat, via feed (kg as is)	27	27	Swedish cultivation
Triticale, via feed (kg as is)	23	23	Swedish cultivation
Barley, via feed (kg as is)	34	34	Swedish cultivation
Oats, via feed (kg as is)	11	11	Swedish cultivation
Barley (grain), grown on farm (kg as is)	130	130	
Oats (grain), grown on farm (kg as is)	128	128	
Wheat straw (kg as is)	57	57	Swedish cultivation
Total feed intake (kg/animal)	4317	4317	Total of the above
Gross energy intake (MJ/animal)	36738	36738	Calculated with values from feedipedia
Digestibility (% of GE)	69.4%	69.4%	Calculated with values from feedipedia
Crude protein in diet (% of DM)	16.2%	16.2%	Calculated with values from feedipedia
Percentage of silage (% of GE)	59.0%	59.0%	GE provided by silage/total GE
HOUSING			
Straw for bedding (kg/animal)	44	44	Based on Danish dairy system, as no Swedish data was available
Saw dust (kg/animal)	6.25	6.25	Based on Danish dairy system, as no Swedish data was available
Type (e.g. housed/ free ranging)	Housed	Housed	
MANURE MANAGEMENT			
Manure management system (select type, e.g. dry lot)	liquid/slurry with natural crust cover	27.47% liquid system, 16.08% solid storage, 52.35% deep bedding, 4.10% digestion	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	46%	51.67%	NIR 2025
Time spent in buildings (%)	54%	48.33%	NIR 2025
Housing system calves <1 year			
RATION			The quantity of feed consumed is based on data from Denmark, as Swedish data was not available. This was deemed appropriate as calves don't have a big contribution compared to dairy cows and heifers. Swedish data was used to model the feed ingredients.
Concentrate feed (kg as is)	78	78	
Grass silage, grown on farm, SE (kg as is)	4281	4281	

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Grass for grazing, permanent pasture, SE (kg as is)	40	40	Grass dataset modelled based on yield and inputs from (Krizsan, Chagas, Pang, & Cabezas-Garcia, 2021) and Cederberg, 2009
Wheat straw (kg as is)	154	154	Swedish cultivation
Total feed intake (kg/animal)	4553	4553	Total of the above
Gross energy intake (MJ/animal)	41348	41348	Calculated with values from feedipedia
Digestibility (% of GE)	80.0%	80.0%	Calculated with values from feedipedia
Crude protein in diet (% of DM)	18.3%	18.3%	Calculated with values from feedipedia
Percentage of silage (% of GE)	90.5%	90.5%	GE provided by silage/total GE
HOUSING			
Straw for bedding (kg/animal)	0	0	
Saw dust (kg/animal)	0	0	
Type (e.g. housed/ free ranging)	housed	housed	
MANURE MANAGEMENT			
Manure management system	liquid/slurry with natural crust cover	48.23% liquid system, 16.01% solid storage, 30.56% deep bedding, 5.20% digestion	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	33%	34.17%	NIR 2025
Time spent in buildings (%)	68%	65.83%	NIR 2025

Finland

The data for Finland is updated based on the data derived from the National Inventory Report (NIR) of Finland. The data on feed composition did not change compared to the Main Report. The main changes in data are the milk yield per cow, which increased by 3% compared to the Main Report and a change in manure management towards liquid systems.

More details on the exact data sources used and assumptions made can be found in the table below.

Data point	Value (per year) - used in the Main Report from 2022	Value (per year) – updated in this report	Explanation/source for this report
General details			
Geography	Finland	Finland	
Climate type		Cool temperate moist	IPCC Climate Zones
Average annual temperature	1.7		
OUTPUTS			
Milk (total weight as is) (kg)	2,349,621,560	2,253,522,300	NIR 2025
Protein content (%)	3.5	3.6	LUKE 2025
Fat content (%)	4.4	4.5	LUKE 2025
RESOURCE USE			
Electricity use (kWh)	1,271,098,137 (MJ) (=353,082,816 kWh)	329,915,762	Valo (2020)
Gas use (MJ)	32,980,010	30,815,962	Valo (2020)
Diesel use (MJ)	0		
Fuel oil use (MJ)	2,096,585,257	1,957,569,060	Valo (2020)
Water consumption (kg)	11,312,547,200	10,570,311.60	Proxy (SIK, 2013)

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HOUSING SYSTEMS			
Housing - Heifers	15,001	118,156	Average # animals present in stage. Based on input/output stage and mortality.
Housing - Calves 1-2 year	85,086		
Housing - Calves <1 year	86,958	107,025	Average # animals present in stage. Based on input/output stage and mortality.
Housing - Dairy cows	258,940	241,950	NIR 2025
Housing system dairy cows			
RATION			The quantities of main feed ingredients are based on ProAgria (2021). Quantities were converted to kg as is using dry matter percentages from AFP.
Silage (kg as is)	9935	9935	84% grass silage, 16% grain silage (assumed maize silage)
Grazed grass (kg as is)	393	393	Grass dataset modelled based on yields and inputs from (Smit, Metzger, & Ewert, 2008) and Pallière, C. (2011)
Hay & straw (kg as is)	39	39	
Cereals (kg as is)	1974	1974	Consists of barley and oats. Modelled using barley and oats market mix
Energy compounds (kg as is)	1143	1143	Assuming rapeseed meal and sugar beet pulp (common in Swedish compound feed)
Protein compounds (kg as is)	*777*	*777*	Assuming soybean meal (common in Swedish compound feed)
By-products (kg as is)	571	571	Assuming distiller's grain
Minerals and additives (kg as is)	105	105	
Total feed intake (kg/animal)	14938	14938	Total of the above
Gross energy intake (MJ/animal)	166312	166312	Based on GE data per ingredient from feedipedia
Digestibility (% of GE)	74%	74%	Based on digestibility data per ingredient from feedipedia
Crude protein in diet (% of DM)	20%	20%	Based on crude protein data per ingredient from feedipedia
Percentage of silage (% of GE)	53%	53%	Based on GE data per ingredient from feedipedia
HOUSING			
Straw for bedding (kg/animal)	438	438	Hietala (2020) based on beef breed
Peat for bedding (kg/animal)	803	803	Hietala (2020) based on beef breed
Saw dust (kg/animal)	0	0	
Type (e.g. housed/ free ranging)	Housed	Housed	
MANURE MANAGEMENT			
Manure management system (select type, e.g. dry lot)	Dairy cows: 51% slurry with natural cover, 23% solid storage, 14% slurry with no cover, 11% pasture	66.68% liquid system with crust, 22.23% liquid system no crust, 8.69% solid storage, 2.40% deep bedding	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	32.5%	32.47%	NIR

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Time spent in open yard areas (%)	0.0%		
Time spent in buildings (%)	67.5%	67.53%	NIR
Housing system Heifers and Calves 1-2 years			
RATION			The quantities of main feed ingredients are based on ProAgria (2021). Quantities were converted to kg as is using dry matter percentages from AFP.
Silage (kg as is)	6583	6583	84% grass silage, 16% grain silage (assumed maize silage)
Grazed grass (kg as is)	819	819	Grass dataset modelled based on yields and inputs from (Smit, Metzger, & Ewert, 2008) and Pallière, C. (2011)
Hay & straw (kg as is)	455	455	
Cereals (kg as is)	110	110	Consists of barley and oats. Modelled using barley and oats market mix
Energy compounds (kg as is)	15	15	Assuming rapeseed meal and sugar beet pulp (common in Swedish compound feed)
Protein compounds (kg as is)	86	86	Assuming soybean meal (common in Swedish compound feed)
By-products (kg as is)	98	98	Assuming distiller's grain
Minerals and additives (kg as is)	64	64	
Total feed intake (kg/animal)	8229	8229	Total of the above
Gross energy intake (MJ/animal)	73843	73843	Based on GE data per ingredient from feedipedia
Digestibility (% of GE)	66%	66%	Based on digestibility data per ingredient from feedipedia
Crude protein in diet (% of DM)	15%	15%	Based on crude protein data per ingredient from feedipedia
Percentage of silage (% of GE)	80%	80%	Based on GE data per ingredient from feedipedia
HOUSING			
Straw for bedding (kg/animal)	44	44	
Saw dust (kg/animal)	6.25	6.25	
Type (e.g. housed/ free ranging)	Housed	Housed	
MANURE MANAGEMENT			
Manure management system (select type, e.g. dry lot)	Heifers: 35% slurry with natural cover, 26% solid storage, 23% pasture, 10% slurry with no cover	40.79% liquid system with crust, 14.47% liquid system no crust, 22.37% solid storage, 22.37% deep bedding	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	37.0%	37.67%	NIR 2025
Time spent in open yard areas (%)	0.0%		
Time spent in buildings (%)	63.0%	62.33%	NIR 2025
Housing system calves <1 year			
RATION			The quantity of feed consumed is based on data from Denmark, as Finnish nor Swedish data was not available. This

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			was deemed appropriate as calves www.blonksustainability.nl 2022 75 don't have a big contribution compared to dairy cows and heifers.
Concentrate feed (kg as is)	78	78	
Grass silage, grown on farm, SE (kg as is)	4281	4281	
Grass for grazing, permanent pasture, SE (kg as is)	40	40	
Wheat straw (kg as is)	154	154	
Total feed intake (kg/animal)	4553	4553	Total of the above
Gross energy intake (MJ/animal)	41348	41348	Calculated with values from feedipedia
Digestibility (% of GE)	80.0%	80.0%	Calculated with values from feedipedia
Crude protein in diet (% of DM)	18.3%	18.3%	Calculated with values from feedipedia
Percentage of silage (% of GE)	90.5%	90.5%	GE provided by silage/total GE
HOUSING			
Straw for bedding (kg/animal)	0	0	
Saw dust (kg/animal)	0	0	
Type (e.g. housed/ free ranging)	housed	housed	
MANURE MANAGEMENT			
Manure management system	Calves < 1 year: 37% solid storage, 31% slurry with natural cover, 10% pasture, 9% slurry with no cover	19.35% liquid system with crust, 11.83% liquid system no crust, 40.86% solid storage, 27.96% deep bedding	NIR 2025
TIME SPENT DISTRIBUTION			
Time spent grazing (%)	31.5%	32.47%	NIR 2025
Time spent in open yard areas (%)			
Time spent in buildings (%)	68.5%	67.53%	NIR 2025

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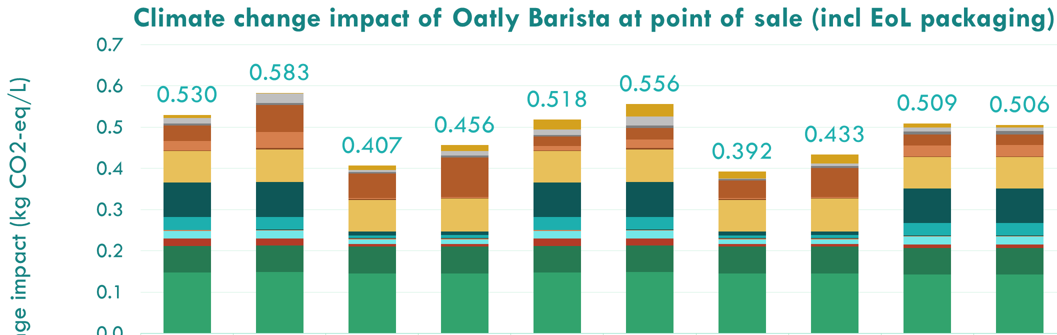
Appendix II Contribution analysis Oatly Barista



	Oatly Barista NL factory Ambient Retail DE	Oatly Barista NL factory Chilled Retail DE	Oatly Barista SE factory Ambient Retail FI	Oatly Barista SE factory Chilled Retail FI	Oatly Barista NL factory Ambient Retail NL	Oatly Barista NL factory Chilled Retail NL	Oatly Barista SE factory Ambient Retail SE	Oatly Barista SE factory Chilled Retail SE	Oatly Barista NL factory Ambient Retail UK	Oatly Barista NL factory Chilled Retail UK
10. End of Life of Packaging	0.007	0.002	0.010	0.014	0.024	0.030	0.017	0.022	0.010	0.006
9b. Storage at Point of Sale	0.014	0.022	0.005	0.011	0.014	0.022	0.001	0.005	0.010	0.009
9a. Storage at DC	0.005	0.006	0.004	0.005	0.003	0.006	0.004	0.005	0.008	0.008
8b. Distribution to Point of Sale	0.038	0.064	0.059	0.096	0.023	0.029	0.043	0.070	0.026	0.026
8a. Distribution to DC	0.023	0.039	0.002	0.003	0.012	0.020	0.002	0.003	0.026	0.027
7b. Transport of packaging materials	0.001	0.004	0.002	0.001	0.001	0.004	0.002	0.001	0.001	0.001
7a. Packaging	0.076	0.079	0.077	0.079	0.076	0.079	0.077	0.079	0.076	0.076
6. Processing - Oatly Barista	0.084	0.084	0.010	0.010	0.084	0.084	0.010	0.010	0.084	0.084
5. Processing - oat base	0.031	0.031	0.007	0.007	0.031	0.031	0.007	0.007	0.031	0.031
4b. Transport of other ingredients to factory	0.001	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.001	0.001
4a. Transport of oats to factory	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
3. Oats milling	0.018	0.019	0.011	0.011	0.018	0.019	0.011	0.011	0.018	0.018
2. Oats transport to mill	0.018	0.018	0.006	0.006	0.018	0.018	0.006	0.006	0.010	0.010
1b. Other ingredient production	0.064	0.064	0.065	0.065	0.064	0.064	0.065	0.065	0.064	0.064
1a. Oat cultivation	0.148	0.148	0.145	0.146	0.148	0.148	0.145	0.146	0.142	0.142
Total	0.530	0.583	0.407	0.456	0.518	0.556	0.392	0.433	0.509	0.506

FIGURE: CONTRIBUTION ANALYSIS FOR THE CLIMATE CHANGE IMPACT OF OATLY BARISTA 1L AT POINT OF SALE INCLUDING END-OF-LIFE (EOL) OF PACKAGING. ABBREVIATIONS USED: DE = GERMANY, NL = THE NETHERLANDS, UK = THE UNITED KINGDOM, FI: FINLAND, SE: SWEDEN

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Appendix III Critical Review Statement and Report

Critical Review Statement

This Critical Review addresses the May 2026 update to the life cycle assessment (LCA) of Oatly Barista and its comparison to cow's milk, originally published in December 2022. The original study, referred to here as the Main Report, was conducted by Blonk Consultants and critically reviewed by a panel of four LCA and sustainable food systems experts: Dr. Jasmina Burek, Chair, University of Massachusetts Lowell, USA; Joanna Trewern, UK; Dr. Jens Lansche, Switzerland; and Dr. Hayo van der Werf, France. The Main Report assessed six variants of Oatly Barista sold in Germany, Finland, the Netherlands, Sweden, the UK, and the US, as well as country-specific cow's milk baselines. The Main Report was prepared in accordance with ISO 14040 and ISO 14044 for LCA studies, and with ISO/TS 14071:2014 for the original critical review process.

The current May 2026 update focuses on Oatly Barista products sold in Germany, Finland, the Netherlands, Sweden, and the United Kingdom. It refreshes operational data from 2021 to 2025 for the Netherlands and Sweden factories supplying these markets. The key operational changes include decreased energy consumption and changes in energy sources, changes in distribution distances, and changes in oat and rapeseed oil origins. The report also incorporates background data and method updates, including ecoinvent 3.11 instead of 3.6, Agri-Footprint 7 instead of 6, ReCiPe 2016 v1.1, and updated dairy modeling using the Animal Life Cycle Engine, IDF 2022 biophysical allocation, the 2025 Dairy PEFCR, and IPCC 2019 emission factors.

Given that this update is a targeted addendum to the 2022 Main Report and that the overall conclusions of the Main Report remain consistent after the operational, database, LCIA, allocation, and dairy modeling updates, it was deemed appropriate for the original Chair, Dr. Burek, to conduct this follow-up critical review. No additional review by the other panel members was required at this stage.

This review provides a technical validation of the updated data for Germany, Finland, the Netherlands, Sweden, and the United Kingdom, along with related methodological updates, and assesses whether the revised report remains aligned with the applicable ISO requirements and best practices for LCA. The following is the external reviewer's final statement, based on the review of the draft update report and the final version provided in May 2026. The resulting critical review statement and updated review report are intended to be used in combination with the original 2022 Main Report and its corresponding panel review because the update document builds on and partially revises the original study rather than replacing it.

The critical review was performed based on ISO 14044, by Dr. Jasmina Burek, ISO Review Chair. The review considered the current ISO standard references available at the time. ISO 14040 remains ISO 14040:2006 with Amendment 1:2020, and ISO 14044 remains ISO 14044:2006 with Amendment 1:2017 and Amendment 2:2020. ISO 14071:2024 has replaced ISO/TS 14071:2014 as the guidance for critical review processes. Confidential LCI data were made available to the reviewer where needed and are excluded from the published report due to

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confidentiality.

The critical review found the updated LCA report to be in conformance with ISO 14040 and ISO 14044, including their published amendments, with respect to the following:

- 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 or validate the goals chosen for the LCA by the LCA study's commissioner, nor the ways in which the LCA results are used. Following ISO 14071:2024, this critical review in no way implies an endorsement of any comparative assertion that is based on an LCA study. The reviewer asserts conformity with the applicable ISO standards and finds the methodological approach and the interpretation of the results to be scientifically and technically valid for the stated scope of the update.

The critical-review process was conducted specifically for the May 2026 update report, which is an addendum to the original Main Report. This process involved the following steps:

- a review of the draft version of the update report, assessed against the applicable ISO criteria and accompanied by recommendations for improvement; and
- a review of the final version, confirming that the authors had addressed the points raised in the draft review.

Reviewer comments were provided on the draft version of the May 2026 update report. The LCA practitioners documented responses to each comment and implemented changes in the subsequent draft. The Critical Review Report includes the reviewer's comments and recommendations, together with the corresponding responses and justifications from the LCA practitioners. Based on the stated goals of the review, it is concluded that the updated study generally conforms to the relevant ISO standards and meets the requirements for a publicly disclosed comparative assertion when read together with the 2022 Main Report and review. The reviewer acknowledges the significant effort and diligence demonstrated by the LCA practitioners and Oatly in completing this update.

May 13, 2026

Dr. Jasmina Burek

Panel Chair

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LCA of Oatly Barista in key markets and comparison with cow's milk
2026 update to the 2022 LCA of Oatly Barista and comparison with cow's milk

Critical Review Report

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1. Introduction

The Critical Review Report is the summary report documenting the critical review process under ISO 14071:2024, Environmental management, Life cycle assessment, Critical review processes, and reviewer competencies. This report provides details of the complete review process and includes all review comment iterations of the study 'LCA of Oatly Barista in key markets and comparison with cow's milk, 2026 update to the 2022 LCA of Oatly Barista and comparison with cow's milk.' The original study, 'LCA of Oatly Barista and comparison with cow's milk,' hereafter referred to as the Main Report, was commissioned by Oatly and conducted by Blonk Consultants.

The present critical review applies only to the May 2026 update report for Germany, Finland, the Netherlands, Sweden, and the United Kingdom and was conducted by the original review chair. This review and its accompanying statement are intended to be used in conjunction with the 2022 Main Report and its panel review because the updated report refreshes operational data for selected markets and incorporates background database, LCIA, allocation, and dairy modelling updates without altering the broader conclusions of the Main Report. The final statement is based on a review of the draft update report and the final version provided on May 12th 2026.

2. Critical Review Process

The critical review was conducted following completion of the updated LCA study. A single round of review was performed by the chair after the LCA practitioners submitted the draft update report in May 2026. The critical review included comments and recommendations from the chair, along with corresponding responses provided by the LCA practitioners.

Per ISO 14071:2024 critical review process guidance, the goal of this critical review was to verify that:

- the methods used to carry out the LCA study are consistent with ISO 14040 and ISO 14044, including the relevant published amendments,
- 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. Following ISO 14071:2024, this critical review in no way implies an endorsement of any comparative assertion that is based on an LCA study.

The critical-review process was conducted specifically for the May 2026 update report, which is an addendum to the original Main Report. This process involved the following steps:

- a review of the draft version of the update report, assessed against the applicable ISO criteria and accompanied by recommendations for improvement; and
- a review of the final version, confirming that the authors had addressed the points raised in the draft review.

3. Critical Review Results

This section summarizes the critical review. A complete list of comments addressing specific statements in the draft LCA report, the proposed changes, the practitioner responses, and the final reviewer statements is provided in the table below.

The reviewer recognizes the substantial effort by the LCA practitioners, Mérieux NutriSciences | Blonk, in updating the comparative LCA study, and by Oatly in providing primary data and responding to review comments.

Literature

Mérieux NutriSciences | Blonk, 2022. LCA of Oatly Barista in key markets and comparison with cow's milk,

Mérieux NutriSciences | Blonk, 2026. LCA of Oatly Barista in key markets and comparison with cow's milk, 2026 update report.

Intergovernmental Panel on Climate Change, 2019. 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

ISO 14040, 2006. ISO 14040:2006, Environmental management, Life cycle assessment, Principles and framework.

ISO 14040, 2020. ISO 14040:2006/Amd 1:2020, Environmental management, Life cycle assessment, Principles and framework, Amendment 1.

ISO 14044, 2006. ISO 14044:2006, Environmental management, Life cycle assessment, Requirements and guidelines.

ISO 14044, 2017. ISO 14044:2006/Amd 1:2017, Environmental management, Life cycle assessment, Requirements and guidelines, Amendment 1.

ISO 14044, 2020. ISO 14044:2006/Amd 2:2020, Environmental management, Life cycle assessment, Requirements and guidelines, Amendment 2.

ISO 14071, 2024. ISO 14071:2024, Environmental management, Life cycle assessment, Critical review processes and reviewer competencies. This International Standard replaces ISO/TS 14071:2014.

4. List of Specific Reviewer Comments, Recommendations, and Responses

The chair provided comments on the draft report. These comments were addressed and incorporated, where applicable, in the final version of the report by the LCA practitioners. The review statement and review report, including comments from the expert and responses to recommendations made by the reviewer, have been included in the final LCA report.

Date: May 2026	Document: **LCA of Oatly Barista in key markets and comparison with cow's milk (2026 update)**	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
JB		Goal & Scope / Introduction		te	"background processes were also updated with the use of more recent Ecoinvent and Agri-footprint databases (Ecoinvent version 3.11 instead of 3.6, and Agri-Footprint 7 instead of 6) and the updated version of the LCIA method…" The report presents the update as mainly operational data changes, but includes multiple methodological changes (allocation, LCIA, databases, dairy modeling). ISO requires a transparent and complete description of all methodological choices and changes.	Distinguish and list: (1) operational changes, (2) methodological changes, (3) background data updates.	Added	OK
JB		Conclusions		te	"Given that no methodological changes were made…" The report states that no methodological changes were made, which contradicts the documented updates Violates ISO consistency and transparency requirements.	Revise the statement and explicitly acknowledge methodological changes.	Adjusted	OK
JB		Methodology / Allocation		te	Allocation changed from PEFCR 2018 to IDF 2022/PEFCR 2025, but is not described in the main text. Allocation is a key ISO methodological choice affecting results and must be clearly documented.	Describe the allocation method change in the main report and explain the differences	Table added on differences in allocation	OK
JB		Methodology / Dairy modelling		te	"In comparison to the main report a new version of Mérieux NutriSciences | Blonk's tool is used: Animal Life Cycle Engine." This reads as dairy modeling updated (new tool, IPCC 2019, background data), but not fully described in the main methodology. ISO requires transparency and reproducibility of modeling approaches.	Provide a clear summary of the new dairy model, key assumptions, and differences from the baseline.	Added	OK
JB		Results / Interpretation		te	Results reflect combined effects of operational changes, database updates, LCIA changes, and dairy modelling, but these are not separated. ISO requires interpretation to identify and explain drivers of results.	Isolate main drivers of change.	Explanation added	OK

1 Initials of the **Reviewer**

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

Date: May 2026	Document: **LCA of Oatly Barista in key markets and comparison with cow's milk (2026 update)**	Project:

Reviewer[1]	Line number	Clause/ Subclause	Paragraph / Figure/ Table/	Type of com-ment[2]	Comments	Proposed change	Response of the commissioner & practitioner	Final Reviewer Statement
JB		Comparative assertion		te	Cow's milk modelling was updated alongside Oatly	Separate the effects of Oatly changes from those of milk changes, and discuss the implications.	To be consistent with all the previous reports, the comparison has been done in the same way. Oatly vs cow's milk for each market. In this report, only where differences are observed compared to the Main Report are presented.	OK
JB		LCIA		te	Update of ReCiPe method affects results (e.g., freshwater eutrophication). ISO requires methodological changes to be linked to results and interpretation.	Identify which impact categories are affected by LCIA changes and clarify their influence on conclusions.	Footnote added in introduction on the changes and which impact categories are affected and rephrased the conclusion.	OK
JB		Results / Comparability		te	Results from 2021 and 2025 are compared despite changes in methods and data systems. ISO requires a consistent basis for comparison.	Clarify that comparisons reflect updated modelling; avoid presenting as direct performance improvement unless isolated.	Added	OK
JB		Interpretation / Conclusions		te	Several impact category conclusions changed (e.g., freshwater eutrophication, mineral resource scarcity) but are not systematically explained.	Add a structured table comparing previous vs new conclusions and their drivers.	Due to updates in background datasets, methods and operational changes it is not possible to identify the specific drivers for the change in results. This update of the 2022 study did not include an analysis on the contribution of each update change.	OK

1 Initials of the **Reviewer**

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

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: May 13, 2026

Name: Jasmina Burek

Signature:

Mérieux NutriSciences
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