



# Carbon Footprint Accounting 2021

Report made by Cemsys, May 2022





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# Introduction and delimitation

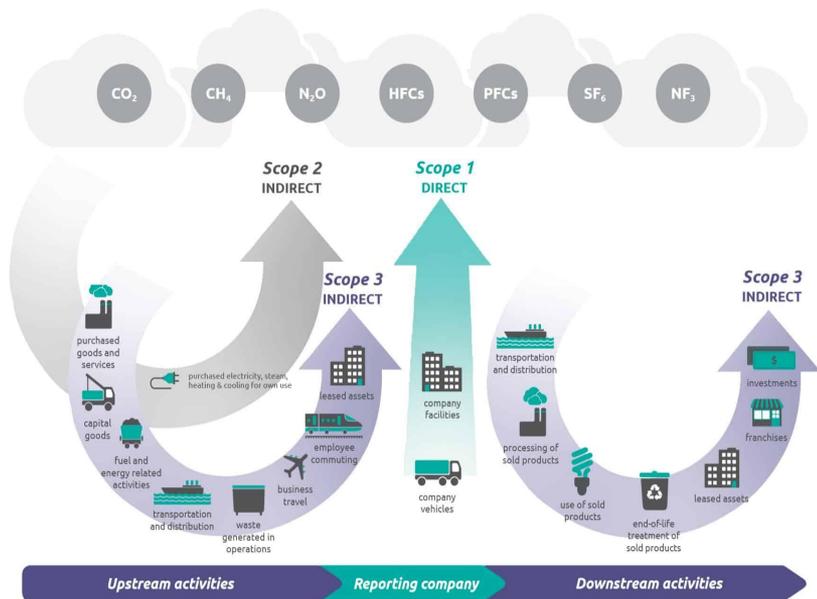
- This report provides an overview of the estimated greenhouse gas (GHG) emissions related to Brav's entire product portfolio produced and sold in 2021. Carbon accounting is a fundamental tool for identifying, measuring and taking tangible measures to reduce GHG emissions for a company. The annual carbon accounting report enables Brav to benchmark performance indicators and evaluate their progress over time.
- This study reviews Brav's carbon footprint based on the emissions in their value chain, from 'cradle-to-grave': from the production of the raw materials to the production of the final products, transport/distribution to the consumer, the usage/maintenance of the products, as well as waste management and business travel.
- All consumption of fossil fuels is converted to tonnes of CO<sub>2</sub> equivalents (tCO<sub>2</sub>e). Associated emissions from these processes are distributed on the relevant production volume in each link in the value chain. As a basis for the calculation, generic life cycle analyzes have been used that cover emissions up to finished substance production.
- The tCO<sub>2</sub>e emissions will be shared for all Brav's operations and will thereafter be broken down to the tCO<sub>2</sub>e for each brand and business activity that Brav has.
- Brav wants to signal that in their role as manufacturer and importer of products, that they are aware of their influence on climate and the environment and are taking measures as a company to reduce their greenhouse gas emissions.

# About Cemasy

- Cemasy was established in 2007 as one of the first specialized climate change and sustainability consultancies in Norway.
- A leading provider of solutions for the entire Environmental Social Governance (ESG) segment.
- ESG data gathering and management, advanced analysis, strategy development, ESG reporting, and carbon offsetting.
- 500+ Nordic and international clients.



# Greenhouse Gas protocol



The report covers the BRAV offices and production facilities including the brands: Swix, Toko, Lundhags, Ulvang, Helsport and Brav Teamwear.

Input data is based on consumption data from internal and external sources, which are converted into tonnes of carbon dioxide equivalents (tCO<sub>2</sub>e). The analysis is based on the international standard for climate calculations; A Corporate Accounting and Reporting Standard, developed by the Greenhouse Gas Protocol Initiative (GHG Protocol). The GHG Protocol is the most widely used and recognized international standard for measuring greenhouse gas emissions and is the basis for the ISO standard 14064-1.

## Scope 1: Direct emission: Reporting company

- \* Greenhouse gas emissions from sources that are owned or controlled by Brav:
- \* Company facilities (incl. Lillehammer and Lithuania factories). Company vehicles

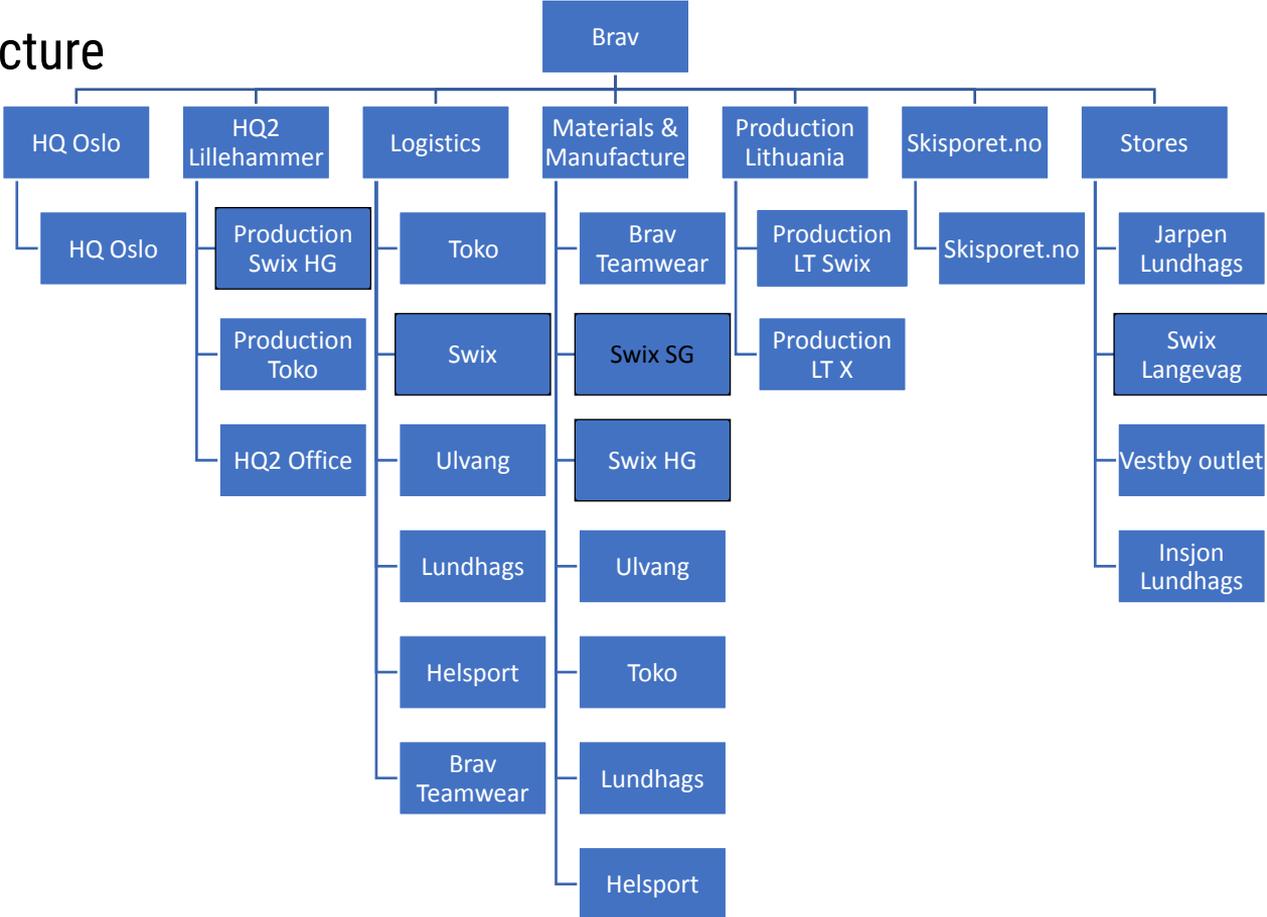
## Scope 2: Indirect emission: Upstream activities

- \* Greenhouse gas emissions resulting from the generation of electricity, heat purchased by company
- \* Purchased electricity, steam, heating and cooling for own use

## Scope 3: Indirect emission: Upstream and downstream activities

- \* Purchased goods, services
- \* Business travel and commuting
- \* Transportation, distribution
- \* Waste generated in operations
- \* End-of-life treatment of sold products

# Brav structure



# Methodology: Greenhouse Gas Protocol

- The carbon footprint analysis is based on the international standard; A Corporate Accounting and Reporting Standard, developed by the Greenhouse Gas Protocol Initiative (GHG Protocol). The GHG Protocol is the most widely used and recognized international standard for measuring greenhouse gas emissions and is the basis for the ISO standard 14064-1.
- The carbon inventory is divided into three main scopes of direct and indirect emissions.
- Scope 1 includes all direct emission sources.
- Scope 2 includes indirect emissions related to purchased energy; electricity and heating/cooling where the organization has operational control.
- Scope 3 includes indirect emissions resulting from value chain activities. The scope 3 emissions are a result of the company's upstream and downstream activities, which are not controlled by the company, i.e., they are indirect.

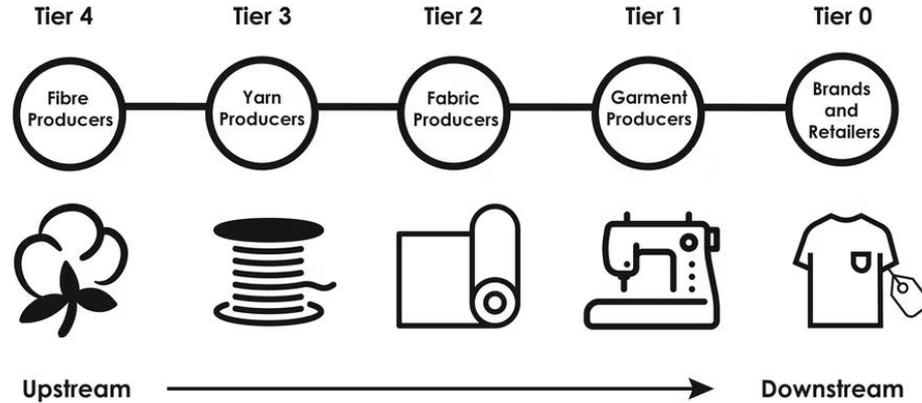
# Methodology: LCA in the GHG-protocol

- Our approach is to map Brav's emissions by analyzing and evaluating a range of international life cycle assessment (LCA) studies and define which of these are relevant for Brav. We use generic emissions factors for the calculation of this hybrid LCA study, which includes GHG emissions from the cradle to the usage of the clothing.
- The current study provides the estimated carbon footprint measured in tons of CO2 equivalents for Brav's operations and manufacturing during 2021.
- This report is based on the actual production and procurement data from Brav, which has been used to calculate the emissions related to transportation and distribution, materials, as well as sales & administration. We have made some assumptions for the analysis with regards to consumer treatment and washing of the clothes.

# Methodology: CO2 emission factors

- CEMAsys has a dedicated emission factor team consisting of four members
- The Emission factor team uses emission factors from sources such as Department for Environment, Food & Rural Affairs (DEFRA), The International Energy Agency (IEA), SimaPro and Ecoinvent. The team also researches papers to find relevant emission factors
- CEMAsys always ensures that all our emission factors come from reliable and good quality sources
- The emission factor team also has the competency to use LCA-tools to make LCA-analysis
- Specific emission factors can be added for supplier-specific data upon request
- Generic emission factors are updated annually towards the end of the year. All emissions factors are usually updated in November and December each year. New emission factors can also be added upon request

# Context: carbon footprint in the textile industry



- Supply chains in the textile industry are often long, complex, and interconnectional, meaning it is important to ensure that the entire manufacturing process is captured when doing carbon accounting.
- This manufacturing process within the textile industry is split up into different tiers, with different manufacturers specializing in different aspects of the process. These tiers go from tier 4 to 1, each tier representing a different manufacturer, specialized in one aspect of the process.
- In the case of Brav, we have made sure to choose emissions factors covering the totality of the manufacturing process of the different garments, to ensure that the carbon footprint is complete, including all relevant emissions.

# General process



- Introduction of the GHG Protocol, scope 1, 2, 3
- Organizational boundaries
- Identification of emission categories that might be relevant to include in the carbon accounting.

- Identification of all scope 3 categories and subcategories that are deemed significant.
- Internal discussion on how to collect data.

- Data was collected and reviewed by internal sources at BRAV.
- Materials are based on reported weight and fabric composition.
- Upstream transportation of product is based on the main mode of transport from the city of origin and city of delivery. Distances are acquired from [www.ecotransit.org](http://www.ecotransit.org). Some supplier specific data was also gathered.
- Results were categorized per brand.

- The emissions have been calculated using generic emission factors\*, provided by Cemsys.

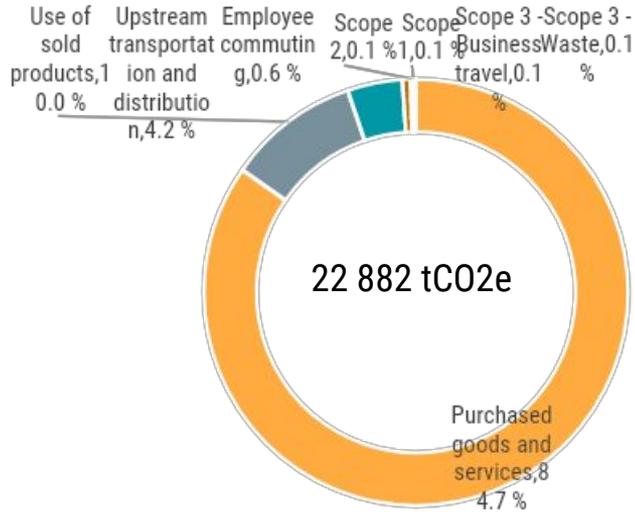
\*Emission factors are available for BRAV for internal use.

## Assumptions & Uncertainties (textiles references)

- We have made assumptions regarding the consumer treatment and washing of the garments for the purpose of this analysis and assume that the customers wash all clothes at 40°C. Washing instructions per item of clothes, including hand wash and dry clean for the delicate materials, would improve the data quality of the scope 3 category use of sold products.
- The analysis consists of a combination of both secondary and primary sources and is largely based on external LCA studies with varying degrees of uncertainty. To the extent possible, we have conducted various studies of, among other things, cotton and polyester to compare results. The variation between such studies is partly large and will vary depending on geography, use of different energy carriers, and different production processes. The uncertainty is smallest in the value chain from export to store, as the database is well known. The emission figures cover both direct and indirect emissions.
- An important point in the uncertainty analysis is that generic data will never give a complete picture of the actual conditions that apply to the purchase of textiles or other materials or services.
- The conclusion is that the overall result has a relatively high degree of certainty. Overall, the analysis is considered a high degree of reliability, and the analysis thus provides, in CEMAsys' assessment, a sensible picture of the climate impact of BRAV's collection.

# Brav Norway AS

## Total GHG emissions in 2021

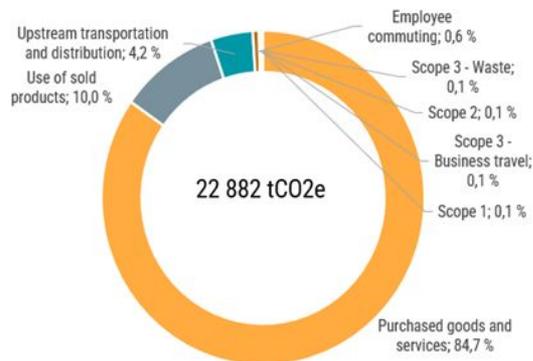


## Scope 1, 2, 3 2021 per GHG source of emissions

Scope categories	Unit	Consumption	tCO <sub>2</sub> e
<b>Scope 1</b>	<b>l</b>	<b>11 180</b>	<b>25</b>
<b>Scope 2</b>	<b>kWh</b>	<b>2 782 700</b>	<b>31</b>
<b>Scope 3 - Purchased goods and services</b>		<b>1 399 322</b>	<b>19 391</b>
Wool, fine (T1-4)	kg	190 218	7 698
Polyester fabric (T1-4)	kg	354 569	3 734
Aluminium	kg	178 642	1 630
Nylon/Polyamide (PA) fabric (T1-4)	kg	108 727	1 399
Plastic avg, (virgin)	kg	112 973	352
Plastic avg, (virgin)	tonne	209	651
Nylon fabric (6) (T1-4)	kg	51 595	872
Polyester fabric, recycled (T1-4)	Kg	93 416	806
Steel, stainless	kg	96 606	406
Cotton fabric, organic (T1-4)	kg	41 183	342
Ski wax			296
Leather, cow (T1-4)	kg	6 684	246
Silk fabric (T1-4)	kg	1 728	164
Rubber (footwear)	kg	21 500	100
Other materials*	kg	140 976	694
<b>Scope 3 - Use of sold products</b>	<b>kg</b>	<b>620 908</b>	<b>2 297</b>
<b>Scope 3 - Upstream transportation and distribution</b>	<b>tkm</b>	<b>16 043 012</b>	<b>960</b>
<b>Scope 3 - Employee commuting</b>	<b>km</b>	<b>909 349</b>	<b>142</b>
<b>Scope 3 - Business travel</b>	<b>km</b>	<b>178 228</b>	<b>22</b>
<b>Scope 3 - Waste</b>	<b>kg</b>	<b>49 285</b>	<b>15</b>
			<b>22 882</b>

\*Materials with less than 100 tCO<sub>2</sub>e

## Total emissions in 2021 per Scope



GHG emission sources	tCO <sub>2</sub> e	% share
Scope 1 Facilities and vehicles owned or controlled by Brav	24,4	0,1 %
Scope 2 Purchased electricity, heating and cooling for own use	30,6	0,1 %
Scope 3 Purchased goods and services	19 391,2	84,7 %
Upstream transportation and distribution	960,2	4,2 %
Waste generated in operations	14,7	0,1 %
Business travel	22,5	0,1 %
Employee commuting	141,7	0,6 %
Use of sold products	2 297,4	10,0 %
<b>Total emission</b>	<b>22 882,7</b>	<b>100,0 %</b>

99,8%

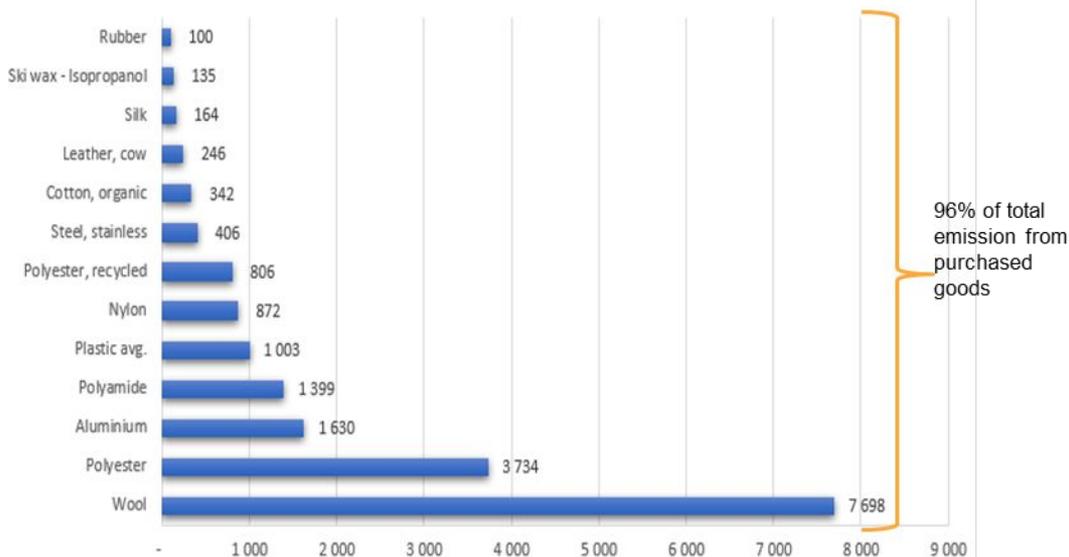
Scope 3 is the largest category and are emissions from the value chain.

Scope 3 emissions stand for 99,8% of the total emissions.

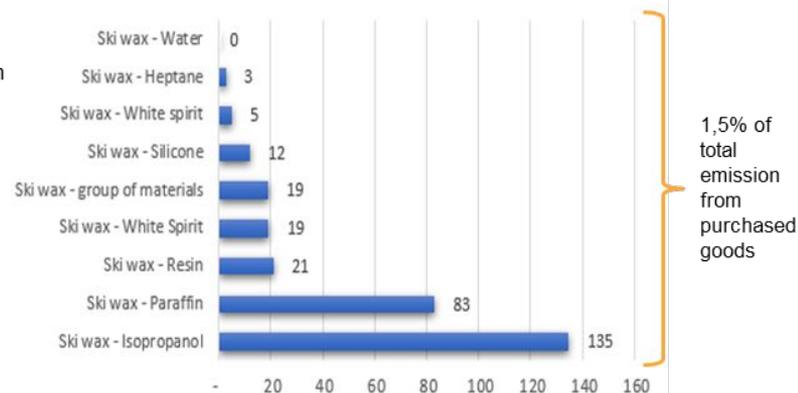
The largest scope 3 categories are purchased goods and services standing for most of the emissions.

# Emissions in 2021 per Material

tCO2e per Material BRAV 2021 (above 100 tCO2e)



tCO2e per main ski wax materials



The materials that have less than 100 tCO2e are excluded from this graph.

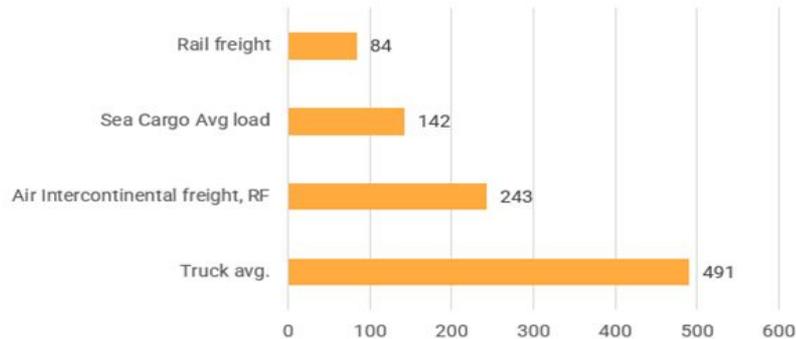
The largest emission source for BRAV in this category is associated with the use of wool. Wool as a material has a significant climate footprint when one includes the effect of animals producing methane gas by displacing body gases (via belching and farting) during wildlife.

The second and third largest emission sources are polyester and aluminium that also are among the most used materials for BRAV.

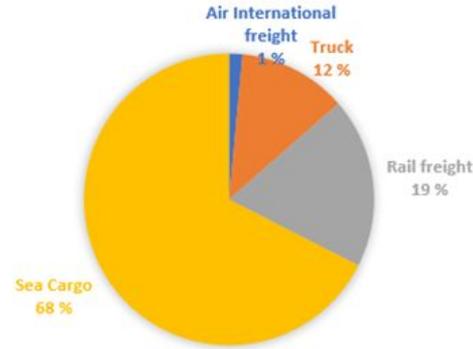
## Emissions in 2021 per transport mode

	tkm	tCO2e
Air International freight	238 685	243
Truck	1 933 606	491
Rail freight	3 015 663	84
Sea Cargo	10 786 059	142

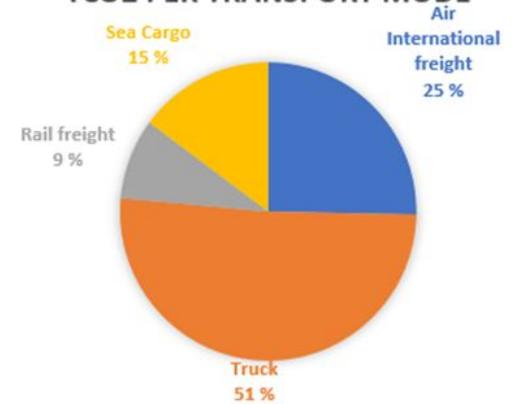
tCO2e per transport mode for BRAV Norway AS



TKM PER TRANSPORT MODE



TCO2 PER TRANSPORT MODE

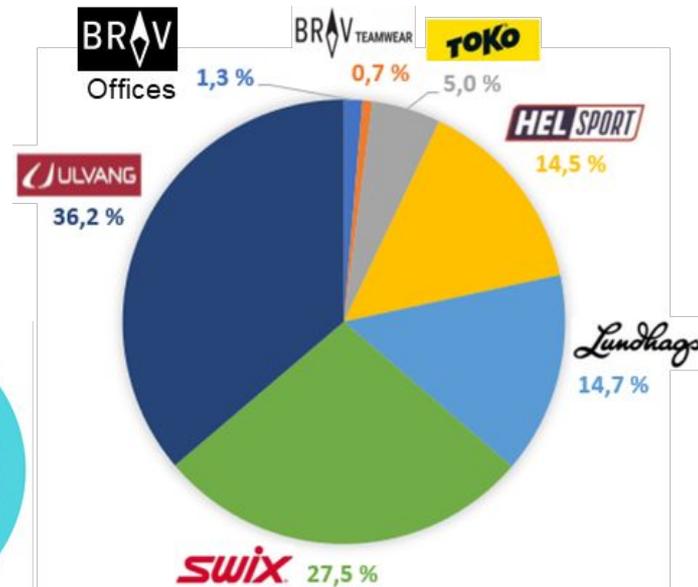


The transport modes that lead to the largest emission sources are truck and air freight.

Sea transport is more used than air freight but does not lead to the same amount of emission as the emission factor is less than half of the emission connected to air freight.

# Emissions in 2021 per Brand

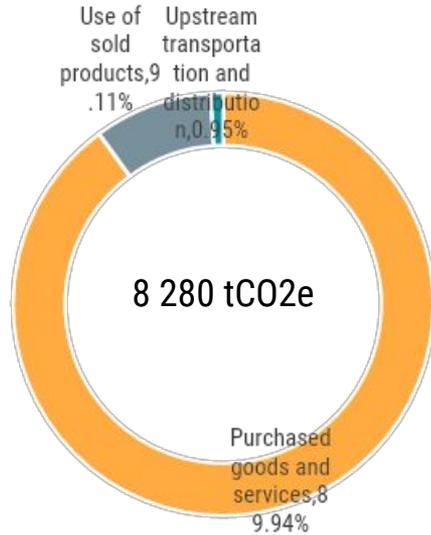
	tCO2e	% share
Offices	308	1,3 %
Brav Team wear	165	0,7 %
Toko	1155	5,0 %
Helsport	3320	14,5 %
Lundhags	3357	14,7 %
Swix	6299	27,5 %
Ulvang	8280	36,2 %
<b>Total emissions</b>	<b>22 884</b>	<b>100,0 %</b>



- Upstream transportation and distribution
- Purchased goods and services
- Use of sold products

# Ulvang

## Scope 3 2021 per GHG source of emissions

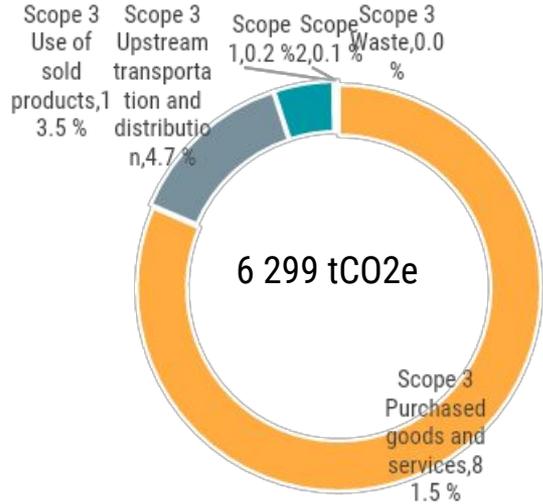


## Scope 3 2021 per GHG source of emissions

Scope 3 categories	Unit	Consumption	tCO2e
<b>Purchased goods and services</b>		<b>203 848</b>	<b>7 447</b>
Wool, fine (T1-4)	kg	173 259	7 012
Nylon fabric (6) (T1-4)	kg	15 363	260
Polyester fabric (T1-4)	kg	6 195	65
Tencel fabric (T1-4)	kg	3 224	32
Nylon/Polyamide (PA) fabric (T1-4)	kg	1 872	24
Elastan/Spandex fabric (T1-4)	kg	1 517	16
Acrylic fabric (T1-4)	kg	1 486	16
Silk fabric (T1-4)	kg	116	11
Lyocell fabric (T1-4)	kg	787	11
Polypropylene fabric (T1-4)	kg	23	0
Bamboo fabric (T1-4)	kg	6	0
<b>Use of sold products</b>	<b>kg</b>	<b>203 848</b>	<b>754</b>
<b>Upstream transportation and distribution</b>	<b>tkm</b>	<b>2 529 950</b>	<b>79</b>
<b>Total</b>			<b>8 280</b>

# Swix

## Scope 1, 2 and 3 2021 per GHG source of emissions



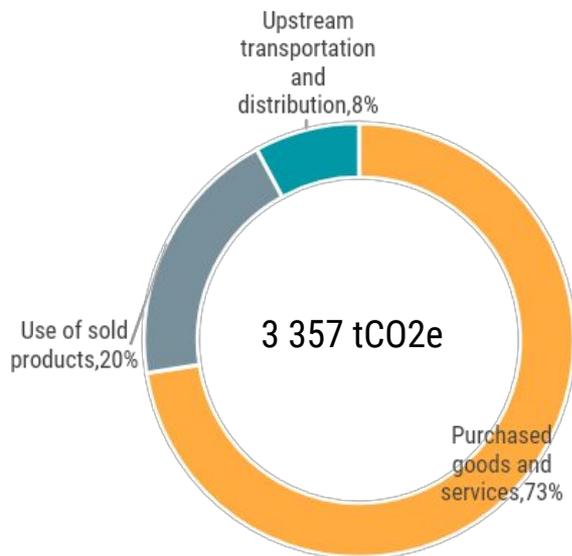
## Scope 1, 2 and 3 2021 per GHG source of emissions

Scope 3 category	Unit	Consumption	tCO <sub>2</sub> e
<b>Scope 3 Purchased goods and services</b>		<b>645 168</b>	<b>5 132</b>
Polyester fabric (T1-4)	kg	195 593	2 060
Aluminium	kg	115 777	1 056
Steel, stainless	kg	82 260	346
Wool, fine (T1-4)	kg	7 742	313
Nylon/Polyamide (PA) fabric (T1-4)	kg	19 495	251
Plastic avg. (virgin)	kg	68 402	213
Packaging - Plastic avg. (virgin)	kg	44 193	138
Nylon fabric (6) (T1-4)	kg	8 077	137
Ski wax - Paraffin	tCO <sub>2</sub> e	76	76
Polyurethane fabric (T1-4)	kg	6 512	62
Plastic (PET)	kg	15 038	61
Ski wax - Isopropanol	tCO <sub>2</sub> e	55	55
Elastan/Spandex fabric (T1-4)	kg	4 824	52
Acrylic fabric (T1-4)	kg	4 324	46
Rubber (footwear)	kg	7 879	37
Cotton fabric, conventional (T1-4)	kg	3 558	33
Tencel fabric (T1-4)	kg	2 751	27
Plastic (HDPE)	kg	7 984	26
Ski wax - Resin	tCO <sub>2</sub> e	21	21
Ski wax - White Spirit	tCO <sub>2</sub> e	19	19
Plexiglass (PMMA)	kg	1 809	16
Leather, goat (T1-4)	kg	476	14
Packaging - Plastic (PVC)	kg	2 768	9
Down insulation	kg	6 637	9
Polyester fabric, recycled (T1-4)	kg	901	8
Epoxy resin (liquid)	kg	1 577	8
Iron	kg	3 340	6
Glass fibre	kg	2 366	6
Wood material, virgin	kg	18 349	6
Nylon fabric, recycled (T1-4)	kg	471	4
Packaging - Plastic (PET)	kg	963	4
Glass, virgin	kg	3 625	3
Packaging - Cardboard, virgin	kg	3 668	3
Expanded Polystyrene (EPS)	kg	1 098	3
Ski wax - Heptane	tCO <sub>2</sub> e	3	3
Nylon 6	kg	220	2
Polyurethane, flexible foam	kg	259	1
Paper, virgin	kg	482	0.4
Ethylene vinyl acetate	kg	51	0.1
Cork (raw), PT	kg	1 526	0.0
<b>Total</b>			<b>5 132</b>

Scope 1, 2 and 3 categories	Unit	Consumption	tCO <sub>2</sub> e
Scope 3 Use of sold products	kg	229 005	847
Scope 3 Upstream transportation and distribution	Tkm	6 626 118	299
Scope 1	L	5 052	12
Scope 2	kWh	133 623	9
Scope 3 Waste	kg	20 805	0
<b>Total</b>			<b>1 167</b>

# Lundhags

## Scope 3 2021 per GHG source of emissions

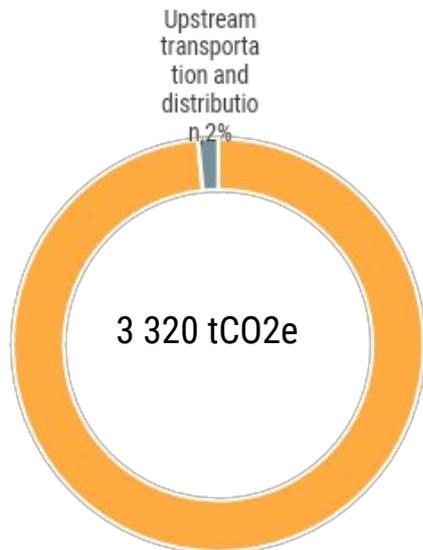


## Scope 3 2021 per GHG source of emissions

Scope 3 categories	Unit	Consumption	tCO2e
<b>Purchased goods and services</b>	<b>kg</b>	<b>229 833</b>	<b>2436</b>
Polyester fabric, recycled (T1-4)	kg	90 395	780
Nylon/Polyamide (PA) fabric (T1-4)	kg	28 761	370
Wool, fine (T1-4)	kg	8 995	364
Cotton fabric, organic (T1-4)	kg	41 183	342
Leather, cow (T1-4)	kg	6 684	246
Polyurethane, rigid foam	kg	13 385	68
Rubber (footwear)	kg	13 445	63
Polypropylene fabric (T1-4)	kg	7 812	61
Polyester fabric (T1-4)	kg	5 426	57
Steel, stainless	kg	8 164	34
Aluminium	kg	1 702	16
Polyurethane fabric (T1-4)	kg	1 471	14
Elastane/Spandex fabric (T1-4)	kg	904	10
Cotton fabric, conventional (T1-4)	kg	769	7
Tencel fabric (T1-4)	kg	359	4
Plastic avg, (virgin)	kg	378	1
<b>Use of sold products</b>	<b>kg</b>	<b>177 222</b>	<b>656</b>
<b>Upstream transportation and distribution</b>	<b>tkm</b>	<b>3 135 008</b>	<b>265</b>
<b>Total</b>			<b>3 357</b>

# Helsport

## Scope 3 2021 per GHG source of emissions

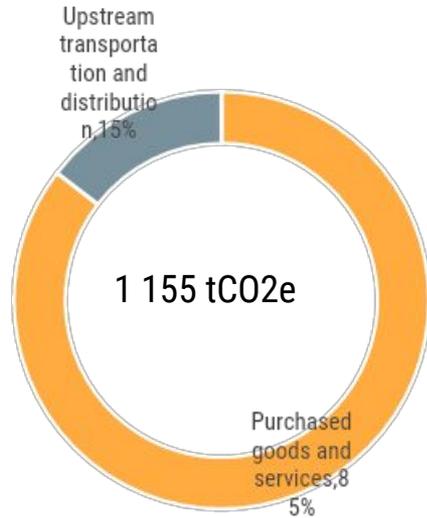


## Scope 3 2021 per GHG source of emissions

Scope 3 categories	Unit	Consumption	tCO2e
<b>Purchased goods and services</b>		<b>285 142</b>	<b>3 268</b>
Polyester fabric (T1-4)	kg	137 952	1 453
Nylon/Polyamide (PA) fabric (T1-4)	kg	58 599	754
Nylon fabric (6) (T1-4)	kg	28 155	476
Aluminium	kg	38 591	352
Silk fabric (T1-4)	kg	1 612	153
Steel, stainless	kg	6 167	26
Cotton fabric, conventional (T1-4)	kg	2 338	22
Polyester fabric, recycled (T1-4)	kg	2 120	18
Down insulation	kg	9 451	13
Polypropylene fabric (T1-4)	kg	102	1
Rubber (footwear)	kg	55	0
<b>Upstream transportation and distribution</b>	<b>tkm</b>	<b>2 833 212</b>	<b>52</b>
<b>Total</b>			<b>3 320</b>

# Toko

## Scope 3 2021 per GHG source of emissions

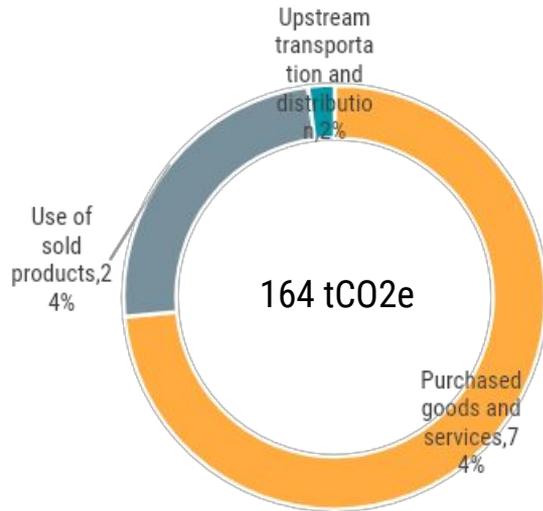


## Scope 3 2021 per GHG source of emissions

Radetiketter	Unit	Consumption	tCO2e
<b>Purchased goods and services</b>		<b>24 498</b>	<b>987</b>
<b>Packaging</b>			
Plastic avg, (virgin)	tonne	209	651
Aluminium	kg	18 063	165
Cardboard, virgin	tonne	2	2
Polyurethane, flexible foam	kg	94	1
<b>Materials</b>			
Ski wax – Isopropanol			80
Aluminium	kg	4 509	41
Plastic avg,	kg	834	3
Nylon 6	kg	200	2
Rubber (footwear)	kg	121	1
Steel, stainless	kg	15	0
Paper, virgin	kg	118	0
Polyurethane, rigid foam	kg	25	0
Rubber, cork	kg	27	-
Wood material, virgin	kg	78	-
Cork (raw), PT	kg	80	-
Ski wax - group of materials		19	19
Ski wax – Silicone			12
Ski wax – Paraffin			8
Ski wax - White spirit			5
Ski wax - Water			-
<b>Upstream transportation and distribution tkm</b>		<b>808 486</b>	<b>168</b>
<b>Total</b>			<b>1 155</b>

# Brav Teamwear

Scope 3 2021 per GHG source of emissions



Scope 3 2021 per GHG source of emissions

Scope 3 categories	Unit	Consumption	tCO2e
<b>Purchased goods and services</b>		<b>10 833</b>	<b>121</b>
Polyester fabric (T1-4)	kg	9 403	99
Elastan/Spandex fabric (T1-4)	kg	973	10
Wool, fine (T1-4)	kg	222	9
Polyurethane fabric (T1-4)	kg	235	2
<b>Use of sold products</b>	<b>kg</b>	<b>10 833</b>	<b>40</b>
<b>Upstream transportation and distribution</b>	<b>tkm</b>	<b>16 033</b>	<b>3</b>
<b>Total</b>			<b>164</b>

# List of references

- Scope 1: DEFRA
- Scope 2: IEA, Fjernkontrollen, Energinos Naudingumo projektavimas ir sertifikavimas
- Scope 3, Waste: Ecoinvent, DEFRA
- Scope 3, Business Travels: DEFRA
- Scope 3, Purchased goods and services: Ecoinvent and LCA-analysis for textile fabrics (see Excel document sent to BRAV)
- Scope 3: Upstream Transportation and distribution: DEFRA
- Scope 3, Employee commuting: DEFRA, Miljøkalkulator Vy, Ruter
- Scope 3, Use of Sold Products: IEA, DEFRA, ENOVA, Proctor

BR  V