

A woman with long brown hair is shown from the chest up, wearing a white long-sleeved button-down shirt. She is looking down and adjusting the collar of the shirt with her right hand. The background is a plain, light-colored wall.

TRUE
COST
LABEL

— +
UNSALTED
AMSTERDAM

LCA REPORT: GOTS organic cotton supplychain

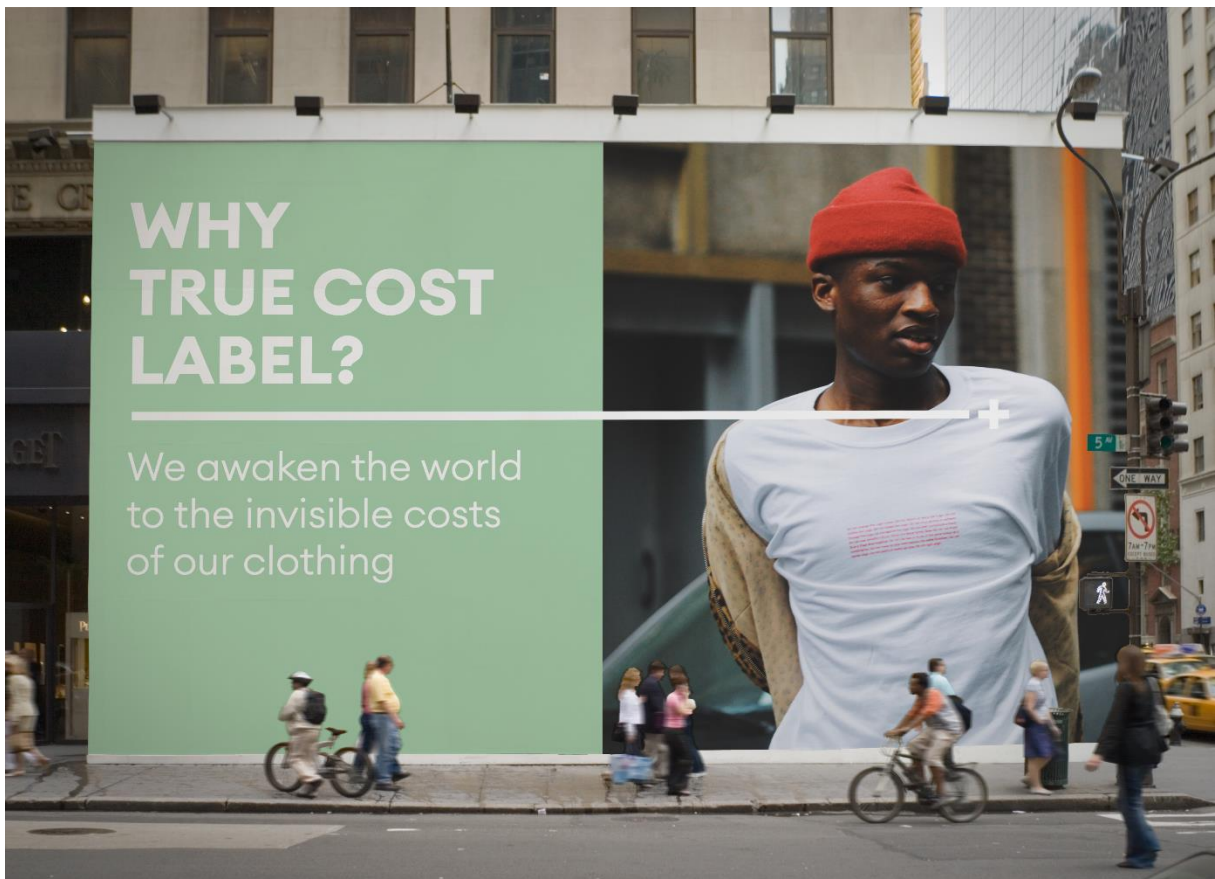
ABOUT THIS REPORT

This Life Cycle Analysis report has been constructed in consultation to Unsalted to reveal the invisible costs of their Pure Wool Supplychain and GOTS organic cotton supplychain. A True Cost Label impact profile has been calculated to show consumers the impact their products have on the planet and its people. To help consumers make more informed decisions, Unsalted' products are benchmarked with products of the same material weight according to conventional industrial practices, materials and locations. As a frontrunner, Unsalted understands the need for radical transparency which is why they partnered with True Cost Label to set up this Life Cycle Analysis.

OUR STORY

We are True Cost Label, a digital platform that makes it simple to buy and sell sustainable and ethical fashion. Let's face it. Our fashion has a huge impact on the environment, and the people who make it. We reveal these invisible costs. Piece by piece, we break down how each product affects our planet and its people. By translating complicated data into simple facts, we bring clarity. That's how we encourage more informed decisions that involve less pollution and fairer work conditions across the industry.

Finding a new favorite is already a challenge. Let sustainability be the easy part. We bring together conscious fashion brands with like-minded consumers. All in one spot. United as one force. Love the planet. Love your fashion.



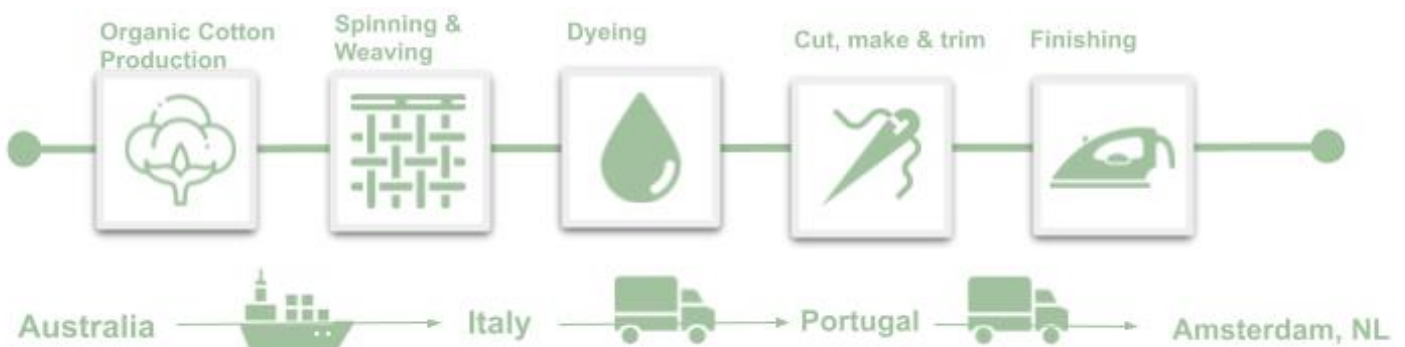
LIFE CYCLE ANALYSIS

A Life Cycle Analysis, also known as LCA study, is a deep analysis of the supply chain. Whereas LCAs can be performed for any industry, True Cost Label specializes in those specifically for the fashion sector. An essential step in this, is the mapping of Unsalted supply chain.

The product is broken down at a component level, looking at every single kilogram of material and production process needed to make the garment. Consequently, the environmental and social impacts of the production of raw materials and the manufacturing of those materials into a final product is collected and computed into total figures. From the production and spinning of fibres to the dyeing, printing and CMT process and anything else imaginable within the typical supply chain of a garment.

Another important aspect of LCA is transport. For every product True Cost Label investigates, the transportation routes from the raw materials to the brand's store are tracked down and included in the impact calculation. This way, the total amount of kilometers a brand's product has traveled is displayed in its True Costs.

Figure 1: Unsalted Supply Chain



UNSALTED: GOTS OC SHIRT

For Unsalted, True Cost Label conducted an LCA of their GOTS organic cotton supplychain shirt.

GOTS Organic Cotton is grown in the USA in New Mexico, California and Texas. The raw material is ginned then shipped to Italy where it is combed, spun, dyed and woven into a fabric by the Albini group in the vicinity of Bergamo.

The fabric is transported to LCP, Serzedo, Portugal where the manufacturing process continues. The product is cut and sewn into a garment, labels are added and the CMT including finishing the product is completed. Once complete the product is driven to Amsterdam.

The Albini group has an emphasized focus on sustainability with multiple initiatives running to cut energy demand and CO₂ emissions. At moment of analysis, the Albini Group does not have certifiable solar or wind power at the plant in Albini. A follow up study could investigate the specific water use and energy cost per m² of fabric.

Unsalted GOTS –Organic Cotton Shirt

Size ‘M’ 217 grams, oversized fit, dropped back hem.

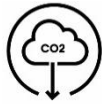


No PRODUCT-AS-SERVICE



No UPCYCLED/REUSED

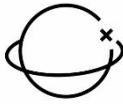
4,32



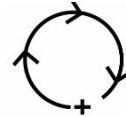
132



15150 km



No



KILOGRAM CO₂-eq

LITER WATER

AROUND THE WORD

RECYCLED MATERIAL

BIOBASED

LCA RESULTS

The results of this LCA are presented in the following table and in the figure above. A full table of the impact for all sizes is included in the appendix of this report.

Indicator	Unsalted: GOTS OC shirt	Conventional Fast Fashion	Unit	Benchmark Versus conventional
Climate change	4,32	6,98	kg CO ₂ -eq	38% better
Water use	132	815	Liter	83% better
Total distance	-15150	-46000	Kilometer	57% better

Conventional product Regular cotton from China, manufactured to fabric and cmt process in asia. Shipped overseas. Fast fashion industry practices and standard dyeing.

SOCIAL IMPACT

Unsalted’s organic cotton supplychain is GOTS certified, which requires social audits along the supplychain. In addition the supplychain has to deal with US and EU law for social impact. Finally, the manufacturers show initiatives for improved social impact.

REFLECTION & IMPROVEMENT

Breakdown of indicators

True Cost Label's LCAs are broken down in the following indicators:¹

- Climate change expressed in kilograms of CO₂-equivalents²;
- Water use expressed in liters of water;
- Distance traveled in number of kilometers.

In addition, various qualitative indicators and a social impact reflection is considered as shown in the previous page. By putting all these indicators together, True Cost Label aims to provide shoppers with the most complete picture of their product before purchasing it.

Impact visualization & compensation

Unsalted GOTS shirts have a climate change impact of **4,37** kg CO₂ (size M). The annual production of GOTS shirts products in 2022 is 147 orders. In order to neutralize the total impact of these products, Unsalted would need to plant **8** full grown trees capturing CO₂ for a year to compensate the emissions.³The total water use of the garments is equal to **15** m³ of water. Enough water to support the water demand of 1 family for 1 week.

¹ Chemical use not taken into account

IMPACT REDUCTION STRATEGIES

The impact Unsalted products have is significantly lower than conventional fast-fashion production. Nevertheless, True Cost Label provides Unsalted with several strategies to lower their impact even further. The strategies we recommend are:

Strategy	Description
Circular fibers	Eventhough Unsalted has a high focus on sustainability, ethical and biobased fibers, recycled cotton yields even higher results in terms of CO ₂ and water impact reduction.
Dyeing	Dyeing in any textile supplychain is an impactful step. Sustainable alternatives such as using natural cotton looks, spin-dyeing and pigments made from natural ingredients could provide a way to further reduce the impact of the garments. Portugal has some spin-dyeing suppliers that could be an interesting partner in this process.
Renewable Energy	If it can be proven that some suppliers use renewable energy such as solar panels, wind energy or geothermal energy, this could further reduce the total impact. Certificates would need to be uploaded for this.

² A CO₂ equivalent abbreviated as CO₂-eq is a measure used to compare emissions from various greenhouse gases on the basis of their global-warming potential (GWP).

³ The impact for the total amount is divided over all sizes equally

IMPACT VISUALISATION



8 trees are needed to compensate the climate impact of GOTS shirts (147)

The unsalted GOTS shirts (147) use the same water as a family of four

for 1 week



LCA ASSUMPTIONS

The following summary represents some important assumptions made during the Life Cycle Analysis conducted for Unsalted:

- Assumption 1: Distances for the supply chain were calculated using Google Maps, Sea-distances.org and estimations plus assumptions for some suppliers' locations.
- Assumption 2: Euro 5 truck with 24 tonne capacity used for modelling transport emissions
- Assumption 3: Cotton is grown near Albuquerque, then trucked to Houston harbour, shipped to Genoa, then trucked to Bergamo → Portugal → Amsterdam
- Assumption 4: packaging modeled after description, total of 100 grams divided over the materials.
- Assumption 5: standard dyeing assumed
- Assumption 6: Ironing, steaming, laser cutting are all modelled with average power consumption for those devices.

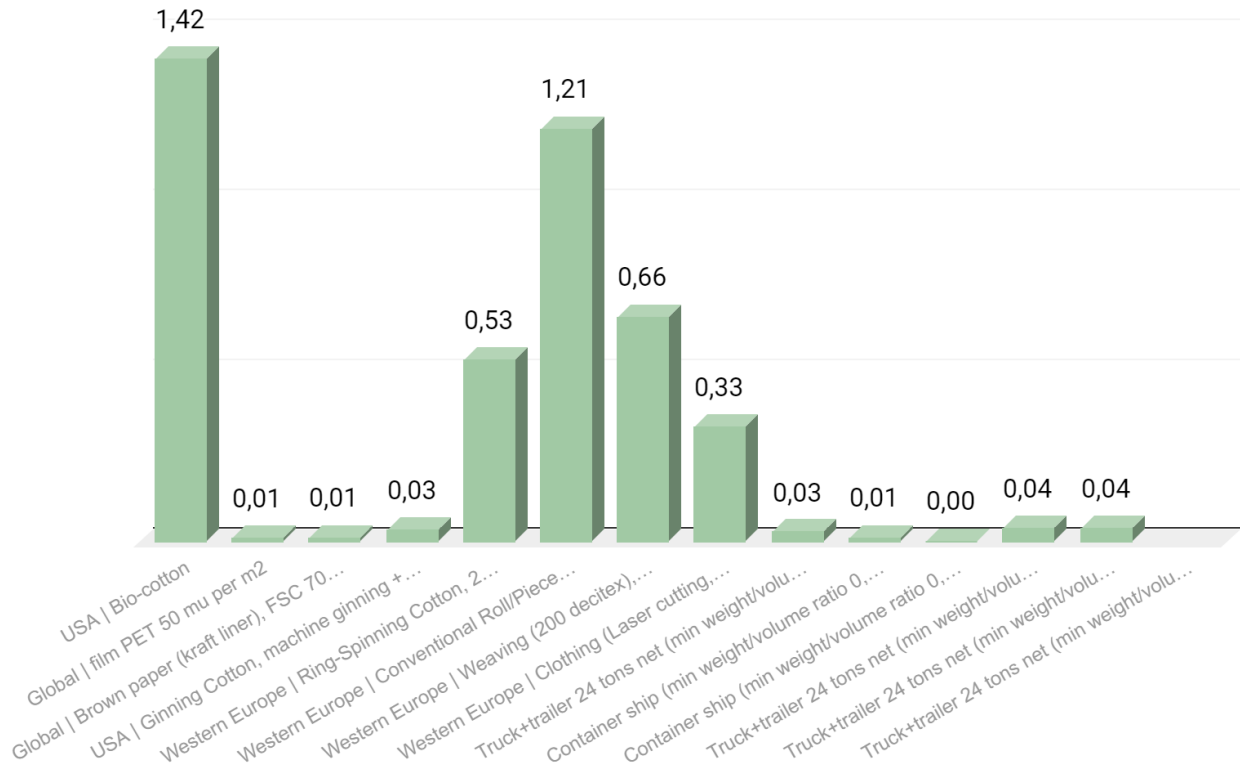
LIFE CYCLE INVENTORY

Trousers:

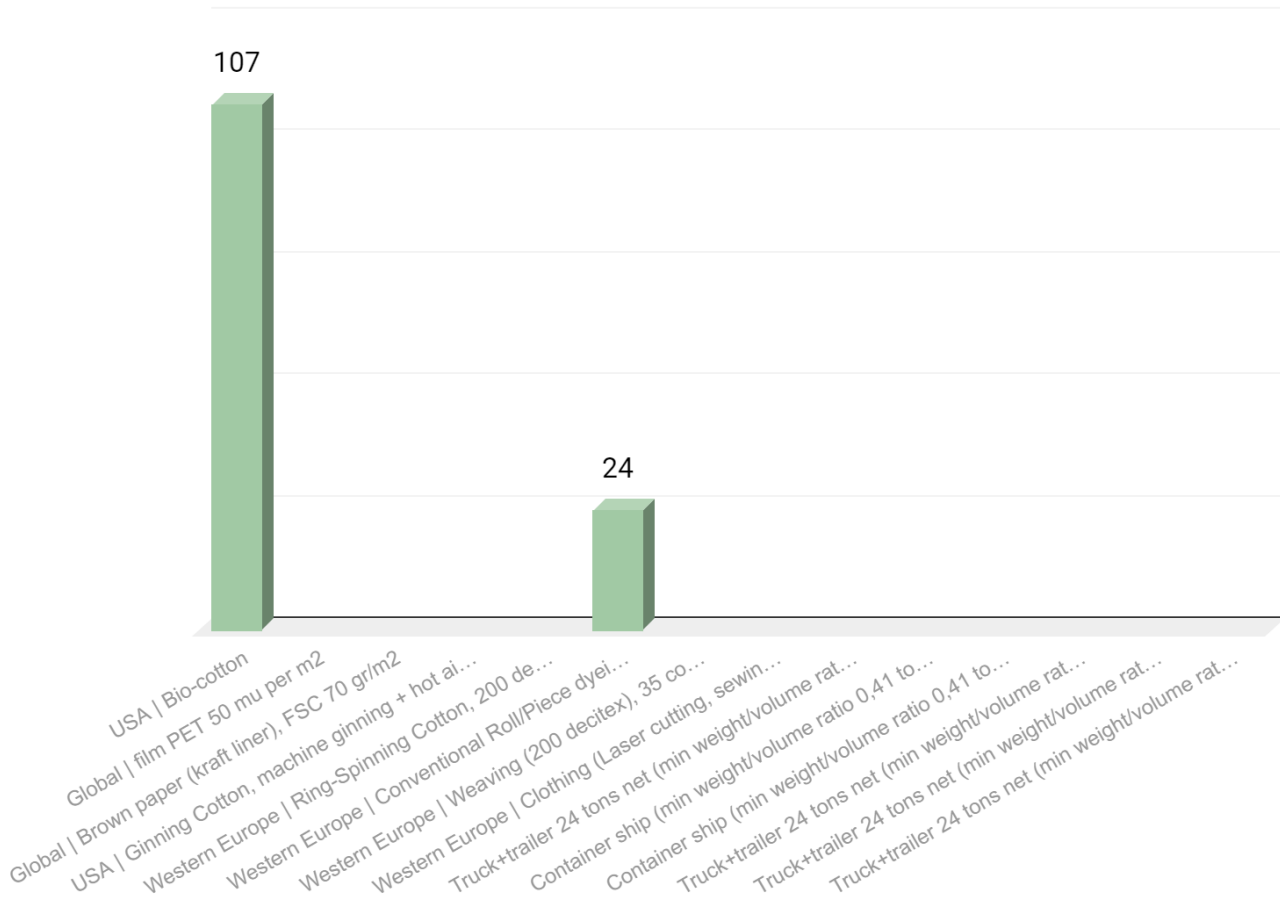
Raw material production	Qty/unit
USA Bio-cotton	0.217 kg
Global film PET 50 mu per m2	0.05 kg
Global Brown paper (kraft liner), FSC 70 gr/m2	0.05 kg
Manufacturing	Qty/unit
USA Ginning Cotton, machine ginning + hot air drying, per kg	0.217 kg
Western Europe Ring-Spinning Cotton, 200 decitex	0.217 kg
Western Europe Conventional Roll/Piece dyeing, incl scouring (pretreatment), reactive dyes, dyeing chemicals, washing, softening, centrifugation, drying and wastewater treatment	0.217 kg
Western Europe Weaving (200 decitex), 35 cotton count	0.217 kg
Western Europe Clothing (Laser cutting, sewing and ironing and packaging)	0.217 kg
Transport	Qty/unit
Albuquerque <-> Houston port Truck	295,12 kgkm
Houston Port <-> Genoa port Ship	2072,35 kgkm
Genoa port <-> Bergamo Truck	52,08
Bergamo <-> Portugal Truck	434
Portugal <-> Nederland Truck	434

IMPACT PER PROCESS

Climate change, kg CO₂-eq /kg product



Water use, Liters / kg product



DETAILED TECH. EXPLANATION

[TCL - True Cost Label](#)

Technical Explanation

All LCAs made by True Cost Label B.V. including the data and methods contained within are calculated using our own developed tool, the 'True Cost Generator'. A custom LCA tool built by True Cost Label, specifically for Fashion LCAs and the detailed supply chains of the fashion industry.

1 Software, Databases and Methodology applied.

We apply OpenLCA[1] software to access input data for the True Cost Generator, with data mainly but not exclusively deriving from the following databases:

Ecoinvent 3.6 [2];

Idemat 2021 by TU Delft [3];.

2 We apply the following Impact Assessment Methods for data retrieved and used in our LCAs

A) Carbon footprint: IPCC 2013 GWP 100a [4] as recommended by the European Platform on Life Cycle Assessment: ILCD [5] (International Reference Life Cycle Data System and the Greenhouse Gas Protocol

B) Water Depletion: ILCD 2011; Resource depletion - water; midpoint; freshwater scarcity; Swiss Ecoscarcity 2006.

C) Total distance in kilometer and mode of transport: Supply chain data provided by the customer in combination with Google maps and Sea Distances.

In addition, LCA data is included from carefully selected LCAs from peer reviewed scientific papers. This is mostly done for innovative textile production processes or processes poorly modelled in existing databases. Assumptions made for these additions are stated in detail in each report

3 Goal and scope

We calculate our LCAs with a functional unit of total impact per kg of product from the raw materials to the manufacturing of the product with all transport processes included. (Cradle-to-Gate).

4 Standardization

True Cost Label Applies the ILCD method for its impact numbers, which is standardized according to EU-PEF method: European Product Environmental Footprint (EC, 2018. Product environmental footprint category rules, version 6.3). Our LCAs, LCA Reports and advise given based on LCA results follow the general principles of the ISO14044 quality standard for Life Cycle Assessment

5 Benchmarking

All products on the True Cost Label platform have their impact benchmarked to a product of the same make and build, but then following conventional production and manufacturing standards which is most common and average for the industry. Our conventional t-shirt, is a t-shirt made with commodity trademix cotton originating in an average Asian production country (i.e. China, India, Bangladesh). The t-shirt is produced according to the manufacturing standards of fast fashion production, using average spinning, knitting or weaving, dyeing, embroidering, printing and other techniques based on an average energy grid representative for those countries and industries.

6 References:

1. <https://www.openlca.org/>

2. <https://ecoinvent.org/the-ecoinvent-database/>

3. <https://www.ecocostsvalue.com/>

4. <https://www.ipcc.ch/>

5. <https://eplca.jrc.ec.europa.eu/uploads/ILCD-Recommendation-of-methods-for-LCIA-def.pdf>

6. <https://www.iso.org/standard/38498.html>

REFERENCES

Practical LCA data is included based on carefully selected LCIs from peer reviewed papers, scientific databases for various textile processes and several business literature sources for impact comparisons:

- Average yearly carbon compensation of trees: Encon (2020), Trees for all (2020), IPCC (2020), Climate Neutral Group (2020), Arbor Environmental Alliance (2020)
- Average yearly water use of households (multiple sources): Engie: Gemiddeld waterverbruik in Nederland, Vewin 2019, omgerekend door Nibud 2019 en Waternet 2020
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- van der Velden, N. M., Patel, M. K., & Vogtländer, J. G. (2014). LCA benchmarking study on textiles made of cotton, polyester, nylon, acryl, or elastane. The International Journal of Life Cycle Assessment, 19(2), 331-356.
- VTT, Technical Research Centre Finland, Environmental Performance of Printing Cotton, 2014

FINAL NOTE

The LCAs conducted by True Cost Label are continuously updated and improved in line with changing regulations, standardizations and new publications of data sources providing increasingly higher data quality. Therefore, it may be the case that these numbers will be updated in the future at the product display on the True Cost Label platform.

True Cost Label aims for 100% transparency 100% of the time. That said, the ultimate goal is to use actual factory data from the very supply chain parties involved in the Cradle2Gate lifecycle of every product that runs on the platform. This way all brands connected to True Cost Label will be at a 100% transparency with real-time impact data of the product's supply chain. To ensure this goal True Cost Label will keep innovating and streamlining its processes.

Only together we will be able to shift the fashion industry into a new sustainable paradigm. United as one force. Love the planet, love your fashion.

