tentree Life Cycle Analysis Methodology

Goal and Scope

The goal of this life cycle analysis (LCA) was to measure and understand the key environmental impacts for tentree garments, along with the net impact of planting 10 trees, compared to conventional products. Through research into existing LCA databases, in addition to a review of relevant peer-reviewed secondary research, the team at GreenStep Solutions and our sister software company, EcoBase Solutions created a LCA calculator that would offer results easily communicated to tentree customers.

EcoBase developed an eco-score as a means to conceptually rank the impact of a garment's lifecycle (CO_2e, water, and waste) for comparison between tentree garments and conventional counterparts. tentree's garments also provide the added benefit of carbon sequestration from the planting of ten trees. The eco-score sums all inputs from the assessment for each garment (tentree and conventional) and the trentree garment is given a deduction equivalent to the total CO_2 sequestered from 10 trees over a one year period. The score is then scaled to be between 0 and 10: the lower the number, the better the garment's eco-score (lower lifecycle impact). EcoBase has also provided common-knowledge analogies for the garment's life cycle impacts.

Two sets of system boundaries were used: one for tentree and conventional garments, and one for tree planting projects. The boundaries were defined as follows:

System Boundary for Garments

Data from LCA Database Sources & Other Secondary LCA Research
- Raw material production
- Yarn manufacturing
- Textile manufacturing
- Dying (prep and colouring) to gate
- Transportation from cradle to gate

Data from Secondary LCA Research
- Cutting, sewing, washing, dying, finishing
- Packaging
- Surface transport
    - Rail, container vessel, and truck
    - From assembly to port to distribution centre to retail to customer
- Air transport
    - Online orders to domestic and international market
- Warehousing at distribution centre
- Retail
- Customer garment care
- Garment end of life

Environmental Inputs and Outputs
- Inputs: raw materials, water, energy
- Outputs: CO2e (carbon dioxide equivalent), water consumption, waste disposal/recycling

System Boundary for Tree Planting Projects

From Tree Planting Partners or Other Secondary LCA Research
- Tree species, planting locations, total counts
- CO2e sequestration (if available)

Environmental Inputs and Outputs
- Inputs: raw materials, water, energy
- Outputs: CO2e sequestered

Impact Assessment

The life cycle impacts that we sought to measure were:

→ kilograms (kg) CO2e

→ Litres (L) water

→ kg waste to landfill or recycled

Methodology

EcoBase has conducted a cradle to grave LCA for each garment and associated fabric blend produced by tentree and compared it to an equivalent garment manufactured with a conventional fabric blend. The LCA consists of seven phases including fabric, garment, packaging, transport, warehousing, customer usage and end of life.

tentree provided EcoBase with a dataset for each garment and the associated fabric blend, based on information supplied from their manufacturers so that EcoBase could determine the carbon emissions, waste and freshwater consumption values for each fabric blend using information derived from existing LCA tools, databases and secondary LCA research. Matching profiles for a conventional fabric blend were then created for each garment.

The tentree garment and its conventional counterpart were assessed using the same manufacturing, transportation, warehousing and end of life system boundaries and assumptions. Each garment was identified by its finished weight (kg) or area (m2) and passed through each phase of LCA as a stand alone unit of measure.

The only difference in the LCA beyond the fabric phase was the packaging. tentree uses a corrugated cardboard box with one large, plastic poly liner and rolled garments tied with a raffia paper ribbon. Conventional garments were assumed to be individually wrapped in plastic bags, before being packed in the same cardboard boxes and poly liner, as this is

currently standard industry practice.The LCA phases are displayed graphically and further defined below:
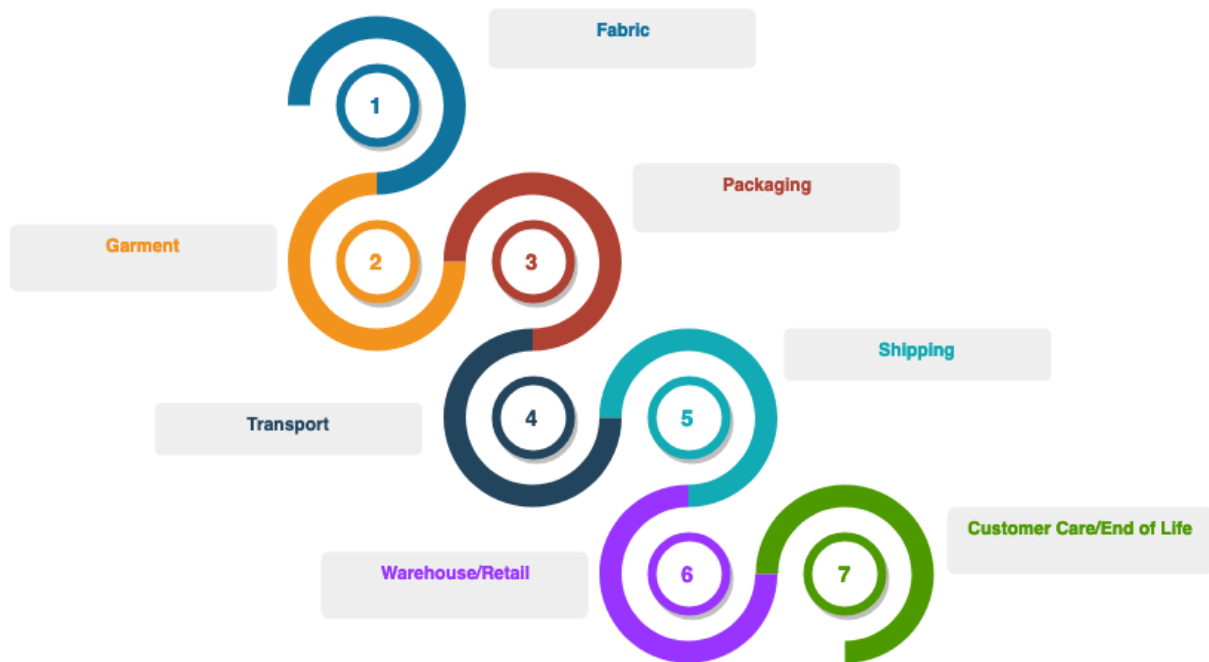
Schematic of tentree life cycle assessment calculator methodology.

1. **Fabric**
   a. Raw material source, fibre composition, knitting, weaving, finished fabric weight, dyeing, and finishing of the fabric blend delivered to the gate of the garment boundary where the tentree product is manufactured.

2. **Garment**
   a. Gender, fabric, bolt width, fabric weight, fabric yield (determined by variations in gender sizing), finished garment weight, cutting/sewing/finishing, garment dyeing, washing (pre-consumer).

3. **Packaging**
   a. Cardboard box, low density polyethylene (LDPE) box liner, LDPE bag per garment, raffia matte ribbon, box volume, garment volume.

4. **Transport**
   a. Transport was defined by the distance travelled (km), the mode of transport (road, rail, ship, and air), and the capacity of the transport mode. The modes were separated into surface (road, rail and ship) and air (domestic and international)
   b. Surface:
      i. Freight by truck between cut, sew, and finishing factories
      ii. Freight by rail to exit ports (India, Vietnam, and China)

Freight by sea faring cargo vessel to entry ports (Vancouver, Canada; Los Angeles, USA; Southampton, United Kingdom)
iv. Freight by truck to distribution centres in Surrey, Canada, Los Angeles, USA, and the United Kingdom
v. Freight by truck to retail locations across North America

c. Air:
   i. Air freight from online orders to locations across North America
   ii. Air freight from online orders to locations across Europe

5. **Warehousing/Retail**
   a. Garments were defined by the area (m2) they would occupy within a warehouse or retail setting. The variations of stacking, folding, hanging and displaying garments within these settings was beyond the scope of this LCA. A conservative assumption was made that the area occupied by the packed garment would not be occupied by other materials and the energy/water consumption per m2 of a warehouse and retail outlet would be assigned to the garment. Residency times of the garment were assumed to be 3 months for the warehouse and 9 months for the retail outlet.

Customer care and end of life calculations are provided for completeness but are excluded from the final LCA calculation

6. **Customer Care**
   a. Care instructions on tentree garments must outline what the garment can "withstand" for washing/drying. For most garments, the stated care instructions include machine wash cold and tumble dry low. For the purposes of this LCA, EcoBase assumed these as the baseline customer care instructions. However, it should be stated that tentree's included instructions encourage cold wash and line dry.
   b. A garments lifespan was assumed to consist of 52 wash cycles in an 8 kg Energy-Star rated washer. To account for customers who also tumble-dried garments, the impact of a matched 11kg Energy-Star dryer was applied.

7. **End of life**
   a. Garment end of life was assumed to consist of 15% of the garment being recycled (as per North American baselines as outlined in , repurposed or donated, with the remaining 85% of garments ending up in landfill.

8. **Eco-Score**
   a. The eco-score is the end-result of the LCA calculator, which combines all of the aforementioned system boundaries; CO2 emissions, water consumption and waste generated for each garment. Its ultimate goal is to help tentree and customers directly compare the life-cycle impact on a garment-to-garment and fabric-to-fabric basis. The score is visually represented on a scale of 0 to 10, with 0 being the lowest impact across all three measures. This allows for quick and simple comparison across tentree products as well as tentree products vs. their conventional counterparts.

b. The score is calculated by normalising each of the three measures so that a kg of CO2 is directly comparable to a litre of water and a kg of waste. It then weights each measure evenly so that a kg of CO2 accounts for one third of the eco-score. Each measure is then added together to determine the eco-score. A 0 out of 10 is the best score meaning the garment has the lowest footprint. The calculation has the following form:

$$P(x,y,z) = \frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

$$Eco - Score = (1 - [(P(x)*0.333) + (P(y)*0.333) + (P(z)*0.333)]) * 10$$

Where **P(x,y,z)** is the normalised distribution of values for CO2e, water and waste per garment. The eco-score is then the sum of normalised values weighted to one third (33.3%) for each metric. The sum is then multiplied by 10 to achieve a scale from 0 to 10. The amount of CO2 sequestered in one year by tentree's tree planting efforts outweighs the garment's CO2 emissions over its lifetime by almost a factor of ten, making the CO2 "score" of tentree products is reduced to zero in the eco-score calculation. Therefore, the CO2 measure in the eco-score for tentree products is zero, leaving only water consumption and waste generation. This gives tentree garments a boost above conventional ones, hence the lower score.

Assumptions

In order to quantify the positive impact tentree has had on the environment with respect to carbon emissions, it was necessary to select similar, *conventional* garment qualities based on the materials tentree uses in its manufacturing process and pass these fabrics through the same manufacturing, transportation, warehousing, customer lifespan and end of life phases.

The following assumptions were made when comparing tentree and conventional garments:

Materials
- Conventionally produced cotton vs. organic cotton for cotton blended fabrics
- Fossil-fuel derived polyester material vs. mechanically recycled polyester for poly-blended fabrics
- Hemp vs. conventionally produced cotton
- Generic lyocell vs. TENCEL™ lyocell
- Same (fabric) weight as tentree garments

Accessories
- Did not include zippers, cork trim drawcords, buttons, or labels - negligible impact when observed cumulatively

Packaging/Shipping

- Garments manufactured in China, Vietnam, Bangladesh, Philippines, and India
- Garments individually wrapped in poly-bags, packed in a corrugated cardboard box

Waste
- Waste data was calculated based upon wastage assumptions (5%) at the garment manufacturing stage. All LDPE and raffia ribbon was assumed to be sent to landfill. Raffia is compostable but most communities do not have composting facilities. Plastic recycling rates have historically been around 12%, but with recent changes in China's acceptance of recyclables, these figures are declining and not reliable. 92% of cardboard was assumed to be recycled.

Limitations

This LCA calculator includes all aspects of the garment production process including transportation between facilities and delivery to warehouse within this LCA calculator (i.e., cradle-to-grave). Because there is a wide variety of information on textile manufacturing, both in alternative LCA calculators and peer-reviewed secondary sources, we have, where possible, worked to compare similar criteria. In some cases, this was not possible and we were required to seek additional resources outside of the geographical areas in which tentree manufactures. With that in mind, we have compiled an all-encompassing data set with the following limitations:

- Slub Jersey - Naturally dyed fabrics are not included in this analysis because there was insufficient primary and secondary data for natural dyes.

- Recycled wool felt is not included in this analysis because there was insufficient primary/secondary data with respect to recycled wool, nor the felting process.

What sets tentree apart from conventionally-made goods?
- tentree supports to the Organic Content Standard and the Global Organic Textile Standard in their use of organic cotton content.
- tentree supports to the Global Recycling Standard (GRS) and/or the use of branded, certified, and traceable sustainable yarns such as Repreve® from Unifi in their use of recycled polyester content.
- The use of branded and sustainably made (closed-loop processing systems) MMF fibres such as Lenzing TENCEL™ versus conventional lyocell fibres.
- Eliminating single poly-bags from 95% of their apparel line during the shipping process, thereby reducing the amount of packaging being produced and ultimately ending up in the waste stream.
- Where possible, using recycled content and alternative materials (cork, FSC matte twine, etc.) in both their apparel line and packaging.
- Commiting to giving back with its mission of planting at least ten trees per garment sold, in order to sequester CO_2 from the atmosphere, restore habitats, and provide socioeconomic benefits to the communities in which the trees are planted.
- Working with their suppliers to encourage more sustainable practices, i.e., encouraging the use of alternative energy sources at the garment manufacturer level.

- Recycling, reusing, or selling wastage fabrics to reduce the amount of scrap fabric going to landfill.
- Offering primarily ground shipping to customers, except during the holidays, to reduce shipping emissions from air travel.
- Educating consumers on how to care for the garments to reduce environmental impact, i.e. promoting 'Clevercare' programs (developed by EU) on its CC labels, promoting washing synthetic garments using washing bags (to limit the amount of micro-fibres entering water streams)

Tree Planting Impact

tentree's stated mission is to plant ten trees for every item of apparel produced. Currently, tentree has relationships with 12 tree-planting partners across the globe, who have, as of March 2019, planted over 26 million trees collectively, comprising over 100 species that are native to each region where they are planted. Not only are these trees sequestering CO_2 from the atmosphere, reducing the amount of greenhouse gasses currently fueling rapid human-induced climate change, but many provide much-needed socioeconomic benefits to the communities in which they are planted.

Many of the tree-planting projects undertaken by planting partners include habitat restoration, in addition to agroforestry and sustainable timber-harvesting; both of which provide sources of income to previously impoverished communities. Tree-planting enhances habitat for wildlife and native plants, can assist in cleaning up watersheds, and can support financial independence in local communities.

Limitations

Because many of the tree planting partners tentree has relationships with are non-profits, often with small staff sizes and located in remote communities, establishing a data set for tree planting impacts proved difficult. Many of these organizations conduct work other than tree-planting, and do not have the staff or budget to monitor forest carbon projects and so do not have data to support CO_2 sequestered over the lifetime of their projects.

Based on feedback from tentree, EcoBase reached out to two of tentree's 12 partners: Eden Reforestation and Trees For the Future. Both have conducted their own, independent sequestration analyses on specific projects and were willing to share their information.

In the case of Eden Reforestation, while they have a number of projects with tentree currently, their best and most robust data set emerged from their ongoing mangrove restoration project in Madagascar, which began in 2012. Trees For the Future implemented their Forest Garden program in Senegal in 2013 and reported out to us the findings from that tree planting effort, based on independent research conducted by Michigan State University.

Many factors influence the rate at which trees are able to sequester carbon including the age, amount of biomass, species, location, and survival rate. However, the largest consideration when estimating CO_2 sequestration rates and amounts is the ultimate land-use scenario for the tree planting area: what will the final designated land-use be for the planted trees? In cases of pure reforestation, carbon sequestration rates will be highest, due to the trees being allowed to grow to maturity without disturbance. If the tree plantations are intended for agroforestry, or sustainable timber harvesting, these will impact carbon sequestration numbers.

Keeping this in mind, and to give a general overview of sequestration efforts to-date, EcoBase used primary research from *Eden Reforestation*, in addition to secondary research from peer-reviewed scientific journals, to calculate an estimation of the CO2 sequestered by tentree's tree planting efforts, as well as a high-level estimation of the amount of CO2 sequestered on a per-tree basis annually. These values are conservative and are likely understated.

Overall Impact

While it is difficult to calculate a generic rate of carbon sequestration at a per-tree level, due to the many limitations aforementioned, we were able to extrapolate an estimated figure based on the data received from Eden Reforestation, whose project is primarily mangrove restoration activities. Over the lifetime of their planting projects with tentree, and for the Madagascar project specifically for which they have the best dataset, comprised of approximately 12,571,045 mangroves and dry deciduous trees, they have sequestered an estimated 6,543,023 metric tons of CO2. Based on the hectares of trees planted (2,111 ha) and since tentree joined this project in 2012 (7 years as of March 2019), this equates to *roughly 43 kilograms of CO2 per tree, per year*. CO2e sequestration rates vary by geographic location, species and age of the tree planted. Estimates range from the above value of 43 kg CO2e per year to as low as 6 kg CO2e. Based on data provided by Eden Reforestation, as well as secondary data which included studies on urban forest systems that sequester as little as 6 kg CO2e, *EcoBase used a conservative assumption of 15 kg CO2e per tree per year, equating to 150 kg CO2e per year for every garment manufactured.*

It is important to note that tentree commits to planting trees for every garment it produces, not for every garment sold.

These numbers are likely a considerable underestimate of the true impact tentree has had on global carbon sequestration efforts since it first launched its tree planting programs. In a worst case scenario where only one tree out of 10 planted lived to maturity and then survived for 10 years, the assumption that has been used in the impact calculations would still be defensible. Additionally, it should be stated that although trees sequester the most carbon at their mature age (this can range depending on the tree species, anywhere from 10-30 years), they will continue to sequester carbon up to and beyond maturity.

In addition, this analysis did not take into account the long-term positive socioeconomic and other positive environmental impacts these tree planting projects have, or will have, on the environment in which they are planted. For many of the regions, these trees provide a stable food and income-generating source for the local communities, work to heal damaged landscapes from environmental disasters such as flooding, desertification, and pollution, provide wildlife habitat, and many more benefits. It is difficult to quantify the full socioeconomic and environmental impacts of one tree and to-date tentree has planted over 26 million.

Recommendations

As consumer awareness about human-induced climate change grows, businesses are seeing a shift in demand from their consumer base for products and practices with a more sustainable focus. tentree is well-positioned to meet that demand due to their focus on using more responsible materials and as a result of their tree planting commitment.

In the future, tentree could consider providing funding to or working in collaboration with university research teams or local tree-planting partners, to undertake forest carbon studies in each of tentree's global planting regions. More data is needed to paint an accurate picture of total CO2 sequestered by tentree tree planting efforts including specific land-use scenarios, rate of survival, species diversity, and tree-specific information.

Fortunately, there is currently an open-source database available that might aid in this effort: the Globe-Allome Tree database provides allometric equations, estimates of biomass, and carbon stock for a variety of tree species with more crowd-sourced information being added regularly. Incorporating a more comprehensive data-set into the LCA calculator will ensure that the final results are accurate, robust, and give consumers a more accurate picture of the impact they are having when purchasing a tentree garment.

Equivalencies

Should tentree desire to show the impacts of their products compared to conventional products in a more relatable way than the ecoscore provides, the CO2, water and waste factors below can be applied to the garment impacts to calculate comparisons.

CO2 emissions: The average passenger car emits 25 kg of CO2e per 100 km
CO2 emissions: The average American drives 21,684 km per year
CO2 sequestration: On average 150 kilograms of C02 is sequestered by 10 trees over a one year period.
Water: The average bath holds 150 litres of water
Waste: We would suggest showing the kg of waste per garment compared to the garment weight itself.

Interpreting Results

A sample output from the calculator is shown in Table 1. The complete LCA output for each garment is provided in Appendix A. The data shows that water consumption is the main differentiator between tentree fabric blends and conventional fabric blends.

Table 1. LCA for sample tentree and conventional garments

Garment	Fabric	tentree			Conventional		
		kg CO2e	L H2O	Waste kg	kg CO2e	L H2O	Waste kg
Hoodie	Waffle_FH19	6.1	98.4	0.03	6.8	453.4	0.05
Hooded Henley	Snow Heather Jersey	4.2	68.9	0.02	4.4	361.4	0.04
Pants	Stretch Twill	11.7	118.2	0.03	14.1	620.4	0.05

tentree garments score significantly lower eco-score ratings than their conventional counterparts (Table 2). The largest contributors to this score is the carbon sequestration estimates from tentree's tree planting program, and the lower water consumption of tentree's selection of fabrics.

Table 2. Eco-Score for sample tentree and conventional garments

Garment	Fabric	Eco-Score		
		tentree	tentree + planting	conventional
Hoodie	Waffle_FH19	4.6	3.0	8.2
Hooded Henley	Snow Heather Jersey	2.6	1.7	6.3
Pants	Stretch Twill	6.0	2.8	9.6

The addition of air transport can have a significant impact on the amount of CO_2e emitted per garment. Table 3 shows the impacts for air transport of the sample garments for North American and European delivery. These values are in addition to the impact defined in Table 1. As the air transportation metric is based on the weight of the garment relative to the cargo capacity of 747-400 and the distance traveled, heavier items transported a longer distance will have a larger impact.

Table 3. Surface and air transport impacts for garment delivery within North America and to Europe

Garment	Fabric	kg CO_2e		
		Surface North America	Air North America	Air Europe
Hoodie	Waffle_FH19	0.6	1.5	5.7
Hooded Henley	Snow Heather Jersey	0.3	0.8	2.9
Pants	Stretch Twill	0.5	0.0	1.3

Conclusions

It is important to note that while there are environmental impacts along every step of the garment creation process, we noticed a trend in research that identified the consumer use-phase of the garment LCA (washing/drying in home) to be the most impactful on a per garment basis. Care instructions for 95% of tentree garments include suggestions for cold-water wash, which allows consumers to lower their own carbon footprint during the use-phase of the garment. tentree has committed to enhancing awareness about the impacts of garment care at the consumer level and to that end, has enacted a number of positive policies geared towards education of its consumers. As of FH19, all tentree garment care labels will reference the CleverCare™ trademark. CleverCare™ is a consumer-facing program, launched in Europe, that aims to raise awareness about how consumers can better care for their garments, while minimizing their impact on the environment. tentree also outlines care instructions on every product page online, which include: "machine wash cold, hang dry", and this is also noted as "suggested" on the back of each care label.

In terms of impact, the LCA calculator demonstrates that comparatively, purchasing apparel from tentree rather than a conventional retailer *does* result in lower CO2e emissions. However, the biggest difference is realized in the tree-planting efforts undertaken by tentree. Even by modest calculations, the planting of ten trees per garment has a net positive impact of sequestering up to 5 times the amount of CO2 in the garments lifecycle. This demonstrates that tentree's mission to plant ten trees for every item produced is making a huge difference and is a model that more apparel companies could and should invest in. tentree customers will appreciate knowing that the clothing they purchase not only has a smaller carbon footprint than a similar, conventional item, but it actually gives back, just by the tree-planting efforts alone.

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Appendix A Garment Eco-Score

| Garment | Gender | Fabric | tentree | | Conventional |
			Eco-Score	Eco-Score + 10 trees	Eco-Score
Hoodie	M	Waffle_FH19	4.6	3.0	8.2
Hooded Henley	M	Snow Heather Jersey	2.6	1.7	6.3

Hooded Henley	M	Double Knit Jersey	5.8	3.5	8.3
Hooded Button-Up	M	Hemp/Cotton Plaid Flannel	4.4	2.2	7.1
Hoodie	M	Marled Fleece - 300	5.3	3.4	8.6
Hoodie	M	Jacquard Double Knit	4.9	3.2	8.4
Hoodie	M	Hemp Fleck Fleece	8.0	4.7	9.3
Hoodie	M	Heather Fleece - 300	6.3	4.0	9.2
Hoodie	M	Fleece - Sherpa 245	3.9	2.2	6.0
Hoodie	M	Drirelease Fleece - Poly/Wool	4.3	2.2	6.3
T-shirt	M	Tencel Tri-Blend V2	2.1	1.2	4.3
T-shirt	M	Snow Heather Jersey	1.8	1.3	4.7
T-shirt	M	Slub Jersey - Naturally Dyed	1.8	1.3	4.9
T-shirt	M	Slub Jersey - Fabric Dyed	1.8	1.3	4.9
T-shirt	M	Hemp Single Jersey - SP19 Stripe	3.5	1.7	6.5
T-shirt	M	Drirelease® Single Jersey	1.8	1.1	3.5
Longsleeve	M	Tencel Tri-Blend V2	2.5	1.4	5.1
Longsleeve	M	Jacquard Double Knit	3.4	2.3	7.2
Longsleeve	M	Hemp Fleck Fleece	6.8	3.5	8.3
Longsleeve	M	Heather Fleece - 300	4.5	3.0	8.1
Longsleeve	M	Drirelease® Single Jersey	2.1	1.2	4.1
Longsleeve	M	Double Knit Jersey	4.5	2.8	7.3
Longsleeve	M	Slub Jersey - Naturally Dyed	2.2	1.5	5.6
Longsleeve - Hooded	M	Hemp Single Jersey - SP19 Stripe	5.4	2.6	8.7
Longsleeve - Henley	M	Hemp Single Jersey - SP19 Stripe	5.1	2.4	8.3
Longsleeve	M	Fleece - Sherpa 245	2.7	1.6	4.9
Longsleeve	M	Waffle_FH19	3.2	2.2	6.9
3/4 sleeve	M	Tencel Tri-Blend V2	2.3	1.3	4.7
Button-up	M	Hemp/Poly Plain Weave	2.5	1.2	4.5
Button-up - Nordmann Shacket	M	Hemp/Cotton Plaid Flannel	3.8	1.9	6.6
Button-up	M	Hemp/Cotton Plaid Flannel	3.8	1.9	6.6
Pants	M	Stretch Twill	7.1	3.7	9.9
Pants	M	Marled Fleece - 300	5.7	3.6	8.8

Pants	M	Heather Fleece - 300	6.7	4.2	9.4
Pants	M	2-way Stretch Poly Elastane Blend	4.5	1.8	6.5
Pants	M	Plaid Flannel - OC/Tencel	4.3	2.0	7.7
Jacket	M	Poly Twill - 2Layer	5.9	2.6	7.3
Jacket	M	Poly Heather - Uncoated	6.0	2.7	7.3
Jacket	M	Poly Heather - 2Layer	6.3	3.0	7.4
Hat	Ungendered	Various - Hats	NA	NA	NA
Hat - festival	Ungendered	Recycled Wool Felt	3.9	1.2	5.5
Toque	Ungendered	Wool/Repreve Poly Yarn	1.3	0.9	2.7
Mittens	Ungendered	Wool/Repreve Poly Yarn	1.2	0.9	2.5
Socks - 2 Bottle	Ungendered	Repreve® Poly Yarn	1.0	0.8	2.2
Socks - 3 Bottle	Ungendered	Repreve® Poly Yarn	1.0	0.8	2.2
Socks - Selkirk	Ungendered	Repreve® Poly Yarn	1.0	0.8	2.2
Wallet	Ungendered	Repreve® Poly Canvas 600	1.0	0.8	1.9
Wallet - Zip	Ungendered	Repreve® Poly Canvas 600	1.0	0.8	2.0
Lunch Tote	Ungendered	Repreve® Poly Canvas 600	1.6	1.0	3.1
Travel Kit	Ungendered	Repreve® Poly Canvas 600	1.6	1.0	3.1
Pouch - Natures	Ungendered	Organic Cotton Canvas	1.2	0.9	2.8
Backpack - Mobius	Ungendered	Repreve® Poly Canvas 600	3.0	1.5	4.8
Backpack - Motion	Ungendered	Repreve® Poly Canvas 600	3.0	1.5	4.8
Duffle - Mobius	Ungendered	Repreve® Poly Canvas 600	3.0	1.5	4.8
Duffle - Packable	Ungendered	Repreve® Poly Canvas 150	2.4	1.1	4.0
Tote	Ungendered	Organic Cotton Canvas	2.1	1.3	5.2
Onsie	Ungendered	Heather Fleece - 300	4.8	3.1	8.3
Button-up	W	Y/D Flannel Plaid - Herringbone	3.5	1.7	7.2
Button-up	W	Tencel Twill - PFD | light	4.2	1.5	6.3
Button-up	W	Hemp/Poly Plain Weave	2.7	1.2	4.8
Cardigan	W	Waffle_FH17	3.3	2.1	7.1
Cardigan	W	Sweater Knits	5.3	2.7	9.4
Cardigan	W	Loose Knit (Marled) Jersey	3.6	2.2	7.2

Hoodie	W	Marled Fleece - 300	4.8	3.1	8.3
Hoodie	W	Loose Knit (Marled) Jersey	3.2	2.0	6.8
Hoodie	W	Heather Fleece - 300	5.8	3.7	8.9
Hoodie	W	Drirelease Fleece - Poly/Wool	4.0	2.0	6.0
Hoodie	W	Fleece - Sherpa 245	3.6	2.1	5.7
Hoodie - Bomber	W	4-way Stretch Poly - Textured Back	4.1	1.6	6.0
Hooded Longsleeve	W	Snow Heather Jersey	2.4	1.6	6.0
T-shirt	W	Tencel Twill - PFD | light	2.4	1.1	4.2
T-shirt	W	Tencel Tri-Blend V2	1.9	1.2	4.0
T-shirt - Blouse	W	Tencel Twill - PFD	2.8	1.2	4.8
T-shirt	W	Slub Jersey - Naturally Dyed	1.7	1.2	4.5
T-shirt	W	Slub Jersey - Fabric Dyed	1.7	1.2	4.5
T-shirt	W	Loose Knit (Marled) Jersey	1.8	1.3	4.6
T-shirt	W	Hemp Single Jersey - FH19 Stripe	2.9	1.5	5.1
T-shirt	W	Drirelease® Single Jersey	1.6	1.0	3.3
T-shirt	W	Snow Heather Jersey	1.6	1.2	4.3
Pants	W	Tencel Twill - PFD	4.6	1.8	6.8
Pants	W	Stretch Twill	6.0	2.8	9.6
Pants	W	Marled Fleece - 300	4.8	3.1	8.3
Pants	W	4-way Stretch Poly - Textured Back	3.8	1.5	5.7
Pants	W	Plaid Flannel - OC/Tencel	3.7	1.7	6.9
Pants	W	Jacquard Double Knit	4.5	2.9	8.1
Shorts	W	Plaid Flannel - OC/Tencel	2.4	1.3	4.9
Longsleeve	W	Tencel Tri-Blend V2	2.3	1.3	4.7
Longsleeve - Sweater	W	Sweater Knits	4.2	2.2	8.7
Longsleeve	W	Jacquard Double Knit	3.0	2.1	6.8
Longsleeve	W	Slub Jersey - Naturally Dyed	2.0	1.4	5.3
Longsleeve	W	Loose Knit (Marled) Jersey	2.2	1.5	5.4
Longsleeve	W	Hemp/Poly Plain Weave	2.0	1.1	3.8
Longsleeve	W	Hemp Single Jersey - FH19 Stripe	3.7	1.8	5.9
Longsleeve	W	Drirelease® Single Jersey	2.0	1.1	3.8

Longsleeve	W	Fleece - Sherpa 245	2.4	1.5	4.5
Longsleeve - Tunic	W	Hemp Fleck Fleece	6.4	3.2	8.0
Longsleeve - Crew	W	Hemp Fleck Fleece	6.4	3.2	8.0
Longsleeve - Crew	W	Heather Fleece - 300	4.0	2.6	7.7
3/4 Sleeve	W	Tencel Tri-Blend V2	2.2	1.3	4.5
Jacket	W	Poly Twill - 2Layer	5.0	2.1	6.8
Jacket	W	Poly Heather - Uncoated	5.3	2.1	7.0
Jacket	W	Poly Heather - 2Layer	5.5	2.4	7.1

Appendix B Garment LCA Output

Garment	Gender	Fabric	tentree			Conventional		
			kg CO2e	Water (L)	Waste (kg)	kg CO2e	Water (L)	Waste (kg)
Hoodie	M	Waffle_FH19	6.1	98.4	0.03	6.8	453.4	0.05
Hooded Henley	M	Snow Heather Jersey	4.2	68.9	0.02	4.4	361.4	0.04
Hooded Henley	M	Double Knit Jersey	7.9	60.3	0.04	9.4	232.7	0.06
Hooded Button-Up	M	Hemp/Cotton Plaid Flannel	7.8	97.9	0.02	5.0	481.2	0.04
Hoodie	M	Marled Fleece - 300	6.7	97.8	0.03	7.7	437.2	0.05
Hoodie	M	Jacquard Double Knit	6.3	100.6	0.03	7.0	510.1	0.05
Hoodie	M	Hemp Fleck Fleece	17.4	237.0	0.04	9.0	937.6	0.06

Hoodie	M	Heather Fleece - 300	7.8	130.3	0.04	8.8	592.4	0.06
Hoodie	M	Fleece - Sherpa 245	6.1	20.6	0.03	7.5	20.6	0.05
Hoodie	M	Drirelease Fleece - Poly/Wool	7.5	20.0	0.03	8.5	20.0	0.05
T-shirt	M	Tencel Tri-Blend V2	4.0	30.2	0.01	4.5	95.7	0.03
T-shirt	M	Snow Heather Jersey	2.7	47.6	0.01	2.8	250.2	0.03
T-shirt	M	Slub Jersey - Naturally Dyed	2.8	51.6	0.01	2.9	270.6	0.03
T-shirt	M	Slub Jersey - Fabric Dyed	2.8	51.6	0.01	2.9	270.6	0.03
T-shirt	M	Hemp Single Jersey - SP19 Stripe	6.3	103.4	0.01	6.1	339.3	0.03
T-shirt	M	Drirelease® Single Jersey	3.5	9.2	0.01	4.0	9.2	0.03
Longsleeve	M	Tencel Tri-Blend V2	4.8	36.9	0.01	5.5	117.0	0.04
Longsleeve	M	Jacquard Double Knit	4.7	79.0	0.02	5.3	400.8	0.04
Longsleeve	M	Hemp Fleck Fleece	13.4	186.1	0.03	6.8	736.7	0.05
Longsleeve	M	Heather Fleece - 300	5.9	102.4	0.03	6.6	465.4	0.05
Longsleeve	M	Drirelease® Single Jersey	4.2	11.3	0.01	4.8	11.3	0.03
Longsleeve	M	Double Knit Jersey	6.4	51.0	0.03	7.6	196.9	0.05
Longsleeve	M	Slub Jersey - Naturally Dyed	3.4	63.1	0.01	3.6	330.7	0.03
Longsleeve - Hooded	M	Hemp Single Jersey - SP19 Stripe	9.6	160.8	0.02	9.3	527.8	0.04
Longsleeve - Henley	M	Hemp Single Jersey - SP19 Stripe	9.0	149.3	0.02	8.7	490.1	0.04
Longsleeve	M	Fleece - Sherpa 245	4.6	16.1	0.02	5.6	16.1	0.04
Longsleeve	M	Waffle_FH19	4.5	77.2	0.02	5.1	356.2	0.04
3/4 sleeve	M	Tencel Tri-Blend V2	4.4	33.6	0.01	5.0	106.4	0.03

Button-up	M	Hemp/Poly Plain Weave	5.2	21.4	0.01	3.2	178.9	0.03
Button-up - Nordmann Shacket	M	Hemp/Cotton Plaid Flannel	6.8	90.9	0.02	4.3	446.8	0.04
Button-up	M	Hemp/Cotton Plaid Flannel	6.8	90.9	0.02	4.3	446.8	0.04
Pants	M	Stretch Twill	15.1	154.5	0.03	18.2	811.2	0.05
Pants	M	Marled Fleece - 300	7.1	104.8	0.04	8.2	468.4	0.06
Pants	M	Heather Fleece - 300	8.3	139.6	0.04	9.3	634.7	0.06
Pants	M	2-way Stretch Poly Elastane Blend	9.4	16.6	0.02	10.2	16.6	0.04
Pants	M	Plaid Flannel - OC/Tencel	7.9	71.4	0.02	8.8	263.7	0.04
Jacket	M	Poly Twill - 2Layer	12.4	23.9	0.03	13.8	23.9	0.05
Jacket	M	Poly Heather - Uncoated	14.4	24.5	0.03	15.8	24.5	0.05
Jacket	M	Poly Heather - 2Layer	14.1	27.4	0.03	15.7	27.4	0.05
Hat	Ungendered	Various - Hats	NA	NA	NA	NA	NA	NA
Hat - festival	Ungendered	Recycled Wool Felt	9.2	22.0	0.01	9.1	22.0	0.03
Toque	Ungendered	Wool/Repreve Poly Yarn	2.3	3.9	0.01	2.4	3.9	0.03
Mittens	Ungendered	Wool/Repreve Poly Yarn	1.5	3.0	0.01	1.5	3.0	0.03
Socks - 2 Bottle	Ungendered	Repreve® Poly Yarn	0.8	2.0	0.00	0.8	2.0	0.03
Socks - 3 Bottle	Ungendered	Repreve® Poly Yarn	0.8	2.0	0.00	0.8	2.0	0.03
Socks - Selkirk	Ungendered	Repreve® Poly Yarn	0.8	2.0	0.00	0.8	2.0	0.03
Wallet	Ungendered	Repreve® Poly Canvas 600	0.7	1.1	0.00	0.7	1.1	0.02

Product	Gender	Material					
Wallet - Zip	Ungendered	Repreve® Poly Canvas 600	0.9	1.4	0.00	0.8	1.4	0.02
Lunch Tote	Ungendered	Repreve® Poly Canvas 600	3.2	7.6	0.01	3.2	7.6	0.03
Travel Kit	Ungendered	Repreve® Poly Canvas 600	3.2	7.6	0.01	3.2	7.6	0.03
Pouch - Natures	Ungendered	Organic Cotton Canvas	1.6	16.1	0.00	1.9	87.6	0.02
Backpack - Mobius	Ungendered	Repreve® Poly Canvas 600	5.8	13.4	0.02	5.7	13.4	0.04
Backpack - Motion	Ungendered	Repreve® Poly Canvas 600	5.8	13.4	0.02	5.7	13.4	0.04
Duffle - Mobius	Ungendered	Repreve® Poly Canvas 600	5.8	13.4	0.02	5.7	13.4	0.04
Duffle - Packable	Ungendered	Repreve® Poly Canvas 150	5.3	8.1	0.01	5.3	8.1	0.03
Tote	Ungendered	Organic Cotton Canvas	3.9	42.8	0.01	4.8	233.4	0.03
Onesie	Ungendered	Heather Fleece - 300	6.3	102.5	0.03	7.1	465.5	0.05
Button-up	W	Y/D Flannel Plaid - Herringbone	6.6	78.7	0.02	6.9	393.6	0.04
Button-up	W	Tencel Twill - PFD | light	9.1	41.1	0.02	10.2	48.9	0.04
Button-up	W	Hemp/Poly Plain Weave	5.6	23.1	0.01	3.4	192.7	0.03
Cardigan	W	Waffle_FH17	4.7	92.1	0.02	5.1	482.9	0.04
Cardigan	W	Sweater Knits	8.8	111.9	0.03	11.2	612.8	0.05
Cardigan	W	Loose Knit (Marled) Jersey	5.3	69.6	0.02	5.9	344.3	0.04
Hoodie	W	Marled Fleece - 300	6.3	90.9	0.03	7.2	406.0	0.05
Hoodie	W	Loose Knit (Marled) Jersey	4.9	62.4	0.02	5.4	308.7	0.04
Hoodie	W	Heather Fleece - 300	7.3	121.1	0.04	8.2	550.1	0.06

Hoodie	W	Drirelease Fleece - Poly/Wool	7.0	18.6	0.02	7.9	18.6	0.04
Hoodie	W	Fleece - Sherpa 245	5.8	19.1	0.02	7.0	19.1	0.04
Hoodie - Bomber	W	4-way Stretch Poly - Textured Back	8.5	14.7	0.02	8.8	14.7	0.04
Hooded Longsleeve	W	Snow Heather Jersey	3.7	68.8	0.01	4.0	361.3	0.03
T-shirt	W	Tencel Twill - PFD | light	5.3	23.5	0.01	6.0	28.0	0.03
T-shirt	W	Tencel Tri-Blend V2	3.6	26.9	0.01	4.0	85.1	0.03
T-shirt - Blouse	W	Tencel Twill - PFD	6.1	29.4	0.01	7.0	35.2	0.03
T-shirt	W	Slub Jersey - Naturally Dyed	2.5	45.9	0.01	2.7	240.5	0.03
T-shirt	W	Slub Jersey - Fabric Dyed	2.5	45.9	0.01	2.7	240.5	0.03
T-shirt	W	Loose Knit (Marled) Jersey	2.8	38.4	0.01	3.1	190.0	0.03
T-shirt	W	Hemp Single Jersey - FH19 Stripe	5.6	75.4	0.01	3.0	298.1	0.03
T-shirt	W	Drirelease® Single Jersey	3.1	8.2	0.01	3.6	8.2	0.03
T-shirt	W	Snow Heather Jersey	2.4	42.4	0.01	2.5	222.4	0.03
Pants	W	Tencel Twill - PFD	9.8	45.9	0.02	11.1	55.1	0.04
Pants	W	Stretch Twill	11.7	118.2	0.03	14.1	620.4	0.05
Pants	W	Marled Fleece - 300	6.3	90.9	0.03	7.2	406.0	0.05
Pants	W	4-way Stretch Poly - Textured Back	8.0	13.7	0.02	8.3	13.7	0.04
Pants	W	Plaid Flannel - OC/Tencel	7.0	61.9	0.02	7.8	228.6	0.04
Pants	W	Jacquard Double Knit	5.9	93.4	0.03	6.6	473.7	0.05
Shorts	W	Plaid Flannel - OC/Tencel	4.7	42.8	0.01	5.2	158.2	0.03
Longsleeve	W	Tencel Tri-Blend V2	4.4	33.6	0.01	5.0	106.4	0.03

Longsleeve - Sweater	W	Sweater Knits	7.3	96.4	0.02	9.3	528.2	0.04
Longsleeve	W	Jacquard Double Knit	4.3	71.8	0.02	4.8	364.4	0.04
Longsleeve	W	Slub Jersey - Naturally Dyed	3.1	57.3	0.01	3.3	300.6	0.03
Longsleeve	W	Loose Knit (Marled) Jersey	3.5	48.0	0.02	3.9	237.4	0.04
Longsleeve	W	Hemp/Poly Plain Weave	4.1	16.5	0.01	2.6	137.6	0.03
Longsleeve	W	Hemp Single Jersey - FH19 Stripe	7.0	94.2	0.01	3.7	372.6	0.03
Longsleeve	W	Drirelease® Single Jersey	3.8	10.3	0.01	4.4	10.3	0.03
Longsleeve	W	Fleece - Sherpa 245	4.2	14.7	0.02	5.1	14.7	0.04
Longsleeve - Tunic	W	Hemp Fleck Fleece	12.2	169.2	0.03	6.3	669.7	0.05
Longsleeve - Crew	W	Hemp Fleck Fleece	12.2	169.2	0.03	6.3	669.7	0.05
Longsleeve - Crew	W	Heather Fleece - 300	5.4	93.1	0.03	6.1	423.1	0.05
3/4 Sleeve	W	Tencel Tri-Blend V2	4.2	31.9	0.01	4.8	101.0	0.03
Jacket	W	Poly Twill - 2Layer	10.1	19.1	0.02	11.2	19.1	0.04
Jacket	W	Poly Heather - Uncoated	11.7	19.6	0.03	12.8	19.6	0.05
Jacket	W	Poly Heather - 2Layer	11.5	21.9	0.03	12.7	21.9	0.05

Appendix C Surface and Air Freight

Garment	Gender	Fabric	Domestic Surface Freight		Domestic Air Freight		International Air Freight	
			kg CO2e	Water (L)	kg CO2e	Water (L)	kg CO2e	Water (L)
Hoodie	M	Waffle_FH19	0.60	0.04	1.52	0.00048	5.70	0.17
Hooded Henley	M	Snow Heather Jersey	0.31	0.02	0.78	0.00025	2.93	0.09
Hooded Henley	M	Double Knit Jersey	0.77	0.05	1.95	0.00062	7.28	0.21
Hooded Button-Up	M	Hemp/Cotton Plaid Flannel	0.40	0.03	1.01	0.00032	3.78	0.11
Hoodie	M	Marled Fleece - 300	0.69	0.05	1.74	0.00055	6.51	0.19
Hoodie	M	Jacquard Double Knit	0.63	0.04	1.60	0.00051	5.99	0.18
Hoodie	M	Hemp Fleck Fleece	0.78	0.05	1.97	0.00063	7.37	0.22
Hoodie	M	Heather Fleece - 300	0.79	0.05	1.99	0.00063	7.44	0.22
Hoodie	M	Fleece - Sherpa 245	0.54	0.04	1.35	0.00043	5.06	0.15
Hoodie	M	Drirelease Fleece - Poly/Wool	0.52	0.04	1.31	0.00042	4.91	0.14
T-shirt	M	Tencel Tri-Blend V2	0.25	0.02	0.64	0.00020	2.41	0.07
T-shirt	M	Snow Heather Jersey	0.21	0.01	0.54	0.00017	2.03	0.06
T-shirt	M	Slub Jersey - Naturally Dyed	0.22	0.02	0.57	0.00018	2.13	0.06
T-shirt	M	Slub Jersey - Fabric Dyed	0.22	0.02	0.57	0.00018	2.13	0.06
T-shirt	M	Hemp Single Jersey - SP19 Stripe	0.28	0.02	0.70	0.00022	2.64	0.08
T-shirt	M	Drirelease® Single Jersey	0.24	0.02	0.61	0.00019	2.27	0.07
Longsleeve	M	Tencel Tri-Blend V2	0.31	0.02	0.79	0.00025	2.95	0.09
Longsleeve	M	Jacquard Double Knit	0.50	0.03	1.26	0.00040	4.71	0.14
Longsleeve	M	Hemp Fleck Fleece	0.61	0.04	1.55	0.00049	5.79	0.17
Longsleeve	M	Heather Fleece - 300	0.62	0.04	1.56	0.00050	5.85	0.17

Longsleeve	M	Drirelease® Single Jersey	0.29	0.02	0.74	0.00024	2.77	0.08
Longsleeve	M	Double Knit Jersey	0.65	0.04	1.65	0.00052	6.16	0.18
Longsleeve	M	Slub Jersey - Naturally Dyed	0.27	0.02	0.70	0.00022	2.60	0.08
Longsleeve - Hooded	M	Hemp Single Jersey - SP19 Stripe	0.43	0.03	1.10	0.00035	4.10	0.12
Longsleeve - Henley	M	Hemp Single Jersey - SP19 Stripe	0.40	0.03	1.02	0.00032	3.81	0.11
Longsleeve	M	Fleece - Sherpa 245	0.42	0.03	1.06	0.00034	3.98	0.12
Longsleeve	M	Waffle_FH19	0.47	0.03	1.20	0.00038	4.47	0.13
3/4 sleeve	M	Tencel Tri-Blend V2	0.28	0.02	0.72	0.00023	2.68	0.08
Button-up	M	Hemp/Poly Plain Weave	0.26	0.02	0.66	0.00021	2.45	0.07
Button-up - Nordmann Shacket	M	Hemp/Cotton Plaid Flannel	0.37	0.03	0.94	0.00030	3.51	0.10
Button-up	M	Hemp/Cotton Plaid Flannel	0.37	0.03	0.94	0.00030	3.51	0.10
Pants	M	Stretch Twill	0.68	0.05	1.72	0.00055	6.44	0.19
Pants	M	Marled Fleece - 300	0.74	0.05	1.87	0.00059	6.98	0.20
Pants	M	Heather Fleece - 300	0.84	0.06	2.13	0.00068	7.97	0.23
Pants	M	2-way Stretch Poly Elastane Blend	0.43	0.03	1.09	0.00035	4.07	0.12
Pants	M	Plaid Flannel - OC/Tencel	0.39	0.03	0.98	0.00031	3.65	0.11
Jacket	M	Poly Twill - 2Layer	0.62	0.04	1.57	0.00050	5.88	0.17
Jacket	M	Poly Heather - Uncoated	0.64	0.04	1.61	0.00051	6.03	0.18
Jacket	M	Poly Heather - 2Layer	0.71	0.05	1.81	0.00057	6.75	0.20
Hat	Ungendered	Various - Hats	NA	NA	NA	NA	NA	NA

Hat - festival	Ungendered	Recycled Wool Felt	0.26	0.02	0.65	0.00021	2.43	0.07
Toque	Ungendered	Wool/Repreve Poly Yarn	0.14	0.01	0.36	0.00012	1.36	0.04
Mittens	Ungendered	Wool/Repreve Poly Yarn	0.14	0.01	0.36	0.00012	1.36	0.04
Socks - 2 Bottle	Ungendered	Repreve® Poly Yarn	0.09	0.01	0.23	0.00007	0.87	0.03
Socks - 3 Bottle	Ungendered	Repreve® Poly Yarn	0.09	0.01	0.23	0.00007	0.87	0.03
Socks - Selkirk	Ungendered	Repreve® Poly Yarn	0.09	0.01	0.23	0.00007	0.87	0.03
Wallet	Ungendered	Repreve® Poly Canvas 600	0.02	0.00	0.06	0.00002	0.23	0.01
Wallet - Zip	Ungendered	Repreve® Poly Canvas 600	0.03	0.00	0.09	0.00003	0.33	0.01
Lunch Tote	Ungendered	Repreve® Poly Canvas 600	0.20	0.01	0.50	0.00016	1.87	0.05
Travel Kit	Ungendered	Repreve® Poly Canvas 600	0.20	0.01	0.50	0.00016	1.87	0.05
Pouch - Natures	Ungendered	Organic Cotton Canvas	0.07	0.00	0.18	0.00006	0.68	0.02
Backpack - Mobius	Ungendered	Repreve® Poly Canvas 600	0.35	0.02	0.88	0.00028	3.28	0.10
Backpack - Motion	Ungendered	Repreve® Poly Canvas 600	0.35	0.02	0.88	0.00028	3.28	0.10
Duffle - Mobius	Ungendered	Repreve® Poly Canvas 600	0.35	0.02	0.88	0.00028	3.28	0.10
Duffle - Packable	Ungendered	Repreve® Poly Canvas 150	0.21	0.01	0.53	0.00017	1.97	0.06
Tote	Ungendered	Organic Cotton Canvas	0.19	0.01	0.48	0.00015	1.81	0.05
Onsie	Ungendered	Heather Fleece - 300	0.62	0.04	1.56	0.00050	5.85	0.17
Button-up	W	Y/D Flannel Plaid - Herringbone	0.32	0.02	0.82	0.00026	3.06	0.09
Button-up	W	Tencel Twill - PFD | light	0.33	0.02	0.84	0.00027	3.15	0.09
Button-up	W	Hemp/Poly Plain Weave	0.28	0.02	0.71	0.00022	2.64	0.08
Cardigan	W	Waffle_FH17	0.40	0.03	1.01	0.00032	3.79	0.11
Cardigan	W	Sweater Knits	0.50	0.03	1.27	0.00040	4.76	0.14

Cardigan	W	Loose Knit (Marled) Jersey	0.47	0.03	1.18	0.00037	4.41	0.13
Hoodie	W	Marled Fleece - 300	0.64	0.04	1.62	0.00051	6.05	0.18
Hoodie	W	Loose Knit (Marled) Jersey	0.42	0.03	1.06	0.00034	3.95	0.12
Hoodie	W	Heather Fleece - 300	0.73	0.05	1.85	0.00059	6.91	0.20
Hoodie	W	Drirelease Fleece - Poly/Wool	0.48	0.03	1.22	0.00039	4.56	0.13
Hoodie	W	Fleece - Sherpa 245	0.50	0.03	1.26	0.00040	4.70	0.14
Hoodie - Bomber	W	4-way Stretch Poly - Textured Back	0.38	0.03	0.96	0.00031	3.60	0.11
Hooded Longsleeve	W	Snow Heather Jersey	0.31	0.02	0.78	0.00025	2.93	0.09
T-shirt	W	Tencel Twill - PFD | light	0.19	0.01	0.48	0.00015	1.80	0.05
T-shirt	W	Tencel Tri-Blend V2	0.23	0.02	0.57	0.00018	2.14	0.06
T-shirt - Blouse	W	Tencel Twill - PFD	0.25	0.02	0.63	0.00020	2.34	0.07
T-shirt	W	Slub Jersey - Naturally Dyed	0.20	0.01	0.51	0.00016	1.89	0.06
T-shirt	W	Slub Jersey - Fabric Dyed	0.20	0.01	0.51	0.00016	1.89	0.06
T-shirt	W	Loose Knit (Marled) Jersey	0.26	0.02	0.65	0.00021	2.43	0.07
T-shirt	W	Hemp Single Jersey - FH19 Stripe	0.25	0.02	0.63	0.00020	2.34	0.07
T-shirt	W	Drirelease® Single Jersey	0.21	0.01	0.54	0.00017	2.02	0.06
T-shirt	W	Snow Heather Jersey	0.19	0.01	0.48	0.00015	1.80	0.05
Pants	W	Tencel Twill - PFD	0.39	0.03	0.98	0.00031	3.66	0.11
Pants	W	Stretch Twill	0.52	0.04	1.32	0.00042	4.92	0.14
Pants	W	Marled Fleece - 300	0.64	0.04	1.62	0.00051	6.05	0.18
Pants	W	4-way Stretch Poly - Textured Back	0.35	0.02	0.89	0.00028	3.34	0.10

Pants	W	Plaid Flannel - OC/Tencel	0.33	0.02	0.85	0.00027	3.17	0.09
Pants	W	Jacquard Double Knit	0.59	0.04	1.49	0.00047	5.57	0.16
Shorts	W	Plaid Flannel - OC/Tencel	0.23	0.02	0.59	0.00019	2.19	0.06
Longsleeve	W	Tencel Tri-Blend V2	0.28	0.02	0.72	0.00023	2.68	0.08
Longsleeve - Sweater	W	Sweater Knits	0.43	0.03	1.10	0.00035	4.10	0.12
Longsleeve	W	Jacquard Double Knit	0.45	0.03	1.15	0.00036	4.28	0.13
Longsleeve	W	Slub Jersey - Naturally Dyed	0.25	0.02	0.63	0.00020	2.36	0.07
Longsleeve	W	Loose Knit (Marled) Jersey	0.32	0.02	0.81	0.00026	3.04	0.09
Longsleeve	W	Hemp/Poly Plain Weave	0.20	0.01	0.50	0.00016	1.89	0.06
Longsleeve	W	Hemp Single Jersey - FH19 Stripe	0.31	0.02	0.78	0.00025	2.93	0.09
Longsleeve	W	Drirelease® Single Jersey	0.27	0.02	0.67	0.00021	2.52	0.07
Longsleeve	W	Fleece - Sherpa 245	0.38	0.03	0.97	0.00031	3.62	0.11
Longsleeve - Tunic	W	Hemp Fleck Fleece	0.56	0.04	1.41	0.00045	5.26	0.15
Longsleeve - Crew	W	Hemp Fleck Fleece	0.56	0.04	1.41	0.00045	5.26	0.15
Longsleeve - Crew	W	Heather Fleece - 300	0.56	0.04	1.42	0.00045	5.32	0.16
3/4 Sleeve	W	Tencel Tri-Blend V2	0.27	0.02	0.68	0.00022	2.54	0.07
Jacket	W	Poly Twill - 2Layer	0.50	0.03	1.26	0.00040	4.70	0.14
Jacket	W	Poly Heather - Uncoated	0.51	0.04	1.29	0.00041	4.82	0.14
Jacket	W	Poly Heather - 2Layer	0.57	0.04	1.44	0.00046	5.40	0.16

Appendix D Customer Care

Garment	Gender	Fabric	customer care			Conventional		
			kg CO2e	Water (L)	Waste (kg)	kg CO2e	Water (L)	Waste (kg)
Hoodie	M	Waffle_FH19	1.19	296.91	0.46	1.11	296.99	0.46
Hooded Henley	M	Snow Heather Jersey	0.63	152.51	0.23	0.60	152.57	0.23
Hooded Henley	M	Double Knit Jersey	1.48	379.56	0.58	1.42	379.55	0.58
Hooded Button-Up	M	Hemp/Cotton Plaid Flannel	0.72	197.16	0.30	0.76	197.16	0.30
Hoodie	M	Marled Fleece - 300	1.27	339.55	0.52	1.29	339.50	0.52
Hoodie	M	Jacquard Double Knit	1.24	312.64	0.48	1.16	312.55	0.48
Hoodie	M	Hemp Fleck Fleece	1.50	384.25	0.59	1.45	384.27	0.59
Hoodie	M	Heather Fleece - 300	1.51	388.05	0.60	1.54	388.09	0.60
Hoodie	M	Fleece - Sherpa 245	0.97	264.11	0.41	1.03	264.11	0.41
Hoodie	M	Drirelease Fleece - Poly/Wool	1.03	256.22	0.39	1.01	256.22	0.39
T-shirt	M	Tencel Tri-Blend V2	0.44	125.67	0.19	0.50	125.68	0.19
T-shirt	M	Snow Heather Jersey	0.43	105.65	0.16	0.38	105.62	0.16
T-shirt	M	Slub Jersey - Naturally Dyed	0.39	110.90	0.17	0.46	110.83	0.17
T-shirt	M	Slub Jersey - Fabric Dyed	0.39	110.90	0.17	0.46	110.83	0.17
T-shirt	M	Hemp Single Jersey - SP19 Stripe	0.50	137.41	0.21	0.51	137.39	0.21
T-shirt	M	Drirelease® Single Jersey	0.44	118.27	0.18	0.43	118.27	0.18
Longsleeve	M	Tencel Tri-Blend V2	0.60	153.57	0.24	0.63	153.62	0.24
Longsleeve	M	Jacquard Double Knit	0.93	245.64	0.38	0.93	245.63	0.38

Longsleeve	M	Hemp Fleck Fleece	1.18	301.98	0.46	1.15	301.94	0.46
Longsleeve	M	Heather Fleece - 300	1.13	304.94	0.47	1.18	304.89	0.47
Longsleeve	M	Drirelease® Single Jersey	0.51	144.53	0.22	0.58	144.53	0.22
Longsleeve	M	Double Knit Jersey	1.20	321.11	0.49	1.27	321.13	0.49
Longsleeve	M	Slub Jersey - Naturally Dyed	0.51	135.54	0.21	0.53	135.52	0.21
Longsleeve - Hooded	M	Hemp Single Jersey - SP19 Stripe	0.87	213.83	0.33	0.87	213.83	0.33
Longsleeve - Henley	M	Hemp Single Jersey - SP19 Stripe	0.73	198.50	0.31	0.81	198.52	0.31
Longsleeve	M	Fleece - Sherpa 245	0.83	207.48	0.32	0.79	207.48	0.32
Longsleeve	M	Waffle_FH19	0.95	233.35	0.36	0.93	233.31	0.36
3/4 sleeve	M	Tencel Tri-Blend V2	0.50	139.61	0.21	0.59	139.64	0.21
Button-up	M	Hemp/Poly Plain Weave	0.49	127.97	0.20	0.48	127.99	0.20
Button-up - Nordmann Shacket	M	Hemp/Cotton Plaid Flannel	0.75	183.15	0.28	0.70	183.12	0.28
Button-up	M	Hemp/Cotton Plaid Flannel	0.75	183.15	0.28	0.70	183.12	0.28
Pants	M	Stretch Twill	1.25	335.75	0.52	1.32	335.71	0.52
Pants	M	Marled Fleece - 300	1.45	363.78	0.56	1.40	363.79	0.56
Pants	M	Heather Fleece - 300	1.62	415.76	0.64	1.57	415.79	0.64
Pants	M	2-way Stretch Poly Elastane Blend	0.81	212.12	0.33	0.78	212.12	0.33
Pants	M	Plaid Flannel - OC/Tencel	0.75	190.59	0.29	0.77	190.51	0.29
Jacket	M	Poly Twill - 2Layer	1.17	306.63	0.47	1.23	306.63	0.47
Jacket	M	Poly Heather - Uncoated	1.21	314.43	0.48	1.23	314.43	0.48

Product	Gender	Material						
Jacket	M	Poly Heather - 2Layer	1.35	352.13	0.54	1.41	352.13	0.54
Hat	Ungendered	Various - Hats	NA	NA	NA	NA	NA	NA
Hat - festival	Ungendered	Recycled Wool Felt	0.44	126.53	0.19	0.49	126.53	0.19
Toque	Ungendered	Wool/Repreve Poly Yarn	0.27	70.82	0.11	0.25	70.82	0.11
Mittens	Ungendered	Wool/Repreve Poly Yarn	0.27	70.87	0.11	0.29	70.87	0.11
Socks - 2 Bottle	Ungendered	Repreve® Poly Yarn	0.17	45.61	0.07	0.19	45.61	0.07
Socks - 3 Bottle	Ungendered	Repreve® Poly Yarn	0.17	45.61	0.07	0.19	45.61	0.07
Socks - Selkirk	Ungendered	Repreve® Poly Yarn	0.17	45.61	0.07	0.19	45.61	0.07
Wallet	Ungendered	Repreve® Poly Canvas 600	0.06	12.25	0.02	0.01	12.25	0.02
Wallet - Zip	Ungendered	Repreve® Poly Canvas 600	0.02	17.07	0.03	0.07	17.07	0.03
Lunch Tote	Ungendered	Repreve® Poly Canvas 600	0.35	97.65	0.15	0.41	97.65	0.15
Travel Kit	Ungendered	Repreve® Poly Canvas 600	0.35	97.65	0.15	0.41	97.65	0.15
Pouch - Natures	Ungendered	Organic Cotton Canvas	0.13	35.43	0.05	0.14	35.43	0.05
Backpack - Mobius	Ungendered	Repreve® Poly Canvas 600	0.71	170.80	0.26	0.66	170.80	0.26
Backpack - Motion	Ungendered	Repreve® Poly Canvas 600	0.71	170.80	0.26	0.66	170.80	0.26
Duffle - Mobius	Ungendered	Repreve® Poly Canvas 600	0.71	170.80	0.26	0.66	170.80	0.26
Duffle - Packable	Ungendered	Repreve® Poly Canvas 150	0.36	102.57	0.16	0.41	102.57	0.16
Tote	Ungendered	Organic Cotton Canvas	0.40	94.45	0.15	0.33	94.47	0.15
Onsie	Ungendered	Heather Fleece - 300	1.20	304.93	0.47	1.14	304.89	0.47
Button-up	W	Y/D Flannel Plaid - Herringbone	0.57	159.46	0.25	0.62	159.40	0.25

Button-up	W	Tencel Twill - PFD | light	0.64	164.33	0.25	0.65	164.27	0.25
Button-up	W	Hemp/Poly Plain Weave	0.52	137.83	0.21	0.56	137.84	0.21
Cardigan	W	Waffle_FH17	0.77	197.89	0.30	0.74	197.85	0.30
Cardigan	W	Sweater Knits	0.98	248.25	0.38	0.99	248.25	0.38
Cardigan	W	Loose Knit (Marled) Jersey	0.89	229.81	0.35	0.89	229.79	0.35
Hoodie	W	Marled Fleece - 300	1.19	315.33	0.49	1.19	315.31	0.49
Hoodie	W	Loose Knit (Marled) Jersey	0.75	205.99	0.32	0.81	205.99	0.32
Hoodie	W	Heather Fleece - 300	1.41	360.35	0.55	1.40	360.29	0.55
Hoodie	W	Drirelease Fleece - Poly/Wool	0.90	237.83	0.37	0.96	237.83	0.37
Hoodie	W	Fleece - Sherpa 245	0.95	245.27	0.38	0.90	245.27	0.38
Hoodie - Bomber	W	4-way Stretch Poly - Textured Back	0.75	187.51	0.29	0.75	187.51	0.29
Hooded Longsleeve	W	Snow Heather Jersey	0.57	152.51	0.23	0.63	152.57	0.23
T-shirt	W	Tencel Twill - PFD | light	0.38	93.89	0.14	0.33	93.90	0.14
T-shirt	W	Tencel Tri-Blend V2	0.43	111.72	0.17	0.46	111.70	0.17
T-shirt - Blouse	W	Tencel Twill - PFD	0.52	122.03	0.19	0.45	122.10	0.19
T-shirt	W	Slub Jersey - Naturally Dyed	0.36	98.52	0.15	0.35	98.58	0.15
T-shirt	W	Slub Jersey - Fabric Dyed	0.36	98.52	0.15	0.35	98.58	0.15
T-shirt	W	Loose Knit (Marled) Jersey	0.46	126.82	0.20	0.45	126.75	0.20
T-shirt	W	Hemp Single Jersey - FH19 Stripe	0.45	122.13	0.19	0.45	122.18	0.19
T-shirt	W	Drirelease® Single Jersey	0.38	105.08	0.16	0.44	105.08	0.16
T-shirt	W	Snow Heather Jersey	0.38	93.83	0.14	0.36	93.91	0.14
Pants	W	Tencel Twill - PFD	0.74	190.76	0.29	0.75	190.74	0.29

Pants	W	Stretch Twill	0.98	256.76	0.39	1.01	256.73	0.39
Pants	W	Marled Fleece - 300	1.19	315.33	0.49	1.19	315.31	0.49
Pants	W	4-way Stretch Poly - Textured Back	0.70	174.15	0.27	0.63	174.15	0.27
Pants	W	Plaid Flannel - OC/Tencel	0.60	165.18	0.25	0.64	165.14	0.25
Pants	W	Jacquard Double Knit	1.12	290.30	0.45	1.10	290.28	0.45
Shorts	W	Plaid Flannel - OC/Tencel	0.42	114.36	0.18	0.41	114.30	0.18
Longsleeve	W	Tencel Tri-Blend V2	0.50	139.61	0.21	0.59	139.64	0.21
Longsleeve - Sweater	W	Sweater Knits	0.81	213.97	0.33	0.86	213.96	0.33
Longsleeve	W	Jacquard Double Knit	0.81	223.31	0.34	0.87	223.25	0.34
Longsleeve	W	Slub Jersey - Naturally Dyed	0.48	123.16	0.19	0.52	123.17	0.19
Longsleeve	W	Loose Knit (Marled) Jersey	0.60	158.44	0.24	0.60	158.48	0.24
Longsleeve	W	Hemp/Poly Plain Weave	0.39	98.48	0.15	0.33	98.45	0.15
Longsleeve	W	Hemp Single Jersey - FH19 Stripe	0.60	152.71	0.23	0.55	152.67	0.23
Longsleeve	W	Drirelease® Single Jersey	0.55	131.45	0.20	0.48	131.45	0.20
Longsleeve	W	Fleece - Sherpa 245	0.71	188.63	0.29	0.76	188.63	0.29
Longsleeve - Tunic	W	Hemp Fleck Fleece	1.06	274.49	0.42	1.04	274.50	0.42
Longsleeve - Crew	W	Hemp Fleck Fleece	1.06	274.49	0.42	1.04	274.50	0.42
Longsleeve - Crew	W	Heather Fleece - 300	1.02	277.13	0.43	1.04	277.19	0.43
3/4 Sleeve	W	Tencel Tri-Blend V2	0.50	132.59	0.20	0.52	132.65	0.20
Jacket	W	Poly Twill - 2Layer	0.98	245.26	0.38	0.92	245.26	0.38

Jacket	W	Poly Heather - Uncoated	1.01	251.58	0.39	0.92	251.58	0.39
Jacket	W	Poly Heather - 2Layer	1.11	281.66	0.43	1.08	281.66	0.43