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Water Footprint Methodology for Everlane's Supply Chain

A Group Project submitted in partial satisfaction of the requirements for the degree of Master of Environmental Science and Management
for the
Bren School of Environmental Science & Management

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The Group Project is required of all students in the Master of Environmental Science and Management (MESM) Program. The project is a year-long activity in which small groups of students conduct focused, interdisciplinary research on the scientific, management, and policy dimensions of a specific environmental issue. This Group Project Final Report is authored by MESM students and has been reviewed and approved by:

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Dr. Arturo Keller, Faculty Advisor

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Project Objective

The main objectives of this project were to:

- **Develop a comprehensive water footprint calculation** for Everlane's top 3 most used fabric materials: Cotton, polyester, and MMCFs, to help Everlane calculate and reduce its water footprint across its supply chain and test it using a popular product.
- **Provide recommendations** for improvements in Everlane's supply chain considering environmental and social impacts, particularly in water-stressed areas, through a supply-chain specific risk analysis.
- **Share an adoptable water footprint methodology** with other apparel leaders to be used as an industry-wide framework.

Significance

Client: Everlane

Everlane is an apparel brand based in San Francisco, California. Everlane was launched in 2011 with an initial goal of creating wardrobe basics that have radical awareness in price transparency, at a time when apparel supply chains were not widely visible to consumers. Everlane's founding tenant of radical transparency informs its decisions to build a business that creates products with the least impact on people and the planet, while taking accountability for their outputs. Today, Everlane's mission is to empower people to live their best lives with the least impact on the planet and leave the environment cleaner than they found it. The three pillars that guide its social and environmental efforts are "Keep Earth Clean, Keep Earth Cool, and Do Right By People". Combined with its collaboration with non-governmental organizations (NGOs) and strategic industry experts, these three pillars have helped the company set measurable goals based on data and help verify its progress.

Mapping its supply chain's water footprint will help Everlane make progress toward their "Keep Earth Clean" pillar and provide them with the needed steps to create trackable and verifiable goals towards water reduction. The final footprint methodology will help the company identify materials and processes in its supply chain that are water-intensive. Ultimately, this information will help Everlane prioritize materials and processes that use less water, or find and implement alternative processing methods and/or partners to produce alternative materials with reduced water impacts.

The Problem

With increases in human population and development, water supply has become stressed in many parts of the world. Access to clean, healthy water is a basic human necessity, yet many regions are facing water scarcity.[1] It is crucial to examine water usage within the textile industry in particular, as it ranks among the top ten water-consuming industries.[2] Water consumption in the apparel industry is in large part attributable to textile processing, both mechanical and chemical, and varies depending on the textiles used. According to the U.S. EPA, a dye house with a medium production capacity producing 20,000 lbs/day (9,100 kg/day) of fabric consumes 36,000 L of water/day.[3] Additionally, agricultural irrigation is a major source of global water consumption, and agricultural processes, such as cotton production, are an

[1] Kumar & Carolin, 2019
[2] Samanta et al., 2019
[3] Ibid.

integral part of apparel production.[4] Cotton is used in 40% of all clothing and is the highest consuming aspect within the apparel supply chain.[5] Other materials like linen, for example, are derived from flax and represent less than 1% of all global textile consumption. The cultivation of flax is also less water-intensive than cotton since it requires less pesticides.[6]

High water consumption used in fiber and textile production in regions already susceptible to water scarcity leads to water becoming less accessible, leaving vulnerable communities at higher risk of lacking access to clean water. Both the environmental and social impact of water usage throughout the textile industry's supply chain should not be neglected. With a rise in clothing consumption, coupled with a rise in environmental consciousness, companies that invest in sustainable processes will strengthen their market reach.[7] According to Forbes, the overall awareness and transparency of water impacts in the fashion sector is low.[8] Out of 62 companies that provided data for the CDP, only one in ten companies was aware of their water impact across every stage of the supply chain.[9] This highlights the gap that apparel companies should aim to fill: by measuring, managing, and reporting on their water use, companies can develop practices and projects that mitigate their environmental and social impact.

This project aimed to improve water footprint analyses by creating a replicable water footprint methodology that can be applied to global supply chains across the apparel industry. To do this, the overall water usage for different clothing products was estimated by aggregating both the water withdrawal and the water consumption of three key materials in Everlane's supply chain. Water withdrawal can be defined as, "water diverted or withdrawn from a surface or groundwater source." In contrast, water consumption can be defined as, "water use that permanently withdraws water from its source, that is no longer available."[10] By creating a methodology to measure the water footprint of Everlane's global supply chain, this project offers an external-facing methodology that other companies can adapt to quantify their own supply chain's footprint and assess the water risk associated with their operations.

Audience

While this project sought to build an Everlane-specific water footprint and methodology, findings apply to a broader audience. Primarily, other apparel companies and leaders in the industry looking to improve their supply chain sustainability and transparency and decrease their water footprint can use this methodology. Other audience members include shareholders in apparel companies interested in the associated water footprint and risks. There is an increasing demand for transparency and responsibility, and stakeholders and consumers alike are starting to hold companies to a higher standard of sustainability and social governance. Therefore, this methodology is relevant and useful for apparel companies seeking to measure their impacts on water resources. Improving water risk awareness across the industry will allow companies to implement strategies within their supply chain that are less water-intensive, thereby minimizing risks to their business operations and improving their overall sustainability.

[4] US Geological Survey, 2019
[5] Kumar & Carolin, 2019
[6] *Flax (Linen) | Materials Index | CFDA*, n.d.
[7] Kumar & Carolin, 2019
[8] Aivazidou & Tsolakis, 2019
[9] CDP Worldwide, 2020
[10] *Water Use, Withdrawal and Consumption*, 2022

Background

Literature Review

Textile & Clothing Supply Chain Overview

The textile and clothing industry supply chain can be broken down into three main functions: the raw materials supplier, the manufacturer, and the retailer. The raw materials supplier and manufacturer levels, where the most water is consumed, can be divided into different processes within different tiers. Tier 4, the process furthest from finished goods, consists of raw material production via agriculture or synthesis. Raw materials can include natural fibers such as cotton, linen, wool, and man-made cellulosic fibers (MMCFs). There are also synthetic fibers like polyester, nylon, and recycled fibers made from existing clothes or textile waste. These materials are processed into fabrics and finished products through Tier 3 and 2.Tier 3 suppliers consist of fiber processing facilities (e.g., knitting, weaving, yarn-spinning).Tier 2 is where processing occurs (e.g., dyeing, printing, laundering, lamination). Tier 1 is where the clothing enters final production (cut-and-sew and finishing), before being transported to distribution centers or warehouses and shipped to retail stores or directly to customers.

The processes of an apparel brand's supply chain typically include design, raw materials sourcing, textile manufacturing, dyeing and printing, finishing, cutting and sewing, apparel manufacturing, transportation, and retail operations. In the design stage, details such as fabrics, silhouettes, trims, and finishes are established. There is room in this stage to make decisions about sustainability and evaluate different options based on their impact on the final garment. Additionally, many apparel brands are now focusing on more sustainable, long-lasting approaches to design, embracing responsible design principles, such as entire life cycle impacts.

Raw materials sourcing involves finding suppliers around the world for materials like cotton, wool, silk, and synthetic fibers. The use of chemicals throughout the textile manufacturing process is a major concern for sustainability, as many chemicals are released into freshwater systems, potentially contaminating water used for agriculture and human consumption. Chemicals used in the textile manufacturing process include bleaches, dyes, finishing agents, stabilizers, surfactants, and solvents, among others.

Overall, the apparel industry's supply chain is a complex and resource-intensive process, from growing or creating raw textile material to cutting, sewing, and assembling finished garments. Sustainability and responsible design practices are becoming increasingly important considerations for many clothing brands as they strive to reduce their environmental impact and ensure the ethical treatment of workers throughout the supply chain.

Types of Water in Textile Manufacturing

Water is an integral resource in the apparel manufacturing process, used to process, wash, dilute, heat, and cool materials. Water can be classified as blue, green, or gray water depending on its source points and utilization. These distinctions are critical to keep in mind when calculating a company’s net water footprint in units of water volume per product unit.

As defined by the Water Footprint Network (WFN), the types of water can be categorized as follows.[11]

- *Blue water* refers to fresh surface and groundwater, usually drawn from aquifers or surface freshwater bodies, such as lakes or rivers. In some cases, it may include desalinated water, sourced from the ocean or saline aquifers that are not potable. Blue water is mostly used for irrigating agricultural fields and supplying water to cities and industries.
- *Green water* is precipitation on land that does not run off or recharge groundwater but is instead stored directly in shallow soils and vegetation. For example, agriculture that only uses rainwater would be considered green water sourced.
- *Gray water* considers the contamination that may occur during water use. It is the water that is needed to dilute contaminated water to meet discharge requirements. However, if the process water is treated inside the manufacturing facility, then the amount of dilution may be less. No dilution is needed if the treatment removes the contaminants to effluent standards that are protective of the environment. Not all contaminants are regulated, so even the effluent from a facility meeting all effluent standards can negatively impact human and ecological health. Before dilution, gray water could be sourced from either blue or green water, but becomes gray water once it has been contaminated.

Water sources and their consumption are important to consider for footprinting, as blue and green water differ in environmental, social, and economic costs depending on location. Water scarcity and wastewater pollution are both risks throughout the supply chain.[12] In order to achieve Everlane's efforts to reduce negative impacts on the environment and human health, these costs must be weighed against the benefits of current practices.

Avenues for improvement, based on current industry practices and innovations, include adherence to effluent standards, increased water use efficiency throughout the entire supply chain. To improve, Everlane must strive to implement these practices. They can do so by heightening supplier oversight and/or contributing to and engaging with local communities affected by its supply chain processes.

A water footprint is defined as a multidimensional indicator that shows water consumption volumes by source and polluted volumes by type of contamination.[13] We found the following water footprint formulas for each of the relevant, blue, green, and gray footprints as laid out in the Water Footprint Assessment Manual.[14] We used these as guidepoints for our own methodology, but deviated from the formula based on available data.

<u>Blue water footprint calculations:</u>
WF_{blue}= *BlueWaterEvaporation* + *BlueWaterIncorporation* + *LostReturnFlow* [volume/time]

<u>Gray water footprint calculations:</u>
$WF_{gray} = L / (C_{max} - C_{natural})$ [volume/time]

<u>Green water footprint calculations:</u>
WF_{green}= *GreenWaterEvaporation* + *GreenWaterIncorporation* [volume/time]

[11] Aldaya et al., 2012
[12] Water Integrity Network, 2017
[13] Aldaya et al., 2012
[14] Ibid.

Variable	Definition
BlueWaterEvaporation	All production-related evaporation, including during storage, transport, processing, collection, and disposal
BlueWaterIncorporation	Water incorporated into the product
LostReturnFlow	Part of the return flow not available for reuse within the same catchment within the same period of withdrawal **Return Flow:** The part of the water withdrawn for an agricultural, industrial or domestic purpose that returns to the groundwater or surface water in the same catchment as where it was abstracted. This water can potentially be withdrawn and used again.
L	Added load - estimated by measuring effluent volume and pollutant concentration
C_{max}	Maximum acceptable concentration of a pollutant (mass / volume)
$C_{natural}$	Natural concentration of a pollutant in the receiving water body (mass / volume)
GreenWaterEvaporation	Total rainwater evapotranspiration from fields and plantations
GreenWaterIncorporation	Water incorporated into the harvested crop or wood

Table 1: Definitions of variables for water footprint calculations.[15]

Water Availability

The apparel industry consistently ranks among the highest water-consuming industries. A 2012 report cites that an average composite textile mill, which produces 8,000 kg/day of fabric, consumes roughly 1.6 million liters of water per day, out of which 8% is utilized in printing and 16% is used in the dyeing process.[16] Additionally, much of the world's apparel production occurs in water-stressed regions.

Different raw materials and woven fibers have different water usage during the production process. Growing cotton demands a lot of water, with literature citing ranges from 10,000 to 40,000 liters per kilogram of cotton.[17] On the other hand, the first step in polyester production, oil extraction, requires much less water, comparatively.[18] As the materials make their way through the production chain, water use also changes depending on the types of fabrics being processed. Cotton and natural fibers are hydrophilic, meaning they absorb water, while synthetic fibers such as polyester are hydrophobic and do not absorb much water. Therefore, more water is used during water-intensive processes (e.g., dyeing, washing) per kilogram of cotton than per kilogram of polyester.[19]

[15] Ibid.
[16] Raja et al., 2019
[17] TheWorldCounts, 2024
[18] Freitas et al., 2017
[19] Raja et al., 2019

Case Study: A Closer Look at India

According to Raja et al. (2019), India has 18% of the world's population but only 4% of the world's water resources. As the country's water-demanding industries grow, annual per capita water availability has been steadily decreasing: in 2019 it was 1,545 m^3 compared to 1,818 m^3 in 2001 and 6,042 m^3 in 1947. Additionally, 60% of Indian textiles are cotton. As noted above, cotton cultivation and processing typically uses more water than synthetic materials; with so much of India's textile industry rooted in cotton and global textile demand rising, the country will likely continue toface challenges with water availability.

Water Treatment

To begin research on wastewater generated from textile manufacturing, we posed four questions:

1) Where in the supply chain are chemicals used?
2) Which chemicals are used? For what purpose?
3) How do chemicals in textile production impact wastewater (effluent)?
4) What are the existing regulations and policies around water treatment?

Supply Chain Impacts

Water pollution in the textile industry occurs at all levels of the supply chain, from raw material production to end-use. The large amounts of wastewater generated contain a large variety of chemicals and pollutants. In Tier 4, raw materials are cultivated and produced, often using fertilizers, insecticides, herbicides, and other chemicals that can run off into freshwater supplies. The impacts of Tiers 1, 2, and 3 on water quality result from the processing of raw materials, and the spinning, dyeing, and finishing processes that use a wide range of synthetic and organic chemicals to achieve desired results. The common processing technologies that are employed in the textile manufacturing process are listed below:

- **Sizing** is the first preparation step, which involves the addition of sizing agents such as starch, polyvinyl alcohol (PVA), and carboxymethyl cellulose to provide strength to the fibers to minimize breakage.
- **Desizing** is the process used to remove sizing agents before weaving. Natural fibers, such as cotton, are often sized with water-insoluble starches and broken down into water-soluble starches via enzymes. Bacteria that break the starch down can contain high levels of biochemical oxygen demand (BOD).
- **Scouring** is the process in which impurities are removed from the fibers by treating them with an alkali solution, usually sodium hydroxide, to break down natural oils, fats, waxes, and surfactants.
- **Bleaching** is the step in which unwanted color is removed from the fibers by treating them with chemicals such as sodium hypochlorite and hydrogen peroxide.
- **Mercerising** is a step in which a concentrated alkaline solution is applied to the fabric which is then washed using acid solution before the dyeing step. Mercerising increases the dyeability, luster, and appearance of the fiber.
- **Dyeing** is the process that involves the addition of color to the fibers. It usually needs large volumes of water in the dye bath as well as during the **rinsing step**. Depending on the nature of the fabric, many chemicals like metals, salts, surfactants, organic processing aids, sulfide, and formaldehyde may be added to improve dye adsorption onto the fibers in the dyeing process.

- **Dye fixation** Textile fibers can catch dyes in their structures as a result of physical adsorption which involves van der Waals forces, hydrogen bonds, and hydrophobic interactions between the fiber and dye. The binding of the dye in fibers depends on the nature and chemical constitution of the dye.[20]
- **Printing** produces high amounts of BOD and COD loads if preparation operations, such as scouring, are done onsite. Textile printing processes generally consume less water than desizing, scouring, and bleaching.

Chemicals and Their Impacts on Effluent

The many steps and processes required to produce textiles necessitate the use of various chemicals. Over 1,900 chemicals have been identified in textile production processes.[21] The composition of textile industry wastewater varies from country to country and from mill to mill, depending on the processes, equipment used in the factory, types of fabric produced, chemicals applied, weight of the fabric, season,[22] and trends in fashion.[23]

These chemicals include inorganic and organic chemicals. Inorganic substances include Na+, Ca_2^+, NH_4^+, Cl^-, and several metals. Organic substances include everything from anionic surfactants and detergents to soaps, waxes, dyes, and petroleum-based substances. Different chemicals are used in different processes and depend on the type of raw materials being processed. Chemicals are used in textile manufacturing to achieve a desired end-use, such as waterproofing, fireproofing, wrinkle resistance, and color fasting.

The chemicals employed in textile production significantly impact effluent from factories. Even when treated, there are negative environmental, human, and economic impacts from generating contaminated wastewater.

Environmental
Textile operations, particularly wet processing, impact pollution loads on effluents. These impact the pH, BOD, total solids, and human and ecological toxicity, among other water quality parameters. Generally speaking, textile wastewater contains dyes, chemical particles, and heavy metals that cause multiple negative impacts on the environment ranging from soil balance disruption, decreasing light uptake (i.e., impacts on plants' ability to photosynthesize), and decreasing water quality.[24] While Everlane's suppliers comply with required regulations, it is important to understand that not every chemical is always treatable and can re-enter the water system (e.g., PFAS).

Social
Negative social impacts of contaminated graywater include health impacts that range from minor to severe, and even deadly. Heavy metals, like amine-based dyes, are known to be harmful to humans, causing symptoms ranging from skin rashes to developmental and cognitive impairment. Additionally, communities living near discharge sites bear a disproportionate burden of the industry's pollution, bringing up issues of equity and environmental justice. While we briefly assess the social and cultural implications of water use in regions that Everlane operates in through a risk assessment, detailed analysis of specific social and cultural indicators is outside the scope of this project.

[20] Saini, 2017
[21] Bailey et al., 2022
[22] Yaseen & Scholz, 2019
[23] Ibid.
[24] Islam et al., 2023

Economic

The textile industry discharges up to 200,000 tons of dyes to wastewater each year[25] during the dyeing and finishing processes due to ineffectiveness in the dyeing process and inadequate knowledge of dye chemistry. It is clear that there are significant financial implications of losing chemicals to effluent streams. This is just one of the financial indicators we can assess when considering the potential negative environmental, social, and cultural impacts chemicals entering the environment have. It becomes extremely challenging to quantify. Quantifying the economic implications of these impacts is outside the scope of this project.

Wastewater Treatment Methods

There are four methods for treating wastewater from textile production: (1) biological removal; (2) chemical removal; (3) physical processes; and (4) hybrid processes.[26] Biological removal is generally less expensive and energy-intensive. However, biological removal may not always be sufficient, and may require significantly more space and holding equipment than chemical removal. Some chemicals required for chemical removal can also be resistant to biodegradation, requiring additional processes. Treating wastewater using these methods can utilize algae, bacteria, enzymes, fungi, and yeast.

Chemical removal is generally more expensive and energy-intensive than biological removal, but usually has a smaller footprint and can achieve higher removal efficiencies. Examples include coagulation-flocculation, electrocoagulation, and advanced oxidation processes (e.g., electro-Fenton oxidation, anodic oxidation, ultraviolet (UV)/ozonation). Synthetic coagulation is one of the best-known methods for treating textile wastewater, and the oxidation processes can achieve almost 100% removal of contaminants.[27]

Physical processes include adsorption and membrane processes. Adsorption is "among the most efficient and effective techniques for treating textile wastewater," and employs the use of activated carbon, clay, wood chips, or other organic materials.[28] Synthetic adsorbents have also been developed for the very specific removal of chemicals, which can allow for recovery and recycling of the chemicals. This method transfers dissolved chemicals from wastewater to the surface of solid, highly porous materials. Membrane processes are highly effective, depending on the level of filtration used (e.g., micro, ultra, nano, reverse osmosis). These processes have an efficiency of 85-99.9% and rely on mass transfer through membranes of various sizes.

Hybrid processes, which can combine biological, chemical, and/or physical processes, can have the most potential for efficiently removing chemical and solid byproducts from textile manufacturing effluent. Two examples of hybrid techniques include membrane bioreactors (MBR) and photocatalytic membrane reactors (PMR). In principle, a hybrid technique should save money, time, and space by merging processes into a single reactor design.[29]

More details about the specific treatment technologies in a wastewater treatment plant can be found in Appendix A: Wastewater Treatment Technologies.While this project does not explore the particular wastewater treatment solutions used by every Everlane supplier, it is important to understand the context of water use and potential impacts of textile manufacturing effluent.

[25] Ibid.
[26] Ibid.
[27] Ibid.
[28] Ibid.
[29] Ibid.

Regulation and Policy

A cursory look at the regulations and policies of several countries that have strong textile manufacturing industries revealed that the policy landscape is scattered. While it is well-known how to regulate point source pollution impacting water quality, it is much more challenging to regulate enforcement of those policies and regulations, particularly in countries where textile manufacturing is a large contributor to their GDP or economic productivity. In the U.S. several federal laws can influence textile wastewater management, including RCRA, CERCLA, and the Clean Water Act. The EPA has promulgated additional policies and guidelines to manage wastewater treatment, such as the Textile Mills Effluent Guidelines (40 CFR Part 410). The E.U. is more strictly regulating the textile production industry, with laws such as the Industrial Emissions Directive and EU Chemicals Strategy for Sustainability that emerged in 2023. These policies are an attempt to more stringently regulate an industry that has historically been under-regulated.

In other regions where Everlane suppliers operate, including India and China, laws are in place to protect water quality and to regulate industrial discharge. In China, an Environmental Protection Tax has been implemented, yet its enforcement was difficult to confirm and requires more thorough research. China has also enacted the 2022 Textile Waste and Recycling System Policy along with the Yellow River Protection Law to protect its water bodies. In India, the Water Prevention and Control of Pollution Act and the Environment Act of 1986 and the Zero Liquid Discharge (ZLD) policy from the Central Pollution Control Board set regulations for water quality.[30] Whether or not these acts enforce wastewater treatment standards requires further research. Still, both countries are similar in that government bodies are the primary driver of protection and enforcement.[31]

Water Footprinting Tools

Existing water footprinting methodologies that are relevant to this project, both for quantifying water use, and also analyzing water risk, are summarized below:

Water Footprint Frameworks:

The Water Footprint Network (WFN): The WFN is a leading organization that developed the water footprint concept "to promote the transition toward sustainable, fair and efficient use of freshwater resources worldwide."[32] The Water Footprint Assessment (WFA) tool uses "a four-phase process that quantifies and maps green, blue and gray [sic] water footprints, assesses the sustainability, efficiency, and equitability of water use and identifies which strategic actions should be prioritized [sic] in order to make a footprint sustainable."[33] The tool is a "comprehensive, analytical tool for sustainable water resource management of products, processes, or organizations."[34] The water footprint assessment typically only includes steps of production up to the delivery of the consumer. The water footprint approach is a quantitative approach focusing on the volume of direct and indirect water consumption by source and polluted volumes by contamination.[35] This method and its calculations account for the green, blue, and gray water footprint at process, product, regional, and national levels of water consumption. The WFN was the primary methodology we relied on while creating our own methodology.

The International Standards Organization (ISO): The ISO developed ISO 14046 for water footprint principles, requirements, and guidelines in 2014.[36] This standard outlines how to conduct a life-cycle assessment-based water footprint for products, processes, or organizations. ISO 14046:2014 is aligned

[30] Restiani & Khandelwal, 2016
[31] Xu et al., 2018
[32] *Aims & History – Water Footprint Network*, n.d.
[33] *What is water footprint assessment? – Water Footprint Network*, n.d.
[34] Yang et al., 2020
[35] Zhu et al., 2022
[36] International Organization for Standardization, 2020

with UN Sustainable Development Goals 6 (Clean Water and Sanitation), 13 (Climate Action), and 14 (Life Below Water). An "Impact Assessment" is typically conducted using the ISO Standards. This can be an approach to water footprinting and is used to compile the inputs, outputs, and potential environmental impacts related to water that could arise from industry processes.[37] With this approach, multiple impact categories are identified and analyzed in an attempt to better understand the specific consequences of water usage on the environment. Results from ISO 14046:2014 can be reported, however, communication of water footprint results, for example in the form of labels or declarations, is outside the scope of ISO 14046:2014.

Life Cycle Assessment: An industry life cycle assessment (LCA) serves as a method for assessing the potential environmental impacts and resource utilization of a product or service throughout its entire lifecycle, including raw materials, production phases, and waste management.[38] In an LCA, clearly defining the system boundary of a product's life cycle is one of the most crucial first steps. A system boundary is defined as, "the boundary between processes that are significant and insignificant to the product system."[39] An LCA also conducts a sensitivity analysis to determine the unit processes that should be included and refine the system boundary of choice for the given product. LCAs come with some limitations, such as inconsistent system boundary selection, and allocation problems among the system boundaries. Since an LCA is typically done for a product or service, relying on it as a blueprint alone would not be sufficient for our analysis of water footprint for an entire supply chain.

Overall, the two most widely used industry practices and approaches for water footprinting are Life Cycle Assessments and Water Footprint Assessments. We conducted a further comparison of the two approaches to best understand which one would align with our end goals. The major differences we found between the WFA and LCA methods are as follows:[40]

- Lack of site-specificity in LCA's approach
- LCA includes cradle-to-grave estimates of consumption and pollution (Life cycle inventory)
- LCA includes estimates of impacts on human health and ecosystems (Life cycle impact assessment)
- LCA is <u>not</u> spatially explicit depending on the region of water scarcity
- LCA does <u>not</u> consider green and gray water
- WFA is spatially explicit, meaning that its data accounts for the regional differences in crop irrigation that are dependent on that region's water stress levels
- WFA includes data and methodology for hotspot analysis, given that water-consuming processes in the supply chain can be located
- LCA ignores green water usage, which is the water added to a product from rainfall and typically occurs during agricultural processes

Additionally, a hybrid approach of combining methods from both an LCA and a WFA can also be conducted.[41] This hybrid approach would include the following amendments:

- Blue and green water measurements, but would exclude gray water measurements
- Considers total blue water drawn from the environment as opposed to process-specific withdrawals
- Uses data from WFN to conduct hotspot analysis and estimate regional cotton production
- Uses LCA datasets for completeness of materials and production stages
- Uses WFA methods to calculate impacts of production on blue water scarcity

[37] Yang et al., 2020
[38] Li et al., 2014
[39] Ibid.
[40] Vos, 2019
[41] Ibid.

Water Risk and Impact Tools:

The World Resources Institute (WRI): The WRI developed the Aqueduct Water Risk Atlas to help identify and map water risks such as floods, droughts, and stress.[42] This tool is open-source, meaning that anyone can download the geodatabases and shapefiles to explore water stress country rankings, water stress projects, floods, and other risks. This tool assesses the implications of water use in different regions where suppliers are based.

The World Wildlife Fund (WWF): The WWF has developed its own Water Risk Filter, "a free online tool that enables companies and investors to Explore, Assess, and Respond to water risks."[43] Currently, the "Explore" and "Assess" options are functional, and "Respond" is coming soon. This is the tool we relied on for our risk assessment and analysis.

The Higg Facility Environmental Module (FEM) Index: Developed by the Sustainable Apparel Coalition, Higg FEM is a tool used to measure and quantify the sustainability impacts of a facility, and a common tool used in the apparel industry to evaluate yearly environmental performance. Higg FEM is an index that was formerly provided by a technology platform known as Higg, but is now known as the Worldly platform. Everlane's suppliers report to this index for measuring sustainability metrics, and therefore we relied heavily on obtaining data through this platform. More information regarding the Higg FEM index can be found on the Higg website.[44]

The Higg Materials Sustainability Index (MSI): This was "designed to compare the environmental impact of different materials so design and development teams can make more sustainable choices."[45] Companies can input materials and get out midpoint impact indicators. The most relevant impact indicator for this project was water scarcity. Finally, the MSI provides a score for the individual material.

We used ideas from these available footprinting, risk, and impact tools when developing the specific methodology for Everlane's supply chain, following industry best practices and using available geographic information.

Everlane's Supply Chain

Everlane's supply chain is divided into four tiers that are each responsible for a different phase of garment production. Gathered from Everlane's 2022 Impact Report, its Tier 1 suppliers focus on the stitching and assembly to finalize a garment for distribution, and these are the facilities with which Everlane has direct relationships. The Tier 2 suppliers consist of fabric mills that are responsible for the textiles used for the clothing. Tier 3 is focused on raw material processing. Tier 4 is responsible for the raw material extraction and cultivation.[46] As stated in its impact report, Everlane has 100% visibility into its Tier 1 and Tier 2 suppliers, but recognizes limitations in visibility as the supply chain becomes much more complex in Tier 3 and Tier 4 operations. Everlane is currently in the process of mapping the intricate web of material from its Tier 3 and Tier 4 facilities.

Everlane does not directly own or control any of its supply factories. This is a common practice for other apparel companies, as seen while analyzing the water footprinting efforts of other apparel brands. Despite not owning their factories, the company utilizes a three-step auditing process to ensure that its suppliers are complying with Everlane's strict Code of Conduct for environmental and social standardsThis process includes an initial risk assessment, yearly verification of compliance, and continuous improvement efforts

[42] World Resources Institute, 2023
[43] WWF Water Risk Filter, n.d.
[44] Getting Started – User Resources: How To Higg, n.d.
[45] *Higg Materials Sustainability Index (Higg MSI) – User Resources: How To Higg,* n.d.
[46] Everlane, 2023

if a facility is underperforming. Everlane conducts in-person audits on 100% of its Tier 1 operations. Its Tier 2 and 3 partners are still subject to screenings and initial risk assessments, but not to yearly in-person audits.

Priority Materials

Everlane's most widely used materials by volume are cotton, MMCFs, polyester, linen, and wool, respectively. Cotton comprises 70.6% of the total material volume purchased (or used) and thus will be critical to explore its supply chain in great depth, tracing back to farmers who grow raw materials. Everlane's second and third most commonly used materials, MMCFs and polyester, are also critical to examine in depth as they comprise 7.5% and 7% of Everlane's total material volume, respectively. In 2022, 75% of Everlane's cotton came from organic sources, though the company does acknowledge the limited availability of certified organic cotton which presents a challenge in transitioning to 100% use of organic.[47] There also continues to be the challenge of full traceability back to organic cotton's cultivation at the Tier 4 stage, which is where the majority of water consumption occurs for this material. Tracing back each material to its initial extraction phase is difficult to do with the little visibility that Everlane has into its supply chain.

Everlane's Tier 1 supply chain consists of 48 factories in 11 countries, and a total of 84 Tier 2 factories, with whomEverlane has direct contact. Its Tier 1 facilities can be divided into the type of constructed, finished garment each factory handles. Of these 11 countries, Everlane has the most facilities in Vietnam and Sri Lanka.[48] Everlane has multiple Tier 1 operations within these two countries which distribute a wide range of finished garments to Everlane. Everlane's Vietnam partners supply the company with knits, denim, outerwear, shoes, hats, sneakers, and wovens. One of the most significant partners Everlane works with in Vietnam is Saitex International, its primary supplier of denim. Saitex is a vertically integrated, seed-to-shelf facility that conducts all phases of denim production in a closed-loop system.[49] This includes eco-efficient processes in spinning, weaving, dyeing, and finishing of fabric. With all of the manufacturing processes occurring within this one facility, traceability efforts are much easier. Saitex recycles 98% of the water used in its production and can reuse the water after it goes through its five-step filtration process. Saitex indicates that it has developed a technology that reduces the water consumption required for one pair of jeans from 1,500 Liters (L) down to 0.4 L.[50] Saitex has received various sustainability certifications such as Bluesign,[51] B-corp, Oeko-Tex,[52] Fairtrade, GOTS (Global Organic Textile Standard), ZDHC (Zero Discharge of Hazardous Chemicals), and GRS (Global Recycle Standard).[53]

Everlane has many Tier 1 operations in Sri Lanka as well, which supply them with swimwear, activewear, underwear, knits, denim, and wovens. One of its most significant suppliers, responsible for most of Everlane's swimwear, is a facility called Linea Aqua in Hanwella. Linea Aqua is the first WaterNeutral® apparel factory in the world as certified by the Sustainable Future Group. The WaterNeutral® certification was developed in part by the Sustainable Future Group[54] and is based on the 'Water Neutrality' concept first coined by WFN, which indicates that the brand has reduced its footprint as much as reasonably possible and has offset the remaining negative externalities.[55] The supplier states that it has achieved this through the maximum possible reduction efforts of its freshwater consumption through recycling and

[47] Ibid.
[48] Everlane, 2023
[49] Ibid.
[50] Ibid.
[51] SGS, n.d.
[52] *OEKO-TEX® - for More Sustainability in the Textile and Leather Industry*, n.d.
[53] Bodmer-Altura, 2019
[54] *Sustainable Future Group*, 2022
[55] Hoekstra, 2008

reusing 75% of it back into the facility.[56] Linea Aqua has routinely monitored and mitigated its water use through water footprint assessments and water audits. The facility also uses 82% regenerated plastic nylon called ECONYL for its swimwear products.[57] Suppliers like Linea Aqua can be looked to as leaders in the field that can push other suppliers in a positive direction.

While some Everlane suppliers are indeed making positive strides in their water mitigation, there are still many unknown details about the impact on water throughout the supply chain. This project maps Everlane suppliers through Tier 3 and raw material supply regions for Tier 4. Due to the complex web of relationships between suppliers, we were unable to identify specific names of Tier 4 suppliers despite requesting that information from Tier 3 suppliers in a survey. However, we were able to identify the regions of many of Everlane's organic cotton raw material suppliers through their various Transaction Certificates (TCs) of products purchased. These TCs included information on the origin region of organic cotton raw material and the weight of raw material purchased by Everlane. There were still some gaps in the data as some of the TCs did not provide information on raw material origin or weight. Additionally, the TCs we had access to only corresponded to organic cotton and not any other fabric materials purchased by Everlane. Additionally, when requesting Tier 3 supplier data from Tier 2 suppliers in our survey, we received limited responses, leaving us to fill in the gaps based on the literature review. Through our research into other apparel companies' supply chain mapping efforts, we found that it is common in the industry to have little to no visibility and contact with Tier 3 and Tier 4 suppliers. Thus, we had to fill in the gaps with informed research.

Conventional Cotton vs. Organic Cotton

Cotton is the most widely used fabric for Everlane's production, thus it is crucial that the company examines sustainable best practices to incorporate into its supply chain. As of 2022, 75% of Everlane's total cotton production came from certified organic sources. Organic farming of cotton is an environmentally-friendly alternative to conventional cotton since it minimizes the use of toxic pesticides and fertilizers during crop cultivation. Fertilizers and pesticides are only applied to organic cotton farming if the chemicals are derived from a natural source. With conventional cotton cultivation, the fertilizers and pesticides that are used often include high concentrations of nitrogen and phosphorus. When leached into the ground as runoff, these elements can contaminate groundwater and drinking water, and also cause eutrophication. These high concentrations of nitrogen and phosphorus as pollution increases the gray water footprint of cotton. Switching to organic cotton practices greatly reduces the pollution load from nitrogen and phosphorus-containing fertilizers, and thus reduces the overall gray water footprint of cotton significantly. A study found that in India, conventional cotton farming practices produced 5.5 times the gray water footprint produced by organic cotton farming methods.[58] Recycled cotton also presents itself as an opportunity for water reduction, as it uses already-existing materials and therefore would not require water-intensive agricultural processes.

Everlane currently uses Supima, GOTS, and OCS-certified cotton, all of which are industry standards for organic cotton certification. OCS is the Organic Cotton Standard, a voluntary global standard that aims to set standards for third-party certification of organic materials, created by the Textile Exchange.[59] GOTS is the Global Organic Textile Standard[60] for textile processing of organic fibers backed up by independent certification of the entire supply chain. Supima cotton[61] is an extra-long staple cotton that is stronger and

[56] *Sri Lanka Business News*, n.d.
[57] *Everlane*, n.d.
[58] Kumar et al., 2021
[59] Textile Exchange, n.d.
[60] Global Organic Textile Standard, n.d.
[61] *Supima | The Cotton Fiber*, n.d.

more resilient than conventional cotton, making it a longer-lasting and more sustainable alternative. It is American Pima cotton, often grown on family-owned, generational farms.

Virgin Polyester vs. Recycled Polyester

In Everlane's 2022 Sustainability report, the company indicated that 96% of its apparel materials containing polyester or nylon came from GRS-certified recycled sources. The GRS certification is a voluntary product standard for tracking and verifying the content of recycled materials in a final product.[62] Processing and manufacturing virgin polyester is associated with many chemicals and pollutants that impact water quality, which makes for a high gray water footprint. Specific water quality parameters that are used to evaluate the impact on a gray water footprint include benzene, cadmium, phenol, copper, and nickel during the crude oil exploration process.[63] Levels of Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), and lead are associated with oil refinery, polymerization, and petrochemical processes. Since recycled polyester fabric is made from existing materials, it does not go through the chemical-intensive processes that virgin polyester does. Therefore, using recycled polyester as an alternative fabric source greatly reduces the associated gray water footprint of raw polyester production. Recycled polyester is shown to have a significantly lower water footprint than virgin polyester as well: virgin polyester consumes 5.98 cubic meters of water equivalent per 100 kg, and recycled polyester consumes 1.90 cubic meters of water equivalent per 100 kg.[64] This is about a 68% decrease in water impact, clearly indicating that recycled polyester has a significant environmental advantage over virgin cotton. It is a promising fabric alternative for apparel companies to research to improve their sustainability efforts.

Water Footprints of Other Apparel Companies

To ensure a thorough and robust analysis of Everlane's supply chain water footprint, we compared other apparel companies' similar efforts. We did this by choosing a few apparel brands that have highlighted their recent methods of water usage quantification within their production, typically seen in their sustainability reports.

Gap, Inc.

Gap, Inc. is the parent company of the apparel brands Gap, Banana Republic, Old Navy, and Athleta. The company has set goals for water. Its three water focus areas include access for the communities in which they have suppliers and partners, reduction in manufacturing processes, and replenishment of priority water-stressed basins where its clothing is manufactured.[65] As of the 2022 ESG Report, Gap, Inc. is mapping its supply chain further upstream to understand water impacts at the initial product stages, like farming. The company is developing a "framework for long-term context-based water targets," but did not provide more detail. According to Gap, Inc.'s 2023 CDP Climate report, 100% of its Tier 1 suppliers and 73% of its Tier 2 suppliers reported water usage information using Higg FEM. While Gap, Inc. measures its suppliers' water usage, there was not a reported footprint calculation.

Levi Strauss & Co.

Levi Strauss & Co's water stewardship efforts have been implemented into its sustainability practices for over a decade. According to its Water Stewardship[66] website page, in 2011, it launched its renowned water conservation initiative, Water<Less®, an initiative built upon technical innovations to aid apparel manufacturers in decreasing their water usage. It has been able to scale this initiative widely across its

[62] Global Recycle Standard, n.d.
[63] Freitas et al., 2017
[64] Qian et al., 2021
[65] Gap, Inc. 2022 ESG Report, 2023
[66] Levi Strauss & Co., n.d.

manufacturing facilities, and now is seeking to develop facility-specific targets to address and reduce local water risk. It also has been active in its wastewater recycling efforts, and in 2021 reported that almost 3 billion liters of recycled water were used in its manufacturing processes.

Its 2021 water footprint was 522,000 cubic meters for company-operated facilities including corporate offices, retail stores, distribution centers, and factories. According to its Supplier Reporting[67] website page, its Tier 1 supply chain is broadly referred to as “factories" and its Tier 2 supply chain is referred to as “mills.” With these definitions, it appears that its 2021 calculated water footprint accounts only for its Tier 1 supply chain. This was calculated by assessing supplier-reported data through the Higg FEM index. However, Levi’s notes that some of its suppliers do not submit their data on time or at all, so it relies on estimates to fill in the gaps not reported.

It also recognizes that a lot of water use comes from the raw material sourcing of cotton, so it has ongoing plans to increase the number of cotton suppliers that join the Better Cotton Initiative (a program that works with farmers to better their cotton cultivation practices and increase sustainability). The fabric materials that comprise most of its textile production are cotton, polyester, MMCFs, and elastane, which is a similar makeup to Everlane.

Patagonia

In 2010, another Bren School Group Project focused on water footprinting for the outdoor clothing company Patagonia. That group’s report, *Developing a Product Water Footprinting Methodology for Patagonia*,[68] outlines a simple methodology for footprinting. Two footprints were developed: a product water footprint consisting of supply chain usage, and a customer-use water footprint. This report also looked into water risk using the Water Stress Index (WSI) developed by Pfister et al. (2009) which informed the second water footprint methodology for regional impact that considered water stress. While the results did not include a total company water footprint, a case study found that one women’s cotton t-shirt required 703 L of water across the supply chain and customer use. This report served as a good starting point for us to continue this project’s research into our own.

Ralph Lauren

In Ralph Lauren’s 2023 Global Citizenship and Sustainability Report,[69] the company calculated its 2023 supply chain water use by facility type. Ralph Lauren defines its production tiers as follows:

- Tier 1: Finished goods manufacturing
- Tier 2: Material production (mills, weaving, knitting, dyeing, washing)
- Tier 3: Raw material processing (yarn spinning)
- Tier 4: Raw material sourcing (farming, ginning, forestry)

Ralph Lauren split its facilities into two categories, the first being manufacturing and processing facilities, and the second being owned and operated facilities. The company partnered with the World Wildlife Fund (WWF) to create a comprehensive water risk analysis on its identified Tier 1 factories and subcontractors, and Tier 2 fabric mill facilities. Within its identified Tier 1 and Tier 2 facilities, Ralph Lauren was able to quantify its total water footprint to be 11 million cubic meters. It used data collected from the commonly used Higg FEM index to evaluate the sustainability metrics (including water usage) of 270 Tier 1 facilities and 186 Tier 2 fabric mills. Its total water footprint, while encompassing a lot of verified reported data, only accounts for its identified Tier 1 and Tier 2 operations and does not specify as to which production

[67] Levi Strauss & Co., n.d.
[68] Bass et al., 2010
[69] Ralph Lauren Corporation, n.d.

processes are included in these tiers. Visibility, and thus water usage data into its production processes beyond Tier 2, such as Tier 3 or Tier 4 operations, was not specified.

The key finding to note here for comparison with Everlane's water footprinting is that Ralph Lauren has not yet quantified its water usage for facilities at the raw material processing and sourcing stages. Ralph Lauren does mention its ongoing plans to increase their supply chain traceability, with physical and digital traceability methods.

Tapestry

Tapestry is a global apparel holding company that includes luxury brands such as Coach, Kate Spade, and Stuart Weitzman. In its 2023 Corporate Responsibility Report,[70] Tapestry presented its 2022 total water usage for its Tier 1 and Tier 2 supply chain productions. The company gathered data using Higg FEM and Leather Working Group data reports from its suppliers. Based on the 119 reports it received from both of these indexes, the company calculated its water usage for these facilities to be 3.8 million cubic meters. Most of this water was found to come from municipal sources (62%) and then groundwater (13%). These facilities were for all of the fabric types used in its productions. Of the 84 facilities that reported verified data to the Higg FEM index, it calculated the total quantity of wastewater to be approximately 1.9 million cubic meters. Of those reported suppliers, 11% of them indicated that they recycle or reuse some portion of their wastewater. Tapestry is vague in its definitions of supply chain tiers, stating that Tier 1 includes finished garment suppliers and Tier 2 includes raw material suppliers.

The key finding here is that there is no clear distinction between their supply chain process tiers and no mention of anything beyond Tier 2.

Supply Chain Mapping

When assigning textile production processes into relevant production tiers, we used the categorization shown below in Figure 1 to inform our identification of Everlane's supply chain. We included the textile production processes from the Higg FEM Reporting Index and assigned those processes into tiers based on Everlane's specific supply chain. It is worth noting that extracting supplier data from manufacturing and production processes is mostly self-reported and highly subjective.

[70] Tapestry, 2024

Textile Supply Chain Processes

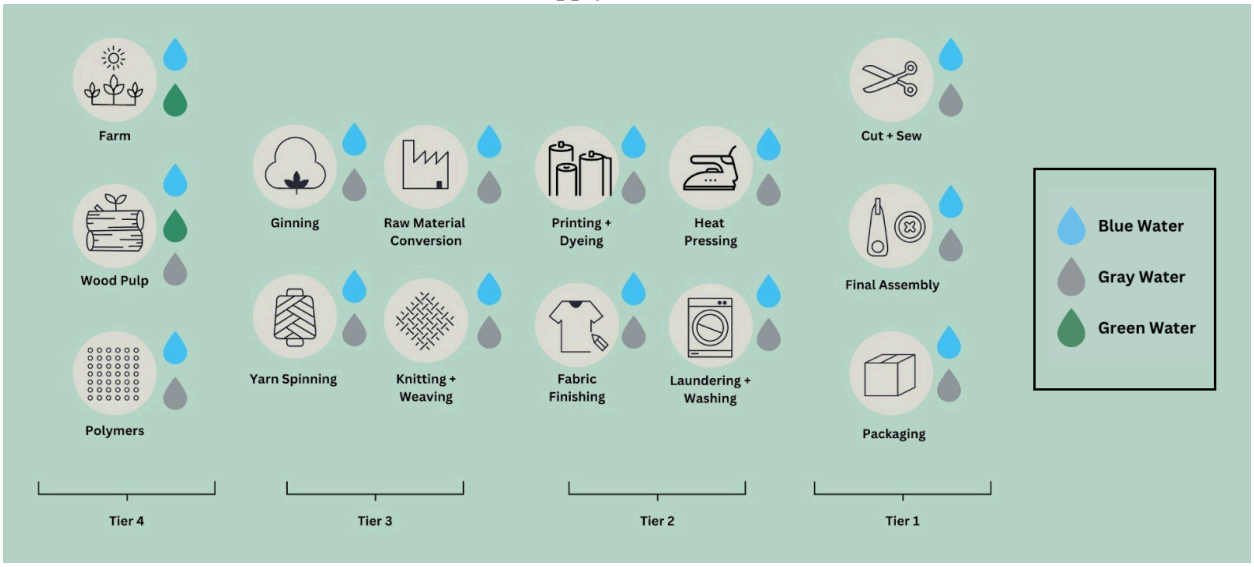


Figure 1: A generalized map of a supply chain for the apparel manufacturing process, including associated water inputs The map moves in descending order, from the origin of materials to the creation of the product (e.g., Tier 4 to Tier 1).

Everlane's Supply Chain Tiers:

To understand where to assign the above processes into Everlane's specific supply chain tiers, we assessed the various process steps that each of its suppliers reported being responsible for. To do so, we mapped the supply chain to understand where each supplier resides in the supply chain. We looked at Higg FEM reports from Tier 1 and Tier 2 suppliers with which they have direct contact to assess the manufacturing and production processes indicated by each of its facilities. Although we were not able to gather information directly from Everlane's Tier 3 suppliers, there are still production processes in the Tier 3 phase that are accounted for in our initial Tier 1 and Tier 2 supply chain map. This is because some of Everlane's Tier 2 facilities are responsible for multiple production processes that may also fall into our defined Tier 3 category. **For this reason, the exact distinction between Everlane's Tier 2 and Tier 3 suppliers was unclear, which resulted in our rationale for grouping Tier 2 and 3 into one, broader tier category that we will refer to throughout the remainder of this report as "Tier 2-3."**

Throughout the process of categorization, it became clear that apparel production processes and tier categorization vary immensely depending on the company, its supplier partnerships, and the specific types of fabric material used in production. Because of this large capacity for variation, we relied on Everlane supply chain insights provided by our client and their specific supplier facilities. To sort the various production processes of Everlane's supply chain with specificity beyond what Everlane could provide us, we looked to the literature for definitions and where to place each production process within the supply chain.. By defining the supply chain processes, and combining Everlane's insights with literature-specific definitions, we came up with the following supply chain categorizations:

Tier 1:

Cutting/Skiving: cutting finished fabrics or thinning pieces of leather or plastic.[71]
Sewing: stitching together components of fabric either by hand or by machine with needle and thread.[72]
Assembly: finished fabrics assembled and sewn together to become the final product, including sizing, orientation, etc.[73]
Packaging: once garments are manufactured, they are packaged and distributed.[74]

Tier 2-3:
Coating/Lamination: processing materials to be able to accept dyes and functional chemicals, multi-step process, different for each type of fiber.[75]
Dyeing: imparting color to fabric (a wet process that includes the processes of singeing, desizing, scouring, bleaching, and mercerizing*).[76]
Fabric Finishing: making fabric to give a lustrous appearance to textile.[77]
Heat Pressing: binding of pigment to textile for later printing.[78]
Laundering/Washing: using wetting agent and detergent to emulsify and remove impurities[79].
Printing: a viscous form of dyes and pigments applied to the fabric to prevent migration of dye.[80]
Knitting: yarn is bent into loops, then interlooping of more or one yarn.[81]
Weaving: a method where two sets of yarn or threads are interlaced to form fabric or cloth.[82]
Yarn Spinning: making yarn from fibers, fiber drawn out, twisted, and wound onto the bobbin, until they come together to form yarn.[83]

Tier 4:
Raw Materials Production: unprocessed raw materials (cotton, oil, etc) altered to be usable in textile manufacturing, i.e., cotton cultivation and ginning[84]; polymer production for polyester thread.
Agriculture/Farming: growing cotton, irrigation processes, pesticide usage.

We recognize that specific definitions of production processes in the textile industry vary greatly and are interpreted differently. Mapping the supply chain helped to interpret our data collected from suppliers, and more readily locate where in the supply chain we may be missing crucial information or have any significant gaps.
*We ran into some uncertainties while sorting the following processes into tier categories: bleaching, scouring, desizing, singeing, and mercerizing. While conducting our literature review of the textile production chain, we noticed that there was not one clear way to assign these processes to a specific tier. For our analysis, we decided to sort these processes into our "Dyeing" process, assuming that they are all a part of the pre-treatment phase of wet processing.

[71] Ibid.
[72] Ibid.
[73] Kiron, 2013
[74] Ibid.
[75] ChemSec Textile Guide, n.d.
[76] Varadarajan & Venkatachalam, 2016
[77] Ibid.
[78] Kumar & Gunasundari, 2018
[79] Ibid.
[80] Ibid.
[81] Kiron, 2014
[82] Patel, 2020
[83] National Cotton Council of America, n.d.
[84] Sayed, 2015

Methods

Scope

Focus Materials: In this section, we outline our methodology for creating the water footprint analysis, including material selection, system boundaries, and data collection. Everlane's top three most significant fabrics in production that are the focus of this footprint are:

- Cotton (including organic, regenerative, and recycled),
- Polyester (including recycled), and
- Man-Made Cellulosic Fibers (MMCF), which include lyocell, viscose, acetate, modal, and triacetate.

After establishing the scope of our material analysis, we determined our water footprint methodology using, the following methods as a framework:

- Life Cycle Impact Assessment (LCIA) involved in a Life Cycle Assessment (LCA)
- The Water Footprint Network's Water Footprint Approach (WFA)

Choosing which of these two methods to use for a water footprint assessment was dependent upon the end goal of the assessment. The Water Footprint Approach is typically carried out to introduce improved water management practices within a company or industry and highlight areas of water risk within regional water basins. The Life Cycle Impact Assessment (LCIA) approach, part of an overall Life Cycle Assessment, is used to compile the inputs, outputs, and potential environmental impacts related to water that could arise from industry processes.[85] With this approach, multiple impact categories are identified and analyzed in an attempt to better understand the specific consequences of water usage on the environment. While both methods are valuable tools for increasing water usage awareness in the industry, for our project and scope, we decided to use the WFA. A primary goal for the outcome of this assessment is to improve water management and find areas to improve upon sustainability practices across Everlane's supply chain.

After reviewing concepts in both the LCA and WFA methods, we decided that our analysis would draw upon LCA concepts to inform the scope, such as establishing system boundaries; however, relying on an LCA approach alone was not sufficient for our analysis because it has temporal and geographical limitations. Geographical hot-spot analyses are not widely conducted in existing literature due to the difficulty of gathering detailed data from an entire supply chain. However, we determined that a critical component of calculating a water footprint for Everlane's supply chain was measuring the water scarcity indexes of all of the relevant facility locations. Since Everlane has partner operations in many different countries spanning the globe, we considered how the differences in climate and environment can impact water resources in a given region. A WFA seeks to be spatially explicit in its results, therefore, combining the LCA methodology with the WFA methodology was needed to ensure regional data specifications.

System Boundary: Concepts of an LCA's product system boundaries were used to help inform the boundary and scope of our water footprint analysis of Everlane's supply chain. When determining the system boundary of an LCA, the product system is further broken down into a foreground system, which includes primary system data and secondary subsystem data. The primary system is composed of activities and processes that directly relate to a product's (or in this case a fabric's) major life cycle stages such as manufacturing, utilization, and disposal or recycling.[86] However, for the scope of our analysis, we

[85] Yang et al., 2020
[86] Li et al., 2014

chose to omit the use phase and end-of-life product phase. The secondary (auxiliary) subsystem data of an LCA includes processes that directly interact with the primary system but may extend further out from the main process sequence.[87] Some of the prominent textile production processes, such as fabric finishing, may have multiple auxiliary applications that are not accounted for in our definition of "fabric finishing." For example, fabric finishing sometimes comes with the auxiliary process of softening or waterproofing, but that is not included in our definition of fabric finishing. Not every textile production process is defined the same way across the entire industry, therefore, it is expected that some of the process applications and components used in an overall process may be excluded, based on the process definitions we define for our analysis.While our analysis does not include auxiliary, secondary systems, we do include a primary, more linear system boundary that represents the textile supply chain tiers.

When deciding the boundary for the Everlane-specific water footprint, the focus was set to be on material and manufacturing processes within the supply chain, specifically from their Tier 1 through Tier 4 operations. Any other material within Everlane's production was not considered in this water footprint analysis, including energy, packaging, and transportation. We also prioritized quantifying the total amount of water withdrawn from each significant production process of the three materials and decided to omit other environmental impact categories outside of water use that a typical LCA approach would normally include. Additional contributing factors that were excluded from this analysis are as follows: packaging, recycling end-of-life garments, electricity, heat, and transportation. Future analysis, which was beyond the scope of this water footprinting project, could analyze the other environmental impacts of each material's production process.

Information Needed: Through extensive background research and familiarizing ourselves with Everlane's textile production processes, we identified the information needed to estimate and aggregate the blue, gray, and green water footprint for each of the three priority materials, cotton, polyester, and MMCFs, across each tier of production.

I. Supplier identification data: To filter and sort Everlane's suppliers, we needed identifying information such as facility names, addresses, and parent companies (if applicable).
II. Supplier water usage data from each material's production chain processes at each tier of the supply chain, including:
    - Fiber production: agricultural cultivation, ginning
    - Material production: knitting, weaving, yarn spinning
    - Wet processing: dyeing, printing, finishing
    - Final product assembly: cutting, packaging, sewing
III. Blue, gray, and green water usage data at each production process for each fabric material was quantified in *liters per kilogram*. For calculating the blue water footprint, we needed to gather information on total domestic and industrial water usage at each production process for each fabric material. For calculating the gray water footprint, we needed to gather information on wastewater quantities from each production process, as well as wastewater treatment technologies. For calculating the green water footprint, we needed to gather data on the amount of water used as precipitation and evapotranspiration for raw material production, on a region-specific basis
IV. Specific geographic regions of each supplier facility to conduct a spatially explicit water risk assessment and understand the implications of water usage in those at-risk areas:
    A. In the form of geo-coordinates, or specific facility addresses.
    B. Identify associated river basins or catchment areas
V. For any data gaps that we are unable to fill using primary data collection sources, we will rely on previous literature for analogous data estimates

[87] Ibid.

Knowing exactly which information we needed to acquire enabled us to establish a plan to collect and process data to determine the processes and materials with the greatest water impact, provide recommendations for reducing water use, and identify the geographic areas with the greatest water stress and risk. This analysis also sought to provide product-specific information for Everlane.

Data Collection & Processing

Data Hierarchy:

To complete a thorough water footprint analysis of Everlane's supply chain, we compiled data using various sources and industry tools, which we show in our "data hierarchy" visual (Figure 2). Understanding the data hierarchy is important when considering the multiple phases of data collection we completed. We began by collecting as much primary, verified data as possible, using verified reports from the Higg FEM index and also primary supplier data directly from Everlane. After analyzing that data first, we assessed which information we needed to obtain. We then built a comprehensive survey to collect additional, unverified primary data from suppliers; data not included in our initial sources. After using both of those primary data collection methods, we completed a gap analysis to supplement missing data using literature. We also used literature to conduct a "reality check" of collected data, where we compared found quantities against apparel industry standards. We lay out each step of the data collection process in the following section, organized into six "phases."

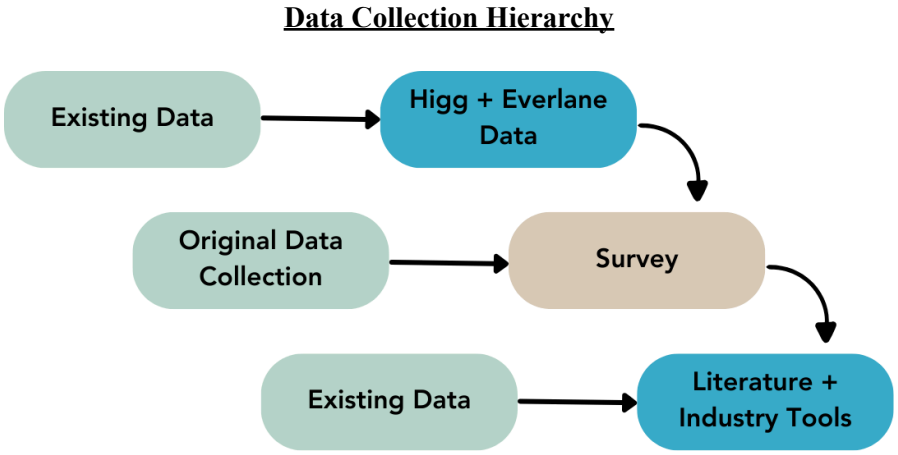


Figure 2: The hierarchy of the data we collected, in order of priority: 1) existing, verified data from Higg FEM and Everlane, 2) unverified data collected from the supplier surveys, and 3) third-party data from literature review and industry averages.

Data Collection Phases:

Figure 3 below depicts a flow chart of our data collection process. This visualization gives a high-level overview of the various collection phases we conducted. Each phase is described in detail in subsequent sections.

Data Collection Flow Chart

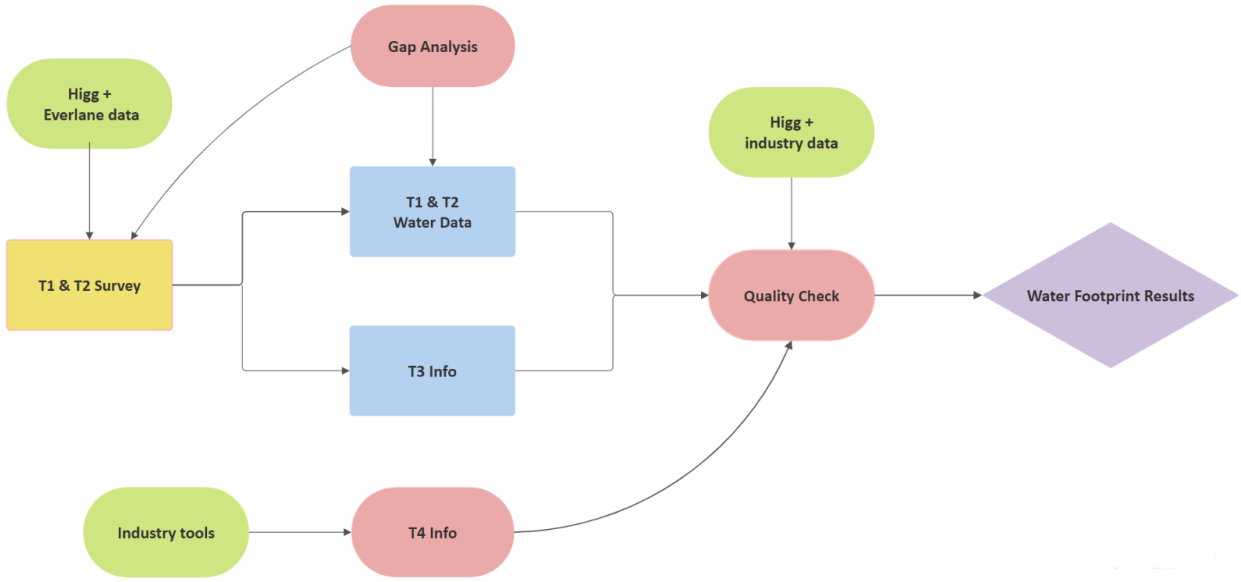


Figure 3: A visualization of the steps taken to gather, process, and analyze the supply chain and water footprint data for Everlane's suppliers.

Phase 1: Understanding existing data

Before we began to reach out to Everlane's suppliers and request specific information to create the water footprint, we needed to understand and make sense of the data that already existed. This included gathering all of the primary data on Tier 1 and Tier 2 suppliers that we received directly from Everlane. Additionally, we gathered 2022 supplier reported data from the Higg FEM Index before we began our supplementary collection.

We prioritized obtaining the most recently completed report data from suppliers, which would have been for the 2022 year since we began this project in 2023. However, there were some instances where the supplier's 2022 data was not readily available, so we resorted to using the next most recently reported data. Overall, we gathered supplier data from Higg FEM for years spanning 2020-2022. To maintain consistency between our supplier survey and the Higg FEM assessment, we used the same question categories and format included in the FEM Index as a basis for our data collection.

Everlane Supplier Data:
Everlane provided us with data from its production bill of materials for 2022, which included a comprehensive list of its purchases. Among the relevant metrics were the product's material content, yield, origin, weight, and consumption. The definitions for these terms are as follows:

- **Total Quantity:** Quantity purchased, measured in whole units.
- **Finished good yield:** Amount of finished good material, measured in either length, weight, or area. Length was in yards or meters, weight was in kilograms, and area was in square meters.
- **Material Content:** The composition of the product, measured in percentage.
- **Product Weight:** Per unit weight of the item, measured in pounds.
- **Finished Good Supplier Information:** The name of the Tier 1 supplier who sent Everlane the product, their associated parent company, and country of origin.
- **Fabric Mill Information:** The name of the Tier 2 supplier linked to the Tier 1 supplier and their country of origin. One product would have a Tier 1 and Tier 2 supplier associated with it.

- **Free on Board (FOB):** In industry practices, it would be the amount paid by the liable party in the case of loss or damage of products. For our analysis, it was a proxy used to gauge the total value of a product or shipment and is referred to as “Consumption” in monetary units.
- **Total Apparel Weight:** The total weight for each batch of products ordered. It is the “Total Quantity” multiplied by the “Product Weight."

One of the most important filters for our analysis was the Material Content information. The original dataset spanned the entire fabric portfolio Everlane offers, from our three scope materials to those not included in our analysis, such as nylon, elastane, and animal products (wool, leather, cashmere, etc.). Any product containing a material within our scope was included in our analysis. We specifically distinguished organic cotton, recycled cotton, and recycled polyester from their conventional counterparts due to the significant differences in water needed to manufacture them. For the comprehensive list of specific materials that qualified for inclusion in our analysis, refer to Table 6 in Appendix F: Fabric Category Key.

The list of purchased products was our main point of reference for Everlane’s production and suppliers. Address data was incomplete for Tier 1 and Tier 2 suppliers, with 96% of Tier 1 suppliers had address information, while Tier 2 had 50%. We used this information later to cross-reference the results from our T1-T2 survey. To clean the data, we filtered out materials that were not within our scope and not in the year 2022. The result was a list of product information and suppliers who qualified for our analysis.

Everlane Supplier Higg FEM Reports:
In addition to the list of suppliers created from Everlane’s purchased products, we were also granted access to the company’s Worldly portal where the Higg FEM reports are stored. The FEM reports contain data on the operations of a facility, many of them verified by Higg/Worldly. Because of the access to this data, we created an additional filter for suppliers who reported data to Higg FEM and were verified by a third party. This added an extra layer of validity to the data and allowed us to compare the information reported there to what was reported in our survey. It is important to note that not all of Everlane’s suppliers report to Higg FEM, and not all of those who reported had shared their specific supplier identifier code with Everlane. Only through our survey and analysis could we demarcate which suppliers report to Higg FEM and/or share that information with Everlane.

Phase 2: Tier 1 and Tier 2 Supplier Survey

After compiling the existing data we had access to, we were able to gain a better understanding of the data gaps that needed to be filled. To gather this needed information, we created a comprehensive survey geared toward Everlane’s finished garment and fabric mill manufacturers. This survey was strategically built and included questions that would give us the necessary information for water quantification of each facility’s processes, and help us to gain more visibility into their supply chain.

Building the First Survey to Tier 1 and Tier 2 Suppliers:
A comprehensive survey was created to send out to all of Everlane’s Tier 1 and Tier 2 suppliers that it has direct partnerships with. The Qualtrics XM survey builder tool was used to synthesize the survey questions, while using various conditional formattings and structures. Using this platform allowed us to monitor the survey responses in real-time as they were submitted, and download the results into digestible formats for data analysis. To create this survey, we completed the following actions:

1. **Build the Survey:** Using extensive literature review and industry research to support the outline of our questions and needed information, we built the survey using the Qualtrics XM platform.
    a. We used existing supplier data from the Higg FEM reports in Worldly as a tool to inform which questions to ask Everlane’s suppliers that did not report their water usage, as a method to keep the industry standard consistent throughout our analysis.

b. We created a comprehensive survey to send out to Everlane's Tier 1 and Tier 2 suppliers, with whom they have direct contact, to gather specific data on their blue and gray water usage within their facilities. This survey also served as an attempt to map their supply chain further upstream by asking the suppliers to provide contact information on their yarn/ raw material suppliers. Considering that a Tier 2 facility indicated in the survey the names of the facility that provides them their raw fabric materials, we would mark this new supplier contact as an Everlane "Tier 3" supplier.
c. We also considered other industry surveys that apparel companies used to gather data and production process information and consumption from suppliers: We took inspiration from water-related questions and formatting used in the CDP 2022 Water Security Reporting Guidance[88] and also the Cere's Supplier Self Assessment survey for Building the Foundation for the Sustainable Supply Chains.[89]

2. **Peer-Review & Send:** After the survey was sufficiently built and peer-reviewed by faculty members, we sent it out to all of Everlane's Tier 1 and Tier 2 suppliers that they have direct contact with.
3. **Track & Report:** We kept track of the survey responses through the Qualtrics platform and the use of personal links and set a deadline for survey response collections.

Number of survey questions: The survey includes 5 sections: Introduction, Water Usage, Wastewater Discussion, Energy Usage, and Supply Chain Mapping. Including the sub-questions, there were a total of 67 questions asked. We created a guide to help suppliers complete the survey, which can be found in Appendix D: Tier 1/Tier 2 Survey Guide.

Nature of questions: Our survey was directly inspired by and mirrored the format of the Higg FEM index as a way to gather information in a manner consistent with the apparel industry reporting standards.

1. Blue water quantities
    1. Municipal
    2. Surface
    3. Groundwater
    4. Collected rainwater
    5. Produced/processed water
    6. Unknown origin
2. Green water quantities
    1. Any water data on irrigation processes for crops
    2. Country of crop origin at the least
    3. Gray water quantities
        1. Industrial wastewater
        2. Domestic wastewater
        3. Treated onsite or offsite?
            1. Treat water before or after disposal?
        4. Type of treatment
        5. Pollutants in wastewater & concentration
        6. Zero liquid discharge system Y or N
        7. Recycle wastewater Y or N
            1. If so, what %?
    4. Facility type
        1. Type of products
        2. Types of specific processes

[88] CDP, 2022
[89] Augustine et al., 2012

3. Types of materials
4. Annual volume of product produced
5. City location
6. River basin nearest

5. Other miscellaneous
    1. Sustainability certifications
    2. Number of employees
    3. Information/contact info on where Tier 2 gets their supplies from
        1. To try to map the supply chain back to Tier 3

Specific considerations:
Gaining Visibility: In addition to these water-related questions requested of suppliers, the survey also contained a section to map Everlane's supply chain through Tier 4, using a cascading approach. Since Everlane does not have direct relationships with their Tier 3 and Tier 4 suppliers, and collecting water use data from these tiers to ensure the most comprehensive footprint was critical, we had to be strategic in our efforts to map upstream. In alignment with Everlane's specific supply chain and sourcing facilities, we included a question that required each respondent facility to choose from a series of Everlane "fabric codes", unique codes that Everlane's associated Tier 1 and Tier 2 facilities use for material makeup identification. The Everlane fabric material codes are a series of letters and/or numbers used to uniquely represent the material content makeup of an Everlane fabric. These are then used for consistency and traceability to source all of Everlane's associated fabrics back to a specific Tier 1 or Tier 2 supplier. For example, a fabric code such as "GAN" indicates 100% organic cotton. If a supplier indicates that they produce this fabric code, then we can confidently determine that that same supplier supplies Everlane organic cotton.

Using the fabric codes to link each of Everlane's Tier 1 and Tier 2 suppliers to their operations was a precise strategy to map the supply chain, and ultimately make strides towards their goal of increased visibility. We also included questions that requested the Tier 1 and Tier 2 respondents to indicate the contact information of the facilities where they source their yarn or raw materials. These contacts were then assumed to be Everlane's "Tier 3" suppliers and added to our efforts to map deeper into their supply chain.

Verification: Another specific consideration worth noting is that this survey was not third-party verified, and thus there was no verification system in place to ensure a respondent's accurate response. Higg FEM-verified versus unverified data is captured in Figure 6 to help address this limitation.

Phase 3: Gap Analysis

After sending out the survey to all of Everlane's Tier 1 and Tier 2 facilities, we closely monitored the responses submitted. We set a specific deadline for survey response collection, to stay in alignment with our timeline and to continue to move through the next steps of data collection. We kept the survey open and tracked responses for approximately 3 months before cutting off submissions. Once we had all of the initial survey responses, we calculated two overall response rates: one based on the number of survey responses received, and one based on the overall weight consumption of Everlane-purchased products from its suppliers. We then identified data gaps and developed a process to fill them.

Purpose: We needed to ensure that all relevant production processes of Everlane's textile supply chain were being represented by the suppliers who either answered the survey or reported to Higg FEM. If there were significant gaps in the representation of certain processes' water usage or in a supplier that contributes a large portion to Everlane's supply, then we needed to reach back out to them and request more information.

Process: Of the suppliers who did not report either to the Higg FEM index or through a survey response, we needed to ascertain which ones to prioritize gathering information from, based on our significance threshold and top three materials. The following gap assessment only considered Tier 1/Tier 2 suppliers that fell within our scope of materials production; if a supplier did not produce or supply either cotton, polyester, or MMCFs to Everlane, it was excluded from the remainder of this analysis. If a Tier 1 or Tier 2 facility within that materials scope contributed over 1% – our chosen significance threshold – to Everlane's total products purchased of fabric by weight (kg) in 2022, we counted it as a "significant supplier." The following steps outline our gap analysis process.

1. The first survey was sent out to a total of 177 different email addresses each with unique survey links. These contacts consisted of all of Everlane's Tier 1 and Tier 2 facilities that they have direct contact with, and some facilities had multiple points of contact that we reached out to. These facilities were responsible for any type of fabric or yarn material that Everlane uses.
    a. 134 total Tier 1/Tier 2 supplier facilities for Everlane's 2022 year, 50 Tier 1 and 84 Tier 2.
2. After the survey was sent, we filtered out all of the suppliers who were outside of our scope materials and proceeded with the non-responders who fell within our scope to focus on reaching back out to encourage a response.
    a. 95 total supplier facilities in our material scope, 36 Tier 1 and 59 Tier 2.
3. We then assessed how many suppliers within our priority material scope we received data from, either in the form of a Higg FEM report or a response to our survey. To find out which suppliers we still needed information from (those who did not respond to our survey and who also did not report to Higg FEM), we cross-referenced the survey response data we received directly with the Higg FEM reports Everlane received from suppliers who did not submit a survey. By using both of these methods of reporting, we were able to pull together a comprehensive list of the names of all suppliers who sent water usage reports to Everlane. Since our survey was built deliberately to mirror Higg FEM questions, the cross-referencing process was straightforward and consistent. This step was to gauge the overall respondent coverage and assess how large the missing information gaps were.
4. From this list of suppliers, we assessed which facility Everlane purchased the most products from, and therefore, had the most significance to Everlane's supply chain and water usage.
    a. The percentage threshold we used: 1% contribution to Everlane's total products purchased.
5. Of the missing data percentages found from the previous step, we focused on reaching back out to the no-response suppliers if they fell above the 1% significance threshold.
6. We then sent a follow-up email to all of these "significant" suppliers to gather data. We reviewed and incorporated their responses and reports.
7. If any of the "significant" Tier 2 suppliers did not respond, we then relied on an estimated percentage from the collected Tier 2 results to fill in their remaining gaps.
8. Finally, we performed a gut check using existing literature on textile production processes and their associated average water usage to compare the supplier's water usage data to the values found in research. This ensured that they were probable and accurate numbers.

Supplier Response Rate Results:

Out of the 177 surveys sent, a total of 109 facilities responded to the initial Tier 1/Tier 2 survey, a 62.7% response rate. These 109 suppliers use all types of fabric and yarn materials, not only our scope materials. Not all of the 109 responses were legitimate nor legible responses, some were mistakes, and some were ostensibly misinformed. Figure 4 shows the total survey response rate percentage from suppliers. After narrowing down the suppliers responsible for our scope materials, there were 95 total facilities to be included in our analysis for both tiers, 36 of them Tier 1, and 59 were Tier 2. Of these narrowed-down suppliers, 27 total Tier 1 facilities reported either to Higg FEM, survey, or both, and 30 total Tier 2 facilities reported(either to Higg FEM, survey, or both.

We calculated the respondent coverage for both Tier 1 and Tier 2, weighted by the percentage of product purchased by Everlane (in USD), for a better gauge of the respondent coverage of suppliers that Everlane relies on most. A visualization of this for both Tier 1 and Tier 2 can be seen in Figure 5. We found that the total Tier 1 respondent coverage for our scope material suppliers was 88.5% and 82.9% for Tier 2. We were unable to reach back out to the supplier percentage of missing information in Tier 1 (11.5%), as Everlane has since ceased partnerships with them. For the remaining Tier 2 missing data, we reached back out to a total of 7 facilities that fell into our "significance threshold." We received one response.

To ensure the validity of our data, we checked on the ratio of verified to unverified data. Verified included data that had been matched to the Higg FEM database and been validated by a third-party verification system. The non-verified data refers to data submitted by suppliers to the survey, but could not be matched to any Higg FEM report. An exact percentage breakdown of verification by count and by Everlane's product consumption can be seen in Figure 6 and Figure 7, respectively.

Tier 1 and Tier 2 Supplier's Survey Response Rate- By Number of Responses

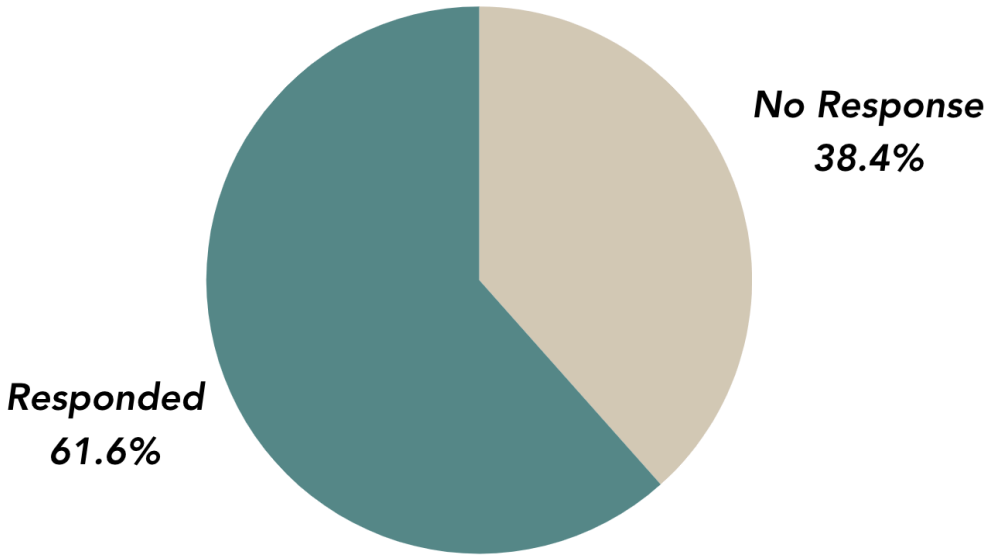


Figure 4: This pie chart shows the percentage of total Tier 1 and Tier 2 suppliers that responded to our initial survey, by number of responses. This is not weighted by product contribution to Everlane. Out of 177 unique survey links sent, we received 109 (61.6%) responses.

Scope Materials Only (Cotton, Polyester, MMCFs): Tier 1 & 2 Suppliers that Reported By Consumption (in dollars)

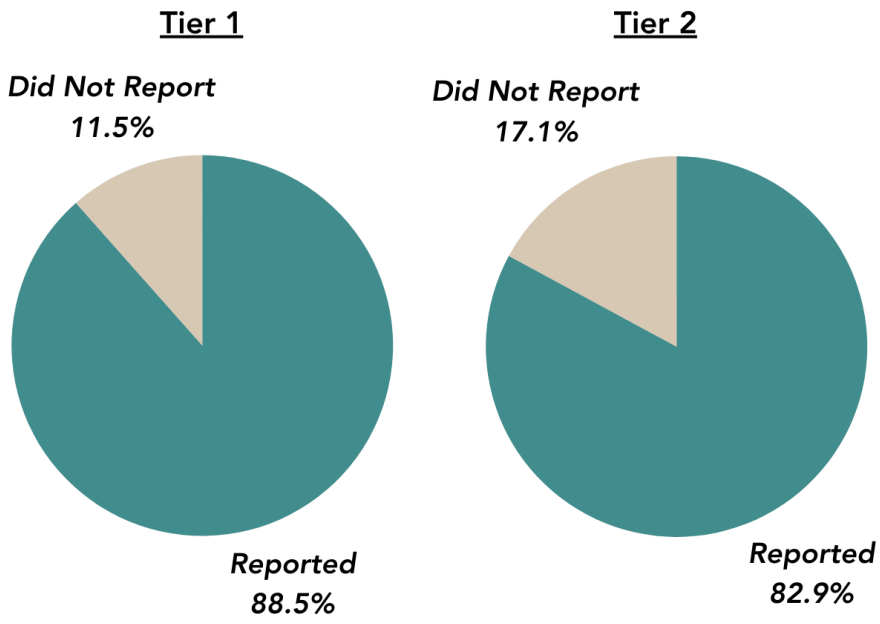


Figure 5: Tier 1 suppliers who reported data to either Higg FEM or the supplier survey, weighted by consumption of the amount Everlane spent on fabrics/garments from Tier 1 (USD). This conveys visually that a majority of the responses received from Tier 1 suppliers represent those from which Everlane buys the most products. From this interpretation, we received data from suppliers that encompass 88.5% of Everlane's total products purchased in 2022. Tier 2 suppliers who reported data to either Higg FEM or the supplier survey, weighted by consumption of the amount Everlane spent on fabrics/garments from Tier 2 (USD). This conveys visually that a majority of the reports received from Tier 2 suppliers represent those from which Everlane buys the most products from. From this interpretation, we received reports that encompass 82.9% of Everlane's total products purchased in the 2022 year.

Percentage of Verified vs. Non-verified Data Reports by Supplier Count

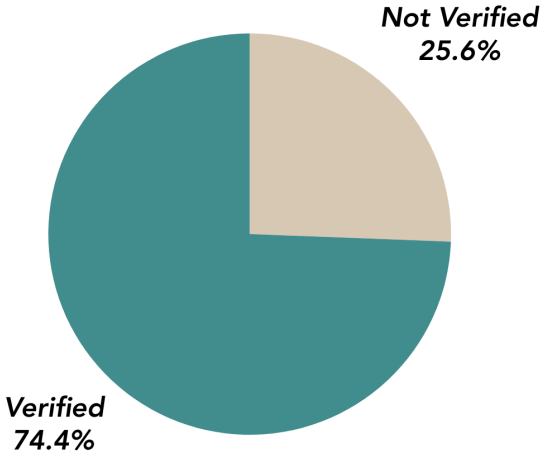


Figure 6: Percent verified of the priority fabric Tier 1-2 suppliers who reported data directly to either our survey or Higg FEM. Of all of our reported data incorporated into the water footprinting calculations, 74.4% has been verified

by a third party through Higg FEM. 25.6% of the data is supplier-reported and is not verified. This may either lead to a smaller footprint/water usage for those who responded incorrectly to our survey or a larger water footprint for each fabric if the suppliers reported underestimations of their actual water use.

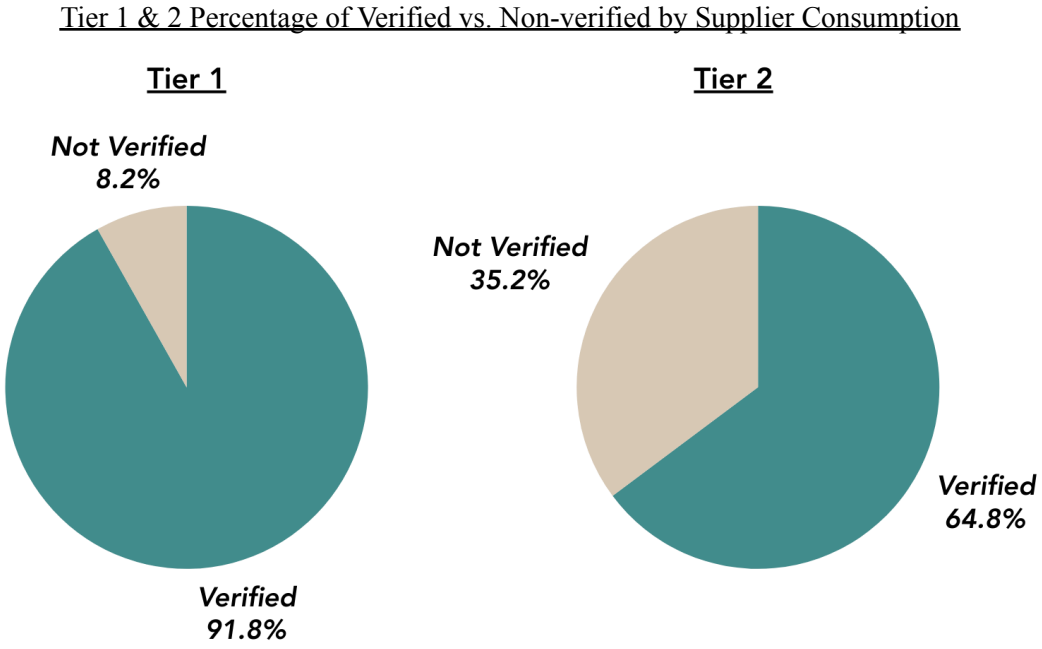


Figure 7: Percent verified of the priority fabric Tiers 1 and 2 suppliers who reported data directly to either our survey or Higg FEM. Of all of our reported data incorporated into the water footprinting calculations, 91.8% has been verified by a third party through Higg FEM. 8.2% of the data is supplier-reported and is not verified in Tier 1. For Tier 2, 64.8% has been verified by a third party through Higg FEM. 35.2%% of the data is supplier-reported and is not verified. This may either lead to a smaller footprint/water usage for those who responded incorrectly to our survey or a larger water footprint for each fabric if the suppliers reported underestimations of their actual water use.

Limitations: There were some limitations we faced while following up with Tier 1 and Tier 2 significant suppliers. There were a few suppliers that no longer worked with Everlane after the 2022 year, or were no longer in business. For these, we estimated values based on final water footprint calculations and the amount of contribution to Everlane based on fabric consumption weight. We then estimated the water footprint for this percentage as part of our overall calculation.

Another prominent gap in our analysis that we were unable to fill was the continued non-responses from priority suppliers. Even after multiple attempts to reach out and collect data from facilities, a few never responded. These gaps were accounted for through estimations and using data from reported facilities that had similar production processes and materials sourced.

To ensure the validity of our data, we checked on the ratio of verified to unverified data. Verified includes data that has been matched to the Higg FEM database and been validated by a third-party system. The non-verified refers to data submitted by suppliers to the survey, but could not be matched to Higg.

Phase 4: Tier 3 Survey

The next phase in data collection was to gain visibility and collect information from Everlane's Tier 3 suppliers. Everlane has no direct contact with their Tier 3 facilities, so obtaining contact information

posed a challenge. While our analysis grouped Tier 2 and Tier 3 processes into one combined stage of Tier 2-3 because of the likelihood of production process crossover, we still deemed it important to gather as much data as possible from Tier 3 suppliers. Thus, we created a second survey targeted to Everlane's Tier 3 suppliers, whose contacts we gathered from the first Tier 1/Tier 2 survey. The following steps were taken to build the survey to Tier 3 suppliers:

1. We went through the collected Tier 1/Tier 2 survey submissions and looked at the responses filled out by each facility in the fabric sourcing portion of the survey. In this section, we asked respondents to fill in the facility name and contact information of where they source either their yarn or raw materials. These were the contacts that we assumed to be Everlane's "Tier 3 suppliers." These were also all-new facility contacts for Everlane, as they did not have any prior direct relationships with their Tier 3 suppliers. Figure 8 below is an example of the sourcing material question that a respondent was given during the Tier 1/Tier 2 survey, to gain visibility into Tier 3 facilities.

2. After sorting through the new "Tier 3" contacts indicated in the first survey that were within our scope materials, we compiled a list of a total of 17 relevant Tier 3 suppliers to target.

3. We replicated the format of the Tier 1/Tier 2 survey to build the Tier 3 survey, but modified wording and format since these Tier 3 suppliers would not have been aware of their contribution to Everlane, and thus would not have knowledge of or use any of the Everlane Fabric Codes that their Tier 1 and Tier 2 suppliers used.

    a. We used Higg FEM questions as a mirror for best industry standard practice. Refer to Appendix B: Higg FEM Questions and Glossary.

    b. The most crucial aspect of the survey that we ensured to keep intact was the facility water usage questions since a breakdown of each facility's water usage throughout Everlane's entire production chain is our ultimate goal. Refer to Appendix E: Tier 3 Survey Guide for the guide we sent to suppliers to help complete the survey.

4. To distribute the Tier 3 survey, we emailed the 17 suppliers we were seeking data from. Since none of these facilities had any sort of direct partnership or relationship with Everlane, direct communication with these manufacturers was articulated differently than communication to the first two supplier tiers. We composed an email targeted to these new contacts with language reflecting the unknown, perhaps seemingly random, connection and explained how Everlane and that Tier 3 facility are mutually connected (through the facility that purchases its yarn or raw materials). We were aware and expected that some of these contacts may not have responded, since Everlane was not a known partner in their value chain.

5. To establish trust with these new suppliers, we stated explicitly how we obtained their information. Within the email, we emphasized that we found their contact info from the mutual Tier 2 Facility "X", who indicated that they source their textile material(s) "X" from this contact. We were only concerned with yarn or raw material production processes for the Everlane relevant material "X", even if the facility produces other materials "Y" and "Z" that are outside of our materials scope.

6. We monitored submissions for a month. After one month, we ended the survey data collection period to stay on track with project timelines. Out of the 17 Tier 3 facilities contacted, we received survey responses from three facilities.

Survey Question For Mapping out Fabric Sources

For fabric code BCE, please provide as many yarn facility details as you can for each of the material contents.

The fabric content materials are already sorted out based on the fabric code you indicated (under column headers "Supplier #1" a fabric material such as "Cotton" will be listed, etc.), please fill in as much information as you can about the yarn supplier for the listed materials. If there is more than one supplier for a material that you source from, please fill in the additional, empty supplier columns and indicate which fabric it is for in the empty "fabric content" row.

For manually adding in additional fabric content please choose between one of these options for each supplier:
Cotton, Polyester, Viscose, Lyocell, Modal, Acetate, Triacetate, Wool, Elastane, Linen, Hemp, Cashmere, Silk, Nylon

	Supplier #1	Supplier #2	Supplier #3
Fabric content	Cotton	Elastane	Cotton #2
Name	Cotton Yarn Inc	Elastane Yarn I	Cotton #2 Inc.
Address	123 Cotton Dr.	123 Elastane D	321 Cotton Dr.
City	Los Angeles	Bangkok	Hanoi
Country/region	California	Thailand	Vietnam
Contact info	cotton@gmail.c	elastane@gma	cotton2@gmail

Figure 8: Tier 2 respondents selected the Everlane fabric code "BCE" that they use, and that fabric code consists of X% cotton and X% elastane. For each of those materials, the Tier 2 respondent indicated the facility name and contact info of who supplies them that material, which would end up being Everlane's Tier 3 supplier. For our scope and analysis, we used the contact info of the cotton Tier 3 suppliers, and ignore the elastane Tier 3 supplier contact info. We used the cotton Tier 3 contact info to reach out with our second survey phase created specifically for Tier 3 suppliers.

Phase 5: Tier 4 Data Collection & Literature Review

The penultimate phase of our data collection from suppliers included gathering information from Everlane's raw material, or Tier 4, production processes. The raw material phase of a fabric is often not known or well connected with an apparel brand, as the production chain becomes farther removed and opaque the more upstream it gets. However, this phase is imperative to consider when examining the water footprint of an entire supply chain, since much of the water is used for raw material cultivation and agricultural processes. At the very least, knowing and understanding the region in which raw materials are grown and cultivated is useful to make the most accurate estimates based on region-specific water data. While we were unable to gain direct contact with Everlane's raw material suppliers (Tier 4), we did obtain access to some of their cotton raw material regional data from Everlane-provided Trade Certification documents. We used these Trade Certificates (TCs) and existing literature to assess water usage for cotton, polyester, and MMCFs at the raw material stage.

Trade Certificates:
The TCs that Everlane provided us with were verified documents that quantify the purchase of raw organic cotton material from a specific country/region by one of Everlane's suppliers. We received 114 total TCs representing Everlane's organic cotton raw material purchases. Some of these purchase transactions came from the same raw material supplier, so the actual number of unique organic cotton suppliers Everlane has is likely less than 114. These documents contained the exact weight of raw material that was purchased, and to what specific facility. They also gave details about which Everlane-specific garment the raw material was made into. The TCs we had access to were limited to only the organic cotton raw material, thus excluding the other priority fabric in our analysis (polyester and

MMCFs) and conventional cotton. However, since cotton comprises a majority of Evelane's production (70%) and organic cotton consists of 75% of its total cotton supply, these certificates were nonetheless beneficial and represented a majority of Everlane's total raw materials sourced.

The TCs did not contain information directly related to water usage, but using the weight of raw material for each purchase order and determining the average water usage of organic cotton cultivation in that specific country, we could estimate total water usage. Therefore, we could account for 70% of Everlane's total Tier 4 production water usage using this method. To account for conventional cotton water usage at the raw materials phase, we used the difference between conventional and organic cotton cultivation water usage and added it to the total cotton Tier 4 water footprint. 75% of total cotton is organic in Everlane's supply chain, so we added in the "missing" 25% from literature numbers of conventional cotton to quantify the entire cotton footprint. After completing the overall water footprint for cotton at the Tier 4 level, we began to quantify the water usage at this level for polyester and MMCFs.

Raw Materials Data for Polyester and MMCFs:
Since we were not able to obtain primary data on raw material water consumption for polyester and MMCFs in Everlane's supply chain, we had to rely on the existing literature. We found research publications that previously quantified water usage at the raw material phase for both polyester and viscose. Viscose, a type of MMCF, is the most commonly used MMCF and therefore has been researched more extensively. For this literature review, we assumed that values found for viscose would be similar for other types of MMCFs and would serve as a good representation, since most MMCFs are made from the same material- wood pulp. Wood production, wood processing, and pulp production are the main steps for creating a viscose fiber. The Water Footprint Network quantified the blue, green, and gray water footprints of a viscose staple fiber and filament.[90] We considered these values and methodologies while quantifying the raw material water usage of Everlane's MMCFs. In this same research, the blue, green, and gray water usage of the raw material phase of polyester was also quantified, and we used these values to conduct the raw material water footprint of Everlane's virgin polyester. To account for Everlane's recycled polyester, which makes up the majority of its total polyester usage, we found literature information regarding the difference in water usage between virgin and recycled polyester at the raw material phase. Recycled polyester overall uses around 32% less water in the raw material phase than virgin polyester.[91]

While verified, relying on industry research comes with its own limitations. We were not able to be region-specific in our raw material water calculations for polyester and MMCFs, since the literature we used was based only on one region (Brazil). This is not representative of all of the possible places and regions where Everlane may source its polyester and MMCFs. Data for these materials is unlike the information collected for organic cotton raw material, which was region-specific as it came from Everlane's trade certificates. We had to make various assumptions when calculating the water footprint.

Phase 6: Data Aggregation

Finally, we aggregated our data by combining datasheets from existing data, results from both surveys, and information from literature review into a cohesive format. Units of measurement were standardized to achieve consistency. For example, water quantity was set to cubic meters instead of liters due to the size of the footprint. In compiling our data, we were also able to share the product of our analysis with Everlane in a condensed manner. This will allow Everlane to analyze and build off of the data in the future.

[90] Freitas et al., 2017
[91] Qian et al., 2021

Mapping Everlane's Supply Chain

Using the data compiled from Everlane's suppliers that reported to Higg FEM or responded to our survey, we mapped Everlane's supply chain based on which apparel production process(es) the suppliers indicated they participated in. As explained above in Everlane's Supply Chain Tiers, we first conducted a literature review to understand where processes fit into supply chain tiers. Using this and data received from suppliers, we were able to map out their location and contribution along the supply chain. To aid this, we conducted an additional literature review of the textile industry's typical water usage quantities for each process. These findings served as a gut check, which enabled us to have confidence that Everlane's suppliers' quantitative reported data was similar to industry trends.

With an understanding of the processes covered by Everlane's suppliers, we then had to determine which processes fit within each supply chain tier. Tier numbering can change based on the supplier's location in the supply chain relative to the brand, and therefore there is no set industry standard that categorizes processes into tiers. Based on the Higg FEM options for facility-type textile processes and Everlane's specific suppliers' processes, we expanded upon our research to establish the following organization (from farthest to closest to Everlane in the supply chain, left to right):

Tier 3	Tier 2	Tier 1
Knitting	Coating / Lamination	Cutting
Weaving	Dyeing	Final Assembly
Yarn Spinning	Fabric Finishing	Finishing
	Heat Pressing	Packaging
	Laundering / Washing	Sewing
	Preparation	Skiving
	Printing	

From these textile production processes, we organized all of the reported suppliers into their indicated production process(es) using Excel. Commonly, one facility was responsible for multiple production processes that contributed to Everlane's supply chain. If this was the case, we flagged it for ourselves during our footprinting calculations to ensure we did not double-count their water usage contribution. To gauge whether or not we had a good representation of facilities reflected in all processes across the supply chain, we counted the number of facilities responsible for each production process within the tiers; we concluded that we had adequate representation. We excluded Tier 4 production processes in this mapping process since we were not able to reach out directly to Everlane's raw material suppliers, and therefore did not get visibility into these suppliers and their specific processes.

In Figure 9 below, the representation of each supply chain process is visually shown. Each Supplier ID has a corresponding number of dots that convey which supply chain processes it participates in, sorted by tier. For example, Supplier ID "CD34" indicated that they were responsible for multiple production processes, three falling into a Tier 1 category and two falling into a Tier 2 category. The highest visibility and representation in Everlane's supply chain is in Tier 1, and the lowest is in Tier 3. This was expected, since Everlane has direct transparency and relationships with all of their Tier 1 and Tier 2 suppliers, but

did not previously have contact with their Tier 3 suppliers. Therefore, mapping the Tier 3 suppliers was challenging, and even with our efforts, still did not enable us to gain full visibility.

Everlane's Apparel Production Process Representation

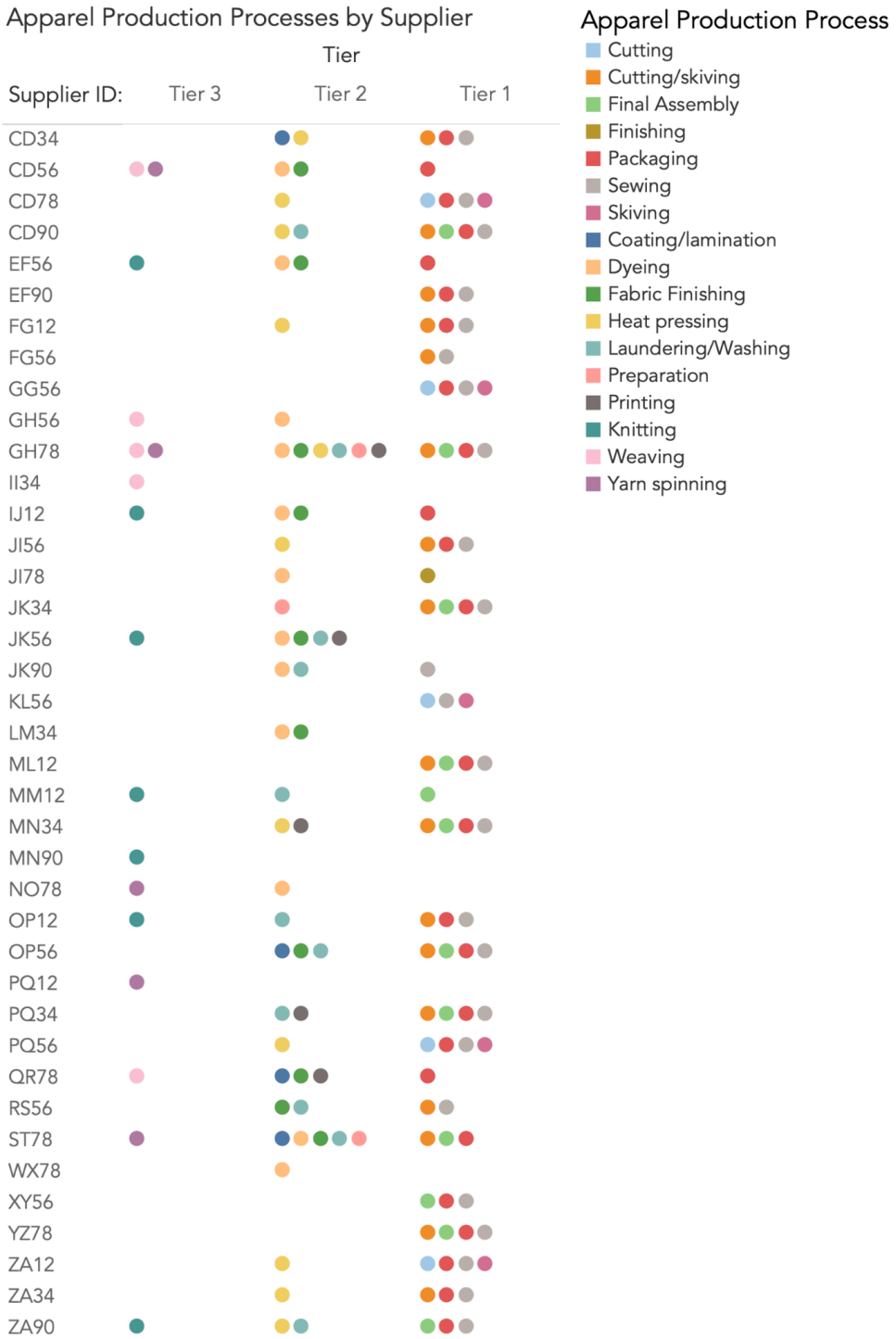


Figure 9: Each dot represents a production process that a supplier indicated they are responsible for. The supplier IDs are arbitrary letters and numbers to maintain anonymity of Everlane's supplier facilities. Most production

processes from Everlane's reported facilities fall into the Tier 1 category, and then the Tier 2 category, and the least amount of process representation is seen in Tier 3.

Data Analysis

Building Methodology

We created 3 visualizations of potential methodologies to use for calculating Everlane's overall supply chain water footprint. While all methodologies are reasonable approaches, we ultimately selected Methodology Approach #1 for our final footprint methodology.

The first concept map we created was a simplified representation of our first methodology, mostly to inform our survey design and ensure interpretable results from our suppliers. It shows how we put each tier's footprint into categories to calculate the total water footprint. Each tier has an individual blue and gray footprint, Tier 4 has a green Footprint as well.

Initial Water Footprint Methodology

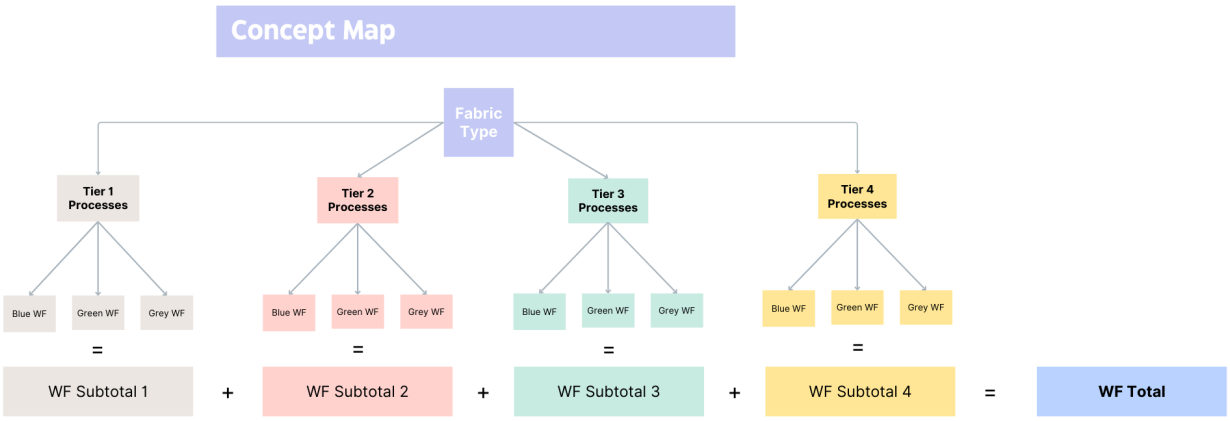


Figure 10: Our first concept map for the calculation of Everlane's total water footprint. First separated by priority fabric type, then broken down into each production tier, and finally each tier's water footprint type is calculated. These are then totaled to estimate the entire water footprint.*

*We have since updated this to remove Green Water from Tiers 1-3, as it only applies to Tier 4. This is our initial concept map of how we wanted to approach the methodology, using a tier-based calculation.

Methodology Approach 1:

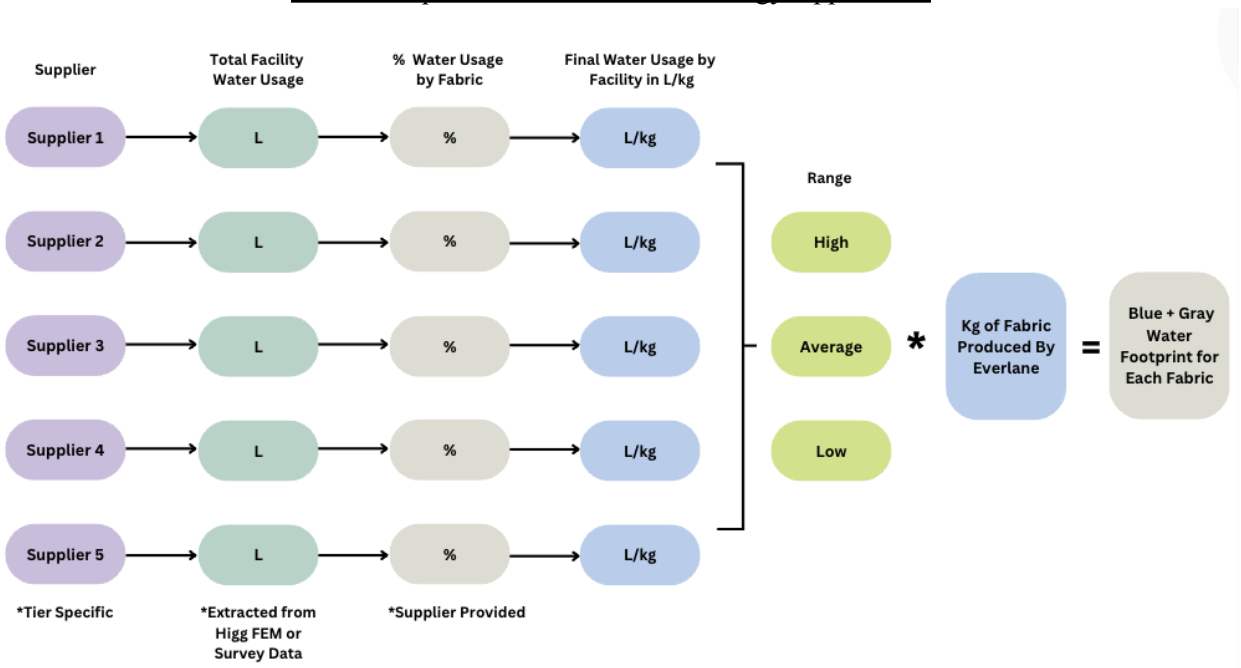


Figure 11: The initial methodology takes a material-specific approach, dividing suppliers based on the fabric type and production tier within Everlane's supply chain. Normalized ranges of blue and gray water usage are then calculated in liters per kilogram of fabric. These individual water usage ranges are multiplied by the total kilograms of each fabric purchased by Everlane in 2022, resulting in the determination of Everlane's blue and gray water footprint for each material (cotton, polyester, and MMCFs) across all tiers.

Methodology Approach 1 centers on quantifying the water usage associated with fabric production by individual suppliers. By calculating the water consumption for each fabric type from every supplier, we established high, low, and mean water usage values across the supplier base. These values were then normalized per kilogram of fabric to determine the water footprint per unit of product across Everlane's entire supplier network. This approach not only provided insight into the overall water usage patterns but also allowed for the identification of industry leaders and laggards.

To calculate the water footprint, we multiplied the total amount of purchased fabric for each priority material by the range of water usage values. It's important to note that while some water usage percentages were provided directly by the suppliers, others were estimated based on the range of values shared by suppliers. Once the range was established, we were able to multiply the range of water usage per kilogram by the total weight (in kg) that Everlane purchased and produced in 2022.

Methodology Approach 2:

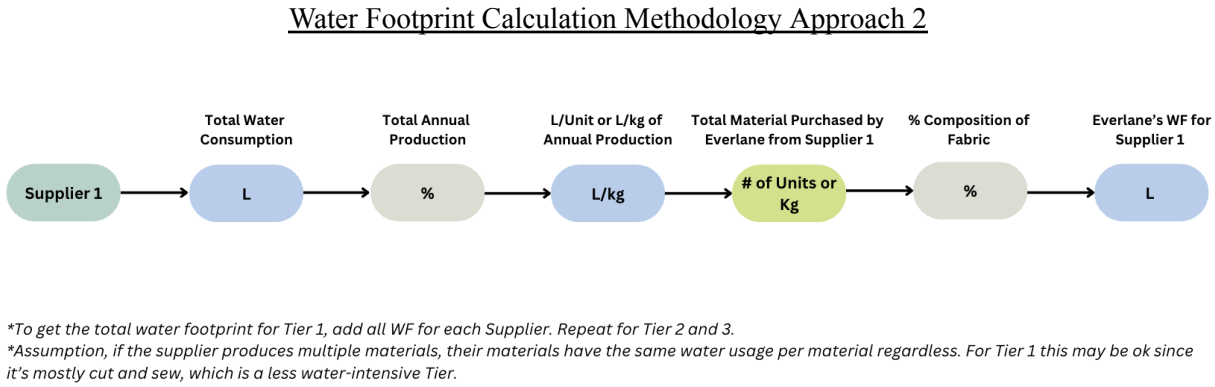


Figure 12: This supplier-specific approach is tailored to Everlane's 2022 production data, focusing on individualized analysis of each supplier's data extracted from both the survey and Higg FEM. To calculate each supplier's total water consumption specifically for Everlane, we multiply the ratio of Everlane's purchases from the supplier by their total annual production. Once the water consumption for Everlane is established per unit or kilogram, it's further multiplied by the total kilograms of fabric Everlane procures from each supplier. With the fabric composition extracted, the total water usage per fabric per supplier is aggregated across Everlane's entire supply chain.

Methodology Approach 2 is a methodology that relies on using Everlane's fabric code information and supplier-specific product purchases to calculate the water footprint. However, it does not consider the water usage associated with each material produced by every supplier, which could pose a limitation in its accuracy. This limitation is particularly evident when a supplier produces multiple materials beyond those supplied to Everlane, as the water usage may vary across different fabrics. Moreover, the approach assumes that each fabric uses the same amount of water per kilogram, ignoring the fact that fabrics require varying amounts of water during different processing phases. Our research shows that this assumption may not accurately reflect the water usage of Everlane's supply chain.

Therefore, we used Approach 1 for our final water footprint calculations, as we presumed it a more accurate approach to group a supplier's data based on its fabric contribution to Everlane, and then find the normalized range per kilogram of each fabric. This approach allowed us to estimate water consumption for future products and yearly purchases, as suppliers often change and purchase orders are altered. Thus, the water footprint calculator can be utilized to make informed decisions and reduce water consumption across Everlane's supply chain.

Water Footprint Calculations:

The initial methodology visualization in Figure 10 aided the survey design process and allowed us to easily enter the complex survey data manually into Google Sheets and Excel. The data analysis process began with sorting and preparing data from the Qualtrics surveys in the R Studio workspace, and combining it with Worldy/Higg FEM data to assess representation gaps and information quality. Each supplier was assigned a confidential "Blue Prints ID", an alphanumeric code, for data filtering and matching with Higg FEM entries. The code was then cleaned for analysis and information from the survey and Higg FEM which corresponded to water data and water usage insights was used for our further analysis, such as water treatment techniques, specifically listed processes each supplier was responsible for in their tier production, and information about the types of water each facility used.

Suppliers were then categorized based on their indicated responsibility for priority materials and production tier based on our previously established tier definitions. Once suppliers were separated by material, a range of water consumption in liters per kg (L/kg) of each fabric in each tier was calculated based on their annual production and total water usage data. To improve accuracy and account for uncertainties, a follow-up survey email was sent out to the respondents asking them to clarify the breakdown of their material production. For example, a supplier may be supplying Everlane with recycled polyester, but their facility's annual production encompasses cotton as well. They were also asked to report the amount of their water usage they estimate is responsible for each fabric. Using this information, a more accurate range of liters of water per kg of each priority fabric could be established. A new database was then created to compile total water usage information for priority materials across tiers, facilitating water footprint calculations using an algebraic model. Additionally, location addresses were geocoded for a comprehensive water risk analysis.

We employed different approaches depending on the tier of the supply chain data. For Tiers 1 to 3, we utilized Methodology Approach #1, as this constituted the primary data available to us. However, because visibility and insight into Tier 4 are essentially nonexistent for the three priority materials, we turned to literature sources to estimate water usage for cotton, polyester, and viscose. Refer to Phase 5: Tier 4 Data Collection & Literature Review.

For our cotton Tier 4 water footprint calculation, we applied regional information from TCs regarding the sourcing of organic cotton in Everlane's production. This was very useful information as 75% of Everlane’s cotton is organic. Leveraging this data, we calculated the total kilograms of organic cotton sourced from each region and multiplied it by the virtual water content specific to each region, per Table 2 below. It is important to note that for regions we did not have specific virtual water content metric for, we used a region from the data source that has similar climatic characteristics as a proxy for that country. Using information from the Water Footprint Network (Table 3 and Table 4), we applied the same methodology for polyester and viscose. This enabled us to derive a water footprint range, expressed in cubic meters per metric ton (i.e.;1 tonne = 1000 kg), for each fabric type.

Tier 4 Water Footprint of Cotton

Table 4 – Volume of water use and virtual water content of seed cotton

	Volume of water use (Gm^3/year)			Seed cotton production (ton/year)	Virtual water content (m^3/ton)		
	Blue	Green	Total		Blue	Green	Total
Argentina	1.6	3.8	5.5	712,417	2307	5394	7700
Australia	2.5	1.5	4	1,777,240	1408	870	2278
Brazil	0.1	4.2	4.2	1,613,193	46	2575	2621
China	10.3	17.1	27.5	13,604,100	760	1258	2018
Egypt	3	0	3	710,259	4231	0	4231
Greece	2.3	0.7	2.9	1,253,288	1808	530	2338
India	11.9	36.1	48	5,544,380	2150	6512	8662
Mali	0.7	1.7	2.4	463,043	1468	3750	5218
Mexico	0.8	0.4	1.1	453,788	1655	852	2508
Pakistan	19.9	5.4	25.4	5,159,839	3860	1054	4914
Syria	3.3	0.1	3.4	1,016,594	3252	88	3339
Turkey	6.2	0.6	6.8	2,199,990	2812	288	3100
Turkmenistan	5.3	0.4	5.7	954,440	5602	407	6010
USA	5.6	16.2	21.8	9,699,662	576	1673	2249
Uzbekistan	14.6	0.3	14.9	3,342,380	4377	83	4460
Sub-total	88.2	88.6	176.8	48,504,613	–	–	–
Average	–	–	–	–	1818	1827	3644
Other countries	10.8	10.8	21.6	5,939,363	–	–	–
World	99.0	99.4	198.4	54,443,977	–	–	–

Period: 1997–2001.

Table 2: From *The Water Footprint of Cotton Consumption*[92] showing the virtual water content needed to grow cotton from seed by region. We applied these values to aid our Tier 4 cotton footprint calculations.

[92] Chapagain et al., 2006

Tier 4 Water Footprint of Polyester

Water Footprint (L/kg)			
	Water Type	*Minimum*	*Maximum*
Polyester Filament Yarns	Blue	50	52
	Gray	50,640	70,981
	Total	**50,690**	**71,033**
Polyester Staple Fibers	Blue	30	32
	Gray	51,036	71,377
	Total	**51,066**	**71,409**

Table 3: Values and table from the Water Footprint Network[93] on the assessment of polyester and viscose. This is a table of virgin polyester's water usage in cubic meters per tonne, blue and gray, for filament and staple fibers in Tier 4 production.

[93] Chapagain et al., 2006

Tier 4 Water Footprint of Viscose

Water Footprint (L/kg)			
	Water Type	*Minimum*	*Maximum*
Viscose Staple Fibers	Blue	156	156
	Gray	489	786
	Green	33	55
	Total	678	996
Viscose Filament Yarn Continuous Washing	Blue	370	370
	Gray	30,192	30,489
	Green	33	55
	Total	30,596	30,914
Viscose Filament Yarn Batch Washing	Blue	80	80
	Gray	3,192	3,489
	Green	33	55
	Total	3,305	3,624

Table 4: Values and table from the Water Footprint Network[94] on the assessment of polyester and viscose. Presented in this table are the water usage values in cubic meters per tonne of Viscose, a type of man-made cellulosic fiber, for both filament and staple fibers in Tier 4 manufacturing, in two common locations, distinguished by blue, gray, and green.

Uncertainties

In our data collection process, we identified some areas that may introduce uncertainties into our water footprint calculation and analysis. First, the lack of third-party verification for self-reported data from our supplier surveys introduces a level of uncertainty. This could either underestimate or overestimate the water footprint if suppliers inaccurately report how much water they are using or if there is a misunderstanding in the survey questions. We utilized Qualtrics language translator to try to mitigate miscommunication of this nature. Second, we relied on the best available literature data and estimations to quantify water usage at the Tier 4 raw materials level, which may introduce inaccuracies due to differences in location of source data versus Everlane's supplier locations. locations of Everlane's Tier 4 suppliers for polyester, MMCFs, and conventional cotton production. Additionally, some of the locations listed in the survey were where the survey responders were located, not necessarily the location of the facility. Finally, regional uncertainties may arise from areas where exact data was unavailable, leading us to use data from climatically similar regions as a proxy.

To mitigate these uncertainties, we used ranges in our calculations to represent the lower and upper bounds of possible water usage for each material from each supplier to improve the quality of our water footprint results. Second, we normalized annual production into kilograms of each material to account for variations in fabric weights. We also acknowledged the percentage of verified data from our various sources to gauge the reliability of our dataset. Finally, we calculated the percentage of supplier data we

[94] Chapagain et al., 2006

had versus how much data we were missing to ensure that we did not underestimate the water footprint. These methods collectively helped us to address and manage uncertainties in our analysis.

Challenges:
While completing our water footprint analysis, we encountered several challenges. First, of our two methods to gather water usage data from suppliers, the Higg FEM Index and the survey, neither required suppliers to specify the percentage or weight of their production for each material. The latter was an oversight that we did not realize until after we began analyzing the data. For example, although a supplier might have mentioned producing cotton and recycled polyester, they did not provide the necessary breakdown of production quantities for each material. Thus, we did not know how the reported values compared to the total production of the facility. We partially rectified this by following up with suppliers to ask about their percentage breakdown.

Second, in terms of geocoding, while our survey collected location-specific data, we needed to cross-reference it with the supplier's listed address to ensure accuracy. This proved difficult as Everlane did not have complete information on the addresses of their Tier 1 and Tier 2 suppliers. Additionally, gathering Tier 3 information from Tier 2 suppliers proved complex. Some were able to list specific Everlane fabric codes, while others did not. This made it difficult to determine what material was linking the facilities to Everlane and where they are located. In hindsight, sorting suppliers based on the fabric codes listed in Everlane's purchasing documents from the start would have streamlined this process.

We also faced the challenge of verifying supplier survey data, necessitating comparison against Higg FEM values for validity. Results from suppliers who did not report to Higg could not be verified. Thus, in order to address the gaps in Tier 1 and 2 processes, we conducted a literature review to estimate water usage. In doing so, we aimed to create a comprehensive and plausible range of data for the results to fall into. Any outliers could be noted and further examined to determine its validity or potential causes for such results.

Water Risk Analysis Methodology

We used WWF's Water Risk Filter Tool to conduct a basin-wide water risk assessment for Everlane's supply chain, with a focus on our three primary materials (e.g. cotton, polyester, MMCFs). We mapped each supplier's location against WWF's water risk data.[95] The tool uses 32 public, peer-reviewed data sets to assess both basin and operational water risks. This analysis was limited in scope and should be viewed as a preliminary assessment that can be used to guide further risk assessments.

Using this screening tool, we assessed 375 supplier locations against industry-wide data that provides analysis of physical, reputational, and regulatory risks, as defined below:

Physical risk: "accounts for whether the water in the river basin is too little (scarcity), too much (flooding), unfit for use (quality), and/or the surrounding ecosystems are degraded, and in turn, negatively impacting water ecosystem services (ecosystem service status)."[96]

Regulatory risk: "linked to how water is managed (or governed) in the area or country. Thus, it is heavily tied to the concept of good governance and the fact that businesses thrive in a stable, effective, and properly implemented regulatory environment."[97]

[95] Laporte-Bisquit et al., 2022
[96] Ibid.
[97] Ibid.

Reputational risk: "linked to stakeholders' and local communities' perceptions of whether companies conduct business sustainably or responsibly concerning water. While a lot of the potential reputational risk is tied to how sites use and need water (i.e., do they use water responsibly?), some characteristics within the basin can make reputational risks more likely to manifest [such as the…] importance of water, biodiversity richness, media coverage, and water-related conflicts."[98]

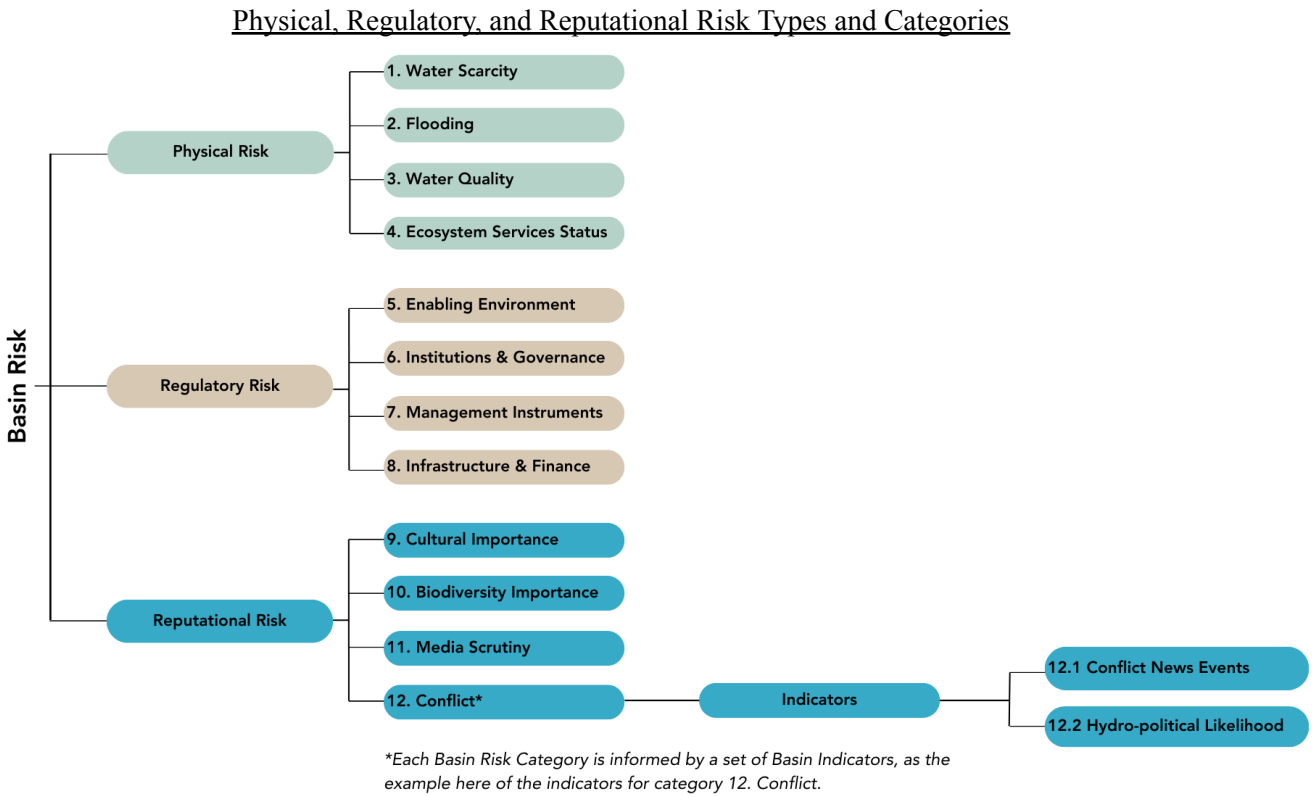


Figure 13: This figure shows the three types of risk and their associated sub-categories. Adapted from WWF Risk Filter Methodology.[99]

There are several important considerations to keep in mind:

- This tool measures basin risk based on typical risk conditions, not real-time water risk at sites.
- **Basin risk** is assessed based on where a site is located and operating within a hydrologic basin. Basin risk assesses the "typical risk conditions at the basin or country level based on historical trends and recent data."[100]
- **Operational risk** focuses on how water is used and managed by a site, and is a more precise measurement of a supplier's true water risk. The only way to assess site-specific risk (and the true risk facing their supply chain), is to complete an operational risk assessment for each prioritized site, which was outside the scope of this project.

Using primary data provided to us by Everlane, the Higg Index, and suppliers, we mapped Tier 1-3 Supplier locations (n=261). We used TCs provided to us by Everlane to understand where a majority of Tier 4 (organic cotton) operations are located (n=114). Of the Tier 4 sites analyzed from the TCs, we had

[98] Ibid.
[99] Ibid.
[100] Ibid.

country-specific data for 75% of them. For the remaining 25%, we had no geographic data available. As noted before, it is possible that supplier information in the TCs were referring to the same supplier, which could result in double-counting of Tier 4 supplier sites. The results of the water risk assessment can be found in the Risk Analysis Results section of this document.

Results

Water Footprint Results

In this section, we will present the water footprint from two angles: (1) at the broader supplier level; and (2) for Everlane specifically.

Tier 1-3 Water Footprint

The water footprint results for production Tiers 1-3 are broken down into two separate categories: supplier-wide and Everlane-specific. The **supplier-wide** results represent the footprint calculations of Tiers 1-3 of Everlane's suppliers. In other words, it quantifies the **total** water usage of each facility that supplies Everlane with either cotton, polyester, or MMCFs, even if Everlane's purchase of products from that facility is very low. Therefore, we considered this water footprint section to be representative of a typical mid-sized apparel supply chain, using Everlane's supplier data to simulate it.

The **Everlane-specific** water footprint results focus on Everlane's direct water footprint based on the amount of product it purchased from specific suppliers. This more specific analysis is unique to Everlane, and is what the water footprint calculator is based off of. This calculator will help Everlane determine the unique water footprint of each of their products made of the priority fabrics included in this analysis.

Supplier-Wide Water Footprint Results:

The proceeding results do not consider Everlane's specific water contribution from each production facility. Each of the supplier facilities considered in this footprint also supplies products to various other companies, so Everlane may just be a small contributor to the overall water usage at one facility. It is important to note that no green water usage or footprint was considered for the Tier 1-3 production phase.

Blue and Gray Water Footprint:
The total water footprint for the supplier-wide textile supply chain of Tiers 1-3 is represented in Figure 14. The total supplier-wide blue water footprint is 1.7 million cubic meters, and the total supplier gray water footprint is 550 thousand cubic meters. Gray water usage overall is much smaller than blue water usage at these production tiers. Most gray water in the textile industry occurs at the raw material, Tier 4, production phase, followed by dying and chemical processing in Tier 2-3.

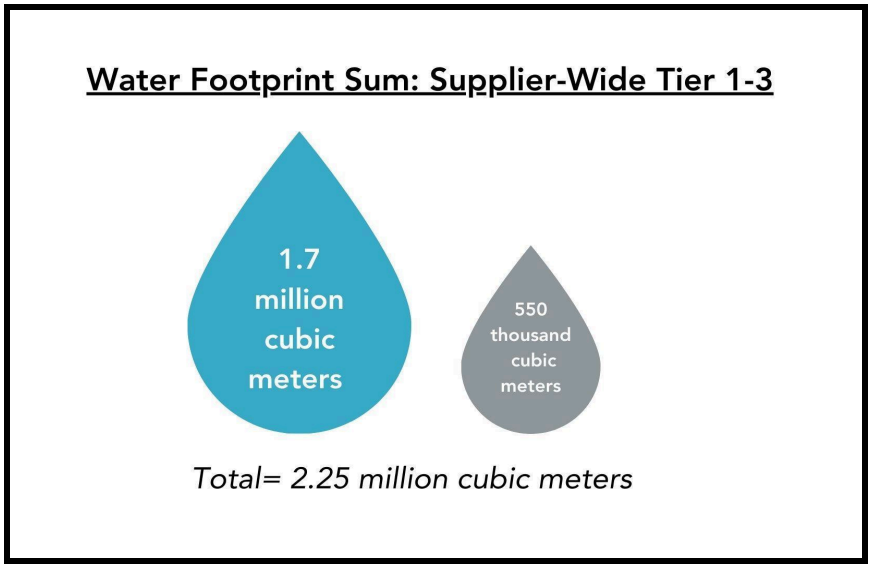


Figure 14: The total water footprint for the supplier-wide textile supply chain of Tiers 1-3. Tier 1-3 is responsible for only 1% of Everlane's total water footprint.

Water Usage Seen by Each Supplier Facility:
In Figures 15 and 16, the Tier 1 and Tier 2-3 water usage for each fabric is shown. This visually represents which of the three fabrics used the most water for production processes in this supply chain. For each tier category, cotton uses the most water compared to the other two fabrics, on average. Each circle represents a supplier in the supply chain, and its associated average water usage per kilogram for each cotton, polyester, and MMCFs. Some suppliers were noticeable outliers, as their water usage for either of the fabrics may be substantially higher than the overall supplier average. For example, in Figure 15 for Tier 1 supplier water usage, a supplier is shown to use over 60 L/kg of water for its cotton, but the majority of cotton suppliers in Tier 1 fall within 0-18 L/kg of water usage. This supplier outlier may be due to its facility having more water-intensive processes than the average Tier 1 facility or no treatment of gray water (wastewater). The same can be interpreted in Figure 16 for Tier 2-3 supplier water usage. The facility that is shown to use over 300 L/kg of water for cotton production may have more water-intensive processes than average, such as larger batch dyeing processes. Tier 2-3 textile production processes are normally much more water-intensive than the production processes in Tier 1, the final assembly stage.

Blue Water:
The biggest contributor to the Tier 1-3 blue water footprint was cotton at the Tier 2-3 phase, as shown in Figure 17. More than half of the blue water footprint for the supplier-wide supply chain can be attributed to cotton fabric at both the Tier 1 and Tier 2-3 levels, combined. Polyester at the Tier 2-3 phase was the second largest contributor to the blue water footprint and polyester at the Tier 1 phase took up a small portion of it. MMCFs take up a very small proportion of the blue water usage contribution, at both of its tier categories. A visualization of the proportional differences of all fabric tiers and their relevant contribution to the overall blue water footprint can be seen in Figure 18.

Gray Water:
While cotton is associated with the most overall water usage (in liters per kilogram) for Tier 1-3 supplier's production, polyester was shown to use a significantly higher amount of gray water at the Tier 2-3 phase than the other fabrics considered. This can be seen in Figure 17, in the suppliers' blue and gray water breakdown by fabric. Gray water usage in a textile supply chain is more prevalent at the manufacturing tier levels (Tier 2-4), as opposed to the final garment assembly level (Tier 1). This is because manufacturing processes, such as dyeing, spinning, printing, etc., are associated with more domestic and

industrial wastewater production. The processes used for a Tier 1 facility, such as cutting, sewing, assembly, etc., do not produce as much wastewater byproduct. In Figure 19, we see that the fabrics contributing the most to the Tier 1-3 gray water footprint are polyester, MMCFs, and cotton, respectively, and all in the Tier 2-3 phase. While MMCFs used very little blue water in both of their tier categories, the gray water usage of MMCFs at Tier 2-3 was noticeably higher than in its Tier 1 phase.

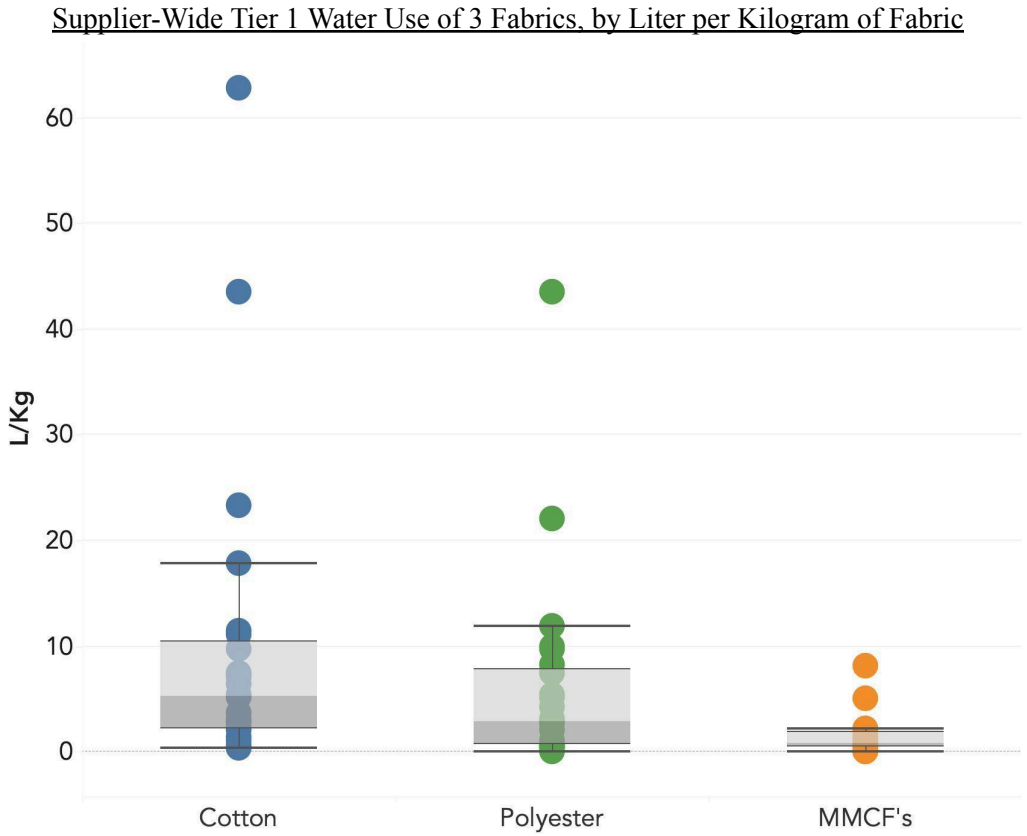


Figure 15: This is an "example" of a mid-sized textile company's supply chain water usage through Tier 1 production, broken up into three fabric types: cotton, polyester, and MMCFs. It represents the entire Tier 1 supply chain of Everlane, but the water usage encompasses other companies that also source materials from these suppliers, therefore, it is not specific to Everlane's water usage contribution. Each circle represents one of Everlane's supplier facilities through the three production tiers.

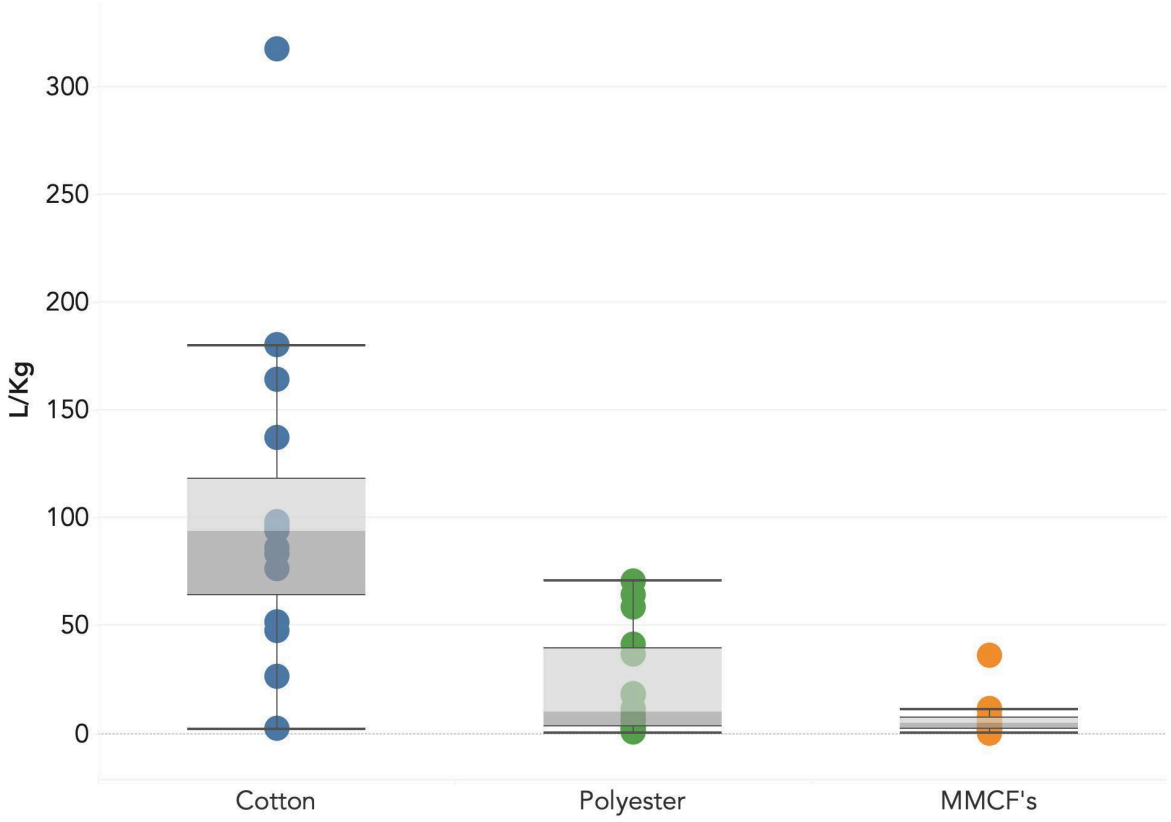


Figure 16: This is an "example" of a mid-sized textile company's supply chain water usage through Tier 2-3 production, broken up into three fabric types: cotton, polyester, and man-made cellulosic fibers. It represents the entire Tier 2 and Tier 3 supply chain of Everlane, but the water usage encompasses all other companies that also source materials from these suppliers, therefore, it is not specific to only Everlane's water usage contribution. Each circle represents one of Everlane's supplier facilities through the two production tiers, and only the facilities that we gathered reported data from. There are some supplier facilities that are not represented in this visualization who we were unable to gain contact with or visibility into.

Supplier-Wide Tier 1-3 Blue and Gray Water Breakdown, by Fabric Type

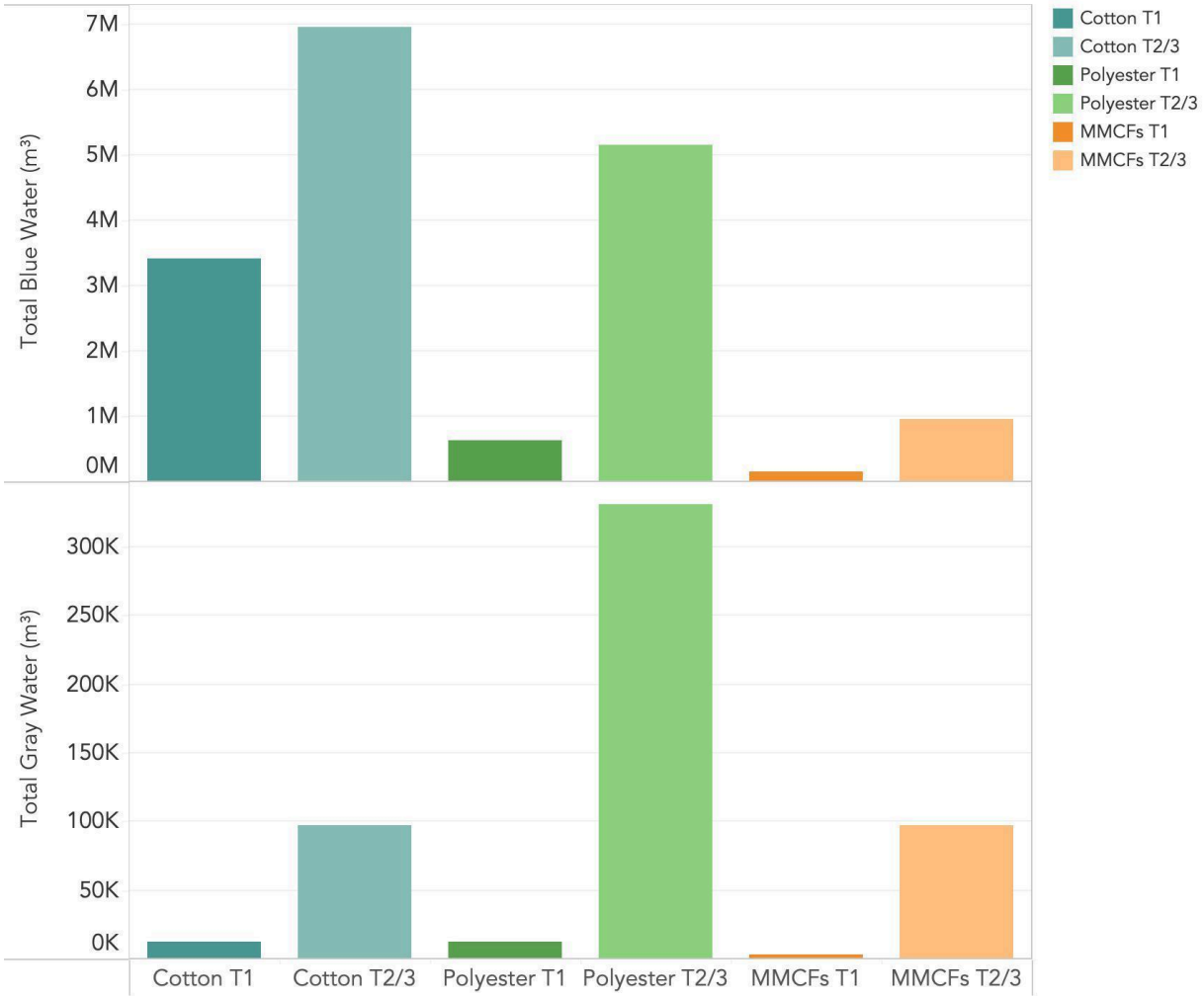


Figure 17: The above figure represents the variations in water usage by each of the three materials in their relevant production tiers, for both blue and gray water. Polyester fabric in the Tier 2-3 production phase is associated with a significant amount more gray water usage than any other material at any other phase. Note the difference in scale of the two graphs (top figure is in millions; bottom figure is quantified in thousands).

Total Blue Water Footprint of Each Fabric Type

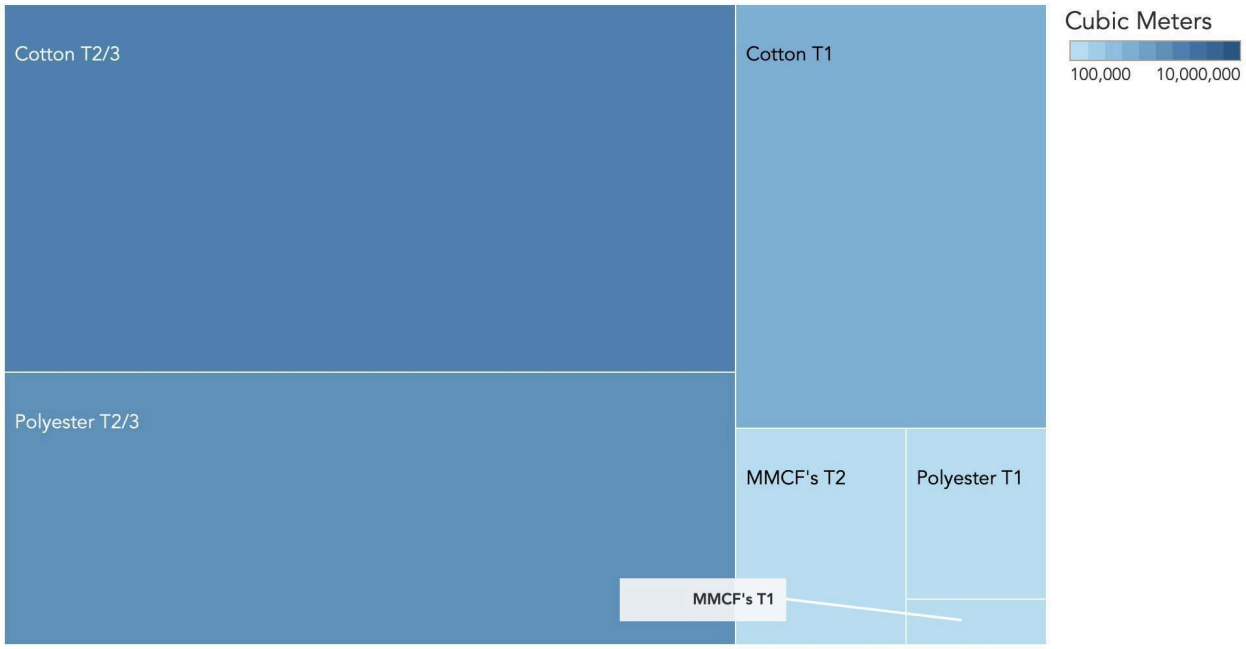


Figure 18: Supply-chain wide blue water footprint of each priority material in production Tiers 1-3. Cotton at the Tier 2-3 production phase contributes the most to blue water usage, with polyester at Tier 2-3 close behind.

Total Gray Water Footprint of Each Fabric Type

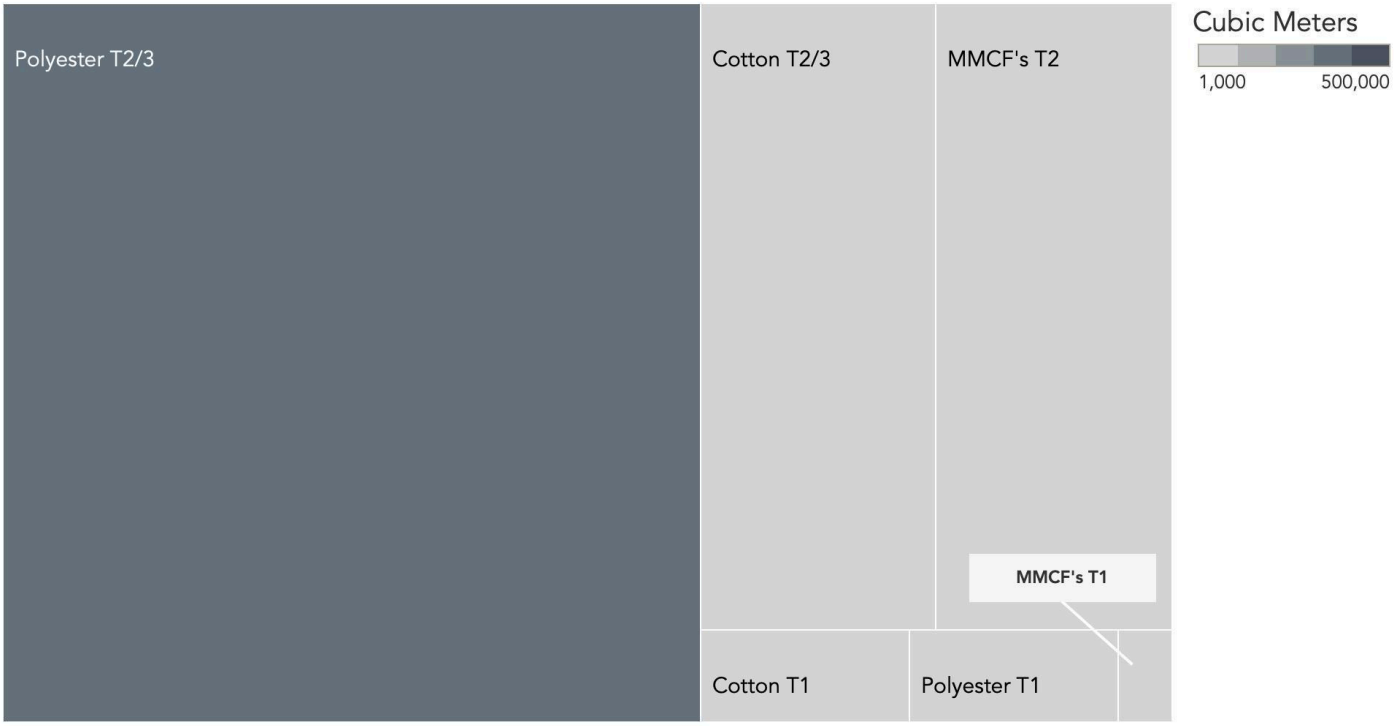


Figure 19: Supply-chain wide gray water footprint of each priority material in production Tiers 1-3. Polyester in the Tier 2-3 production phase contributes the most to the gray water footprint, with MMCFs and cotton in the Tier 2-3 phases following behind. All three fabric materials contribute much less to the total gray water footprint at the Tier 1 phase than in the Tier 2-3 phase.

Everlane-Specific Water Footprint Results:

The following water footprint results focus on Everlane's water footprint. During this analysis and calculation, we took into account Everlane's specific water contribution from each of its suppliers, depending on the amount of product Everlane purchased from each facility. This granular analysis will help Everlane to determine and assess where they may be able to make unique and company-specific changes toward a lower water footprint. The following results are still focused on production Tiers 1-3, without considering Tier 4, which will be explored later in the report.

Figure 20 below shows the difference in fabric use breakdown in Everlane's specific supply chain, compared to the fabric use of the average supplier. These results show that while cotton appears to be the most commonly used fabric in any given supplier's total fabric usage, Everlane's specific breakdown consists of mostly organic cotton, as opposed to conventional.

Everlane's Blue Water Footprint:
As seen in Figure 21, the majority of Everlane's blue water footprint can be attributed to cotton at the Tier 2-3 phase. Cotton at this stage is responsible for most of the total blue water usage for Everlane. These results are slightly different from the supplier-wide blue footprint results, which showed *both* cotton and polyester in the Tier 2–3 phase contributing almost equally significant amounts to blue water. Here, in the Everlane-specific analysis of blue water footprint, polyester does not have nearly as much contribution to water usage as it did in the supplier-wide analysis. This is because Everlane's fabric production consists of mostly cotton, and polyester makes up a small percentage of their overall fabric usage. Therefore, when

the footprint takes into consideration Everlane's specific production contribution from each supplier, its water footprint is more heavily weighted to cotton, giving cotton a much higher proportion of the water footprint and polyester a much lower proportion.

Everlane's Gray Water Footprint:
The same proportion differences are also seen in Everlane's gray water footprint by production tier Figure 22. Cotton at the Tier 2-3 level again contributes the most and makes up the majority of the gray water footprint. Compared to the supplier-wide gray water footprint, which showed Tier 2-3 polyester contributing the most, cotton is a much larger proportion of Everlane's purchased fabric than any other material, so the gray water footprint was weighted more heavily toward cotton.

Fabric Use Breakdown of Everlane's Specific Production vs. its Supplier-Wide Production

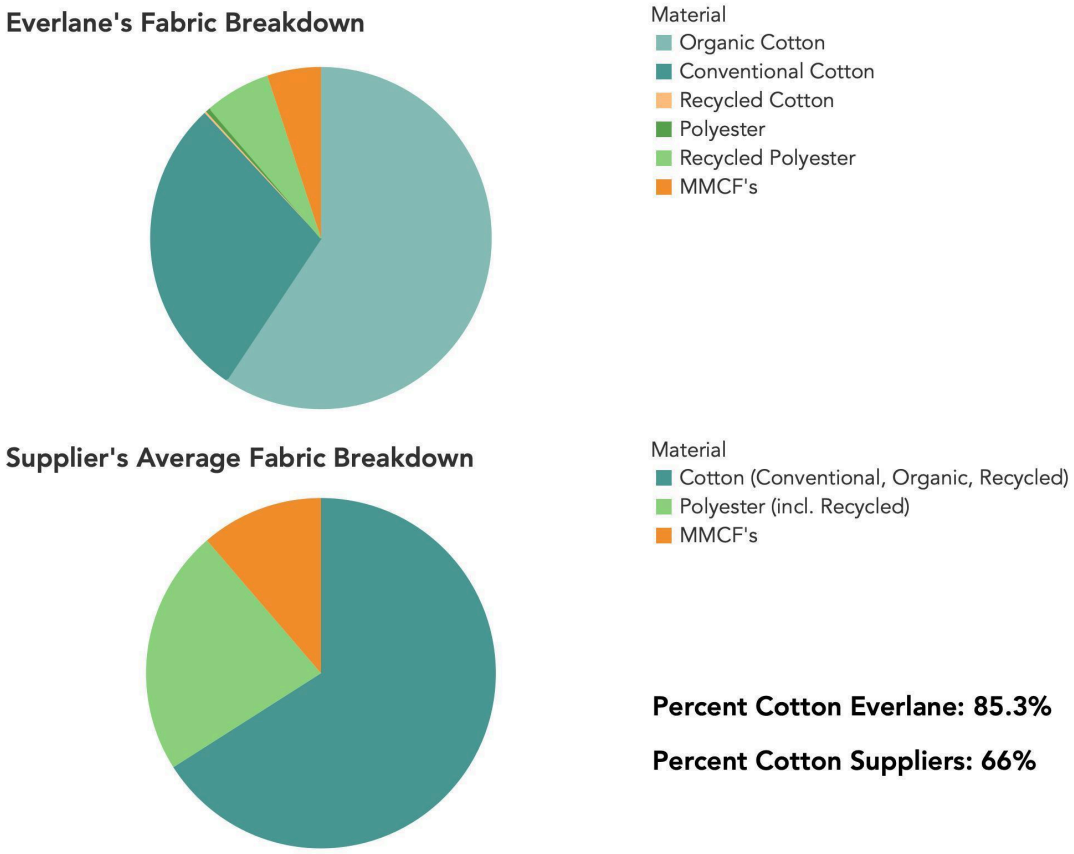


Figure 20: A comparison in fabric use of Everlane's production, as compared to the average fabric use breakdown of an Everlane supplier within the broader textile supply chain. The latter is based on self-reported data from Everlane's textile suppliers.

Everlane's Total Blue Water Footprint of Each Fabric Type and Tier

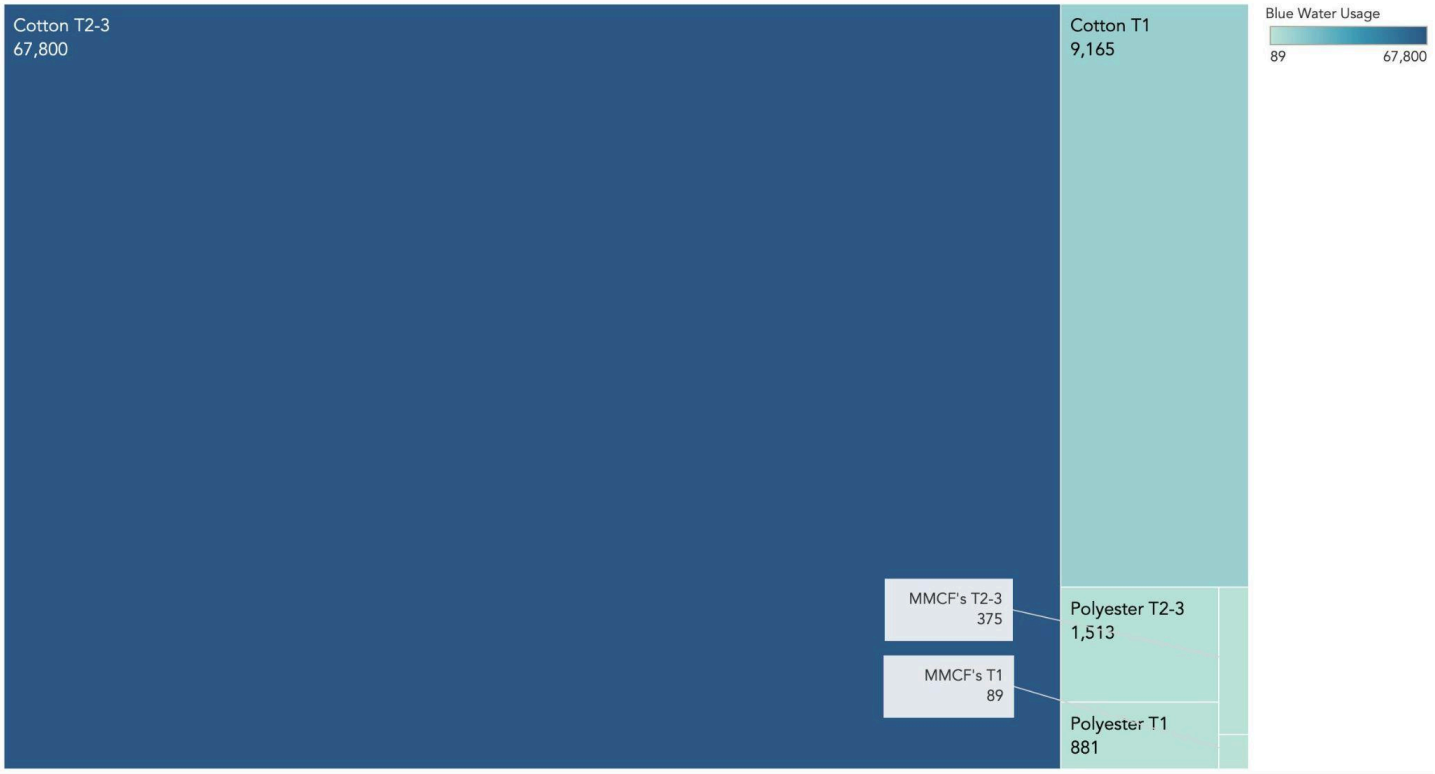


Figure 21: Everlane's total blue water footprint (in cubic meters) broken down by fabric type and tier. Because cotton is the majority of Everlane's fabric composition, cotton in all tiers is the largest contributor to the blue water footprint.

Everlane's Total Gray Water Footprint of Each Fabric Type and Tier

Figure 22: Everlane's total gray water footprint (in cubic meters) broken down by fabric type and tier. Because cotton is the majority of Everlane's fabric composition, cotton in all tiers is the largest contributor to the gray water footprint.

Everlane's Water Usage by Fabric:
As seen in Figure 23, cotton uses 9.93 L/kg of water in Everlane's Tier 1 production processes. In Tier 2-3 production processes, cotton uses 75.0 L/kg of water. This indicates that Everlane's Tier 2-3 processes for producing cotton products use a significantly greater amount of water than their Tier 1 cotton production. Natural fibers require more water in processing than synthetic fibers do. During wet processes, water and other dyes and chemicals are absorbed more heavily in natural fibers (such as cotton), than in synthetic fibers (such as polyester).

Based on previous studies, the amount of water required for cotton textile processing is around 40-200 L/kg, whereas the amount of water required for polyester textile processing is around 40-100 L/kg.[101] Everlane's total water used for cotton processing in their Tier 1-3 productions is 84.9 L/kg. Everlane's total water used for polyester processing in their Tier 1-3 productions is 34.5 L/kg. Everlane's water usage for cotton is at the lower end of the industry range mentioned above, and its water usage for polyester is lower than the reported industry range. This could be because the majority of Everlane's polyester is recycled, and thus requires less water usage in processing. The numbers found in the literature do not specify the type of polyester or cotton (e.g., conventional or organic).

[101] Raja et al., 2019

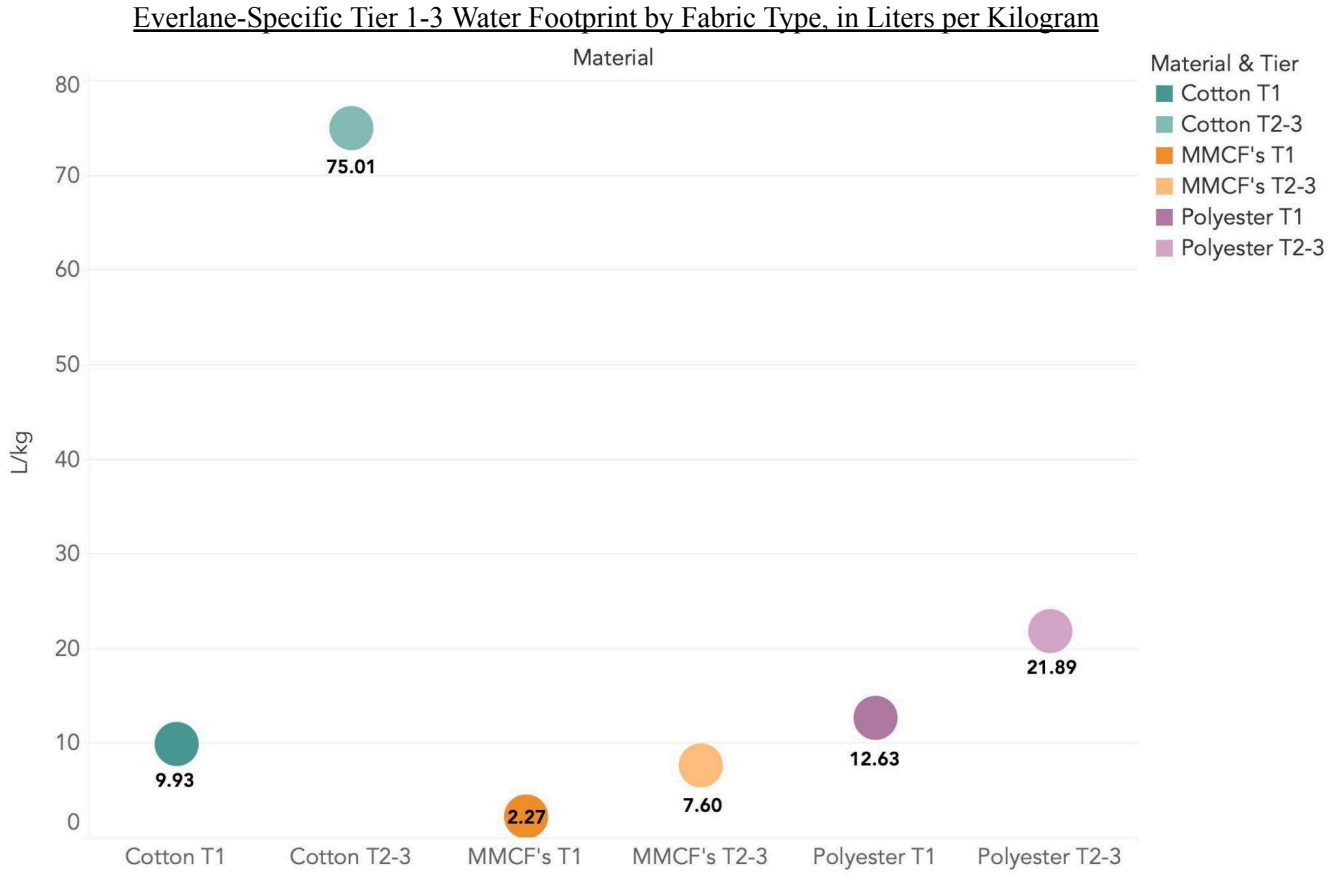


Figure 23: This graph shows the normalized per kilogram representation of liters of water used by Everlane in production Tiers 1-3 for each fabric type. Cotton at the Tier 2-3 phase used significantly more water than any other fabric material at any other phase for Everlane's production.

Tier 4 Water Footprint

The Tier 4 production phase, or raw material production phase, is important to examine when calculating a supply chain water footprint due to the amount of water required to grow and fabricate raw materials. The importance of this was considered during the quantification of Everlane's raw material phase for each fabric, as Everlane did not have prior knowledge of their water impact at this production level. We examined and compared the difference in water impacts between organic and conventional cotton, recycled and virgin polyester, and viscose (a type of MMCF). Quantifying the differences in water usage of different fabrics helped us best inform Everlane on how to decrease their water usage based on the future fabrics they decide to use.

The following results are associated with Everlane's specific water footprint and thus take into account the contribution of material supply (in kilograms) that Everlane sourced from each raw material supplier. As shown in Figure 24, Everlane's total Tier 4 water footprint is 8.9 million cubic meters, with 1.7 million cubic meters from blue water, 5 million cubic meters from gray water, and 2.2 million cubic meters from green water.

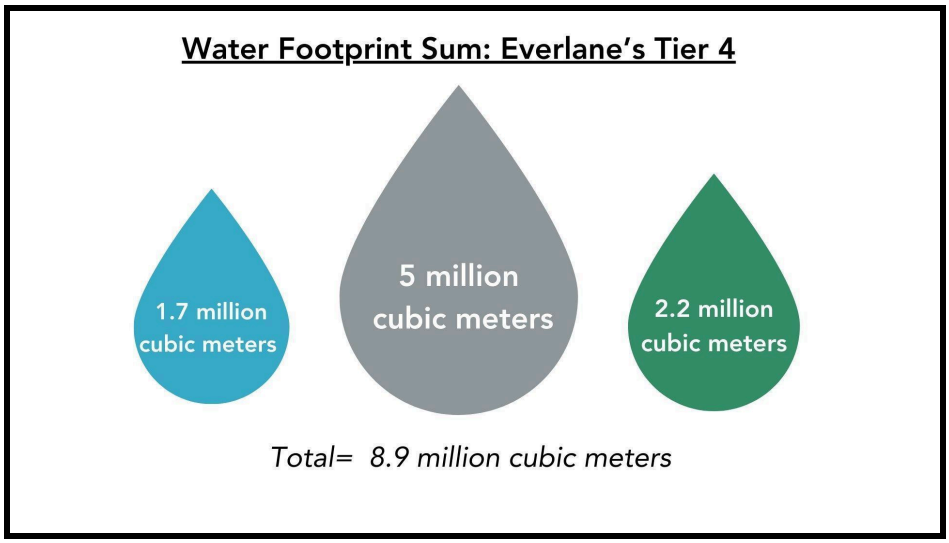


Figure 24: Everlane's Tier 4 Water Footprint. Gray water comprises the majority of Everlane's total Tier 4 water footprint, with green water following it, and then blue water.

Organic Cotton vs. Conventional Cotton:

Everlane uses both conventional cotton and organic cotton in its fabric raw material production. By separating its water usage, we were able to gain a better understanding of the differences in the water footprints of conventional and organic cotton.

There are notable differences in the water usage for Everlane's raw material phase for cotton, as seen in Figure 25. Figure 26 provides an additional visualization for understanding the Tier 4 fabric-specific water usage, and Figure 27 below provides a table of the specific numeric values of Tier 4 water usage for each fabric, and each water type.

For Everlane's Tier 4 production, 3,931 L/kg of blue water is used for conventional cotton cultivation, and 1,791 L/kg of blue water is used for organic cotton cultivation. For its Tier 4 production, 1,469 L/kg of green water is used for conventional cotton cultivation, and 2,183 L/kg is used for organic cotton cultivation. The blue and green water numbers are location-specific for organic cotton (from TCs), and based on literature for conventional. For Everlane's Tier 4 production, 1,205 L/kg of gray water is used for conventional cotton; organic cotton does *not* have a gray water footprint due to the absence (or very limited use) of fertilizers and pesticides.

*Based on these results, organic cotton used 39.8% **less** water overall than conventional cotton in Everlane's raw material production (Tier 4 combined water types: blue, gray, and green).*

MMCF Viscose:

Everlane's gray water footprint was significantly higher than its blue and green water footprint in Tier 4. The MMCF gray water footprint was higher than cotton's gray water footprint at this tier, and lower than polyester's gray water footprint at this tier. Since MMCFs typically have a smaller water footprint contribution compared to cotton and polyester, this higher gray water footprint can be surprising. However, in the raw material production phase, MMCFs, or viscose, as we used for our analysis into this stage, have a high gray water footprint resulting from wood production and processing. When processing and dissolving wood pulp, a continuous washing process is carried out that includes zinc and COD (chemical oxygen demand) emissions in the effluent. At the wood production phase of viscose, nitrogen is an associated pollutant that adds to the gray water footprint, from the application of fertilizers on the

plantations. Only a small amount of blue water is used for viscose at this stage since the amount of water needed for washing wood pulp is small.

Recycled Polyester vs. Conventional Polyester:

There are also noteworthy differences in water usage for Everlane's raw material phase for polyester, seen again in Figure 25. For Everlane's Tier 4 production, 43 L/kg of blue water is used for virgin polyester production, and 24 L/kg of blue water is used for recycled polyester production. For Everlane's Tier 4 production, 61,000 L/kg of gray water is used on average for virgin polyester polymers, and 19,500 L/kg of gray water is used on average for recycled polyester.

The gray water footprint from virgin polyester arises mostly from the petrochemicals, oil refineries, and polymerization involved in the raw material extraction process. Therefore, recycled polyester has a much lower gray water footprint at this tier than virgin polyester, because it does need to go through the same water-intensive extraction processes. No green water is used in the Tier 4 phase for polyester because no plants are required for its production, since it is a purely synthetic material.

*Based on these results, recycled polyester used 68% **less** blue-gray water than virgin polyester in Everlane's raw material production (Tier 4).*

Everlane-Specific Tier 4 Water Footprint by Fabric Type, in Liters per Kilogram

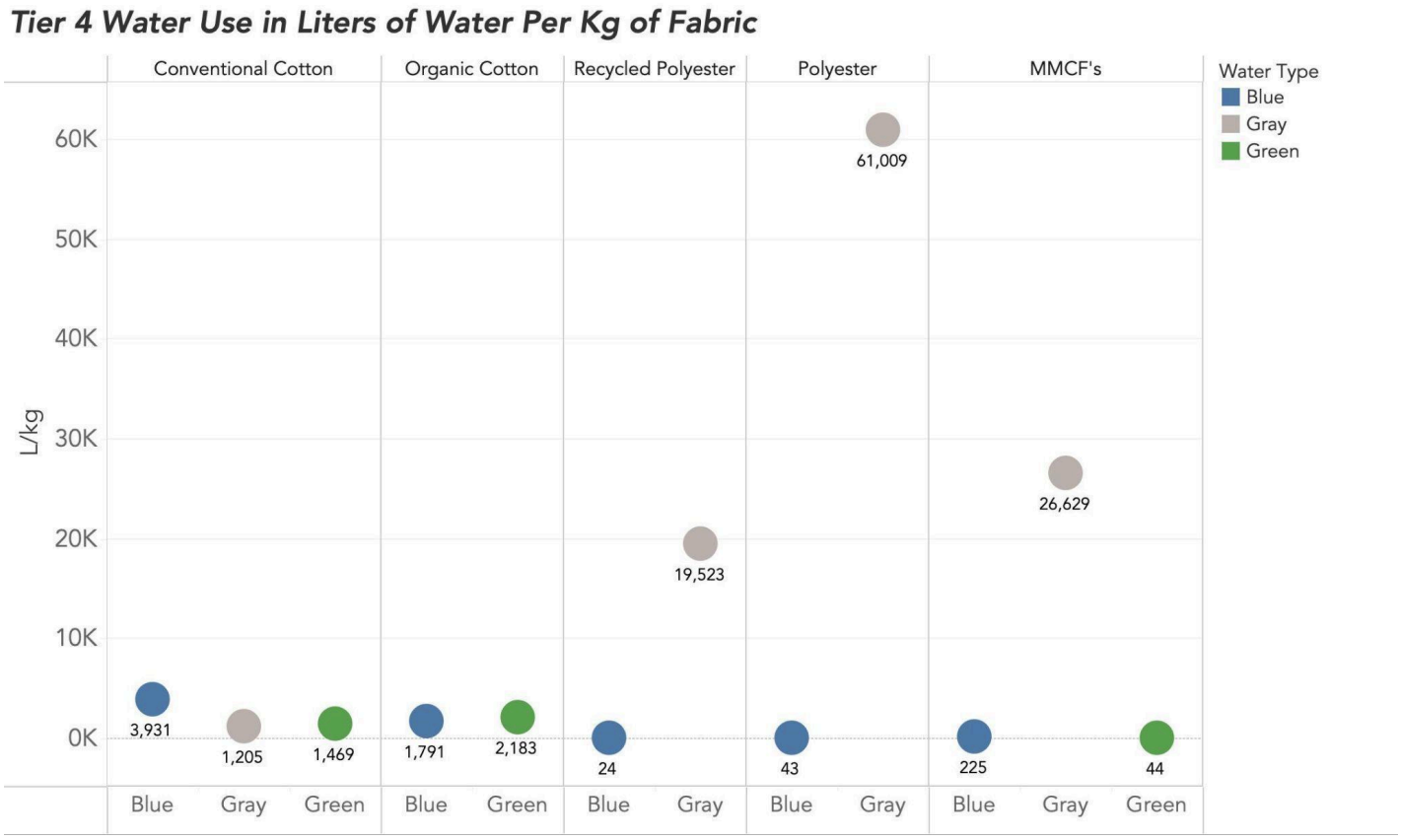


Figure 25: Normalized per kilogram representation of liters of water used in Tier 4 for each fabric. This information is sourced from the literature, and described in the Methodology.

Everlane-Specific Tier 4 Total Water Footprint Contribution by Fabric Type

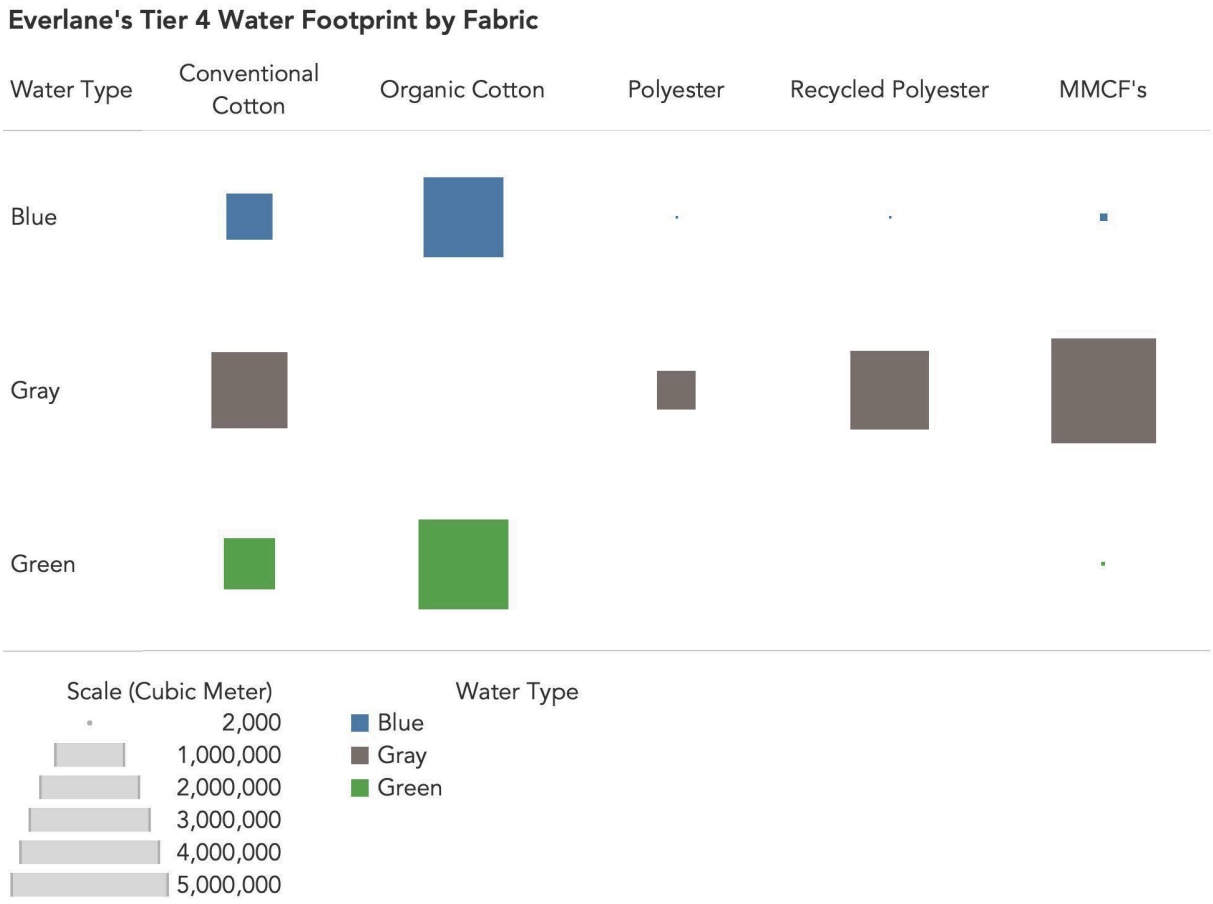


Figure 26: The Tier 4 water footprint contribution by fabric type of Everlane's specific raw material productions. The water type is indicated by color (blue, gray, and green), and the water usage for each fabric is relative to Everlane's specific fabric consumption in 2022. Since it uses primarily organic cotton in its production, therefore purchasing and manufacturing more mass of organic cotton, the organic cotton footprint overall is larger.

Everlane-Specific Tier 4 Water Footprint by Fabric Type in Cubic Meters

Water Type	Conventional Cotton	Organic Cotton	Virgin Polyester	Recycled Polyester	MMCFs	Total by Water Type
Blue	426,476	1,302,831	249	1,067	10,814	1,741,437
Gray	1,197,997		299,142	1,280,787	2,246,740	5,024,666
Green	540,215	1,650,289			2,944	2,193,449
Total by Fabric Type	2,164,688	2,953,120	299,391	1,281,854	2,260,498	8,959,552
Percent of Overall Tier 4 Footprint	24%	33%	3%	14%	25%	

Figure 27: Table of the values associated with Everlane's Tier 4 water usage for each priority material, categorized by water type.

Everlane's Total Tier 1-4 Footprint

Everlane's total water footprint across all production tiers, Tier 1 through Tier 4, is 9 million cubic meters, as shown in Figure 28. Everlane's total blue, gray, and green water footprints are 1.8 million cubic meters, 5 million cubic meters, and 2.2 million cubic meters, respectively. A further breakdown of this water footprint sum can be found in Figure 29, where the numbers are specified for each fabric at each of its varying production tiers. The most notable finding to note from this figure is that most of Everlane's total supply chain water footprint is attributable to the Tier 4 production phase of raw materials. Tier 1 and Tier 2-3 contributed far less to the overall water usage in Everlane's production processes, for all materials, than did Tier 4.

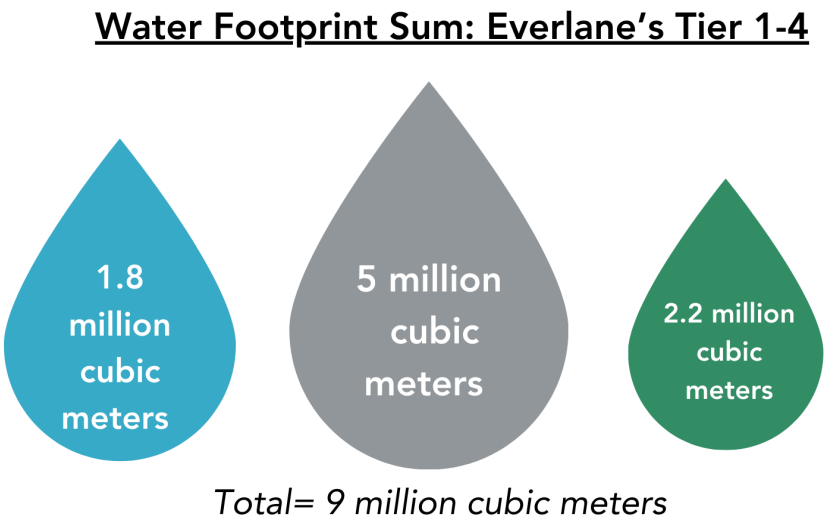


Figure 28: Everlane's total water footprint across Tiers 1 - 4. 99% of Everlane's footprint is from Tier 4.

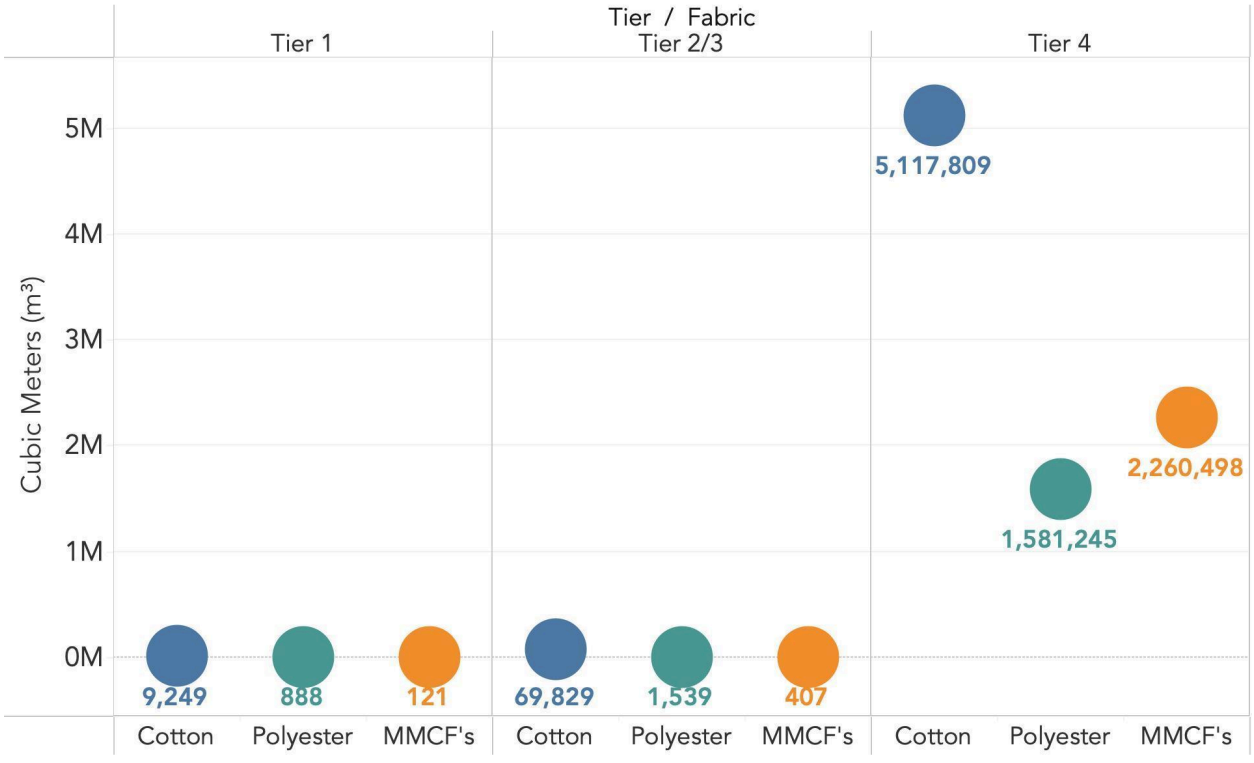


Figure 29: Total Tier 1-4 water usage by each fabric (cotton, MMCF, polyester) and water type (blue, gray, green), indicated in cubic meters. This is the total blue, gray, and green water footprint of Everlane's supply chain across all production tiers.

Additional Analysis

Regional Distribution of Raw Organic Cotton Water Usage:
Figure 30 shows the regional distribution of organic cotton sources, divided into blue and green water. Green water is water that naturally falls onto the land or crops through precipitation. Blue water in cotton cultivation is water from rivers or groundwater used to irrigate the plants. The highest water usage in this raw material phase is found as green water in India, at around 800 million cubic meters, since the majority of Everlane's cotton is sourced from this region. This data comes from the Water Footprint Network's datasets explained in the Methodology section of this report. When exact country data for Everlane suppliers was unavailable, we used countries with similar climate characteristics and geocoordinates as a proxy.

Everlane's Tier 4 Organic Cotton Water Footprint by Country

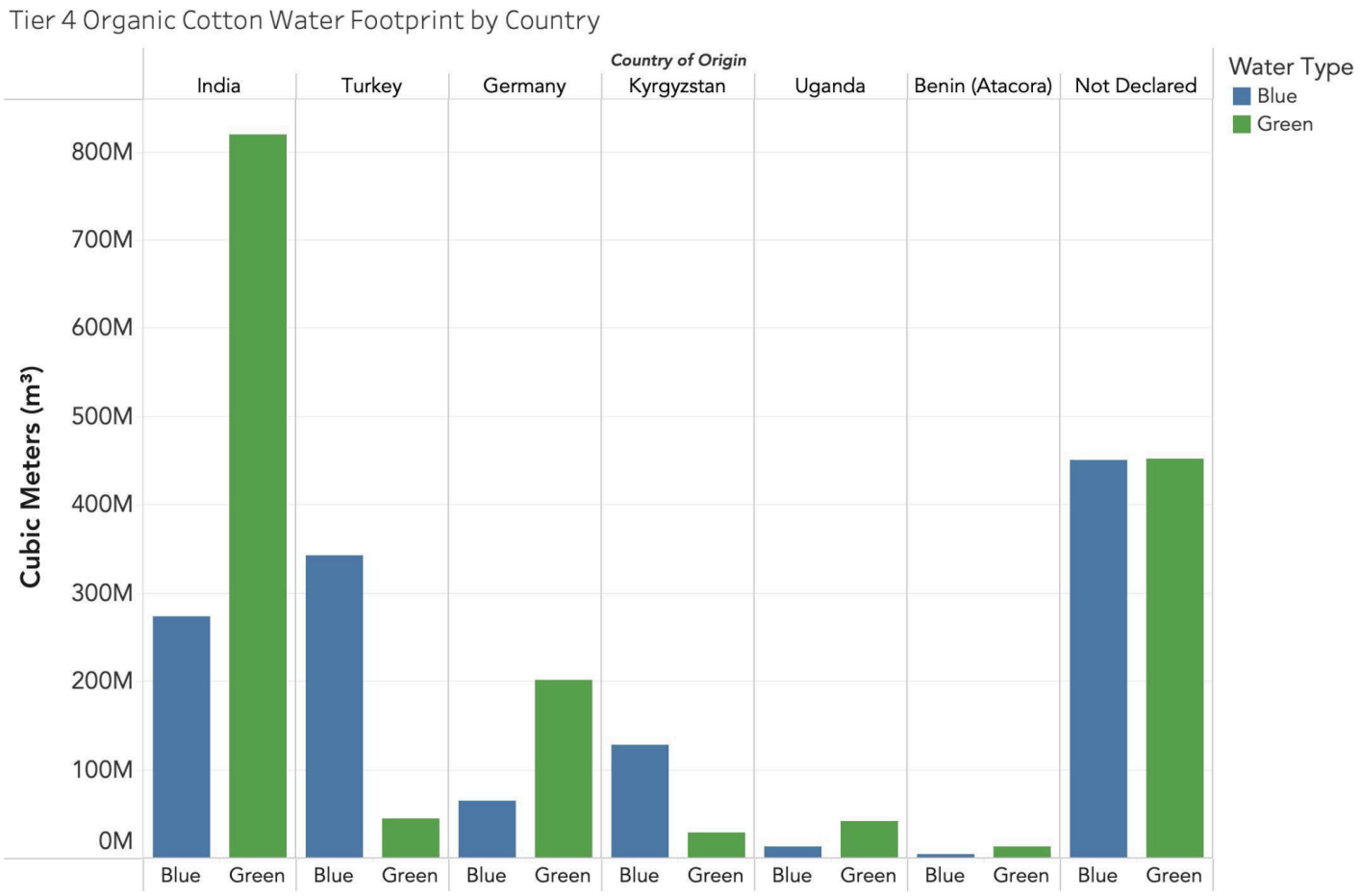


Figure 30: Regional distributions of Everlane's organic cotton sources, broken up by green and blue water types. Most water usage at the raw material phase for organic cotton occurs in India, and the majority of that water usage is from green water.

In Figure 31, the breakdown of Everlane's total Tier 4 water usage, including cotton, polyester, MMCFs, and all of their variations (recycled, organic, etc.) is displayed. This shows that gray water usage comprises most of the water used in Tier 4 processes for Everlane. This is mainly from the chemicals and pollutants associated with virgin synthetic fiber production and conventional cotton growing, which contributes to a gray water footprint. Focusing on efforts to reduce the gray water footprint could serve as

a promising potential for Everlane to decrease its overall Tier 4 water footprint. More detailed recommendations for Everlane to reduce their gray water usage can be found in the Discussions and Conclusions section.

We also show the percent breakdown of Everlane's Tier 1-3 blue water footprint by water source type, shown in Figure 32. The largest source of water contributing to the blue water footprint is municipal, representing 42% of the footprint. The next two largest sources of water are groundwater and produced (process) water. The water source types were mirrored from the Higg FEM Index and are typically the sources that suppliers report using for blue water sources. Definitions of each water source type are as follows, and were pulled directly from the Higg FEM Glossary 2023,[102] which can be found in Appendix B: Higg FEM Questions & Glossary.

- **Municipal Water:** Water provided by a facility or other public provider. Depending on the region and season, municipal water can be sourced by surface water or groundwater. Because this data is collected and defined by Higg/Worldly, we were unable to disaggregate the specific type of municipal water suppliers reported.
- **Groundwater:** Water in the soil beneath the soil surface, usually under conditions where the pressure in the water is greater than the atmospheric pressure, and the soil voids are substantially filled with the water.
- **Produced/Process Water:** Water which, during extraction or processing, comes into direct contact with or results from the production or use of any raw material (e.g. crude oil or a by-product from sugar cane crushing), intermediate product, finished product, by-product, or waste product. Note this also includes reused/recycled water.
- **Surface Water:**
    - **Fresh Surface Water:** Surface water is naturally occurring water on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers, and streams.
    - **Brackish Surface Water/Sea Water:** Brackish water is water in which the concentration of salts is relatively high (over 10,000 mg/L). Seawater has a typical concentration of salts above 35,000 mg/L

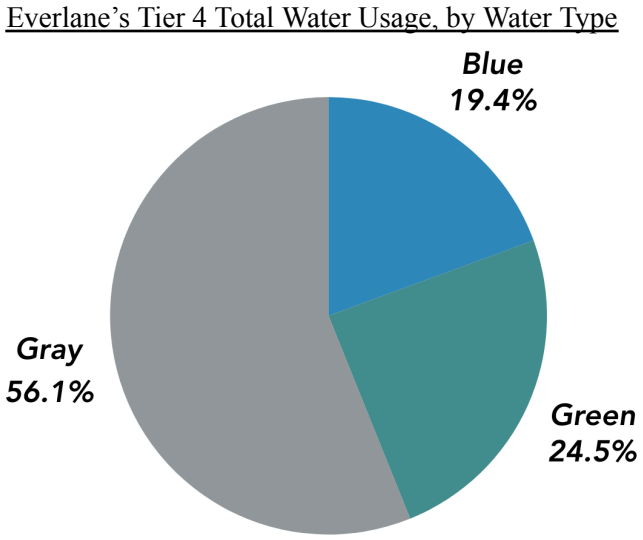


Figure 31: Percent water makeup (blue, gray, green) of Everlane's Tier 4 productions, for all priority materials.

[102] *FEM Glossary 2023 – User Resources: How To Higg*, n.d.

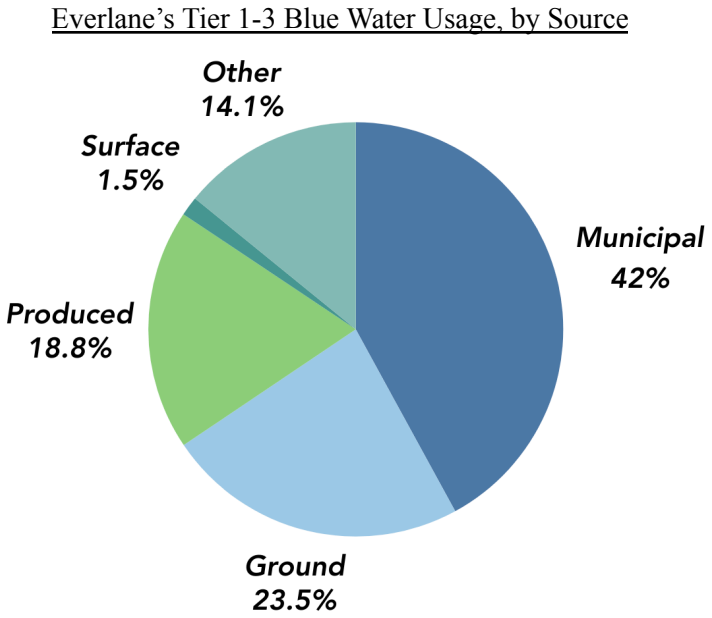


Figure 32: Tier 1, 2, and 3 suppliers' blue water usage by source. Municipal ranks the highest at 42%, followed by groundwater at 23.5% and produced water at 18.8%.

Risk Analysis Results

This risk analysis is the first step in what should be a multi-step approach to understanding Everlane's supply chain water risk. It should be used as a screening tool to begin to understand where hotspots are located so additional data and risk analysis can be performed on an operational level. It should not be used to make definitive decisions, but rather as a starting point to drive further investigation and analysis.

We used WWF's Water Risk Filter to map 375 supplier sites according to three primary risk factors: physical, reputational, and regulatory. Table 5 shows a summary of the aggregated supply chain risk of Everlane's suppliers for each of the three risk types.

Aggregated Supply Chain Risk Factors for Three Primary Risk Types

Rank	Basin Physical Risk	% Total	Basin Regulatory Risk	% Total	Basin Reputational Risk	% Total
Very high	0	0%	0	0%	66	18%
High	147	39%	0	0%	136	36%
Medium	200	53%	103	27%	114	30%
Low	28	7%	178	47%	59	16%
Very low	0	0%	94	25%	0	0%
Total	375		375		375	

Table 5: Total number of sites attributed to each risk factor, aggregated by risk type.

The aggregated supply chain risk factors combine several additional indicators to create a singular score for each site. For details on the risk categories that combine into the three primary risk types, please see Figure 13 in Water Risk Analysis Methodology and Appendix G: World Wildlife Fund (WWF) Water Risk Filter Categories. Based on these sub-categories, the following trends emerged for each Risk Type:

- The highest source of Basin Physical Risk for Everlane's suppliers is **Water Quality**, with 34% of sites located in **Very High Risk** areas, and 31% in **High Risk** areas.
- Suppliers are located in regions that have relatively low regulatory risks. The highest regulatory risk category for Regulatory Risk was in **Institutions & Governance**, with 16% of supplier sites in the **Very High-High risk** categories.
- For Reputational Risk, the highest risk category includes 45% of supplier sites located in areas of **Very High Cultural Importance**.

While this summary provides a general overview of the types of risks facing Everlane's supply chain, a more accurate analysis st the site-level would shed greater light on the unique risks facing each supplier.

Geographic Hotspots:
The Water Risk Filter provides companies with a baseline understanding of the risks facing their business. It is not necessarily meant as a prescriptive tool, and each site that is located in a high-risk region should have an operational risk assessment completed to understand the unique challenges it faces. The map (Figure 33) indicates areas of high risk (hot spots) that can be analyzed further. India, China, and Turkey are three hot spot regions that can be further researched to fully understand the material water risks to Everlane's business.

World Map of Everlane Suppliers – Geographic Hot Spots

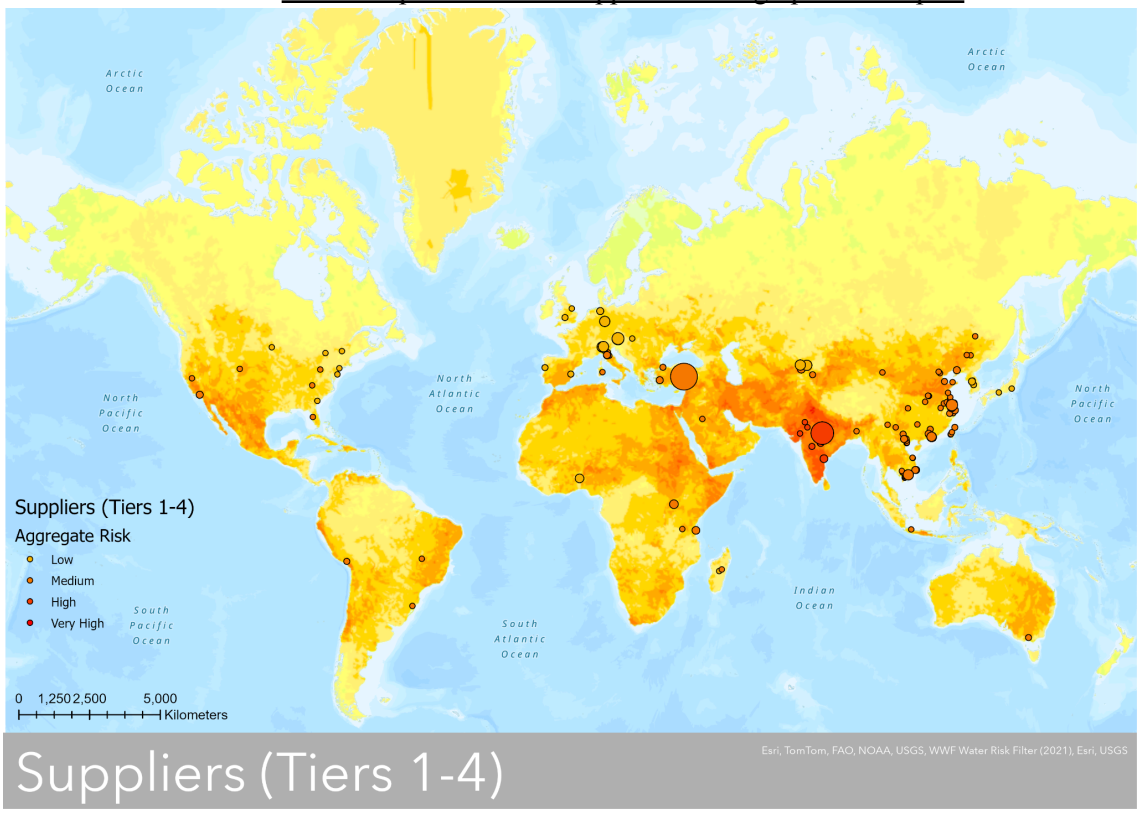


Figure 33: This map plots 375 Tier 1-4 Everlane suppliers. The size of the circle represents the number of suppliers operating in a specific region. Hotspots are areas where there is either (1) high density of circle clusters, or (2) large circles. India, China, and Turkey are hotspots where a majority of Everlane suppliers are operating based on data we were able to collect.

Everlane's Geographic Hotspots - India Focus

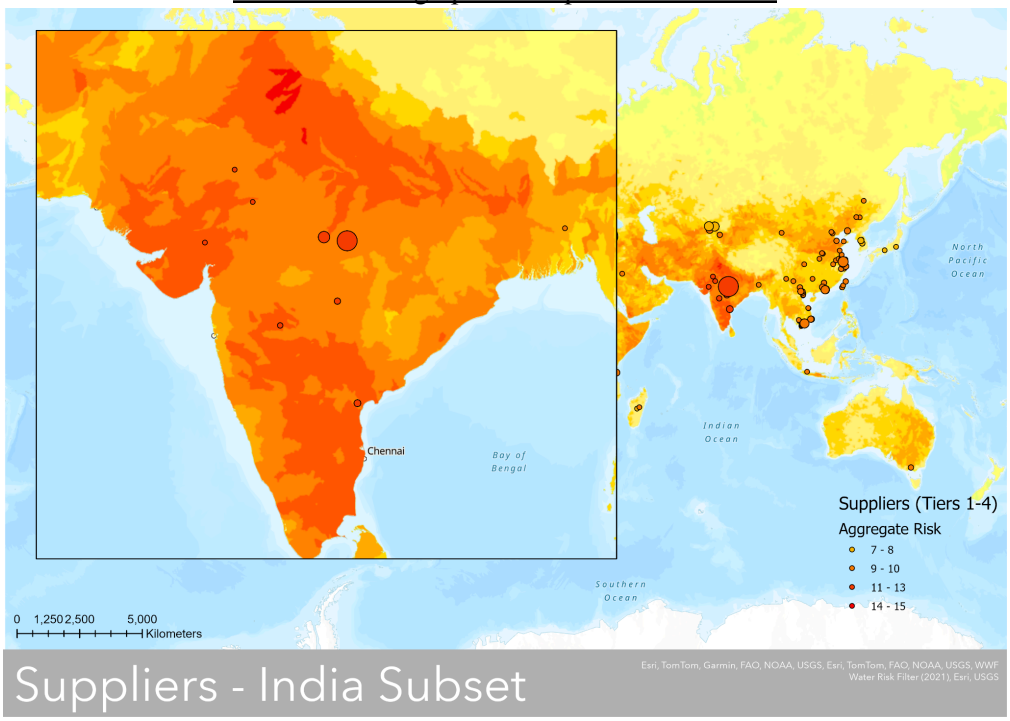


Figure 34: This map shows a granular view of India, one of Everlane's three regional risk hotspots.

A large percentage of Everlane's cotton is grown in India. In the absence of site-specific data, we had to input regional or country-level data into the WWF Water Risk Filter. As a result, generic coordinates were assigned by the Risk Filter (e.g. any site that did not have specific geo coordinates assigned to it was assigned to the same spot in India), thus skewing the results. Regardless of the lack of granular data, the fact that Everlane relies on cotton production in India, which has high water risk as indicated by the map above, suggests that Everlane should invest in obtaining more detailed information about where their cotton suppliers are located to better understand the localized risks faced by their supply chain.

Everlane's Geographic Hotspots - China Focus

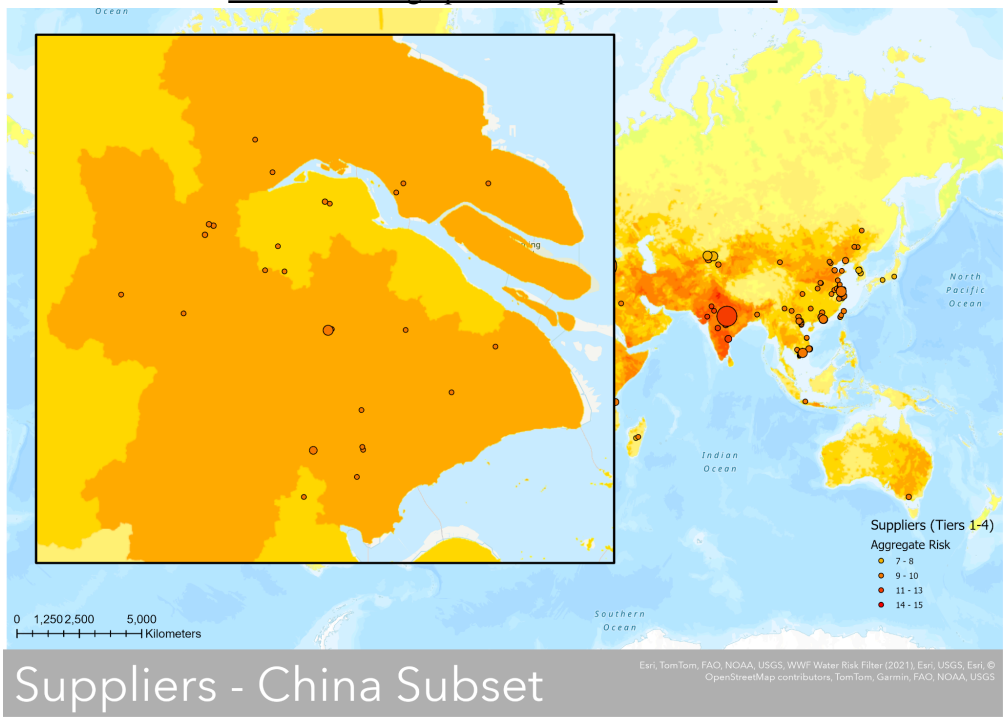


Figure 35: This map shows a granular view of Eastern China, one of Everlane's three regional risk hotspots.

Eastern China, as shown in the subset map above, has a large number of suppliers operating in the region. Of the 375 suppliers mapped, 23% of them were located in China; 63% of those suppliers are in Tier 3, 30% in Tier 2, and 7% in Tier 1. Because Tiers 2 and 3 are more reliant on water for processes like dyeing and laundering, these particular suppliers have higher water risk. Despite the fact that less than 1% of Everlane's total water footprint consists of Tier 1-3 suppliers, it is nonetheless important to engage those whose operations could have a significant impact on local water resources and communities.

Everlane's Geographic Hotspots - Turkey Focus

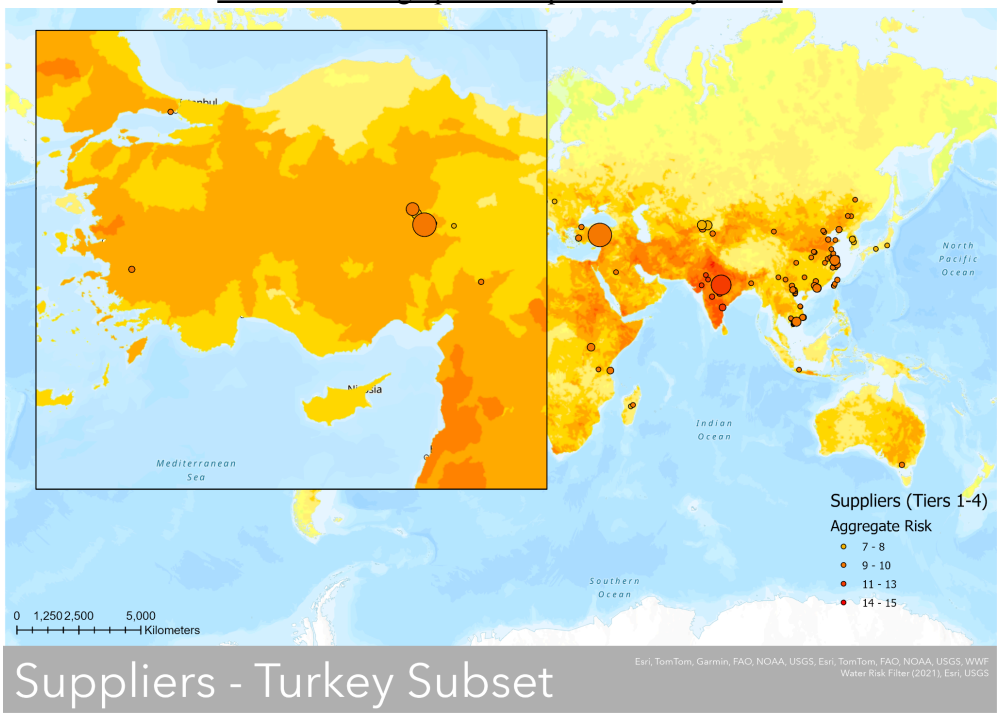


Figure 36: This map shows a granular view of Turkey, one of Everlane's three regional risk hotspots.

Suppliers based in Turkey comprise 15% of Everlane's total suppliers mapped. 27% of those suppliers are in Tier 4, 71% in Tier 3, and 2% in Tier 1. Similar to India's organic cotton suppliers, we had to input regional or country-level data into the WWF Water Risk Filter. As a result, generic coordinates were assigned by the Risk Filter (e.g. any site that did not have specific geo coordinates assigned to it was assigned to the same spot in Turkey), thus skewing the results. Despite the lack of specific data, knowing Turkey is a cotton producer in a relatively high-risk region, Everlane should further study suppliers in the area to assess their impact on local communities and ecosystems.

Tier Hotspots:
We mapped 375 supplier sites using WWF's Water Risk Filter from the various tiers (1-4). How we obtained data for each tier is outlined above in the Water Risk Analysis Methodology section. The results of our preliminary risk assessment for each tier are below.

Tier 1
9% of mapped suppliers were in Tier 1, primarily located in Vietnam. Tier 1 is the least water-intensive part of the supply chain, as it primarily involves the assembly of garments. Tier 1 sites should be the lowest priority for additional water risk analysis.

Tiers 2 and 3
15% of mapped suppliers are Tier 2, and 46% were in Tier 3, Secondary Processing and Initial Processing, respectively. Some of the supply chain's most water-intensive activities occur in Tier 2, which aligns with Everlane's water footprint intensity by tier. A majority of Everlane's Tier 2 processing occurs in China, and Tier 3 processing occurs in both China (32%) and Turkey (23%). Suppliers located in these regions should be further analyzed, as noted in the Geographic Hotspot analysis.

Tier 4

Tier 4 supplier data, where a majority of the physical risk is located, is not granular. At most, we had a region within a country that we could enter into the risk filter. For country-wide data, we relied on the water risk filter's general placement/assessment for the country. For example, we had 22 sites listed in India without any additional location information. The risk filter placed them in the Yamuna basin in India, which has the highest aggregate risk factor in our data set. Since we lacked data for 25% of known organic cotton production locations, we suggest Everlane collect that data to gain a complete, and more granular picture of their Tier 4 water footprint. It should also be noted that Tier 4 supplier data obtained represents only organic cotton, and is thus not fully accounted for in this risk assessment. Conventional cotton, polyester, and MMCF raw material production locations are not included in the Tier 4 risk assessment and could significantly alter results depending on where they are cultivated. This is a major gap that should eventually be addressed through supply chain engagement and efforts to improve transparency.

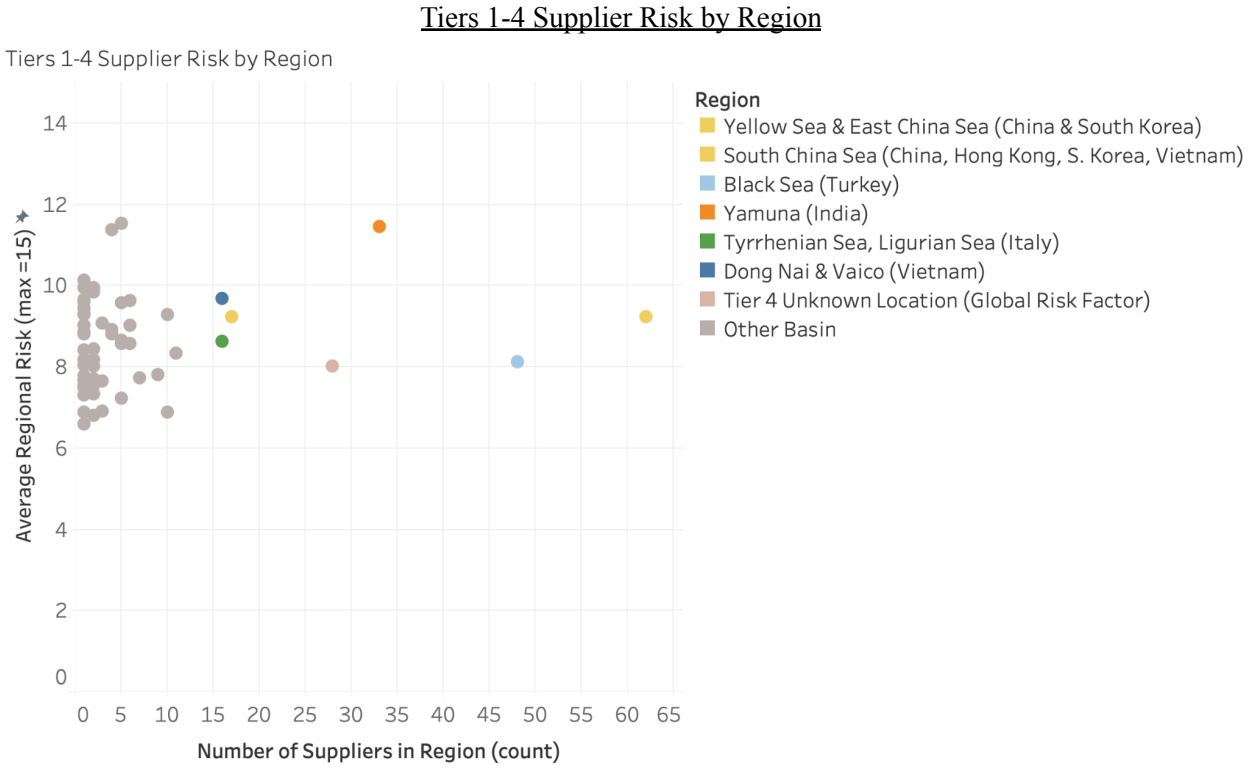


Figure 37: This figure plots the number of suppliers in each region on the x-axis and the aggregate regional risk factor (max=15) on the y-axis. The further you move to the right on the graph, the higher the number of suppliers operating in that region. The further up you move on the graph, the higher the aggregate risk factor for that region.

Tiers 1-4 Supplier Risk by Region, With Tier Representation

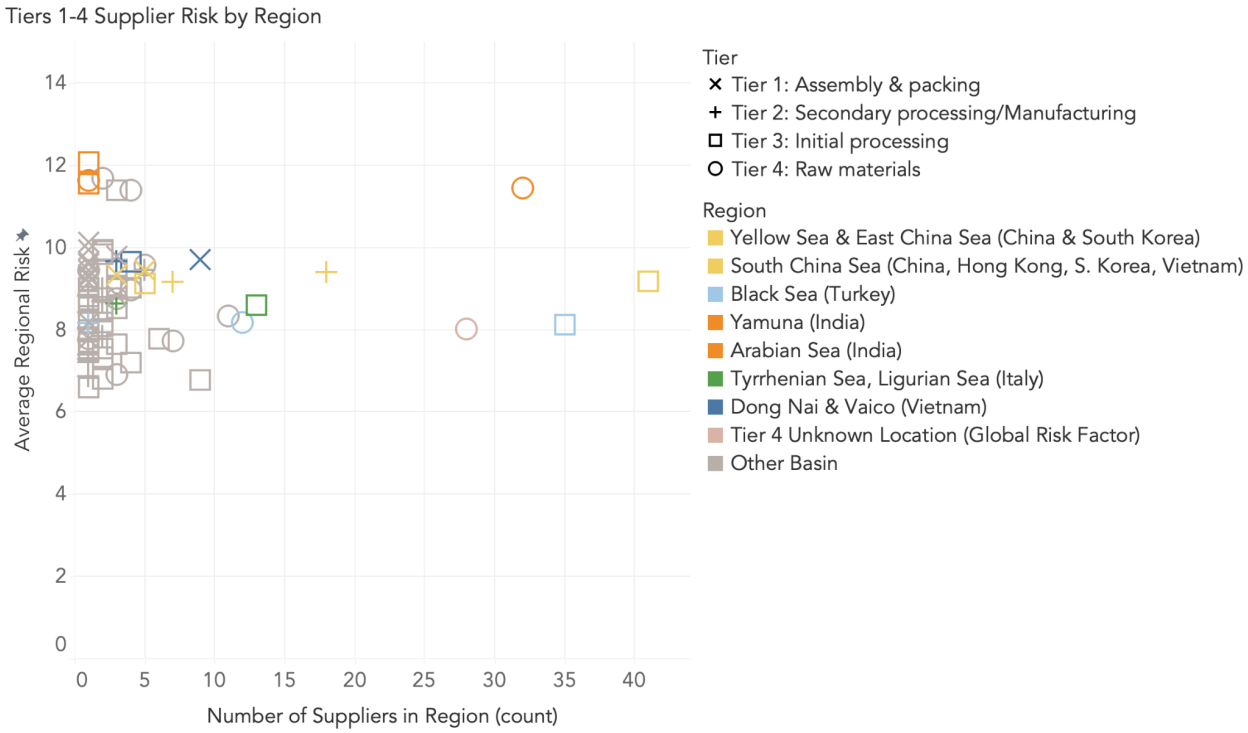


Figure 38: This figure presents a deeper analysis of the above figure. It plots the number of suppliers in each region on the x-axis and the aggregate regional risk factor (max=15) on the y-axis. Each shape represents a different tier.

Water-related risks have material implications for Everlane. Water scarcity can cause supply change challenges that stunt revenue growth, raise operating costs, and increase capital expenditures for new technologies that improve water efficiency or treatment.[103] Therefore, we recommend the following actions Everlane can take to gain a more complete picture of the regional hot spots and risks associated with specific operations/supply chains (e.g. cotton from India).

Recommendations for Action:

- Complete site-specific operational risk assessment, and conduct further risk assessments on suppliers that have:
    - High production value (i.e. supply a large volume of fabric to Everlane), and
    - High water use (i.e. suppliers that are dependent on local water resources to operate)
- Complete a gap analysis for the Tier 2-3 and Tier 4 suppliers to improve supply chain transparency and better assess regional hotspots and risks.
- As regulatory risk likely increases in the face of diminishing water quality, suppliers should consider engaging in the policy processes through advocacy.
    - Since Very High or High water quality risk affects 65% of facilities throughout the supply chain, technology improvements should focus on minimizing further pollution and cleaning existing water sources to usable standards through treatment and reuse. While Everlane does not have direct control over supplier operations, they can leverage partnerships to improve industry-wide practices.

[103] CFA, 2021

Product Case Study

To apply our findings, we examined the implications of transitioning one of Everlane's most popular products from traditional lyocell to Tencel lyocell, and conventional cotton to organic cotton. Employing the Water Footprint Calculator we developed, we quantified the total cubic meters of water consumption associated with the product's fabric composition.

The results show that, upon implementing the fabric switch, there is a notable reduction in the blue water footprint, decreasing from 887 liters (0.8887 cubic meters) to 399 liters (0.399 cubic meters) per unit. The majority of the product's water footprint is attributed to gray water and exhibited the most significant changes. The gray water footprint saw a decrease from 10,166 liters (10.2 cubic meters) to 2,626 liters (2.6 cubic meters) when the pant was made from Tencel lyocell and organic cotton. This reduction in the gray water footprint is primarily due to lyocell's larger water footprint per kilogram compared to Tencel Lyocell. MMCF's have a larger tier 4 footprint and make up 60% of the material composition of this pair of pants.

Overall, the shift in material choice resulted in a 7.9 cubic meter reduction in total water footprint for the Way High Drape Pant (11.4 cubic meters using generic lyocell & conventional cotton to 3.5 cubic meters using Tencel lyocell and organic cotton).

Product-Specific Water Footprint Case Study: Everlane's Way High Drape Pant

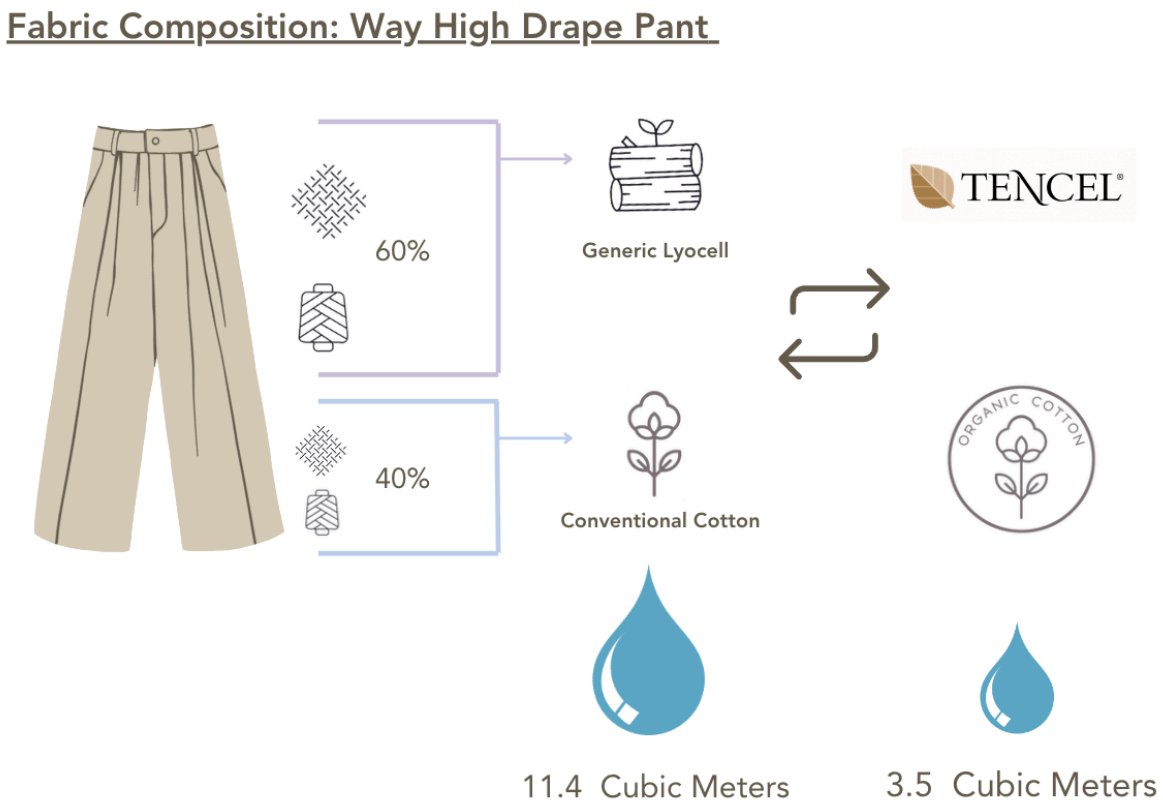


Figure 39: Water usage for Tiers 1-4 of the Way High Drape Pant if the material composition changes from traditional lyocell to TENCEL lyocell, and conventional to organic cotton. Overall, there is a 7.9 cubic meter reduction from switching materials which is about 2,100 gallons of water savings per pant.

Supplier Leaders and Laggards

To better understand the differences in how suppliers operate, and their impacts on water resources, we identified one leader and one laggard to analyze. For this process, we examined various factors including the supplier's annual production volume, water usage (L) per kilogram, production processes, fabric types, and location. We also accounted for the consumption of products from each supplier by Everlane. Each supplier had comparable annual production volumes, processes, and fabric types.

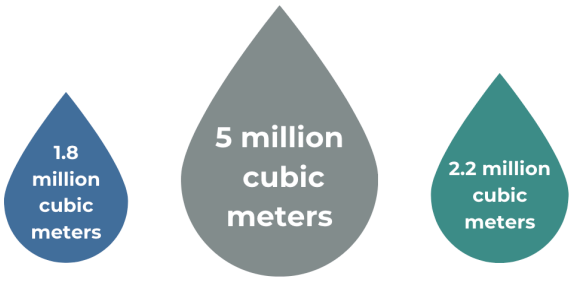
Our analysis revealed a notable distinction between the suppliers: Supplier ID IJ78 demonstrated a significantly lower water usage per kilogram of material, normalized for different fabric types, compared to Supplier ID GH56. Further investigation revealed that Supplier IJ78 implements water recycling practices, reclaiming 27% of their water. In 2022, Supplier IJ78 is responsible for 0.9% of Everlane's water consumption by weight. This finding underscores the potential impact of sustainable water usage on resource conservation. Even recycling a small percentage of wastewater can lead to significant reductions in a facility's water usage. By leveraging our insights into water consumption per kilogram of material, Everlane gains actionable intelligence to pinpoint areas of high water usage within their supply chain, identifying both leaders and laggards in sustainability efforts amongst supplier facilities.

Supplier Case Study: Comparing Water Usage at two Everlane Supplier Facilities

SUPPLIER ID	2022 ANNUAL VOLUME PRODUCTION	PROCESSES	MATERIAL TYPE	WASTEWATER QUANTITY	WASTEWATER TREATMENT	WATER USAGE IN 2022 YR
IJ78- China	17,210,181 kg	Dyeing, Knitting	Cotton, Polyester, MMCF	933,644 cubic meters	Onsite & offsite (recycles 27%)	53 L/kg
GH56- Vietnam	17,571,168 kg	Dyeing, Knitting	Cotton, Polyester, MMCF	1,390,096 cubic meters	Onsite & offsite (no recycling)	69 L/kg

Figure 40: Two suppliers operational water impacts compared by 2022 annual volume production, supply chain processes responsible for, material types processed, wastewater quantity, whether or not they have wastewater treatment onsite or offsite, recycling of water, and their water usage in Liters per kilogram.

Discussion and Conclusions



Tier 1-4 Total= 9 million cubic meters

Key Findings:

Water Use by Water Type

Everlane's total water footprint was 10.2 million cubic meters: 1.8 million cubic meters of blue water, 5 million cubic meters of gray water, and 2.2 million cubic meters of green water.

Water Use by Fabric

Cotton is the most water-intensive fabric used by Everlane. Based on data collected from suppliers, the top three fabrics we analyzed have the following water footprints:

- Cotton: 5,196,887 cubic meters and 84.94 L/kg
- Man-made Cellulosic Fibers (MMCFs): 2,261,026 cubic meters and 9.87 L/kg
- Polyester: 1,583,672 cubic meters and 34.52 L/kg

Water Use by Tier

Tier 4, which includes cotton production, uses the most water in Everlane's supply chain and comprises 99% of Everlane's water footprint at 8.9 million cubic meters. It is important to note that based on our results, recycled polyester used 68% **less** blue-gray water than virgin polyester in Everlane's raw material production. Additionally, switching from conventional cotton to 100% organic cotton would significantly reduce Everlane's gray water footprint, since organic cotton does not use any harmful chemicals or pesticides that require dilution. Data for Tier 4 was derived from the literature review, as visibility into Tier 4 was negligible beyond Trade Certificate data for organic cotton.

The **Tier 1-3** water footprint totals 82,200 cubic meters, or 0.9% of Everlane's total footprint. Cotton in Tier 2-3 uses the most water per kilogram of fabric. This is unsurprising as cotton is hydrophilic, or "water-loving" and absorbs more water than synthetic materials like polyester. Additionally, tier 2-3 houses some of the most water-intensive processes, like dyeing and washing. Polyester, which is hydrophobic, requires less water in Tiers 1-3. MMCFs had the lowest liters of water used per kilogram of fabric in Tiers 1-3. Data for Tiers 1-3 was primarily gathered through primary sources such as verified data and unverified surveys.

Water Risk by Region

Using the WWF Water Risk Filter, we found that Everlane's suppliers located in high risk areas were also those who participated in water-intensive practices in Tiers 2-3 and 4. India is a hot spot for cotton cultivation and has high water risk, while Turkey and China are hot spots for Tier 2-3 processes and have moderate to high water risk. Nearly 40% of Everlane's suppliers are located in regions with high physical risks (e.g., drought or flooding), and over half of Everlane's suppliers are in regions with very high to high reputational risk (e.g. operating in areas of cultural importance). The type of risk each supplier faces helps determine the corrective action a supplier can take to minimize their impacts. These results serve as a starting point for understanding supply chain risk. Dedicated supplier outreach and operational risk audits would yield more detailed results.

Recommendations

Based on the results, we identified potential technological and operational avenues for Everlane to improve its supply chain water footprint.

Materials

- **Materials Selection:** Organic and/or recycled materials should be prioritized whenever possible over conventional or virgin materials to lower Everlane's water footprint. In Everlane's continuing journey to transition to more sustainable materials, the company can use the water data collected to target products. For example, if Everlane is phasing in or out a certain material, it can use water impact as further reasoning to justify its decision and reduce its environmental impact.

- **Certifications:** To ensure water reduction qualities of materials, Everlane can continue prioritizing standards such as Bluesign and the Global Organic Textile Standard (GOTS).

Suppliers

- **Supplier engagement:** Everlane can continue to survey suppliers using a similar template as the one used in this study. The ideal scenario would be to annually collect data to track the evolution of the company's water footprint over time, as well as stay updated on upstream suppliers beyond Tier 1 and Tier 2. This way, specific suppliers can be identified for improvement, and supply chain transparency can be fostered.
- **Traceability/Visibility:** Everlane should look into innovative and rigorous traceability efforts, such as already-existing material tracing technologies. By improving supply chain visibility and material traceability, Everlane can continue to monitor and enforce the best and most responsible practices for supplier water usage. Everlane can also more accurately quantify its water footprint with more comprehensive insight into each supplier tier.
    - Tier 4 raw material regional data: We recommend that Everlane acquire more information on the specific regions of its organic cotton that was not given by the Trade Certificates. Requiring the specific region on the TC and working with partner suppliers to ensure that they can provide region-specific data will help increase the traceability of their raw materials and accuracy of future water footprinting and risk assessment efforts. Additionally, Everlane should gather raw material location data for their conventional cotton, recycled polyester, and MMCFs.
- **Certifications:** To ensure Everlane continues to partner with suppliers who are committed to positive environmental practices, Everlane can establish additional supplier requirements, or prioritize working with suppliers who are certified. This could include certifications for manufacturing processes, like Zero Discharge of Hazardous Chemicals (ZDHC).
- **Efficiency Upgrades:** Suppliers with higher water footprints relative to their peers can be identified from the findings of this project. They can be encouraged to adopt water-efficient practices as part of Everlane's initiative to reduce its water footprint, including onsite wastewater treatment and onsite wastewater recycling.

Water Risk

- **Supplier Engagement:** Water risk data can be provided to the suppliers themselves, along with recommendations for reduction (e.g. technology investments, changes in operational norms). This would provide valuable insight to suppliers on their impact and, potentially, how it compares to similar facilities in the industry. By engaging with suppliers, Everlane can gain access to Tier 3 and 4 operations to better understand the true nature of risks facing their upstream suppliers.
- **Complete Operational Risk Assessment:** To gain a more thorough understanding of its true supply chain risks, we recommend Everlane complete site-specific operational risk assessments, particularly for suppliers that may be high contributors of water risk relative to their production.

Industry

- **Partnerships:** Everlane can provide the water footprint framework and additional insights to companies interested in tracking their water footprints. While this would not directly reduce Everlane's water footprint, it would bolster Everlane's leadership among industry peers. Because water footprinting and supply chain tracking are burgeoning aspects of sustainability, being able to provide insight into the steps needed to conduct these analyses would be valuable knowledge for fellow apparel companies. As more companies work with suppliers to reduce water impacts, the industry as a whole will shift to less water-intensive practices.

In addition to supply chain relations, this project has implications for the entire apparel industry. Supply chain tracking and water footprinting in particular are still in their infancy; Everlane can set itself apart as an industry leader by presenting the results and methodology of this project. A framework for surveying and analyzing a company's water footprint would be a valuable tool for companies seeking to measure their impact. While this project took a materials and production-based approach, other companies can customize their methodology to focus on suppliers, regions, or production processes.

Challenges

Scoping:
Our first challenge was appropriately scoping the project for our limited timeline. Our initial project goals were not specific enough for us to focus on a tangible process, so we had to think critically about the most important and impactful outcomes and how we could achieve them. At this stage, we decided to limit the scope to three priority materials. We then set out to collect as much primary supplier data as possible directly from Everlane. While Everlane was able to provide us with useful information on their direct suppliers, we realized that there were significant gaps further upstream that needed to be filled in. Our extensive literature review and background research helped us articulate more clearly which information we would prioritize gathering from suppliers, and ultimately resulted in the creation of the supplier survey.

Supplier Survey:
Our initial challenges came at the survey creation and execution stage. While Everlane categorizes their supplier by tiers, the facilities themselves may not categorize themselves as neatly since they supply to multiple buyers. To remedy this, we asked suppliers to list the processes they participate in and classified them when data cleaning. That way, even if a facility works across multiple tiers, we were able to categorize them as either Tier 1, 2, or 3.

Another challenge we faced was receiving survey responses from the suppliers, particularly those from Tier 3, as they did have contact with Everlane prior to this project. Balancing supplier relations and urgency for responses was a crucial and difficult aspect of the data gathering stage. We sent two follow-up emails to suppliers who did not respond, and despite our best efforts yielded few replies. We were not able to obtain any contact information for Tier 4 suppliers, leading us to supplement data with a literature review.

Data Analysis:
During the data analysis stage of our project, we faced several challenges. First, we had to convert survey data from Qualtrics into R Studio. We then had to clean it before we could start wrangling it. However, much of the data was categorical and some were filled out in another language, which meant that we had to spend a lot of time inputting survey responses manually to have them in a clean format to work with.

Second, we had to determine our calculation approach from the survey data and Higg FEM data provided, which had multiple parameters and potential approaches for analysis. It was critical to determine which information we needed exactly from the supplier survey and Higg FEM to calculate the footprint most accurately. The information reported to Higg FEM covers more bases than just water, so filtering and selecting the data of most relevance to us and understanding which questions were correlated in our survey was an important task.

Third, we had to quantify how much of each supplier's annual production was attributed to each fabric material, which relied on direct communication with suppliers. Some suppliers responded to our

follow-up email about their specific production breakdown, however, we had to use a range for those who did not.

Finally, we had to make sure all of our units were consistent throughout the calculation, to not have dramatically different results. We used several conversion factors as some of the suppliers reported their units in meters or the total number of items. We used industry information about the weight of cotton per kilogram and polyester, etc., to normalize the values to accurately obtain a range and compare suppliers' water usage.

Limitations & Future Research:
Several limitations came up that could be addressed in future research with more time and resources.

Most importantly, Everlane can move beyond quantifying the water footprint of three priority materials to all of its materials. This is a logical next step in the process. Similarly, this report does not include corporate water use for Everlane facilities. Likely a small percentage of total water use, based on Tapestry's reporting, Everlane may want to measure this type of water use for a complete picture of their company-wide water footprint.

Filling supply chain gaps, particularly those in Tier 4, was near impossible. We had to make various assumptions when working with data from the literature for the Tier 4 water footprint and risk analysis. With more granular data, Everlane can recreate the risk assessment and Tier 4 water footprint to gain a fuller, more accurate picture of the risks and impacts Tier 4 has on their operations.

Due to our limited scope and timeline, we were unable to investigate the water footprints of other materials or wait for additional survey responses to arrive during our gap analysis. Additionally, this project did not cover the use phase and end-of-life of Everlane's products. Washing and disposing of or recycling clothes also require water. Gap Inc., Patagonia, and others have done research into this area. Nevertheless, our water footprint analysis and calculation provide an informative initial glimpse into the water usage of cotton, polyester, and MMCFs in each tier, which is paving the way for greater transparency.

Conclusion

Everlane can use this methodology and water footprint calculator to improve their water footprint and mitigate negative impacts of water use. Strategies it can implement include switching to alternative textiles or fibers that are less water-intensive, transitioning to alternative manufacturing processes, obtaining specific certifications, and cultivating honest relationships with suppliers and customers. This will not only help to improve upon its supply chain environmental impacts but will also help to identify regions where vulnerable communities are directly impacted by water withdrawal associated with the industry.

The framework outlined in this report provides a guiding path to quantify a company's total water footprint. Everlane walked that road by embarking on this project – we hope that the trail left behind will help industry peers blaze their own path.

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Appendices

Appendix A: Wastewater Treatment Technologies
Appendix B: Higg FEM Questions & Glossary
Appendix C: Survey Design Outline
Appendix D: Tier 1/Tier 2 Survey Guide
Appendix E: Tier 3 Survey Guide
Appendix F: Fabric Category Key
Appendix G: World Wildlife Fund (WWF) Water Risk Filter Categories

Appendix A: Wastewater Treatment Technologies

Electrocoagulation: is an electrochemical process for the treatment of wastewater using an electric current without adding chemicals where tiny particles are removed in wastewater. *(Definition sourced from The National Library of Medicine. For more information please visit their official website.)*

Coagulation: is the chemical water treatment process used to remove solids from water, by manipulating electrostatic charges of particles suspended in water. This process introduces small, highly charged molecules into water to destabilize the charges on particles, colloids, or oily materials in suspension. *(Definition sourced from the Dober Chemical Company. For more information, please visit their official website.)*

Flocculation: is a water treatment process where solids form larger clusters, or flocs, to be removed from water. This process can happen spontaneously, or with the help of chemical agents. It is a common method of stormwater treatment, wastewater treatment, and in the purification of drinking water. *(Definition sourced from CleanAWater. For more information, please visit their official website.)*

Advanced Oxidation Processes: are a set of chemical treatment environmental engineering techniques designed to remove organic and sometimes inorganic materials in water and wastewater by oxidation through reactions with hydroxyl radicals. *(Definition sourced from American Water Chemicals. For more information, please visit their official website.)*

Membrane Filtration: relies on a liquid being forced through a filter membrane with a high surface area. There are four basic pressure-driven membrane filtration processes for liquid separations. These are, in ascending order of size of particles that can be separated: reverse osmosis, nanofiltration, ultrafiltration, and microfiltration. *(Definition sourced from the Wastewater Digest. For more information, please visit their official website.)*

Adsorption: is a physical process in which dissolved molecules or small particles in water (the adsorbate) are attracted and become attached to the surface of something larger (the adsorbent). *(Definition sourced from Danamark Watercare. For more information, please visit their official website.)*

Membrane Bioreactors (MBR): is a process that combines a microfiltration or ultrafiltration membrane unit with a suspended growth bioreactor, and is now widely used in both municipal and industrial WasteWater Treatment Plants (WWTPs). *(Definition sourced from PCI Membranes Filtration Group. For more information, please visit their official website.)*

Photocatalytic Membrane Bioreactor (PMR): is a system coupling photocatalysis and membrane filtration to produce high-quality permeate. Photocatalysis creates strong oxidizing radicals that degrade the pollutant. *(Definition sourced from the Royal Society of Chemistry. For more information, please visit their official website.)*

Appendix B: Higg FEM Questions & Glossary

The Higg FEM Glossary of Definitions website can be accessed here: Higg FEM Glossary of Definitions 2023

Please see below for the full guide to the Higg FEM Assessment Questions, also linked here: Higg FEM Questions PDF Doc

Appendix C: Survey Design Outline

1. Provide brief explanation of the purpose of the survey and its relevance to the organization's water management
    1. Assure suppliers the info provided will be confidential
    2. Refer suppliers to a Reference Guide to provide further explanation and clarity on the questions
2. Request basic details about the supplier such as company name, address, contact info, contact person, parent company, and square footage of facility
3. Ask suppliers to provide their total material production in the previous year by either weight in kilograms, or length in meters.
4. Ask suppliers to provide an overview of their water usage within their operations
    1. Total annual water consumption for previous (2022) year
    2. Divided out by type of water that they use in their operations: municipal, process, groundwater, surface water, seawater, etc.
5. Determines supplier's efforts to conserve water
    1. What water conservation efforts or initiatives are in place?
    2. Any technology equipment or processes to reduce water usage?
    3. Water treatment technologies in use and offsite or onsite?
    4. Do they have a copy of the types and concentrations of pollutants in their wastewater after treating it?
    5. Any water recycling or reuse practices?
6. Water management policies that the supplier follows
    1. Do they have a water management plan or policy? If yes, explain
    2. How do they monitor and track water usage? System to identify inefficiencies?
7. Inquire about their compliance with water regulations
    1. Any water-related certifications?
8. If they can, can they provide the contact info of their supplier? Or at a minimum, the country of origin of their raw materials?
9. Provide an opportunity for suppliers to share any additional comments or relevant info not in the survey

We recognize that there are some limitations within our survey methodology such as it not being verified by expert third parties, there being no way to ensure accuracy of response entries, and certain language barriers could skew response results.

Appendix D: Tier 1/Tier 2 Survey Guide

Please see the next page for the complete Tier 1/Tier 2 Survey Guide we sent to Everlane's suppliers to help in the completion of our initial survey.

Appendix E: Tier 3 Survey Guide

Please see the next page for the complete Tier 3 Survey Guide we sent to Everlane's suppliers' suppliers to help in the completion of our second survey.

Appendix F: Fabric Category Key

List of fabric categories and subcategories that fall within the scope materials.

Cotton	Polyester	MMCFs
Conventional Cotton	Conventional polyester	Acetate
Organic Cotton	Recycled polyester	Lyocell
Pima Cotton/Supima Cotton	Recycled PET	Modal
Recycled Cotton		Triacetate
Regenerative Cotton		Viscose

Table 6: List of fabric categories and subcategories excluded from the scope materials, non-exhaustive.

- Animal products
    - Wool
    - Leather
    - Cashmere
    - Suede
    - Alpaca
    - Yak
    - Mohair
- Nylon
- Linen
- Elastane
- Hemp
- Rubber
- Acrylic
- Others not listed in the previous table

Appendix G: World Wildlife Fund (WWF) Water Risk Filter Categories

Table 1. Three-level hierarchy of the basin risk assessment framework: risk type, category and indicator. This table lists the global indicators.

Risk type	Risk category	Indicator *
BPH - PHYSICAL	BRC1 - Water Scarcity	B1_0 - Aridity Index B1_1 - Water Depletion B1_2 - Baseline Water Stress B1_3 - Blue Water Scarcity B1_4 - Available Water Remaining (AWARE) B1_5 - Drought Frequency Probability B1_6 - Projected Change in Drought Occurrence
	BRC2 - Flooding	B2_1 - Estimated Flood Occurrence B2_2 - Projected Change in Flood Occurrence
	BRC3 - Water Quality	B3_1 - Surface Water Quality Index B3_1_1 - *Biological Oxygen Demand (BOD)* B3_1_2 - *Electrical Conductivity (EC)* B3_1_3 - *Nitrogen (N)*
	BRC4 - Ecosystem Services Status	B4_1 - Fragmentation Status of Rivers B4_2 - Catchment Ecosystem Services Degradation Level B4_3 - Projected Impacts on Freshwater Biodiversity
BRG - REGULATORY	BRC5 - Enabling Environment	B5_1 - Freshwater Policy Status (SDG 6.5.1) B5_2 - Freshwater Law Status (SDG 6.5.1) B5_3 - Implementation Status of Water Management Plans (SDG 6.5.1)
	BRC6 - Institutions & Governance	B6_1 - Corruption Perceptions Index B6_2 - Freedom in the World Index B6_3 - Private Sector Participation in Water Management (SDG 6.5.1)
	BRC7 - Management Instruments	B7_1 - Management Instruments for Water Management (SDG 6.5.1) B7_2 - Groundwater Monitoring Data Availability and Management B7_3 - Density of Runoff Monitoring Stations
	BRC8 - Infrastructure & Finance	B8_1 - Access to Safe Drinking Water B8_2 - Access to Sanitation B8_3 - Financing for Water Resource Development and Management (SDG 6.5.1)
BRP - REPUTATIONAL	BRC9 - Cultural Importance	B9_1 - Cultural Diversity
	BRC10 - Biodiversity Importance	B10_1 - Freshwater Endemism B10_2 – Freshwater Biodiversity Richness
	BRC11 - Media Scrutiny	B11_1 – National Media Coverage B11_2 – Global Media Coverage
	BRC12 - Conflict	B12_1 - Conflict News Events B12_2 - Hydro-political Likelihood

* Indicator names in the Global dataset - For names in Local datasets, go to https://riskfilter.org/water/explore/data-and-methods

Appendix A: Wastewater Treatment Technologies

Electrocoagulation: is an electrochemical process for the treatment of wastewater using an electric current without adding chemicals where tiny particles are removed in wastewater. *(Definition sourced from The National Library of Medicine. For more information please visit their official website.)*

Coagulation: is the chemical water treatment process used to remove solids from water, by manipulating electrostatic charges of particles suspended in water. This process introduces small, highly charged molecules into water to destabilize the charges on particles, colloids, or oily materials in suspension. *(Definition sourced from the Dober Chemical Company. For more information, please visit their official website.)*

Flocculation: is a water treatment process where solids form larger clusters, or flocs, to be removed from water. This process can happen spontaneously, or with the help of chemical agents. It is a common method of stormwater treatment, wastewater treatment, and in the purification of drinking water. *(Definition sourced from CleanAWater. For more information, please visit their official website.)*

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Higg Facility Environment Module (Higg FEM) Assessment Questions

Version 3.0

Updated November 2018

Higg Facility Environmental Module (Higg FEM) Convergence Partners

The Higg FEM Chemicals Management section is a joint effort among the Sustainable Apparel Coalition (SAC), the Outdoor Industry Association (OIA), and the Zero Discharge of Hazardous Chemicals (ZDHC) Programme to converge their respective chemicals tools into one assessment questionnaire.

Higg FEM replaces the standalone OIA Chemicals Management Module Facilities Indicators. OIA recommends that all its members utilize the Higg FEM as one holistic tool in its entirety, and as their primary source of benchmarking and measurement for chemicals management best practices at the facility level.

Higg FEM replaces the ZDHC Audit Protocol V.2.0, which is no longer supported by ZDHC. ZDHC Contributors are encouraged to access and utilize Higg FEM as a critical part of the ZDHC system of tools for management and improvement of chemical management. Further, ZDHC requests that Contributors accept Higg FEM assessments and verifications as indicators of chemical management performance.

Through the process of convergence, ZDHC, OIA, and the SAC intend to reach thousands of facilities to harmonize chemical management assessments and reduce duplicative efforts, while also increasing assessment quality and enabling data sharing.

Higg Facility Environmental Module (Higg FEM) version 3.0

Content

General Information and Structure of FEM 3.0

Sections:

General Information and Structure of FEM 3.0

All facilities are required to complete their facility profile on higg.org first, where they are asked to provide information regarding their industry sector, facility type, facility processes, site information, material types, total number of employees, annual production volumes and all permits and licenses they hold. After completing the facility profile, you can start filling in the Facility Environment Module (FEM) sections.

In the module on Higg.org, each section has an introduction and guidance, and all questions in FEM 3.0 have the following additional information and context provided, which provides substantial guidance on:

- What is the intent of the question?
- How does this question help a facility drive improvement?
- Technical guidance
- How this will be verified
- Other references

In addition to the in-tool information and guidance given, the Higg FEM has a so-called 'How to Higg' guide, which is a comprehensive guidance document that contains additional background information, guidance and references to aid facilities and guide them through the completion of the Higg Module. For further information and to access the How to Higg guide, visit howtohigg.org.

Applicability Test

Some sections in FEM 3.0 have an applicability test, which means that users are asked to fill out several questions regarding each topic. Questions are used to determine whether your facility is, for example, a heavy water user or a light water user, which subsequently determines which questions in that section apply and do not apply to your facility and hence do not contribute to your FEM score.

The sections that have an applicability test are: Water, Wastewater, Air Emissions and Chemicals Management.

Site Info Permits

Country

Industry Sector
Select all that apply:

- Apparel
- Footwear
- Home Textiles (includes bed linens, tablecloths, towels, cloth napkins, and similar products)
- Accessories (includes handbags, jewelry, belts and similar products)
- Home Furnishings
- Hard Goods (includes bikes, tents, backpacks, luggage, electronics, coolers, climbing gear, watercraft, and and other equipment made of metal, plastic, or wood)
- Other

Facility Type
Select all that apply:

- Sewing or Final Product Assembly
- Printing or Dyeing
- Materials Supplier (including wet process)
- Trim
- Chemical
- Packaging

Facility Processes:

Sewing or Final Product Assembly	Printing or Dyeing	Materials Supplier (including wet process)	Trim	Chemical	Packaging
Casting	Dyeing	Casting	Casting	Raw Material Storage / Warehousing	Converting raw materials (incoming paperboard or plastic resin)
Cutting	Sublimation	Coating	Dyeing	Chemical Synthesis	Die cutting (e.g. cartons)
Embossing	Wet printing	Dyeing	Gluing	Standardization / Chemical Finishing	Assembly (e.g. corrugated board)
Priming	Screen Printing	Extrusion	Heat Press / Heating and Cooling	Blending / Formulating	Molding (plastic)

Heat Press / Heating and Cooling	Rotary Printing	Finishing	Lamination/Coating	Packaging	Printing
Lasting		Insulation: animal (down) processing	Molding	Waste Treatment / Management	Assembly
Molding		Insulation: non-woven processing	Non-woven	Final Product Warehousing / Storage	Gluing
No sew		Knitting		Shipping	Finishing
Packaging		Lamination			Die cutting
Gluing		Mixing (EVA / Rubber / primer / glue)			Packing
Seam Taping		Bonding			Shipping
Sewing		Spinning			
Sundries Application		Tanning (beam house or retannage)			
Washing		Vulcanization			
Welding		Washing			
Printing		Weaving			
Embroidery					

Material Types

Barriers
- BiComponent Coating
- BiComponent Laminate
- Microporus Coating
- Microporus Laminate
- Monolithic Coating
- Monolithic Laminate

Foams
- Ethylene-vinyl acetate (EVA) foam
- Polyethylene (PE) foam
- Polyurethane (PU) foam

Insulation Materials
- Duck Down insulation
- Goose Down Insulation
- Polyester insulation
- Sheep Wool insulation

Leather
- Cow leather
- Goat leather
- Kangaroo leather
- Pig leather

Metals
- Aluminum
- Brass
- Chromium
- Copper
- Gold
- Iron
- Lead
- Nickel
- Platinum
- Silver
- Steel
- Tin
- Titanium
- Zinc

Plastics
- Acrylonitrile butadiene styrene (ABS) plastic
- Epoxy plastic
- Nylon/Polyamide (PA) plastic
- Poly(methyl methacrylate) (PMMA) (Acrylic) plastic
- Polycarbonate (PC) plastic
- Polyester plastic
- Polyethylene (PE) plastic
- Polylactic Acid (PLA) plastic
- Polypropylene (PP) plastic
- Polysterene (PS) plastic
- Polytetrafluoroethylene (PTFE) plastic
- Polyurethane (PU) plastic
- Polyvinyl Acetate (PVA) plastic
- Silicone plastic
- Thermoplastic Polyurethane (TPU) plastic
- Thermoset PU plastic

Rubbers
- Butyl rubber
- Chloroprene rubber (Neoprene)
- Elastomeric polyurethane (PU) rubber
- Foamed rubber
- Isoprene Rubber (IR)
- Natural Rubber (NR)
- Nitrile Rubber (NBR)
- Polybutadiene rubber (BR)
- Silicone rubber
- Styrene-butadiene rubber (SBR)
- Thermoplastic elastomer (TPE)

Synthetic Leathers
- Polyurethane (PU) synthetic leather

Textiles
- Acetate, Triacetate fabric
- Acrylic fabric
- Alpaca
- Aramid fabric
- Bast fiber fabric
- Carbon fiber fabric
- Elastane/Spandex fabric
- Glass fiber fabric
- Lyocell fabric
- Cashmere
- Cotton fabric
- Modal fabric
- Nylon fabric
- Polyester fabric
- Polylactic Acid (PLA) fabric
- Polypropylene (PP) fabric
- Silk fabric
- Viscose/Rayon fabric
- Wool fabric

Wood-Based
- Cork
- Wood

How many days did you facility operate in 2018?:

Total Number of Employees:

- **Specify the number of full-time employees at your facility:**
- **Specify the number of temporary employees at your facility:**

What was your facility's annual production volume?
Report the total amount of product shipped/sold in the last calendar year

Production Units: Your annual production unit will be used to normalize baselines, targets, and reductions in the Higg Energy, Water, and Waste sections and may also be used for benchmarking purposes. Please select the unit that best represents how your factory tracks production. This may mean that you need to do a unit conversion in order to select a unit from the provided list. For example, if you track production in square feet you will need to convert to square yards

Quantity:

Units
- Square Yard
- Meter
- Kilogram
- Cubic meters (m3)
- Unit (piece or pair)

Does your facility site use pre-treatment for freshwater prior to entering the manufacturing process?
Suggested Upload: Schematics or permits
- Yes
- No
- Not applicable

If yes, please select what type: (include option to upload pre-treatment flow chart, not required)

Pre-Treatment
- Screening/Seaving
- Equalization tank/Homogenization tank
- Grit chambers
- pH Neutralization

Primary Treatment
- Coagulation -flocculation
- Primary clarifier
- Dissolved air flotation
- Lamellar settling

Biological Treatment
- Activated sludge
- Sequential batch reactor (SBR)
- Trickling filters
- Rotating biological contactors
- Submerged aerated filters
- Aerated biofilters
- Fluidized Bed
- Anaerobic digestion
- UASB Reactor
- Membrane bioreactors

- Aerated ponds

Secondary Treatment
- Sand filtration
- Adsorption with activated carbon
- Fenton reactions
- Ozonization
- Membrane filtration and reverse osmosis
- Ion exchange

Advanced
- Advanced Oxidation Processes (AOPs)
- Electrocoagulation-Electroflocculation
- Evaporation

Sludge Treatments
- Sludge thickening

Sludge dehydration technologies
Please upload your facility's pre-treatment flow chart, if you have one

Guidance:
- Need definitions: http://www.wateractionplan.com/en/web/gestion-del-agua/training#panel_2

Permits

The purpose of this section is to determine your compliance status with relevant environmental permits. Please include adherence to any rules or regulations your facility is required to follow such as permits, authorizations, licenses, registrations, certificates or other compliance documentation. Examples of non-permit requirements to include are annual required government reports and required registration of specific chemicals.

Please note that this section is NOT SCORED. This means that you do not get points for being in compliance. However, you must be in compliance to earn any points in the Facility Environmental Module. If you answer "No" to "Does your factory site have a valid operating license?", you will score ZERO for the entire module. This is because a valid operating license is required to score points in the Facility Environmental Module.

1. Does your factory site have a valid operating license, if required by law?
- Yes
- No
- Unknown

Please upload a copy of the operating license, if applicable.

2. Did your facility receive any government-issued environmental violation records in 2018?

- Yes
- No
- Unknown

If yes, please describe the violation and your site's action plan to improve

Suggested Upload: Copies of violation notices

If China is selected country: **Does your facility currently have any records in the Institute of Public & Environmental Affairs (IPE) database?**

- Yes
- No
- Unknown

Suggested Upload: IPE database records

If yes, has your facility supplied enterprise feedback to the database and/or taken steps to remove the record(s) from the database?

- Yes
- No
- Unknown

3. Please complete the following questions to provide details on your facility's environmental permits requirements and compliance status

Please note that licenses/permits for hazardous waste contractors will be requested in the Waste section.

Permit / Agreement Type	**Required for your site?** If yes, all columns must be complete to move on from this page.	**Name of the regulatory agency issuing the permit or agreement**	**Effective Date (MM/YYYY)**	**Is there an expiration date**	**What is your Compliance Status for this permit?**	**Upload a copy of your permit**	**Provide any additional notes**
Is a permit required for water use?	*Yes* *No* *Unknown*	*Open text*	*MM/YYYY*	*Yes / No* *If yes, MM/YYYY*	*In compliance* *Out of compliance*	*Upload*	*Open text*
Is a permit required for water discharge?							
Is a permit required for wastewater treatment?							
Are permits required for specific chemical use and management?							
Are permits required for air emissions?							

Is a permit required for solid waste discharge?							
Are any other environmental permits required? *For example, upload your Environmental Impact Assessment here*							

Section 1. EMS

EMS – Level 1

1. Are one or more employees at your facility responsible for coordinating your facility's environmental management activities?

Please answer Yes if you have any full-time, half-time, part-time, seasonal or contract employees working on environmental management in your facility. If Yes, provide details below.

You can provide details on up to five employees. If you wish to provide details on more than five employees, please upload these details in a document.

- Yes
- No
- Unknown

(If yes)

- Name (text)
- Job title (text)
- Time spent on environmental management (select one):
  - Full time (100%)
  - Half time (50-99%)
  - Part time (1-49%)
  - Seasonal
  - Contract
- Select environmental topic (select all that apply):
  - Energy
  - Waste
  - Water
  - Wastewater
  - Air Emissions
  - Chemicals Management
- Description (text)
- Do you wish to provide information on an additional employee? (If yes, please complete options above)
- Please upload documentation, if available (

  Upload: Environmental management team organization chart

2. Does your facility have a company environmental management strategy that guides long-term decision-making on environmental management?

Please answer Yes if you have a documented environmental strategy in place that sets forth environmental priorities, goals, and actions for 3+ years. A good environmental strategy should: 1) address your facility's significant environmental impacts and compliance obligations as prioritized in your environmental impact assessment; 2) be supported by factory leadership; and 3) be communicated to all employees. To ensure environmental objectives are carried out, your strategy should include plans for achievement that detail: what will be done, what resources will be required, who will be responsible, when it will be completed, and how results will be evaluated (reference: ISO 14001). If you have an environmental strategy that aligns with requirements in ISO 14001, you may answer Yes to this question.

- Yes
- No
- Unknown

Select all topics covered by this strategy:

- Energy
- Water
- Wastewater
- Air
- Waste
- Chemicals Management

Upload environmental management strategy

3. Has your facility identified the significant environmental impacts associated with current operations within the factory premises?

Please answer Yes only if you have an environmental impact assessment that shows significant environmental impacts from current factory operations.

- Yes
- No
- Unknown

Upload: a) Environmental impact analysis and aspect evaluation

4. Does your facility have a program or system in place to review and monitor environmental permit status and renewal (where appropriate) and ensure compliance?

Please answer Yes if you have a program to monitor compliance with environmental permits and rules.

Suggested Upload: Calendar for permit activities.
Upload or view supplemental documents

- Yes
- No
- Unknown

Upload: a) List of required permits needed for your facility to operate and calendar of permit activities; b) Documentation of programs or systems in place to review and monitor environmental permit status, renewals, and ensure you are meeting the legal requirement.

5. Does your facility maintain a documented system to identify, monitor and periodically verify all laws, regulations, standards, codes and other legislative and regulatory requirements for your significant environmental impacts?

Please answer Yes only if you have a system to monitor requirements.

Suggested Upload: Calendar for regular meetings with representatives from relevant organizations.
Upload or view supplemental documents

- Yes
- No
- Unknown

Select all topics covered by the system:

- Energy
- Water
- Wastewater
- Air
- Waste
- Chemicals Management

Are the findings used to set an improvement plan that is regularly reviewed?

- Yes
- No
- Unknown

Upload: Documentation of your system to identify, monitor, and periodically verify all laws, regulations, standards, codes, and other legislative and regulatory requirements for your significant environmental impacts

6. Does your facility have a process and schedule to maintain all equipment?

Please answer Yes if you maintain all equipment as this is important for managing emissions to air, energy efficiency, water efficiency, and other environmental impacts.

Upload: Maintenance schedule

EMS – Level 2

7. Does your facility review the environmental management strategy with your facility's managers each calendar year?

Please answer Yes only if you have evidence of management reviews conducted in 2018.

Suggested upload: Records from last annual management strategy review

8. Do employees at your facility responsible for environmental management have the technical competence required to do their job?

Please answer Yes if you can explain how you ensure environmental employees: a) have technical competence, b) are provided with trainings or certifications as needed, and c) are evaluated for competence on an annual basis. If you can demonstrate employee competence but do not yet have a process for annual performance review, please answer Partial Yes.

Upload: a) List of individuals that are responsible for environmental related issues; b) Procedure to cross reference the individuals listed have the technical competence required to do their job

EMS – Level 3

9. Does your facility promote awareness of the environmental strategy to employees?

Workers play a major role in how much energy and water is used, how much waste is generated, and can also help identify improvements for air and wastewater impacts. Please answer Yes if you can demonstrate how your environmental strategies have been communicated to workers. If you are in the process of developing a communication plan, you may answer Partial Yes.

Upload: Plan for promoting awareness of the environmental strategy to workers.

10. Does your facility monitor, evaluate, and/or engage with your subcontractors on their environmental performance using the Higg Index?

Please answer Yes if you engaged subcontractors in environmental assessment using Higg. If you have a plan to engage subcontractors, please answer Partial Yes.

Upload: List of all subcontractors with proof of Higg Index engagement: e.g., show Higg.org Module shared or other documentation of their Module results such as an emailed export of results.

11. Does your facility engage in environmental improvement in your local context?

Select the ways in which your facility engages in environmental improvement:

- We are supporting (financially or otherwise) conservation or improvement projects for environmental issues (e.g. preserving wetlands).
- We work with other similar businesses to share best practice for environmental management.
- We engage in dialogue with local communities to understand their views on how we as a company should manage our environmental impacts.
- We work within a group of other local stakeholders including government and communities, to understand and address local environmental issues together.
- We engage directly with local or national governance bodies on environmental regulation or management issues.
- We work together in a group with other local stakeholders, to engage with local or national governance bodies on environmental regulation or management issues.
- Other

Suggested Upload: a) Evidence of environmental improvement in your local context (e.g., community, river basin, etc.); b) List of local stakeholders and dates of engagement; c) Pictures, articles or press releases; List of organizations/initiatives you support.

12. Does your facility monitor, evaluate, and/or engage with your upstream suppliers using the Higg Index?

Please answer Yes if you can show Module shares, Higg.org invitations, or Module exports from your upstream suppliers. If you cannot yet show results but can demonstrate your plan for an upcoming Higg.org roll-out, please answer Partial Yes.

If yes, which type of suppliers?:

- Chemical suppliers
- Raw material suppliers
- Other, please describe

Suggested Uploads: List of upstream suppliers with proof of Higg Index engagement: e.g., show Higg.org Module shared or other documentation of their Module results such as an emailed export of results.

Section 2. Energy

Energy– Level 1

1. Select all sources of energy for your facility:

You will receive full points if you are completely tracking all sources of energy that your facility uses. You will receive partial points if you are completely tracking at least one of your energy sources, but are not yet tracking all of your energy sources.

Suggested Upload: a) Optional: an annual summary of the energy consumption for each type of energy sources. Uploading utility bills is NOT required, however they should be available for the verifiers to review at the time of verification; b) Picture of the energy meters used to monitor the consumption of the main energy sources if applicable

Select all sources of energy for your facility	**Does your facility track its energy use from this source?**	**What quantity of energy was used by this source in 2018?**	**Which method was used to track this energy source?**	**What was the frequency of measurement?**	**Provide any additional comments**
Biomass Select all types of biomass used at your facility: • Begasse • Cane Sugar • Cashew Nut Shell • Corncob • Cornstalk • Empty Fruit Branch • Eucalyptus Bark • Palm Fiber • Palm Leaf • Palm Shell • Palm Trunk • Parawood • Peanut Shells • Rice Husk • Rice Straw • Saw Dust • Sliver of wood • Tapioca Rhizome • Wood Briquette • Biodiesel • Biomass- Specific type not known	*Yes* *No*	*Enter Quantity:* _____ *Select Unit:* • g • kg • lb • oz • ton (metric) • ton (short) • kWh • MJ • mmBTU • BTU • Joule • cu ft • cu yard • liter • m3 • gal • CCF	Meters Invoices Estimates	Continuously Daily Weekly Monthly Bimonthly Quarterly Annually	
Chilled Water (purchased) The most common practice is to generate your own chilled water by chilling with purchased electricity, but in some areas you purchase chilled water from a					

centralized system - must track for Scope 1					
Coal					
Coal (Sub-Bituminous A)					
Coal (Sub-Bituminous B)					
Coal (Sub-Bituminous C)					
Coal (Sub-Bituminous High Volatile C)					
Coal (Bituminous High Volatile B)					
Coal (Bituminous - high volatile A; medium volatile; low volatile; Anthracite - semi-anthracite; anthracite; meta-anthracite)					
Coal- Specific type not known					
Diesel					
Electricity (produced on-site)					
Electricity (purchased)					
Fuel Oil					
Geothermal					
Hydro					
Micro-Hydro					
Natural Gas					
Petrol					
Solar Photovoltaic					
Steam (produced on-site)					
Steam (purchased)					
Wind					

Energy– Level 2

2: Has your facility set baselines for energy use? If yes, select all sources of energy for which your facility has set a baseline.

In order to demonstrate improvements or reductions, it's important to know what your starting point is. A "baseline" is a starting point or benchmark that you can use to compare yourself against over time. For example, if your facility used 80 MJ of natural gas per 10,000 fabric meters in 2016, you will be able to compare your performance against this amount in years to come. In this example, "80 MJ of natural gas per 10,000 fabric meters in 2016" is an example of a normalized baseline.

Suggested Upload: A description of how the baseline was calculated (uploading annual consumption records is NOT required, however they should be available for the verifier to review at the time of verification.

Energy Source (fills from source selections above)	**Is the baseline absolute or normalized?**	**What is the baseline quantity?** *If you are reporting a normalized baseline, it must be normalized by the production unit you specified in the Site Info section. Please make sure your normalization calculation reflects your production volumes from your baseline year, not from 2018.*	**Enter the baseline year**	**How was your baseline calculated?**	**Was the baseline verified?**
Source	*Normalized* *Absolute*	*Enter Quantity: _____* *Numerator Unit:* • g • kg • lb • oz • ton (metric) • ton (short) • kWh • MJ • mmBTU • BTU • Joule • cu ft • cu yard • liter • m3 • gal • CCF *Denominator Unit: populates from annual production selection in Site Info*	Dropdown of years (2000-2018)	Open text	If yes, tell us date and auditing party. Not req
+ Add new row					

3. Does your facility know what facility processes or operations use the most energy?

It is important to understand what influences energy use the most in your facility. This allows you to strategically target those factors in order to improve energy efficiency and/or greenhouse gas emissions. Please answer Yes only if you have documented records and methodology to identify the highest factors of energy use on-site (e.g., processes, machines, etc.).

If you do not have a document to upload, describe your methodology here
If you already uploaded a document above, enter "See attached"

What are the highest energy use factors at your facility?

Suggested Upload: a) Ranking of processes or services that consume the most energy (with energy consumption values); b) Copy of an energy audit conducted by an internal or external energy management specialist (if available)

4. Has your facility set targets for improving energy use or GHG emissions? If yes, select all sources of energy for which your facility has set an energy or GHG reduction target.

You will receive full points if you set targets for energy sources that make up 80% or more of your total energy use. You will receive partial points if you set targets for energy sources that make up 50-79% or more of your total energy use. This is to reward you for aiming to improve your most significant sources of energy use which will maximize environmental impact.

Suggested upload: consolidated targets for different energy sources

If yes, please tell us about your targets: (tool auto-calculates)

Fuel Source (pull down info from table above) Add option for: Overall energy / GHG emissions		**kWh (auto populated)**	**What is your target for change in energy use from this source?** *Enter a negative percentage for a reduction target, and a positive percentage for an increase target*	**Enter the target year**	**Is this a normalized or absolute target?**	**Proposed Emissions reduction (renewables does not calculate unless there is an applicable emissions factor)**	**Proposed kwH reduction**	**Describe the measures planned to achieve this target**
Fuel Oil	**Scope 1**		**-10%**		**Normalized Absolute**			***Text***
Electricity	**Scope 2**		**-30%**		**Normalized Absolute**			***Text***

TOTAL		X kWh			X CO2e	X kWh

5. Does your facility have an implementation plan to improve energy use and/or GHG Emissions?
Improvements may be made by reducing energy use or improving GHG emissions by replacing existing energy sources with renewable sources. Please answer Yes if you have an implementation plan in place that demonstrates you are taking action to achieve your targeted reductions. Please choose Partial Yes if you have a plan but have not started on all action items. *You may download a sample implementation plan here*

Upload a copy of the plan

6. Has your facility improved energy consumption compared with its baseline? If yes, select all sources of energy that have been improved.

You will receive full points if you made reductions for energy sources that make up 80% or more of your total energy use. You will receive partial points if you made reductions for energy sources that make up 50-79% or more of your total energy use. This is to reward you for reducing your greatest sources of energy use which will maximize environmental impact.

We recommend that you show normalized reductions such as "electricity used per fabric meter was reduced by 2% in 2018." This is because normalized metrics show real improvement rather than reductions from business changes such as reduced production.

Suggested Upload: Energy tracking reports showing reductions for energy sources from last calendar year. Uploading utility bills is NOT required, however they should be available for the verifier to review at the time of verification.

If yes, please complete the energy reduction table: (tool auto-calculates)

Fuel Source (pull down info. From table above) Add one option in the drop-down " overall energy / GHG emissions"	**)**	**Select a baseline year**	**Indicate your facility's change in energy use from this source** *Enter a negative number for a reduction, and a positive number for an increase*		**Describe the strategies used to achieve this improvement**
Fuel Oil	**Scope 1**			***Quantity Unit of Measure*** • g • kg • lb • oz	***Text***

				• ton (metric) • ton (short) • kWh • MJ • mmBTU • BTU • Joule • cu ft • cu yard • liter • m3 • gal • CCF	
Electricity	**Scope 2**				***Text***
TOTAL			**X CO2e**	**X kWh**	

Energy– Level 3

7. Were your facility's annual Scope 3 greenhouse gas (GHG) emissions calculated in 2018? (This question is not scored.)

Report your facility's 2018 Scope 3 GHG emissions in co2e here
Describe your Scope 3 calculation here

The GHG Protocol categorizes these emissions into three broad scopes:

- *Scope 1: All direct GHG emissions. (this was covered in Level 1 energy tracking)*
- *Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam. (this was covered in Level 1 energy tracking)*
- *Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc. (Source: http://www.ghgprotocol.org/calculationg-tools-faq)*

Calculating Scope 3 emissions for your facility or business is an advanced practice that can be noted in this question. However, this question is unscored because Higg only gives Level 3 points for taking action that improves environmental impact directly. Calculating Scope 3 emissions can provide useful insights and/or support reporting, but it does not guarantee any environmental improvement has occurred.

Suggested Upload: documentation on calculation of scope 3 GHG emissions in the last calendar year

Section 3. Water Use

Applicability Test

You will first be asked to report on your level of water risk as well as quantity of water consumed in the following three questions below. These selections will direct you to the Higg questions that are most applicable for your facility.

If you are in a low-water risk area and use less than 35 m3 per day, you are considered a "Light Water User" and will only complete Level 1.

If you are in a high-water risk area and/or use more than 35 m3 per day, you are considered a "Heavy Water User" and will complete Levels 1, 2, and 3.

1. **How many days per year does your facility operate?**
2. **Use one of the following tools to assess your facility's water risk**
   - WRI Aqueduct Tool
   - WWF Water Risk Filter

3. **Select the tool used to assess your facility's water risk:**
   - WRI Aqueduct Tool
   - WWF Water Risk
4. **Is your facility location rated high/very high for overall water risk using this tool?**
   - Yes
   - No

Water Use – Level 1

1. Select all water sources used by your facility (see table below)

If you are unable to tell us the amount of water used from a source, the method being used to track it, and the frequency of measurement; please select No or Unknown as your answer option for the question: Does your facility track its water use from this source?

You will receive full points if you are completely tracking the quantity of water that your facility withdraws from all sources. You will receive partial points if you are completely tracking at least one of your sources, but are not yet tracking all of your sources.

Suggested uploads: Optional: annual summary of the water consumption for each type of water source. Uploading utility bills is NOT required, but these should be available during verification.

APPLICABILITY NOTE: This information will be used to auto-calculate average daily water use to determine applicability.

- If your facility site uses more than 35 m3/day, you are a HEAVY WATER USER
- If your facility site uses less than or equal to 35 m3/day, you are a LIGHT WATER USER

	Does your facility track water use from this source?	What quantity of water from this source was used in 2018?	Which method was used to track water use from this source?	What was the frequency of measurement?
Fresh Surface Water	Yes	*Quantity*	Meters	Continuously

	No Unknown	*Unit of Measure* • *CCF* • *cu ft* • *cu yard* • *gal* • *liter* • *m3* • *Ml*	Invoices Estimates	Daily Weekly Monthly Bimonthly Quarterly Annually
Rainwater				
Groundwater				
Produce/Process Water				
Municipal Water				
Wastewater from another organization				
Brackish Water/Seawater				
Total Water				

Water Use – Level 2

2. Has your facility set baselines for water use? If yes, select all water sources for which your facility has set a baseline.

If you are unable to tell us your baseline year and normalized quantity for a source; please select No or Unknown as your answer option for that source.

In order to demonstrate improvements or reductions, it's important to know what your starting point is. A "baseline" is a starting point or benchmark that you can use to compare yourself against over time. For example, if your factory used 80 m3 of water per 10,000 fabric meters in 2016, you will be able to compare your performance against this amount in years to come. In this example, "80 m3 of water per 10,000 fabric meters in 2016" is an example of a normalized baseline.

Water Source (fills from source selections above)	**Is the baseline absolute or normalized?**	**What is the baseline quantity? (#)** *If you are reporting a normalized baseline, it must be normalized by the production unit you specified in the Site Info section. Please make sure your normalization calculation reflects your production volumes from your baseline year, not from 2018.*	**Enter the baseline year**	**How was your baseline calculated?**	**Was the baseline verified?**

Fresh Surface Water	*Normalized Absolute*	Enter Quantity: _____ Select Numerator Units: • *CCF* • *cu ft* • *cu yard* • *gal* • *liter* • *m3* • *Ml* *Denominator Unit: populates from annual production selection in Site Info*	Dropdown of years (2000-2018)	Open Text	Yes No Unknown
Rainwater					
Groundwater					
Produced/Process Water					
Municipal Water					
Brackish Surface Water / Seawater					
Total Water					

3. Does your facility know what facility processes or operations use the most water?
It is important to understand what influences water withdrawal the most in your facility. This allows you to strategically target those factors in order to reduce water withdrawal. Please answer Yes only if you have documented incoming water, water loss and outgoing water in a water pipeline drawing/diagram/flowchart that is complete with meter locations.

Upload the methodology for identifying the highest water use factors
If you already uploaded a document above, enter “see attached”

What are the highest water use factors at your facility?

Suggested uploads: ranking of processes or services that consume the most water (with water consumption values).

4. Has your facility set targets for reducing water use? If yes, select all sources of water for which your facility has set a reduction target.

If you are unable to tell us your target amount, year and whether it is absolute or normalized for a source; please select No or Unknown as your answer option for that source.

You will receive full points if you set targets for water sources that make up 80% or more of your total water use. You will receive partial points if you set targets for water sources that make up 50-79% or more of your

total water use. This is to reward you for aiming to reduce your greatest sources of water withdrawal which will maximize environmental impact.

We recommend that you set normalized targets such as "reduce total water use by 30% by 2020". This is because normalized metrics show real improvement rather than reductions from business changes such as reduced production. For example, if your baseline was "80 m3 per 10,000 fabric meters in 2016" then a good normalized target might be: "Reduce total water use by 30% per fabric meter by 2020".

Upload: Documentation describing the targets in place to reduce the water withdrawal

If yes, please tell us about your targets: (tool auto-calculates)

Select source targeted to be improved (select one)	**=**	**What is your target for change in water use from this source?** *Enter a negative percentage for a reduction target, and a positive percentage for an increase target*	**Enter the target year**	**Is this a normalized or absolute target?**	**=**	**Describe the measures planned to achieve this target.**
All water Fresh surface water Rainwater Groundwater Produced/process water Municipal water Wastewater from another organization Brackish surface water/seawater		**-10%**		**Select one:** **Normalized** **Absolute** **Other** Guidance: The target setting should allow the facilities to express and set their own targets which may not fall in absolute or normalized target.		***Text***
+ Add new rows						***Text***
TOTAL	Xm3				Xm3	

5. **Does your facility have an implementation plan to improve water use?**
Please answer Yes if you have an implementation plan in place that demonstrates you are taking action to achieve your targeted reductions. Please choose Partial Yes if you have a plan but have not started on all action items. You may download a sample implementation plan here Implementation Plan Template

Please upload a copy of the implementation plan.

Suggested uploads: Please upload the water use reduction plan showing specific actions designed to achieve targeted reductions in water consumption.

6. Has your facility reduced water withdrawal, compared with your baseline? Select all water sources that have been reduced.

Source

- Select baseline year
- Indicate your facility's change in water withdrawal from this source (quantity and unit of measure)
- Describe the strategies used to achieve this improvement

*You will receive **full points** if you made reductions in the last calendar year for water sources that make up 80% or more of your total water withdrawals.*

***You will receive partial points** if you made reductions in the last calendar year for water sources that make up 50-79% of your total water withdrawals. This is to reward you for reducing your greatest sources of water withdrawal which will maximize environmental impact.*

***Select No** if you have no reductions in the last calendar year or are unable to state what your reductions are for a source as your answer option for that source.*

Suggested Upload: a) Evidence of normalized or absolute reduction of annual water withdrawal for at least one primary water sources (e.g. fresh surface water, groundwater etc.) that is attributable to actions taken by the site. b) Water tracking reports showing reductions of the normalized water withdrawal in the last calendar year

If yes, complete this table:

Select source that was reduced		**Describe the strategies used to achieve this improvement.**
All water Fresh surface water Rainwater Groundwater Produced/process water Municipal water Wastewater from another organization Brackish surface water/seawater	Quantity Unit of Measure • *CCF* • *cu ft* • *cu yard* • *gal* • *liter* • *m3* • *Ml*	
+ Add new rows		

Water Use – Level 3

7. Has your facility implemented a water balance or another analysis to evaluate the traceability of water intake vs. usage (i.e. which processes) and output (i.e. to wastewater treatment plant)?

Please answer Yes if your facility has fully implemented a water balance to fully understand the traceability of water intake vs. usage and outputs in the facility. A complete water balance must include the below information. Please answer Partial Yes if you have completed a partial water balance, but have an action plan to complete all requirements.
The incoming water in the facility: amount and water sources.
The quantity of water used during the production process
The quantity of water recycled/reused in the facility
The quality of wastewater generated
The wastewater generated in the facility
The volume of water discharged after the own treatment
The frequency which the water balance is updated

Upload the methodology for analyzing the water balance.
How was the water balance analysis conducted

Section 4. Wastewater

Applicability Test

1. Does your facility generate industrial wastewater?

2. Does your facility have Zero Liquid Discharge?
- Yes = **ZLD TREATMENT**

3. Do you treat industrial and domestic wastewater separately or together?

4. Where is your domestic wastewater treated?
- Treated onsite only and discharge to the environment after treatment = **DOMESTIC ONSITE**
- Treated offsite only = **DOMESTIC OFFSITE**
- Treated onsite and offsite = **DOMESTIC ONSITE + OFFSITE**
- Sent to septic system = **SEPTIC**
- Not treated = cannot proceed

5. Where is your industrial wastewater treated?
- Treated onsite only = **INDUSTRIAL ONSITE**
- Treated offsite only = **INDUSTRIAL OFFSTE**
- Treated onsite and offsite **= INDUSTRIAL ONSITE + OFFSITE**
- Not treated = **STOP**

6. Where is your combined (industrial and domestic) wastewater treated?
- Treated onsite only = **INDUSTRIAL ONSITE**
- Treated offsite only = **INDUSTRIAL OFFSITE**
- Treated onsite and offsite **= INDUSTRIAL ONSITE + OFFSITE**
- Not treated = **STOP**

Wastewater – Level 1

1. Does your facility track its wastewater volume?

Wastewater tracking should include water that is either discharged, reclaimed/recycled or reused at your site

Industrial: include all manufacturing and/or commercial activities within your facility site such as industrial processing, lubrication, maintenance etc.

Domestic: include all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.

Suggested Upload: Annual wastewater discharge monitoring record (quantity)

If yes, please complete this table:

Type (fills from applicability selection)	**Industrial Wastewater**	**Domestic Wastewater**	**Combined Industrial and Domestic**
What was the total quantity of industrial wastewater discharged from your facility in 2018?	m3/year	m3/year	m3/year
Which method was used to track industrial wastewater volume?	Meters Invoices Estimates	Meters Invoices Estimates	Meters Invoices Estimates
What was the frequency of measurement?	Continuously Daily Weekly Monthly Bimonthly Quarterly Annually	Continuously Daily Weekly Monthly Bimonthly Quarterly Annually	Continuously Daily Weekly Monthly Bimonthly Quarterly Annually
What was the final discharge point for your facility's industrial wastewater?	Offsite Wastewater Septic or Lagoon Environment: Land Environment: Water Recycled / reused in the facility	Offsite Wastewater Septic or Lagoon Environment: Land Environment: Water Recycled / reused in the facility	Offsite Wastewater Septic or Lagoon Environment: Land Environment: Water Recycled / reused in the facility
Provide any additional comments			

2. Do you have the name and contact information of the offsite wastewater treatment plant?

This information is important because environmental contamination from improper treatment must be addressed regardless of where the problem originates. This information can help your factory, the community, and local businesses prevent or cleanup accidental environmental contamination in the case of a failure.

You will receive full points if you know your wastewater treatment plant and are able to upload a contract. Please note that a contract will be required during verification for all factories in China.

- Name:
- Address:
- Ownership:
- Do you have a copy of the contract with the wastewater treatment plant?
    - Please upload documentation if available
    - If you cannot upload the documents, please describe here:

Upload: a) Signed contract with the off-site wastewater treatment plant; b) A permit and contractual agreement for your facility to show that they are allowed to discharge into the off-site wastewater treatment plant

3. Does your facility have a back-up plan if there is an emergency situation related to wastewater?

It is critical that your facility have a backup plan in the event of a wastewater treatment failure in order to prevent untreated effluent from being discharged to the local environment. If you do not have a backup process that can handle your average daily capacity, you cannot score points or complete Level 1.

Select all strategies included in your facility's back-up plan for wastewater

- Emergency Production Shutdown
- Holding Tank
- What is the size of your facility's holding tank?
- Secondary Treatment
- Discharge to Offsite Water Treatment Plant
- Other Backup Process

- **What is your facility's wastewater treatment handling capacity per day?**

Upload: Documented emergency backup process that is sufficient to treat the average daily amount of wastewater discharged by the facility site.

4. Is hazardous sludge (chemical / industrial) disposed of properly?

How is your sludge disposed of?

- Hazardous Waste Treatment
- Incinerated controlled conditions
- Landfilled
- Open burning
- Fuel Blended
- Composted
- Fertilizer (applied to land)

Upload: a) Sludge analysis or test results from last 12 months (if non-hazardous is selected); b) permits or manifests for proper disposal or land application.

5. Is non-hazardous sludge disposed of properly? (Domestic wastewater only)

Suggested Upload: Sludge analysis or test results

Non-hazardous sludge can be disposed of through any method though you must provide documented evidence that your facility's sludge is not hazardous.

How is your sludge disposed of?

- Hazardous Waste Treatment
- Incinerated controlled conditions
- Landfilled
- Open burning
- Fuel Blended
- Composted
- Fertilizer (applied to land)

Suggested Upload: a) Sludge analysis or test results from last 12 months (if non-hazardous is selected); b) permits or manifests for proper disposal or land application.

6. Does your facility treat septic wastewater before it is discharged?

- If yes, please describe

How does your site unload your septic tank once full?

- Describe where it is discharged
- Describe how it is treated after discharge
- Please upload documentation if available

Do you have a plan to upgrade your septic tank to a more modern wastewater treatment approach?.

Suggested Upload: a) Documentation that your facility treats septic wastewater before it is discharged; b) Plan to upgrade your septic tank to a more modern wastewater treatment approach.

Wastewater– Level 2

7. Is your facility reporting against a wastewater standard?

- Wastewater Standard (*e.g., ZDHC Wastewater Guideline or other)*

Please indicate which wastewater standard you are reporting against:

- ZDHC Wastewater Guideline
- BSR
- IPE
- Customer/Brand
- If other, please describe

- **Have you tested and met all parameters specified in the standard?**
  - Yes
  - No (If no complete the detections table below)

- **Are your parameter results available on the standard's platform? (*e.g. ZDHC Gateway or IPE database*)**

If ZDHC Wastewater Guideline was selected:

- **Does your test result also show no detection of parameters in Table 2A-N Chemical Groups?**

Upload test results

Detections Tables

Wastewater Standard:

Select parameters which were not met	**Indicate the quantity detected**	**Units**	**Indicate the limit**	**Units**	**Indicate ZDHC Level, if applicable**	**Upload your action plan for the substance detected / If you don't have a document to upload, describe your plan**
Ammonium-N *Antimony* *AOX* *Arsenic* *BOD5* *Cadmium* *Chromium (VI)* *Chromium, total* *Cobalt* *COD* *Coliform [bacteria/100 ml]* *Colour [m-1] (436nm; 525; 620nm)* *Copper* *Cyanide*	*Quantity Unit of Measure*	*Dropdown references units from WW guideline*	*Quantity Unit of Measure*	*Dropdown references units from WW guideline*	Foundational Strategic Aspirational	*Type or upload*

Lead *Mercury* *Nickel* *Oil and Grease* *Persistent Foam* *pH* *Phenol* *Silver* *Sulfide* *Sulfite* *Temperature [°C]* *Total-N* *Total-P* *TSS* *Zinc* *Nonylphenol (NP), mixed isomers* *Octylphenol (OP), mixed isomers* *Octylphenol ethoxylates (OPEO)* *Nonylphenol ethoxylates (NPEO)* *Other*						

8. Have you requested wastewater quality test results from the offsite wastewater treatment plant?

It is important to be aware of any wastewater quality violations at the wastewater treatment plant in the event that your facility is contributing to environmental contamination. Although your facility does not have authority over the offsite wastewater treatment plant, please provide evidence of your request for wastewater quality results, even if quality results were not provided. This question is intended to provide you with more information in case you are able to take any action to assist the wastewater treatment plan in proper treatment and discharge to the environment.

Upload: a) Documentation of your request to offsite wastewater treatment plant for wastewater quality records; b) Off site wastewater treatment plant quality records (if provided)

Wastewater – Level 3

9. Does your facility reuse and/or recycle process wastewater as process water (closed loop)?

- Enter the percentage of wastewater treated and recycled back into your production processes

Answer Yes if you have wastewater treatment in place to reuse and/or recycle at least 50% or more of your production wastewater back into production processes. The reused and/or recycled water must be used in production processes - other uses like irrigation, toilets are excluded. The actual treatment technologies may include be chemical or biological such as membrane filtration or Zero Liquid Discharge

Suggested Upload: a) Records demonstrating closed-loop recycling (process water to process water) and/or b) List of water reduction achievement(s) according to the location where water is captured for recycling OR the location where recycled water is used.

Section 5. Air Emissions

Applicability Test

You will first be asked to select which operations or processes that emit air pollution are present in your factory. These selections will direct you to the Higg questions that are most applicable for your facility.

If you have any air-emitting operations (e.g., boiler), you will answer questions about operating emissions in all levels.
If you have any air-emitting production processes (e.g., solvents or adhesives), you will answer questions about production emissions in all levels.
If you don't have any facility operation or production air emissions, you will not need to complete this section.

1. **Does your facility contain any of the following operations equipment?**

- Boiler
  - If yes, tell us size:
    - Small: less than 50 MW
    - Medium: 50 MW - 300 MW
    - Large: more than 300 MW
- Generators
- Engines
- Ovens
- Heating and ventilation
- Refrigerant device
- Air conditioning
- Other sources of known air emissions from facility operations
- Other sources of volatile organic compounds (VOCs)

If any of the above are selected: ***Has Operating emissions - proceed to applicability question 2. (Refrigerants will have own table).***

2. Does your facility conduct any of the following processes or use any of the following substances?

- Yarn spinning or synthetic fiber manufacturing
- Finishes
- Solvents
- Adhesives/cementing
- Printing
- Dyeing
- Tenterframes or other heating process
- Spot cleaners
- Sprayed chemicals or paints
- Other sources of ozone depleting substances (ODSs)

If any of the above are selected: *Has production emissions*

If options are selected from both Q1+ Q2: Has both operating and production emissions

If none of the above options apply: skip entire section.

Air Emissions – Level 1

1. Does your factory have any air emissions from facility operations that:

- Are not regulated by a permit?
  - Yes
  - No
- Are regulated by a permit, but you are not in compliance.
  - Yes
  - No

Select all sources of air emissions relevant to your facility's operations that are not regulated by a permit, or for which your facility is not in compliance with its permit

Since you demonstrated compliance with your air permit in the Permits section, please only enter data for emissions that are not tracked by a permit or that are not in compliance with a permit. This question excludes emissions from production processes.

Source	What equipment is this source linked to?	What pollutants are present that are not regulated by a permit or have been found to be out of complian	Reason for reporting pollutant	What quantity of air emissions were emitted by this source in 2018?	Is this source of emissions regulated by a government agency?	If yes, what is the compliance status of the source?	If your facility is out of compliance, how long have you had this problem?	If your facility is out of compliance, upload the action plan for the substance detected	If you cannot upload a copy, please describe the action plan:

		ce with a permit?							
(*Auto-populate from applicability test on operation steps*) Stack Vent Heating and ventilation Refrigerant device Air conditioning Other sources of known air emissions:	*Type*	*Particulate Matter 10 (PM 10)* *Particulate Matter 2.5 (PM 2.5)* *Nitrogen Oxides (NOx)* *Sulphur Oxides (SOx)* *Volatile Organic Compounds (VOCs)* *Ozone Depleting Substances (ODS)* *Other toxic air pollutants, please describe* *Water vapor/steam*	*Out of compliance with permit* *Not regulated by a permit*	*Quantity* *Units* *G* *Kg* *Lb* *Oz* *ton (metric)* *ton (short)*	*Yes* *No* *Unknown*	*In compliance* *Out of compliance*	0-3 months 3+ months	*Type or upload*	

2. Select all sources of air emissions that result from production processes

This question tracks the presence of indoor air quality emissions from production processes. This includes fugitive sources from production processes (sources without a chimney that emit into the building outside through windows, doors, etc.).

Permit compliance does not apply to this question, as indoor air quality emissions are infrequently regulated.

Source (Refrigerant Type)	**What pollutants are known or likely to be present?**	**What quantity of air emissions were emitted by this source in 2018?**	**What method was used to track emissions from this source?**	**Provide any additional comments**
Auto-populate selections from applicability test on production steps	*Text*	*Quantity* *Unit* • *G* • *Kg* • *Lb* • *Oz*	*Measured* *Invoices* *Estimates*	

		• *ton (metric)* • *ton (short)*		

3. Did your facility add additional refrigerants to any existing equipment in 2018?

Having to add refrigerants to existing equipment indicates the system has a leak. If CFC-based refrigerants are maintained in the building, you must reduce annual leakage to 5% or less and reduce the total leakage over the remaining life of the equipment to less than 30% of its refrigerant charge.

This question will contribute to your GHG-emissions calculation so it's important for you to enter accurate data about leak quantities. Please note that your GHG result is intended to provide directional insight into your opportunities to improve, but is not a formal GHG calculation to be used for public reporting.

Select Refrigerant	**Quantity of refrigerant added to existingequipment in 2018 (exclude refrigerant added to newly purchased equipment for the first time)**	**Units:**	**What method was used to track emissions from this source?**	**What is your plan for fixing this leak?**
R-10 (PCC) R-11 (CFC) R-12 (CFC) R-12B1 (H) R-12B2 (H) R-13 (CFC) R-13B1 (H) R-14 (PFC) R-20 (HCC) R-21 (HCFC) R-22 (HCFC) R-22B1 (H) R-23 (HFC) R-30 (HCC) R-31 (HCFC) R-32 (HFC) R-40 (HCC) R-41 (HFC) R-50 (HC) R-110 (PCC)	*Numeric*	*g* *kg* *lb* *oz* *ton (metric)* *ton (short)*	*Measured* *Calculated Leakage Rate* *Estimated*	

R-111 (CFC) R-112 (CFC) R-112a (CFC) R-113 (CFC) R-113a (CFC) R-114 (CFC) R-114a (CFC) R-114B2 (H) R-115 (CFC) R-116 (PFC) R-120 (HCC) R-121 (HCFC) R-121a (HCFC) R-122 (HCFC) R-122a (HCFC) R-122b (HCFC) R-123 (HCFC) R-123a (HCFC) R-123b (HCFC) R-124 (HCFC) R-124a (HCFC) R-125 (HFC) R-E125 (HFC) R-130 (HCC) R-130a (HCC) R-131 (HCFC) R-131a (HCFC) R-131b (HCFC) R-132 (HCFC) R-132a (HCFC) R-132b (HCFC) R-132c (HCFC) R-132bB2 (H) R-133 (HCFC) R-133a (HCFC)				

R-133b (HCFC) R-134 (HFC) R-134a (HFC) R-E134 (HFC) R-140 (HCC) R-140a (HCC) R-141 (HCFC) R-141B2 (H) R-141a (HCFC) R-141b (HCFC) R-142 (HCFC) R-142a (HCFC) R-142b (HCFC) R-143 (HFC) R-143a (HFC) R-143m (HFC) R-E143a (HFC) R-150 (HCC) R-150a (HCC) R-151 (HCFC) R-151a (HCFC) R-152 (HFC) R-152a (HFC) R-160 (HCC) R-161 (HFC) R-170 (HC) R-E170 (HC) R-211 (CFC) R-212 (CFC) R-213 (CFC) R-214 (CFC) R-215 (CFC) R-216 (CFC) R-216ca (CFC) R-217 (CFC)				

R-217ba (CFC) R-218 (PFC) R-221 (HCFC) R-222 (HCFC) R-222c (HCFC) R-223 (HCFC) R-223ca (HCFC) R-223cb (HCFC) R-224 (HCFC) R-224ca (HCFC) R-224cb (HCFC) R-224cc (HCFC) R-225 (HCFC) R-225aa (HCFC) R-225ba (HCFC) R-225bb (HCFC) R-225ca (HCFC) R-225cb (HCFC) R-225cc (HCFC) R-225da (HCFC) R-225ea (HCFC) R-225eb (HCFC) R-226 (HCFC) R-226ba (HCFC) R-226ca (HCFC) R-226cb (HCFC) R-226da (HCFC) R-226ea (HCFC) R-227ca (HFC) R-227ca2 (HFC) R-227ea (HFC) R-227me (HFC) R-231 (HCFC) R-232 (HCFC) R-232ca (HCFC)				

R-232cb (HCFC) R-233 (HCFC) R-233ca (HCFC) R-233cb (HCFC) R-233cc (HCFC) R-234 (HCFC) R-234aa (HCFC) R-234ab (HCFC) R-234ba (HCFC) R-234bb (HCFC) R-234bc (HCFC) R-234ca (HCFC) R-234cb (HCFC) R-234cc (HCFC) R-234cd (HCFC) R-234da (HCFC) R-234fa (HCFC) R-234fb (HCFC) R-235 (HCFC) R-235ca (HCFC) R-235cb (HCFC) R-235cc (HCFC) R-235da (HCFC) R-235fa (HCFC) R-236cb (HFC) R-236ea (HFC) R-236fa (HFC) R-236me (HFC) R-FE-36 (HFC) R-241 (HCFC) R-242 (HCFC) R-243 (HCFC) R-243ca (HCFC) R-243cb (HCFC) R-243cc (HCFC)				

R-243da (HCFC) R-243ea (HCFC) R-243ec (HCFC) R-244 (HCFC) R-244ba (HCFC) R-244bb (HCFC) R-244ca (HCFC) R-244cb (HCFC) R-244cc (HCFC) R-244da (HCFC) R-244db (HCFC) R-244ea (HCFC) R-244eb (HCFC) R-244ec (HCFC) R-244fa (HCFC) R-244fb (HCFC) R-245ca (HFC) R-245cb (HFC) R-245ea (HFC) R-245eb (HFC) R-245fa (HFC) R-245mc (HFC) R-245mf (HFC) R-245qc (HFC) R-251 (HCFC) R-252 (HCFC) R-252ca (HCFC) R-252cb (HCFC) R-252dc (HCFC) R-252ec (HCFC) R-253 (HCFC) R-253ba (HCFC) R-253bb (HCFC) R-253ca (HCFC) R-253cb (HCFC)				

R-253ea (HCFC) R-253eb (HCFC) R-253ec (HCFC) R-253fa (HCFC) R-253fb (HCFC) R-253fc (HCFC) R-254cb (HFC) R-254pc (HFC) R-261 (HCFC) R-261ba (HCFC) R-262 (HCFC) R-262ca (HCFC) R-262fa (HCFC) R-262fb (HCFC) R-263 (HFC) R-271 (HCFC) R-271b (HCFC) R-271d (HCFC) R-271fb (HCFC) R-272 (HFC) R-281 (HFC) R-290 (HC) R-C316 (CFC) R-C317 (CFC) R-C318 (PFC) R-3-1-10 (PFC) R-329ccb (HFC) R-338eea (HFC) R-347ccd (HFC) R-347mcc (HFC) R-347mmy (HFC) R-365mfc (HFC) R-4-1-12 (PFC) R-5-1-14 (PFC) R-400 (CFC)				

R-401A (HCFC) R-401B (HCFC) R-401C (HCFC) R-402A (HCFC) R-402B (HCFC) R-403A (HCFC) R-403B (HCFC) R-404A (HFC) R-405A (HCFC) R-406A (HCFC) R-406B (HCFC) R-407A (HFC) R-407B (HFC) R-407C (HFC) R-407D (HFC) R-407E (HFC) R-407F (HFC) R-408A (HCFC) R-409A (HCFC) R-409B (HCFC) R-410A (HFC) R-410B (HFC) R-411A (HCFO) R-411B (HCFO) R-411C (HCFO) R-412A (HCFC) R-413A (HFC) R-414A (HCFC) R-414B (HCFC) R-415A (HCFC) R-415B (HCFC) R-416A (HCFC) R-417A (HFC) R-417B (HFC) R-418A (HCFC)				

R-419A (HFC) R-420A (HCFC) R-421A (HFC) R-421B (HFC) R-422A (HFC) R-422B (HFC) R-422C (HFC) R-422D (HFC) R-423A (HFC) R-424A (HFC) R-425A (HFC) R-426A (HFC) R-427A (HFC) R-428A (HFC) R-429A (HFC) R-430A (HFC) R-431A (HFC) R-432A (HO) R-433A (HO) R-433B (HO) R-433C (HO) R-434A (HFC) R-435A (HFC) R-436A (HC) R-436B (HC) R-437A (HFC) R-438A (HFC) R-439A (HFC) R-440A (HFC) R-441A (HC) R-500 (HCFC) R-501 (HCFC) R-502 (CFC) R-503 (HCFC) R-504 (HCFC)				

R-505 (HCFC) R-506 (HCFC) R-507[A] (HFC) R-508[A] (HFC) R-508B (HFC) R-509[A] (HCFC) R-510[A] (HC) R-511[A] (HC) R-600 (HC) R-600a (HC) R-601 (HC) R-601a (HC) R-610 (HC) R-611 (HC) R-630 R-631 R-702 R-704 R-717 R-718 R-720 R-728 R-729 R-732 R-740 R-744 R-744A R-764 R-784 R-1112a (CFO) R-1113 (CFO) R-1114 (PFO) R-1120 (HCO) R-1130 (HCO) R-1132a (HFO)				

R-1140 (HCO) R-1141 (HFO) R-1150 (HO) R-1216 (PFO) R-1218 (PFO) R-1233zd (HCFO) R-1234yf (HFO) R-1234ze (HFO) R-1270 (HO)				

4. Does your facility have control devices or abatement processes for on-site emissions to air? If yes, select all sources of emissions that have abatement processes.

Please answer Yes only if you have control device(s) installed and in operation. If you have evidence of plans to install control devices, please choose Partial Yes. This question does not include controls for indoor air quality emissions from production processes.

Suggested Upload: Emission testing records from control devices or abatement processes
Unknown

Source	What control device, abatement process, or safety equipment was used for this source of air emissions?	What was the frequency of monitoring?	Provide any additional comments
Auto-populate selections from applicability test and Q1 on operations steps *Stack* *Vent* *Refrigerant device* *Heating and ventilation* *Air conditioning*	*Text*	*Continuously* *Daily* *Weekly* *Monthly* *Bimonthly* *Quarterly* *Biannually* *Annually*	

5. Does your facility have control devices or abatement processes for indoor air quality issues from production processes? If yes, select all sources of air quality issues that have abatement processes.

Please answer Yes only if you have control device(s) installed and in operation. If you have evidence of plans to install control devices, please choose Partial Yes.

Suggested Upload: Emission testing records from control devices or abatement processes.

Source	What control device, abatement process, or safety equipment was used for this source of air emissions?	What was the frequency of monitoring?	Provide any additional comments
Auto-populate selections from applicability test on production steps	*Text*	*Continuously* *Daily* *Weekly* *Monthly* *Bimonthly* *Quarterly* *Biannually* *Annually*	

Air Emissions – Level 2

6. Has your facility gone beyond permit requirements to achieve a higher level of air performance in Nitrogen Oxides (NOx), Sulfur Oxides (SOx), and Particulate Matter (PM)?

- Yes
- No

If yes, specify the level.

- Level 1: Foundational
- Level 2: Strategic
- Level 3: Aspirational

Upload emissions testing results for PM, S02, and NOx

Please refer to the air standard in the guidance document to determine if you've met a foundational, strategic, or aspirational level of air emissions performance.

Air Emissions – Level 3

7. Do you have a process for implementing modernized equipment to reduce or eliminate air emissions and indoor air quality issues at your facility?

Please select Yes if you have a documented plan to upgrade machinery or if all machinery has been upgraded to the most modern version as that is one of the best ways to control pollutants and achieve a higher level of air performance.

Please upload documentation if available

Upload: Documentation of plans/process for equipment upgrades or documentation of recent upgrades

Section 6. Waste

Waste – Level 1

1. Which non-hazardous waste streams does your site produce? Select all that apply:

Includes production and domestic waste. You will receive full points if you are completely tracking the quantity of all waste streams that your facility generates. You will receive partial points if you are completely tracking at least one of your waste sources, but are not yet tracking all of your sources.

It is important to also specify how each waste stream is being disposed of in order to identify opportunities to increase your use of preferred disposal methods (e.g., reuse, recycling, properly controlled energy recovery, incineration, and biological/chemical treatment) and reduce landfilling and/or uncontrolled incineration.

Suggested Upload: Waste Manifest

- Materials (please specify)
- Metal
- Plastic
- Paper
- Cans
- Food
- Glass
- Cartons
- Other

For each selected, please complete the volume tracking table:

Please specify material type	**Description**	**What quantity of non-hazardous waste was generated by this source in 2018?**	**Quantity** *Unit of Measure*	**Which method was used to track this waste source?**	**How was this waste disposed of?**	**Provide any additional comments**
Auto-populate from selections above		*Numeric*	*Kilograms* *Liters* *Tons* *Other (please specify)*	*Weighed* *Estimated*	• Reuse • Recycled • Energy recovery • Incinerated • Onsite incineration • Landfill • Onsite landfill/dumping • Physical-chemical-biological treatment (please specify) • Other)	

Add new row +						

2. Which <u>hazardous</u> waste streams does your site produce? Select all that apply:

You will receive full points if you are completely tracking all hazardous waste sources AND are disposing of hazardous wastes through a licensed and permitted hazardous waste contractor. Please refer to the guidance documents for information on reporting on drums or barrels.

Production Waste
- Empty chemical drums and containers
- Film and Printing Frame
- Wastewater treatment sludge (industrial / domestic)
- Expired / unused / used chemicals (waste oil, solvents, reactants, etc…)
- Compressed Gas Cylinders (refrigerants, etc.)

Contaminated materials (please specify)

Domestic Waste
- Batteries
- Fluorescent light bulb
- Ink cartridges
- Waste oil and grease (from cooking)
- Empty containers (cleaning, sanitizing, pesticides, etc...)
- Electronic Waste
- Coal combustion residuals (fly ash and bottom ash/coal slag)
- Other

Suggested Upload: Hazardous waste manifests

For each selected, please complete the volume tracking table:

Source	**Description**	**What quantity of hazardous waste was generated by this source in 2018?**	**Which method was used to track this waste source?**	**How was this waste disposed of?**	**Are all hazardous waste transporters, treatment, and disposal facilities licensed and permitted?** *If there are no legal regulations for hazardous waste in your area, choose "Not Applicable"*	**Describe your waste management and disposal processes for this source**
Auto-populate from selections above		*Quantity Unit of Measure*	*Weighed Estimated*	• Reuse • Recycled • Energy recovery • Incineration • Onsite incineration • Landfill	*Yes* *No* *NA (no legal regulations for hazardous waste)* *Upload a copy of the permit*	

				• Onsite landfill/dumping • Physical-chemical-biological treatment • Other (please specify)		
Add new row +						

3. Does your facility segregate all waste streams into non-hazardous and hazardous waste, and store them separately?

Please answer Yes if you segregate hazardous and non-hazardous waste for appropriate management.

Suggested Upload: Photos of segregated storage sites

- Yes
- No
- Unknown

4. Does your facility have well-marked, designated hazardous waste storage areas?

Hazardous wastes pose a greater risk to the environment and human health than non-hazardous wastes and thus require a stricter control regime. It's important to segregate hazardous wastes and secure storage areas and containers to eliminate risk to workers and the environment.

Suggested Upload: Photos of segregated storage sites

- Yes
- No
- Unknown

The hazardous waste storage area is ventilated, dry and protected from the weather, and fire risk.

- Yes
- No

The hazardous waste storage area is protected from unauthorized employees (i.e. locked).

- Yes
- No

The hazardous waste storage area is clearly marked.

- Yes
- No

Storage containers are in good condition, appropriate for their contents, closed and clearly labeled with their contents.
- Yes
- No

Where liquid wastes are stored, the floor is solid and non-porous, containers have lids, there are no water drains that the liquid could spill into, and there is no evidence of spilled liquid.
- Yes
- No

Flammable substances are kept away from sources of heat or ignition, including the use of grounding and explosion-proof lighting.
- Yes
- No

5. Does your facility have well-marked, designated non-hazardous waste storage areas?

Non-hazardous wastes can pose contamination risks (e.g., pollution, waste being dispersed by the wind, food waste leachate) and risks to workers (e.g., fire, sharp objects).

Suggested Uplaod: Photos of segregated storage sites
- Yes
- No
- Unknown

The non-hazardous waste storage area is ventilated, dry and protected from the weather, and fire risk.
- Yes
- No

-

The non-hazardous waste storage area is clearly marked
- Yes
- No

Storage containers are in good condition, appropriate for their contents, closed and clearly labeled with their contents.
- Yes
- No

-

Flammable substances are kept away from sources of heat or ignition, including the use of grounding and explosion-proof lighting.
- Yes
- No

6. Does your facility forbid open burning and dumping on-site?

Burning waste on facility premises (inside or outside) with no air emissions control equipment and without special authorization from your environmental legal agency should be forbidden. If you do incinerate on-site, please explain the technology, the approval process, and how you control air emissions in the comment field provided.

Open burning is forbidden

- Yes
- No

If open burning is not forbidden, please describe the technology used and how you control air emissions

Open dumping is forbidden

- Yes
- No

If open dumping is not forbidden, please describe the technology used and how you control air emissions

7. Does your facility provide training to all employees whose work involves hazardous waste handling (such as maintenance and custodial staff)?

You will be awarded full points if all topics were included in your training. If some, but not all, topics were included you will be awarded partial points

Suggested Upload: List of trained individuals, training materials (including calendar), certifications

- Yes
- Partial Yes
- No
- Unknown

If yes, please select all topics included in your training:

- Proper handling
- Storage and disposal techniques and procedures
- Specific operational procedures for waste minimization
- Use of personal protective equipment
- Other

If other, please specify:

Waste – Level 2

8. Has your facility set a baseline for solid waste? If yes, select all sources of waste for which your facility has set a baseline:

In order to demonstrate improvements or reductions, it's important to know what your starting point is. A "baseline" is a starting point or benchmark that you can use to compare yourself against over time. For example, if your factory produced 15 kg of domestic waste per product in 2016, you will be able to compare your performance against this amount in years to come. In this example, "15 kg of domestic waste per product in 2016" is an example of a normalized baseline. Please note that you may need to set separate baselines for total amount of waste generated and disposal method.

- Yes
- No
- Unknown

Waste Source (fills from source selections above)	**Is the baseline absolute or normalized?**	**What is the baseline quantity?** *If you are reporting a normalized baseline, it must be normalized by the production unit you specified in the Site Info section. Please make sure your normalization calculation reflects your production volumes from your baseline year, not from 2018.*	**Enter the baseline year**	**How was your baseline calculated?**	**Was the baseline verified?**
Source	*Normalized* *Absolute*	Quantity + Unit of Measure • g • kg • lb • oz • ton (metric) • ton (short) • barrels (16 kg/ea) • CCF • cu ft • cu yard • gal • liter • M3 • Ml If other, please specify:	Dropdown of years	Open text	If yes, tell us date and auditing party. Not req
+ Add new row					

9. Did you set a baseline for waste disposal methods for your facility's overall waste?

- Yes
- No

If yes, indicate which methods.

Waste Source (fills from source selections above)	What is the baseline quantity? *Enter the percentage of your facility's waste source that was disposed using this method*	Enter the baseline year	How was your baseline calculated?	Was the baseline verified?
Source	*Normalized* *Absolute*	Dropdown of years	Open text	If yes, tell us date and auditing party. Not req
+ Add new row				

10. Does your facility set formal targets to reduce waste quantity?

You will receive full points if you set targets for waste streams that make up 80% or more of your total waste generated. You will receive partial points if you set targets for waste sources that make up 50-79% or more of your total waste generated. This is to reward you for aiming to reduce your greatest sources of waste generation which will maximize environmental impact.

- Yes
- No
- Unknown

Select all sources of waste for which your facility has set a quantity or improvement target.

If yes, please tell us about your targets: (tool auto-calculates)

Select source targeted to be improved (select one)*	M3 (auto-populated from total above)	Action Taken	What is your target change for waste generated from this source? *Enter a negative percentage for a reduction target, and a positive percentage for an increase target*	Normalized or Absolute Target? (select one)	What is the target year?	Proposed kg reduction	Describe the measures planned to achieve this target
Total waste <select from dropdown of your waste sources (e.g., plastic, glass, etc.)>		Eliminate or reduce waste generation at the source; Reuse waste (without any modification of the waste); Increase quantity of waste recycling;	**-10%**	**Select one:** **Normalized** **Absolute** **Other** Guidance: The target setting should allow the facilities to express and set their own targets which may not fall			***Text***

		Use another treatment that have lower impact on the environment (e.g., energy recovery), please describe.		in absolute or normalized target.			
+ Add new rows							***Text***
TOTAL	Xm3					Xkg	

11. Did you set a target for improving waste disposal methods for your facility's overall waste?

- Yes
- No

If yes, indicate which methods.

Examples of improvements to disposal methods include: Eliminate or reduce waste generation at the source; Reuse waste (without any modification of the waste); Increase quantity of waste recycling; Use another treatment that has lower impact on the environment (e.g., energy recovery)

Select source targeted to be improved (select one)*	**M3 (autopopulated from total above)**	**Action Taken**	**What is your target change for this method of disposal?** *Enter a negative percentage for a reduction target, and a positive percentage for an increase target*	**Normalized or Absolute Target? (select one)**	**What is the target year?**	**Proposed kg reduction**	**Describe the measures planned to achieve this target**
Total waste <select from dropdown of your waste sources (e.g., plastic, glass, etc>		Eliminate or reduce waste generation at the source; Reuse waste (without any modification of the waste); Increase quantity of waste recycling;	**-10%**	**Select one:** **Normalized** **Absolute** **Other** Guidance: The target setting should allow the facilities to express and set their own targets which may not fall in			***Text***

		Use another treatment that have lower impact on the environment (e.g., energy recovery), please describe.		absolute or normalized target.			

12. Does your facility have an implementation plan to reduce waste quantity or improve type of treatment?

- Yes
- Partial Yes
- No
- Unknown

Please answer Yes if you have an implementation plan in place that demonstrates you are taking action to achieve your targeted reductions or improvements. Please choose Partial Yes if you have a plan but have not started on all action items. You may download a sample implementation plan here: https://www.dropbox.com/s/fm2ilfjcqnw93ew/Template_Implementation%20Plan.xlsx?dl=0

Upload a copy of the plan.

This should be a waste reduction plan showing specific actions designed to achieve targeted reductions in waste consumption

13. Has your facility reduced waste quantity or improved type of treatment, compared with the established baseline?

You will receive full points if you made reductions for waste sources that make up 80% or more of your total waste generated. You will receive partial points if you made reductions for waste sources that make up 50-79% or more of your total waste generated. This is to reward you for reducing your greatest sources of waste which will maximize environmental impact.

We recommend that you show normalized reductions such as "hazardous waste per product was reduced by 80% in 2018". This is because normalized metrics show real improvement rather than reductions from business changes such as reduced production.

- Yes
- No
- Unknown

Select all sources of waste for which your facility made improvements.

If yes, complete this table:

Select source that was reduced	Select baseline year		Describe the strategies used to achieve this improvement
Populate dropdown of options from table above		%	
+ Add new rows			

14. Has your facility improved waste disposal methods for overall waste in 2018, compared with the baseline?

- Yes
- No

If yes, indicate which methods:

Select method that was used	Select baseline year	**What was the percentage change?** Enter a negative percentage for a reduction, and a positive percentage for an increase	Describe the strategies used to achieve this improvement
Populate dropdown of options from table above		%	
+ Add new rows			

Waste – Level 3

15. Does your facility validate the final disposal and treatment of all hazardous wastes?

Hazardous waste poses serious risk to the environment when improperly treated and disposed of. It is considered leading practice for a facility to take extra steps to confirm that their waste contractors are properly transporting, storing, treating and disposing of hazardous wastes from your facility site. Facilities should screen, validate and check contractors every three years.

- Yes
- No
- Unknown

If yes, upload supporting documentation.

Describe how you work with your facility's waste contractors to ensure appropriate disposal during the waste treatment.

16. Has your factory diverted at least 90 percent of all discarded materials from landfills, incinerators and the environment?

Zero waste to landfill is defined as diverting 90% of all discarded materials from landfills, incinerators and the environment. If you can demonstrate that you divert 90% or more of all waste please answer Yes to this question.

Suggested Upload: Waste inventory and waste manifests showing >90% diversion from landfills/incinerators

- Yes
- No
- Unknown

Please describe how this is implemented.

17. Does your facility upcycle some of its waste or insert its waste into a circular economy system?

Suggested Upload: Pictures or process flows, showing type and amounts of waste that are recycled into products of the same or higher value

- Yes
- No
- Unknown

If yes, describe how.

Section 7. Chemicals Management

Applicability Test
The following questions are used to determine which chemicals questions apply to your facility and do not contribute to your score.

Select all of the processes performed at your facility (Yes/No):

- Dyeing or other wet processing
- Printing
- Laundry or washing
- Cementing or gluing
- Fiber extrusion or yarn spinning
- Slashing during weaving

- Leather tanning
- LaminationExtrusion, assembly, finishing of plastic parts
- Metal Finishing
- Welding
- Other production processes that require chemicals

If any are selected, you are a facility that **uses chemicals in production processes.**

If none are selected, you are a facility that **uses chemicals in facility tooling and/or operations only**

Chemicals Management - Level 1

1a. Does your facility keep an inventory of chemicals used and the suppliers of each chemical product?

A complete chemical inventory includes: chemical name and type, supplier/vendor name and type, Safety Data Sheet (SDS) date of issuance, function, hazard classification, location used, storage conditions and location, quantities, CAS number(s), lot numbers, MRSL compliance, purchase date, and expiration dates (if applicable). You will be awarded full points if you have a complete inventory for all applicable chemicals in your facility. If you track all chemicals in a partial inventory, you will be awarded partial points. Similarly, if you have a detailed inventory but do not yet track all applicable chemicals, you will be awarded partial points.

For facilities that do not use chemicals in production: You should inventory all chemicals that are related to the manufacturing processes and tooling/equipment category, including spot cleaners, machine grease/lubricants, and effluent treatment plant chemicals. For facilities with only tooling/operations chemicals, If you do not have any chemicals that may touch product (e.g. cleaning products) and/or do not use chemicals to maintain or lubricate machines, you may select "not applicable".

Upload: a) Chemical Inventory List; b) Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent; c) Permits where applicable for certain sensitive chemicals to be stored or used (e.g. explosive materials); d) List of purchased chemicals and corresponding purchase records for the past full year.

- Yes
- No
- Unknown
- Not Applicable

Check all types of chemicals included in the inventory

- **All chemicals used in manufacturing processes (including chemicals in production, spot cleaners, and wastewater treatment plant chemicals where applicable)**
  - Yes
  - No
  - Not Applicable
- **All chemicals used in tooling/equipment (lubricants and grease)**
  - Yes
  - No
  - Not Applicable
- **All chemicals used to operate and maintain the facility**
  - Yes
  - No
  - Not Applicable

Please upload documentation if available.

Upload: a) Chemical Inventory List; b) Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent; c) Permits where applicable for certain sensitive chemicals to be stored or used (e.g. explosive materials); d) List of purchased chemicals and corresponding purchase records for the past full year.

1b. Does your facility's chemical inventory include chemical identification data? Check all that apply:

Not all information needs to be in one single document, but it needs to be easily accessible in relevant documents (e.g., first in first out documentation)

- Chemical name and type
- Supplier/vendor name and type
- Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent
- Function
- Hazard classification
- Where used
- Storage conditions and location
- Quantities

1c. Does your facility's chemical inventory include the following data? Select all that apply:

- CAS number or numbers (when in a mixture)
- Lot numbers
- MRSL compliance
- Purchase date
- Expiration dates (if applicable)

For data not included in your facility's chemical inventory, is there an action plan for obtaining this data?

- Yes
- No

Upload your action plan for obtaining this data.

If you don't have a document to upload, describe your plan:

CM-1a Applicability (these tables do not contain new scoring information, but are intended to provide a visual of the applicability and yes/partial arrangements)

	Chem in Production		**Chem in Tooling / Operations Only**	
	Yes	**Partial Yes**	**dYes**	**Partial Yes**
• All chemicals used in manufacturing processes (including chemicals in production, spot cleaners, and ETP chemicals where applicable)	X	X (must select to move on)	X or NA	X or NA
• All chemicals used in tooling/equipment (lubricants and grease)	X	X (able to move on without)	X or NA	X or NA
• All chemicals used to operate and maintain the facility	X	(able to move on without)	X	

CM-1b and 1c Applicability

	Chem in Production		Chem in Tooling / Operations Only	
	Yes	**Partial Yes**	**Yes**	**Partial Yes**
CM-1b: Chemical name and type Supplier/vendor name and type Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent - availability and date of issuance Function Hazard classification Where used Storage conditions and location Quantities	X	X	X	X
CM-1c: CAS number or numbers Lot numbers (quantities are recorded in batch #) MRSL compliance Purchase date Expiration dates (if applicable)	X (must complete for full points)	(able to move on without - half points)	X (must complete for full points)	(able to move on without - half points)

2. Does your facility make Safety Data Sheets (SDS) available to employees for all chemicals used?

Safety Data Sheets must be Global Harmonization System (GHS) compliant. Please select "partial yes" if you meet Safety Data Sheet requirements, but they are not yet GHS-compliant.

For facilities that do not use chemicals in production: Safety Data Sheets are required for all chemicals that are related to the manufacturing processes and tooling/equipment category, including spot cleaners, machine grease/lubricants, and effluent treatment plant chemicals. If you do not have any chemicals that may touch product (e.g. cleaning products) and/or do not use chemicals to maintain or lubricate machines, you may select "not applicable".

- Yes
- Partial Yes
- No
- Unknown
- Not Applicable (see guidance for definition)

Are Safety Data Sheets posted where hazardous chemicals are stored?

- Yes
- No

Are Safety Data Sheets available in languages workers understand (at least sections directly related to operational worker safety and storage requirements, such as first aid, hazard, and flammability information)?

- Yes
- No

Please upload documentation if available.

Upload: a) Chemical inventory list (skip if previously uploaded); b) Safety Data Sheet (SDS), Global Harmonization System (GHS) compliant or equivalent (skip if previously uploaded); c) Globally Harmonized System - Classification, Labelling and Packaging (GHS CLP); d) Emergency Response Plans; e) Documentation of Spill Control/Containment equipment; f) Documentation of Appropriate PPE being utilized by the workforce; g) Training documentation

3. Does your facility train all employees who use chemicals on chemical hazards, risk, proper handling, and what to do in case of emergency or spill?

Trainings must be documented and cover chemical hazards and identification; MSDS/SDS; signage; compatibility and risk; proper storage and handling; personal protective equipment and procedure in case of emergency, accidents, or spill; access restriction to chemical storage areas; potential environmental impact of the chemicals in tanks; the physical protection provided to employees in the area(s) where the factory uses, stores and transports these containers; and their individual duties associated with monitoring and maintaining this protection. Select partial yes if you do not have documentation or you have not covered all topics listed.

- Yes
- Partial Yes
- No
- Unknown

If yes, please upload supporting documentation.

Upload: a) Sample training; b) Training calendar; c) Employee training attendee list

4. Does your facility have a chemical spill and emergency response plan that is practiced periodically?

Chemical spill and emergency response plans must meet detailed requirements as specified in guidance, and all workers must participate in a practice drill twice a year. Please select Partial Yes if you have a chemical spill and emergency response plan, but that does not yet meet all requirements or you do not have practice drills. For facilities that do not use chemicals in production: Answer Yes if you meet requirements for chemicals and spill response plans, however twice-annual practice drills are not required.

- Yes
- Partial Yes
- No
- Unknown

Does your facility keep records of all employee and environmental incidents related to chemical spills and emergency response?

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.
Upload: Emergency response plan/procedure (skip if previously uploaded).

5. Does your facility have appropriate and operable protective and safety equipment, as recommended by the Global Harmonization System compliant (or equivalent) Safety Data Sheet, in all areas where chemicals are stored and used?

Protective and safety equipment may include spill response kits (size, type and location appropriately adapted for the chemical), showers and eyewash tested regularly, fire extinguishers maintained regularly, adapted Personal Protective Equipment (PPE) appropriate for the chemical (based on MSDS/SDS) such as appropriate gloves, protective masks, long handle scoops, etc.

Equipment should follow specifications in the GHS-compliant or equivalent Safety Data Sheet, be clearly visible for all relevant workers (e.g., not stored in a storage cupboard with locks; and in close proximity to the relevant area), well-maintained, and checked regularly for functionality by relevant staff. There is no Partial Yes option for this question.

For facilities that do not use chemicals in production: This applies to all chemicals that are related to the manufacturing processes, tooling/equipment category, and operating chemicals that do not touch product.

- Yes
- No
- Unknown

Please upload documentation if available.
Upload: a) Schedule for internal checks/audit for chemical safety that covers relevant chemical exposure risks and safety equipment, with clear designation of responsibilities and outcome of the checks/audits; b) Inventory list of PPEs and safety equipment with schedules of stock replenishments, equipment maintenance or replacements, where applicable (skip if previously uploaded).

6. Does your facility have chemical hazard signage and safe handling equipment in the areas of the facility where chemicals are used?

Your facility should post signage at all areas where chemicals are stored or used. Signage should depict the hazard classification(s) of chemicals. The most critical areas for signage include: receiving and delivery, chemical storage areas (centralized warehouse and temporary storage areas), chemical process areas, manufacturing/production areas, waste chemicals storage (including chemical residues and expired chemicals), and laboratories, toolshop, maintenance areas. Handling equipment should be available at relevant locations and correspond with the safety requirement and hazard communication/signage for each particular chemical. There is no Partial Yes option for this question.

For facilities that do not use chemicals in production: This applies to all tooling and operations chemicals in your factory.

- Yes
- No
- Unknown

Please upload documentation if available.
Upload: Schedule for internal checks/audit for chemical safety that covers relevant chemical exposure risks and communication (signage placement and updates), with clear designation of responsibilities and outcome of the checks/audits (skip if previously uploaded)

7. Does your facility select and purchase chemicals based on their hazards and MRSL / RSL requirements?

MRSL is a Manufacturing Restricted Substance List. Facilities typically are aware of Restricted Substance Lists (RSL); however, the industry has recently evolved to focus on Manufacturing Restricted Substance Lists (MRSL) to further environmentally-friendly chemical use in addition to Restricted Substance Lists. MRSL is important because a facility that uses compliant chemicals, in accordance with technical specification directions, has better environmental outcomes for the various facility discharges as well as more consistent RSL material compliance.

Please answer Yes only if all chemicals purchased meet RSL/MRSL purchasing requirements and you have documentation to support this. Please select Partial Yes if you purchased chemical(s) that do not meet MRSL/RSL requirements, but you have a documented plan for eliminating these chemicals next year.

For facilities that do not use chemicals in production: All purchased chemicals must meet these requirements with documentation available that includes certificates of analysis for the composition and MSDS / SDS and technical data sheets where applicable. RSL should be included in your facility's purchasing to prevent violations from accidentally occurring, and it also relieves you from having to demonstrate a full RSL-compliance program in Higg.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

If yes, do all chemicals purchased and used in production meet the facility's chemical purchasing policy?

- Yes
- No

If no, do you have a process or plan for eliminating chemicals that do not meet the facility's chemical purchasing policy?

- Yes
- No

Please describe the process or plan.

8. Does your facility have an environmental and occupational health and safety program specific to chemicals management?

Chemicals health and safety programs must have a designated person or team, meet legal health and safety requirements, and have written procedures for chemical storage, handling, usage, disposal, and environmental controls for waste or discharge to the environment. Please select Partial Yes if your chemicals health and safety program is complete, but not yet documented in writing.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

Upload: a) Letter of appointment, job description, organization chart; b) Curriculum Vitae of responsible person/team; c) Environmental Health and Safety procedures related to chemical storage, handling, usage, and disposal ; d)
Chemical Inventory with identified hazards with MSDS, technical sheets available to and used by Environmental Health and Safety personnel (skip if previously uploaded); e) Permits with operating limits and relevant laws governing health and safety requirement for chemical storage, operations, and disposal (skip if previously uploaded); f) Chemical accident and spill records (skip if previously uploaded); g) Health and Safety Log (First Aid and health station)

9. Does your facility have well marked, designated chemical storage and temporary storage areas?

Proper chemical storage is as important to safety as proper chemical handling. Often, seemingly logical storage ideas, such as placing chemicals in alphabetical order, may cause incompatible chemicals to be stored together. Facilities must demonstrate that all storage areas are well-marked and properly managed to prevent contamination and safety risks. Temporary storage happens at the point of work where chemicals are applied, such as a screen-printing station. Temporary storage questions only apply to factories that use chemicals in production processes.

You will be awarded full points if you meet all storage criteria. Partial points will be awarded if you meet half of all storage criteria.

- Yes, it has both chemical storage and temporary storage areas
- Yes, it only has chemical storage areas
- No
- Unknown

If yes, select all that apply:

	Storage	Temporary Storage
The chemical storage area is ventilated, dry and protected from the weather, and fire risk.	X	X
The storage area is protected from unauthorized employees (i.e. locked).	X	
The chemical storage area is clearly marked.	X	X

The chemical storage area has easy entry and exit in case of any emergencies.	X	X
Storage containers are in good condition, appropriate for their contents, closed and clearly labeled with their contents.	X	X
Floor in storage area is solid and non-porous, there are no water drains that the liquid could spill into, and there is no evidence of spilled liquid.	X	X
Secondary containment is available for solid and liquid chemicals in tanks, drums, and temporary containers (where applicable) to ensure no unintended releases occur	X	X
Incompatible substances (such as strong acids and strong bases) are stored separately.	X	X
Flammable substances are kept away from sources of heat or ignition, including the use of grounding and explosion-proof lighting.	X	X
Temporary storage containers are closed and labeled with contents, lot, and hazard class.		X

Please upload documentation if available.
Upload: a) Facility drawing or emergency response plan with local authorities where applicable (skip if previously uploaded); b) Storage/usage permit with restrictions (if applicable); c) Local fire codes

MSDS/SDS and technical sheets in local language (skip if previously uploaded); d) Chemical labeling on chemical containers (original labeling, no handwritten labels); e) Floor plan of chemical storage areas, specifying categorization and placements of different types of chemicals; f) Storage in/out log, FIFO records, for each chemical specifying date of arrival at storage, lot number, chemical expiration dates, date of dispatch to production, etc. (skip if previously uploaded); g) Management audits/inspections checklists of chemical storage areas; h) Standard operating procedures for proper chemical storage.

10. Does your facility train employees responsible for the chemical management system on Restricted Substance Lists (RSLs) and Manufacturing Restricted Substance Lists (MRSLs)?

MRSL and RSL trainings must be conducted by a knowledgeable employee and come with documentation showing who, when, where, and how they were trained on MRSL and RSL. Please select Partial Yes if training has been provided but is not yet well-documented.

- Yes
- Partial Yes
- No
- Unknown

Please describe the RSL and MRSL trainings conducted in the last calendar year

Please upload documentation if available

Upload: a) Job Descriptions (skip if previously uploaded); b) MRSL/RSL training record(s) with names, date, topic of training, brief description of what was trained

11. Does your facility have a documented process to systematically identify, monitor and verify compliance with all product Restricted Substance Lists (RSLs)?

Please upload documentation if available

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

x

Upload: a) Technical Data/Specification sheets (TDS) for all chemicals; b) Recipes for processes where chemicals are used; c) Purchased materials list with Letter of Compliance to RSL for all chemicals; d) Chemical inventory - verify all chemicals are covered and checked for RSL compliance at least on annual basis, check the dates of previous check.

12. Does your facility have a documented process to systematically monitor, update and demonstrate compliance with Manufacturing Restricted Substance Lists (MRSLs)?

Facilities must incorporate an MRSL into their business practices. Establishing an effective MRSL program is complicated and may take several years to fully implement in your factory. Please refer to the guidance documents for more information.

- Yes
- Partial Yes
- No
- Unknown

Does your facility require its chemicals suppliers to do the same?

- Yes
- No
- Unknown

Does your facility require its washing and printing subcontractors to do the same?

- Yes
- No
- Unknown
- Not Applicable

Please describe these processes.

Please upload documentation if available.

Upload: a) Chemical Inventory (skip if previously uploaded); b) Chemical review policy and process flow; c) List of non-conforming chemicals; d) Phase out plan for non-conforming chemicals, if any; e) MRSLs applicable to the facility e.g. own MRSL, customers' MRSL, or ZDHC MRSL; f) Positive lists from chemical suppliers (skip if previously uploaded); g) Email communication or communication trail between facility and its chemical suppliers and subcontractors (if any) regarding MRSL compliance; h) Letter of compliance to MRSL with chemical name, date of issuance, and test reports; i) Documented periodical screening process against ZDHC Chemical Gateway (where applicable) and the Level of Conformance of each chemical screened. Dated records of previous screenings and schedule of future screening.

13. Can all of your production chemicals be traced from the manufacturing process back to chemical inventory?

Chemicals traceability is necessary so that a facility can trace the source of a RSL and/or MRSL failure and take action. Please answer Yes only if your facility can trace all chemicals in production recipes back to the chemical inventory. If only some of the chemicals in production recipes can be traced back to the chemical inventory, please choose Partial Yes.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

Upload: a) Recipe cards, chemical formulation sheets, and process instructions (where applicable), containing all traceable information (i.e. chemical name and available quantity); b) Chemical Inventory (skip if previously uploaded); c) Chemical mixing process log, lab records (e.g. color lab, washing lab, etc.)

Chemicals Management – Level 2

14. Does your facility have an implementation plan to improve your chemicals management program?

We recognize that it may take many factories years to fully complete all Level 1 requirements for a robust chemicals management program. If you have a plan for achieving full completion of Level 1 requirements, please upload it here.

- Yes
- No
- Unknown

Please upload documentation if available.

Upload: Documented plan for achieving full completion of Level 1 requirements. This plan should include: a) Which questions were not fully achieved why; b) People responsible and a targeted date for achieving requirements for those questions which were not met.

15. Does your facility have an implementation plan to reduce the use of hazardous chemicals beyond chemicals specified by regulations and/or Restricted Substance Lists / Manufacturing Restricted Substance Lists?

Having hazardous chemicals does not mean that you have violated RSL or MRSL; your facility may have hazardous chemicals that are permitted on-site but that must be handled appropriately and eventually phased out. Please refer to the guidance documents for more information.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

Upload: a) A hazardous chemical(s) list with an action plan with assigned responsibilities and a timeframe for action; b) Alternative chemical trials in laboratory or pilot facility documents with conclusions to proceed or decline.

16. Does your facility source already-approved or preferred chemicals from a positives list beyond chemicals specified by regulations and/or Restricted Substance Lists / Manufacturing Restricted Substance Lists?

Please answer Yes only if more than 10% of the chemical formulations in the chemical inventory (% based on the number of chemicals, not the volume) are sourced from a positive list such as ZDHC Chemical Gateway, bluesign, GOTS, and/or Oeko-Tex. If you have chemicals from a positives list that make up less than 10% of your inventory, please choose Partial Yes.

For facilities that do not use chemicals in production: Please answer Yes only if more than 50% of the chemical formulations in the chemical inventory (% based on the number of chemicals, not the volume) are sourced from a positive list such as ZDHC Chemical Gateway, bluesign, GOTS, and/or Oeko-Tex. If you have chemicals from a positives list that make up less than 50% of your inventory, please choose Partial Yes.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation if available.

Upload: a) Demonstrate access to a positive list (example: bluesign bluefinder licence); b) Chemical inventory listing the chemical formulations and the corresponding chemical supplier - chemicals sourced from a positive list should be identified in the chemical inventory (skip if previously uploaded); c) Purchasing support documents (skip if previously uploaded); d) Purchasing contract language to support sourcing chemicals from positive lists (skip if previously uploaded); e) Process documentation to identify internal and external responsibilities (skip if previously uploaded)

Chemicals Management – Level 3

17. Does your facility collaborate with brands and/or chemical suppliers to select chemicals for alternatives assessment?

It's critical that value chain partners work together on alternatives in order to prevent a regrettable substitution that results in a product failure or non-compliance. You will be awarded partial points if you are collaborating on alternatives for all categories of chemicals. You will be awarded partial points if you are only prioritizing alternatives for some categories of chemicals.

- Yes
- No
- Unknown

Indicate which chemicals:

- All chemicals used in manufacturing processes
  - Yes
  - No
- All chemicals used in tooling/equipment (lubricants and grease)
  - Yes
  - No
- All chemicals used to operate and maintain the facility
  - Yes
  - No

Please upload documentation if available.

Upload: a) Prioritized list of alternatives for chemicals; b) MRSL/RSL, substances of concern list, REACH SVHC List (skip if previously uploaded); c) Minutes from collaborative meeting between facility, customers, and chemical suppliers regarding alternatives.

18. Does your facility contribute a chemical analysis against human and environmental hazard criteria (e.g., persistent, bio-accumulative, and toxic) to this alternatives process?

Please answer Yes if a hazardous chemicals assessment has been conducted in the facility and you are using this information to prioritize action and encourage chemical use towards safer alternatives. The assessment must include an evaluation of the hazard associated with an hazardous substance and an assessment of the exposure. Answer Partial Yes if you have conducted an assessment but have not prioritized further action.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation:*Suggested Upload: a) Hazardous Chemicals assessment report; b) Evidence the facility has evaluated the alternatives against hazard criteria.*

19. Does your facility contribute an analysis of lifecycle impacts to this alternatives process

Your facility should optimize chemicals used, manufacturing processes, and machinery to reduce energy and water consumption associated with a production step. An example would be choosing a different dyestuff in order to reduce water consumption during a dyeing process. Please answer Yes if you have evaluated the environmental impacts (e.g., impacts on water usage, energy usage, waste, wastewater, and disposal) of replacing chemicals in your factory.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation:
Suggested Upload: a) bluesign BlueXpert assessment; b) Lifecycle Assessment studies; c) Documented metrics for water, energy, waste, etc.; d) Third party assessments.

20. Can your manufacturing process chemicals be traced from product lot number back to chemical lot number?

- Yes
- Partial Yes
- No
- Unknown

Please answer Yes only if ALL chemicals used in processes or in mixtures can be traced to the temporary/working storage and main warehouse where consistent records are available and maintained to the lot number. If you can trace some but not all chemicals back to the lot number, please answer Partial Yes.

Suggested Upload: a) Product batch card including batch number, dates and production quantity; b) Recipe cards, formulation sheets, process instructions (where applicable), containing all traceable information i.e. chemical name, lot number, and quantity; c) Chemical mixing/blending process log, lab records (e.g. color lab, washing lab, etc.), including relevant information e.g. chemical name and quantity used in mixtures; d) Chemical storage log, including temporary/working storage and main warehouse with consistent records i.e. storage in/out log with chemical lot number, quantity, and dates (stored and dispatched for usage).

21. Does your facility have a documented Quality Assurance (QA) Program that includes performance of chemicals?

Please answer Yes only if you have a process in place to randomly select and verify a chemical's compliance to a known standard such as an MRSL or RSL via an organoleptic and chemical analysis on at least an annual basis. This QA program should include: 1) the evaluation of the quality and performance efficacy of each chemical formulation used, 2) ensuring the process recipes of how each chemical formulation are to be used are strictly followed, 3) process controls are strictly followed, and 4) ongoing assessment of production quality with supporting records. Answer Partial Yes if your facility utilizes customer testing reports traceable to work orders and recipes to verify chemical supplier conformance.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation:
Suggested Upload: a) Quality department with associated records such as customer test reports, analytical laboratory test reports by chemical by lot; b) Chemical supplier analytical test report; c) SOP for purchasing chemicals from qualified suppliers (skip if previously uploaded); d) Quality reports to senior management; e) In-house records of the analysis performed during last season; f) Test reports records from external labs of the analysis performed during last season and check that they are in accordance with MRSL requirements; g) Analysis results traceable to their corresponding internal orders and finished good batch.

22. Do your contractors/subcontractors source already-approved or preferred chemicals from a positives list to replace chemicals not already included in RSL/MRSL?

Please select Yes if your facility has a system in place that requires all contractors and subcontractors to have a preferred chemicals list and verify its use. You may choose Partial Yes if you have an action plan to engage suppliers by requesting the selection of chemicals from a positive list.

- Yes
- Partial Yes
- No
- Unknown

Please upload documentation:
Suggested Upload: a) Description of the procedures; b) Communications with the suppliers and subcontractors showing confirming the practice of sourcing chemicals from positive lists; c) Higg verification report from suppliers / subcontractors showing that they meet the criteria.

23. Does your facility have documented business goals, processes and actions showing commitment (e.g., equipment, process, choice of substitute chemicals) to new sustainable chemistry innovation?

Please answer Yes only if you can demonstrate that business decisions take responsible chemical management and innovation into consideration by incorporating responsible chemicals into its own business agreements and documented business goals. You may choose Partial Yes if you can otherwise demonstrate that business decisions take responsible chemical management and innovation into consideration.

- Yes
- Partial Yes
- No
- Unknown

Does your facility communicate its goals, processes and actions to Brands and Suppliers?

- Yes
- No
- Unknown

Please upload documentation:*Suggested Upload: a) Description or examples of current chemistry R&D projects/investments; b) Examples of how you have incorporated responsible chemistry into your own business agreements.*

Appendix C: Survey Design Outline

1. Provide brief explanation of the purpose of the questionnaire and its relevance to the organization's water management
    1. Assure suppliers the info provided will be confidential
    2. Refer suppliers to a Reference Guide to provide further explanation and clarity on the questions
2. Request basic details about the supplier such as company name, address, contact info, contact person, parent company, and square footage of facility
3. Ask suppliers to provide their total material production in the previous year by either weight in kilograms, or length in meters.
4. Ask suppliers to provide an overview of their water usage within their operations
    1. Total annual water consumption for previous (2022) year
    2. Divided out by type of water that they use in their operations: municipal, process, groundwater, surface water, seawater, etc.
5. Determines supplier's efforts to conserve water
    1. What water conservation efforts or initiatives are in place?
    2. Any technology equipment or processes to reduce water usage?
    3. Water treatment technologies in use and offsite or onsite?
    4. Do they have a copy of the types and concentrations of pollutants in their wastewater after treating it?
    5. Any water recycling or reuse practices?
6. Water management policies that the supplier follows
    1. Do they have a water management plan or policy? If yes, explain
    2. How do they monitor and track water usage? System to identify inefficiencies?
7. Inquire about their compliance with water regulations
    1. Any water-related certifications?
8. If they can, can they provide the contact info of their supplier? Or at a minimum, the country of origin of their raw materials?
9. Provide an opportunity for suppliers to share any additional comments or relevant info not in the questionnaire

We recognize that there are some limitations within our survey methodology such as it not being verified by expert third parties, there being no way to ensure accuracy of response entries, and certain language barriers could skew response results.

Appendix D: Tier 1/Tier 2 Survey Guide

Please see the next page for the complete Tier 1/Tier 2 Survey Guide we sent to Everlane's suppliers to help in the completion of our initial survey.

How-To Guide:
A Reference Guide for the 2023 Everlane Supply Chain Survey

This document is meant to serve as a guide to help Everlane's suppliers complete the water and supply chain survey. The question number on the survey will correspond to the ones on this document. Some questions may be skipped depending on your answers, so please only consult the questions that are relevant to your facility on this guide. For variations of questions based on previous branching selections, they will be denoted with a letter (i.e. 3.05a and 3.05b).

Supplementary instructions for questions are noted with a red asterisk(*). Example answers to non-multiple choice questions will be provided through images bordered in **blue**. Please do **not** use the example answers when completing your own survey – they are meant to serve as a guide for the format of the answers we are seeking.

For translations in other languages, please download a copy of this document and use the documents translation function on Google Translate or another reliable translation tool.

Thank you for your cooperation!

Saving and Continuing

This survey may require you to collect documentation or do research into your facility's record keeping. Because of this, you may not be able to complete it all in one sitting.
Once you begin the survey, your answers will automatically be saved so that you may return to it at any time within the survey deadline timeframe or until the final submission at the end of the survey.

To access your previously saved answers and continue the survey after exiting, you must follow the same initial access link that was sent to you, while using the same browser and computer. You will then be able to resume the survey from where you left off and continue your submission.

Section 1 – Introduction

The objective of this survey is to gather essential information on supply chain transparency, energy usage, and water usage at each of Everlane's partner suppliers.

The data collected will allow us to establish traceability of our supply chain, conduct environmental analyses for the production of our materials, and identify opportunities to implement positive environmental practices. The questions in this survey will be asking you to report production information for calendar year 2022 (January 1, 2022 to December 31, 2022).

You may reference the How-to-Guide for additional assistance in completing each question. The Guide will provide additional details and examples for many of the various questions below. If you need time to gather materials in order to complete the survey, you may exit the survey and your answers will automatically be saved until the survey is complete. You will be able to access it again by clicking the same initial link you were sent, from the same computer and browser.

REMINDER: This survey should be completed for EACH facility location. If Everlane produces finished goods at more than one facility or sources fabric from one or more mills, one survey entry should be completed for each location. This means you may be required to fill out this survey multiple times.

Please be assured that all the information provided will be treated with strict confidentiality and used solely for the purpose of this survey and analysis. Your responses will help us gain a comprehensive understanding of sustainability practices within our supply chain.

Instructions: In this section you will be asked general questions about the facility that produces materials or finished products for Everlane. Questions include general details about the facility, location, square footage, and certifications.

1.01

Facility name:

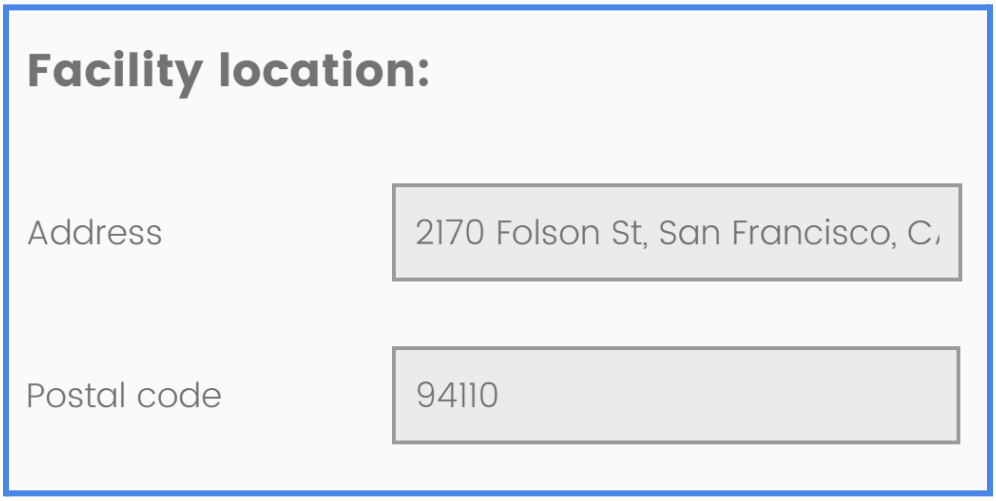
REMINDER: This survey should be completed for EACH facility location. If Everlane produces finished goods at more than one facility or utilizes fabric from one or more mills, one survey entry should be completed for each location. This means you may be required to fill out this survey multiple times.

Facility name:

Everlane Factory

1.02

Facility location:



1.03

Please select the country your facility is located in:

**This is a multiple choice question. Please select according to your facility's details.*

1.04

Location of facility owners or parent/holding company (optional - please answer only if applicable):

Location of facility owners or parent/holding company (optional - please answer only if applicable):

Name	Everlane Parent Company
City	1234 Folson St, San Francisco, C.
Country	United States

1.05

Contact Information:

Please enter the first and last name of the best person to contact for environmental/sustainability practices at this facility. If there is more than one person, please include all names & emails, separated by commas.

Contact Information:

Please enter the first and last name of the best person to contact for environmental/sustainability practices at this facility. If there is more than one person, please include all names & emails, separated by commas.

Contact Name	Jane Smith
Contact Email Address	janesmith@email.com

1.06

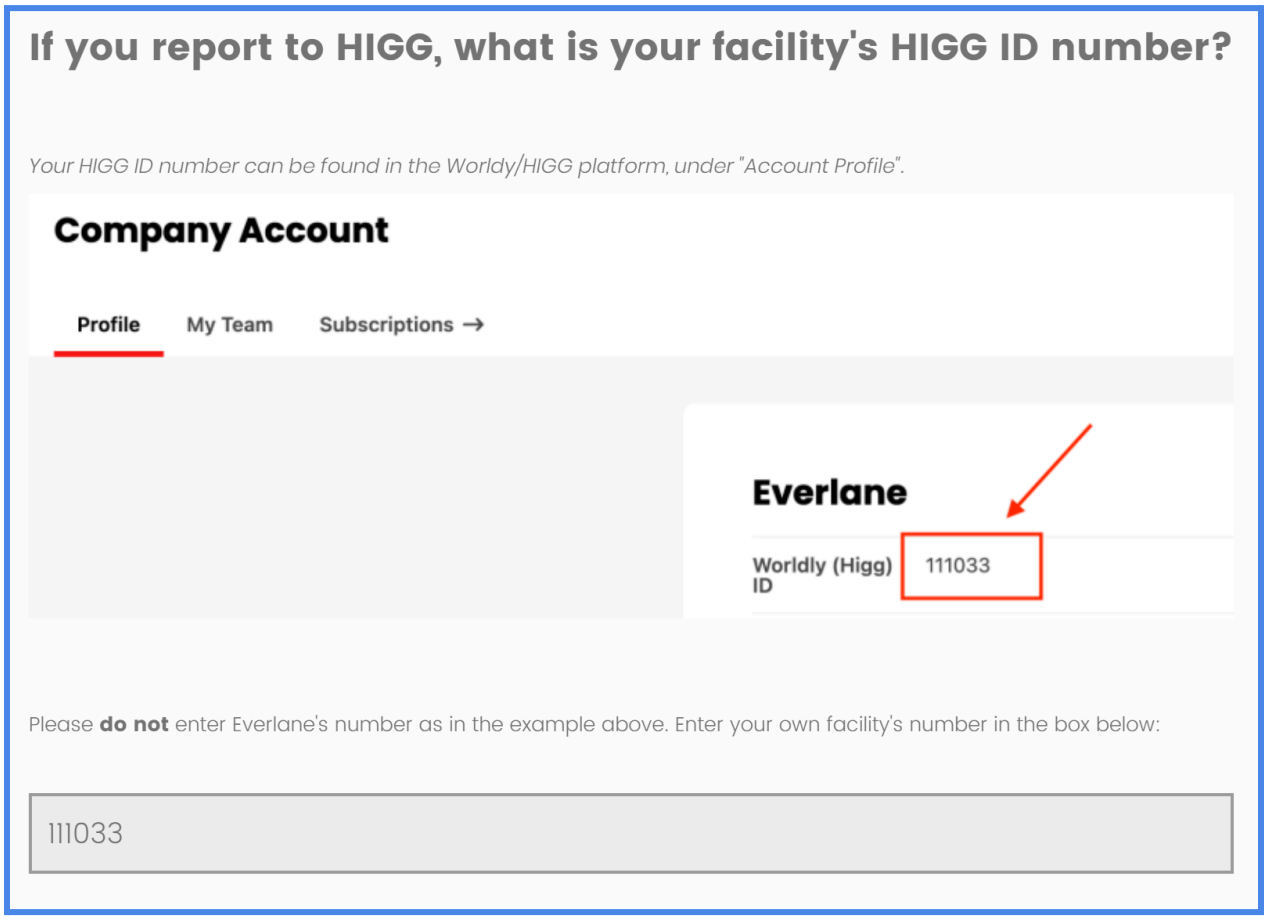
Is your facility reporting to the Higg FEM Index (part of the Sustainable Apparel Coalition)?

**This is a multiple choice question. Please select according to your facility's details.*

1.07

If you report to HIGG, what is your facility's HIGG ID number?

Your HIGG ID number can be found in the Worldy/HIGG platform, under "Account Profile".



Please **do not** enter Everlane's number as in the example above. Enter your own facility's number in the box below:

1.08

Did your facility report to the Higg FEM Index for 2022?

Please ensure that you have shared your 2022 Higg FEM with Everlane on the HIGG/Worldly portal.

**This is a multiple choice question. Please select according to your facility's details.*

1.09

Please enter the approximate square footage of all your production facilities (in sq. ft.):

This does not include square footage from dormitory, office spaces, or any areas where production of goods does not take place.

*When entering a numeric value, please **exclude commas and units**. This number should be supplied in **square feet (sq. ft.)**, please make any conversions from other units of measure before entering the numerical value. If you need assistance converting your area unit of measurement into sq.ft., you can use the unit of measure converter tool here.*

Please enter the approximate square footage of all your production facilities (in sq. ft.):

This does not include square footage from dormitory, office spaces, or any areas where production of goods does not take place.

*When entering a numeric value, please **exclude commas and units**. This number should be supplied in **square feet (sq. ft.)**, please make any conversions from square meters before entering the numerical value. If you need assistance converting your area unit of measurement into sq.ft., you can use the unit of measure converter tool here.*

70580

**This is an aggregate sum of the square footage of your production facilities. Non-production areas such as dormitories and office buildings where production is not taking place should be excluded from the calculation. Please report your answer in square feet (sq. ft.) and use the conversion tool if needed.*

1.10

Does your facility possess any environmental certifications that have specific requirements for water or chemical management? Please select all that apply:

**This is a multiple choice question. Please select the certifications your facility has obtained.*

Section 2 – Water Usage

Instructions: In this section you will be asked to provide details about water use and water effluent at the facility. Be prepared to provide responses about details such as: source of water supply, amount of water used at the facility, and details about your water management plan.

Definitions as stated by the CDP Reporting Guidelines:

- **Water withdrawal:** The sum of all water drawn into the boundaries of the organization (or facility) from all sources for any use over the course of the reporting period.

Reporting your facility's water consumption by source: (all definitions sourced from the Higg FEM Glossary 2022).

- **Produced/process water:** Water which, during extraction or processing, comes into direct contact with or results from the production or use of any raw material (e.g. crude oil or a by-product from sugar cane crushing), intermediate product, finished product, by-product, or waste product. Note this also includes reused and/or recycled water.
- **Municipal water:** Water provided by a municipality or other public provider.
- **Surface water:** Water that is naturally occurring on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers, and streams.
- **Groundwater:** Water that is beneath the soil surface, usually under conditions where the pressure in the water is greater than the atmospheric pressure and the soil void is substantially filled with water.
- **Collected rainwater:** If a company is managing rainwater, either to harvest and use, or to prevent flooding for example, they should try to estimate and disclose it as withdrawal from the hydrological system.
- **Brackish or seawater:** Brackish water is water in which the concentration of salts is relatively high (over 10,000 mg/l). Seawater has a typical concentration of salts above 35,000 mg/l.

Please provide details about your facility's water sources and report quantity used from January 1, 2022 to December 31, 2022.

2.01

Does your facility use water from any of the following sources? Select all that apply.

Using the definitions above, please select which source(s) your facility withdraws water from.

2.02

Does your facility track its volumetric water usage from any of the previously selected sources?

This is a multiple choice question. Please select according to your facility's details.

2.03

Indicate the total quantity of water withdrawal that was measured from January 1, 2022 to December 31, 2022, for each source in cubic meters (m^3):

Enter only the numeric value and exclude any units or commas. If you need assistance converting your water supplier's volume unit of measurement into cubic meters (m^3), you can use the unit of measure converter tool here.

Indicate the total quantity of water that was measured from January 1, 2022 to December 31, 2022, for each source in cubic meters (m^3):

Enter only the numeric value and exclude any units or commas. If you need assistance converting your water supplier's volume unit of measurement into cubic meters (m^3), you can use the unit of measure converter tool here.

Municipal water	100
Surface water	250
Groundwater	390
Collected rainwater	40
Produced/process water	5000
Brackish or seawater	620
Unknown origin	75

**Please share the total quantity of water withdrawal that was measured, in cubic meters (m^3). If needed, please use the converter tool.*

2.04

How does your facility monitor or track its annual water withdrawal? Select all that apply.

**This is a multiple choice question. Please select according to your facility's details.*

2.05

Implementing action plans with specific actions and strategies is crucial to achieve future water reduction targets.

Does your facility have a water management plan in place to ensure the most efficient water use?

Answer "Yes" if you have an implementation plan in place that demonstrates you are taking action to achieve your targeted reductions.

**This is a multiple choice question. Please select according to your facility's details.*
A plan refers to a defined project or objective to reduce water use for your facility. There should be actionable steps, milestones, or other clearly established methods to track the plan's progress.

2.06

Please upload a copy of your water management plan.

Please upload the water use reduction plan showing specific actions designed to achieve targeted reductions in water consumption.

Please upload a copy of your water management plan.

factory_water_mgmt_plan.pdf

2 MB

application/pdf

**Please submit your document in the format of a .pdf or a .docx file.*

2.07

If you do not have a document to upload, please describe your implementation plan with as much detail as possible below. Or, if you have an equivalent plan on an external web browser or URL, please include the link to that here.

If you do not have a document to upload, please describe your implementation plan with as much detail as possible below. Or, if you have an equivalent plan on an external web browser or URL, please include the link to that here.

Our facility's water implementation plan consists of monitoring monthly withdrawals and setting goals to reduce consumption each financial quarter. Here is a detailed breakdown of the key prinicples to our action plan:

1. Improving monitoring

Section 3 – Wastewater Discharges

Instructions: In this section you will be asked to provide details about wastewater discharge at the facility. Be prepared to provide responses about details such as: types of wastewater generated at the facility (domestic, industrial), amount of wastewater discharged, wastewater treatment measures, wastewater quality testing, and wastewater management programs at the facility.

Wastewater refers to the water that is of no further immediate value to the purpose for which it was used or in the pursuit of which it was produced because of its quality, quantity or time of occurrence and is normally discharged from a facility. Measurement and reporting of wastewater are critical aspects of environmental monitoring and sustainability efforts to ensure proper management and mitigate potential impacts on water resources and ecosystems.

The following questions seek to gather information on your facility's approach to wastewater treatment and discharge.

- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(All definitions sourced directly from the Higg Index)

3.01

Does your facility generate industrial wastewater?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

3.02

Does your facility treat industrial and domestic wastewater together?

**This is a multiple choice question. Please select according to your facility's details.*

3.03

Does your facility track its annual volumetric wastewater discharges?

**This is a multiple choice question. Please select according to your facility's details.*

3.04

Which method does your facility use to track wastewater volume? Select all that apply.

**This is a multiple choice question. Please select according to your facility's details.*

3.05a

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m^3)?

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m^3)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

*Enter only the numeric value and **exclude any units or commas**. This number should be supplied in **cubic meters (m³)**. please make any unit conversions before entering the numerical value. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

Domestic	700
Industrial	1400

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

3.05b

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in m³ (cubic meters)

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

*Enter only the numeric value and **exclude any units or commas**. This number should be supplied in **cubic meters (m³)**, please make any unit conversions before entering the numerical value. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

Domestic & Industrial combined	2100

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

3.05c

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in m^3 (cubic meters)

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

Enter only the numeric value and exclude any units or commas. If you need assistance converting your water supplier's volume unit of measurement into cubic meters (m³), you can use the unit of measure converter tool here.

Domestic	700

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

3.06

- **Zero-liquid discharge (ZLD):** A treatment process that designs for no water to leave a facility in liquid form. At a facility with on-site ZLD treatment system, almost all wastewater is treated and recovered such that the only water discharged from the facility exists by evaporation or as moisture in the sludge from treatment plant operations.

Definition sourced directly from the ZDHC website.

Does your facility have a Zero-Liquid Discharge System?

**This is a multiple choice question. Please select according to your facility's details.*

3.07

Is your facility ZDHC (Zero Discharge of Hazardous Chemicals) compliant?

For more information, you can visit their official website.

**This is a multiple choice question. Please select according to your facility's details.*

3.08

To find out more about the registration process, you can visit this page on their official website. If you need help finding your AID, please consult this page.

If you are ZDHC compliant, what is your ZDHC Account ID (AID) number?

To find out more about the registration process, you can visit their official website.
If you need help finding your AID, please consult this page.

If you are ZDHC compliant, what is your ZDHC Account ID (AID) number?

A473JZ94

3.09a

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.
- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to the environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's <u>domestic</u> wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

3.09b

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.
- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's <u>industrial</u> wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

3.09c

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.

- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's combined industrial & domestic wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

3.10

You indicated that your facility uses on-site water treatment methods.

What primary treatment methods or technologies does your facility use to treat its wastewater on-site?

- **Electrocoagulation:** is an electrochemical process for the treatment of wastewater using an electric current without adding chemicals where tiny particles are removed in wastewater
  (Definition sourced from The National Library of Medicine. For more information please visit their official website.)

- **Coagulation:** is the chemical water treatment process used to remove solids from water, by manipulating electrostatic charges of particles suspended in water. This process introduces small, highly charged molecules into water to destabilize the charges on particles, colloids, or oily materials in suspension.
  (Definition sourced from the Dober Chemical Company. For more information, please visit their official website.)

- **Flocculation:** is a water treatment process where solids form larger clusters, or flocs, to be removed from water. This process can happen spontaneously, or with the help of chemical agents. It is a common method of stormwater treatment, wastewater treatment, and in the purification of drinking water.
  (Definition sourced from CleanAWater. For more information, please visit their official website.)

- **Advanced Oxidation Processes:** are a set of chemical treatment environmental engineering techniques designed to remove organic and sometimes inorganic materials in water and wastewater by oxidation through reactions with hydroxyl radicals
  (Definition sourced from American Water Chemicals. For more information, please visit their official website.)

- **Membrane Filtration:** relies on a liquid being forced through a filter membrane with a high surface area. There are four basic pressure driven membrane filtration processes for liquid separations. These are, in ascending order of size of particles that can be separated: reverse osmosis, nanofiltration, ultrafiltration and microfiltration.
  (Definition sourced from the Wastewater Digest. For more information, please visit their official website.)

- **Adsorption:** is a physical process in which dissolved molecules or small particles in water (the adsorbate) are attracted and become attached to the surface of something larger (the adsorbent).
  (Definition sourced from Danamark Watercare. For more information, please visit their official website.)

- **Membrane Bioreactors (MBR):** is a process which combines a microfiltration or ultrafiltration membrane unit with a suspended growth bioreactor, and is now widely used in both municipal and industrial WasteWater Treatment Plants (WWTPs).
  (Definition sourced from PCI Membranes Filtration Group. For more information, please visit their official website.)

- **Photocatalytic Membrane Bioreactor (PMR):** is a system coupling photocatalysis and membrane filtration to produce high-quality permeate. Photocatalysis creates strong oxidizing radicals that degrade the pollutant.
  (Definition sourced from the Royal Society of Chemistry. For more information, please visit their official website.)

**This is a multiple choice question. Please select according to your facility's details.*

3.11

You indicated that your facility uses on-site water treatment methods.

- **Wastewater quality:** May be measured using many factors, such as suspended solids, reduced biological oxygen demand (BOD) or chemical oxygen demand (COD), metals content, oil/grease content, temperature, pH, etc. It can be improved through reducing strength/concentration of contamination at the source of generation and should be considered top priority, before targeting to reduce wastewater volume. Wastewater treatment volume and quality are tightly linked.
- **Wastewater quality test:** A method of quantifying and identifying pollutants in wastewater through testing. For domestic wastewater tests, the categories often include physical properties, solids, biologicals, and chemicals. For industrial wastewater, various heavy metals may also be included.

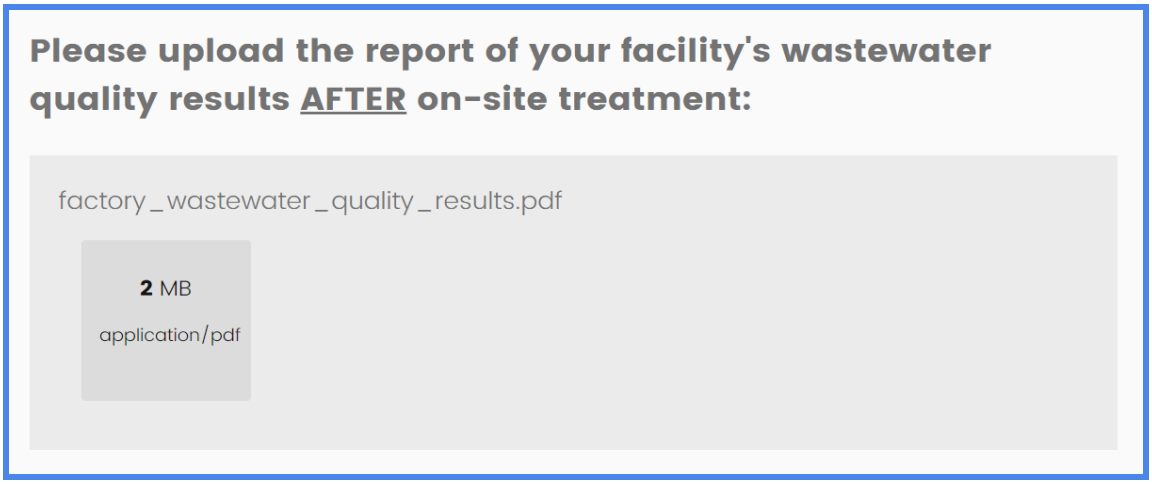
(Definitions sourced directly from The Higg FEM Glossary 2022 and Wastewater Testing)

Do you have a report of your facility's wastewater quality results AFTER on-site treatment?

**This is a multiple choice question. Please select based on if you have a copy of the results.*

3.12

Please upload the report of your facility's wastewater quality results AFTER on-site treatment:



*Please submit your document in the format of a .pdf or a .docx file.

3.13

Based on the wastewater quality results from your facility AFTER on-site treatment, what are the top 3-5 most concentrated pollutant(s) present in the wastewater after treatment? Select all that apply.

*This is a multiple choice question. Please select according to your facility's details.

3.14

You indicated that your facility uses off-site water treatment methods.

- **Wastewater quality:** May be measured using many factors, such as suspended solids, reduced biological oxygen demand (BOD) or chemical oxygen demand (COD), metals content, oil/grease content, temperature, pH, etc. It can be improved through reducing strength/concentration of contamination at the source of generation and should be considered top priority, before targeting to reduce wastewater volume. Wastewater treatment volume and quality are tightly linked.
- **Wastewater quality test:** A method of quantifying and identifying pollutants in wastewater through testing. For domestic wastewater tests, the categories often include physical properties, solids, biologicals, and chemicals. For industrial wastewater, various heavy metals may also be included.

(Definitions sourced directly from The Higg FEM Glossary 2022 and Wastewater Testing)

Do you have a report of wastewater quality results from the OFF-SITE treatment plant?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

3.15

Please upload the report of your facility's wastewater quality results from the OFF-SITE treatment plant.

**Please submit your document in the format of a .pdf or a .docx file.*

3.16

Based on the wastewater quality results from the off-site treatment plant, what are the top 3-5 most concentrated pollutant(s) present in the wastewater before treatment? Select all that apply.

**This is a multiple choice question. Please select according to your facility's details.*

3.17

Does your facility reuse or recycle any of its process wastewater as process water (closed loop)?

Answer 'Yes' if you have wastewater treatment in place to reuse and/or recycle your production wastewater back into production processes. The reused and/or recycled water must be used in production processes - other uses like irrigation, toilets, etc. are excluded.

**This is a multiple choice question. Please select according to your facility's reuse and/or recycling system in place for your facility's wastewater.*

3.18

What percentage of your facility's wastewater is recycled for reuse?

*Enter a single numeric value and **exclude the percentage** sign.*

Section 4 – Energy Usage

Instructions: In this section you will be asked to provide details about the energy use and energy sources at the facility. You will provide details about: the amount of electricity and energy used at the facility, the sources of electricity and energy used at the facility (including fossil fuels and renewables), the facility's use of Renewable Energy Credits (RECs) or Energy Attributes Certificates (EACs), and any carbon reduction targets (such as Science-Based Targets) that the facility has set.

The following questions will allow us to gain a better understanding about the energy usage within Everlane's supply chain. Using renewable energy is crucial for mitigating the negative impacts of climate change and reducing greenhouse gas emissions. By transitioning to renewables, suppliers can contribute to a cleaner environment, decrease their ecological footprint, and support sustainability goals. Reporting energy usage and implementing plans for switching to renewables not only demonstrates corporate responsibility but also fosters transparency and accountability.

4.01

Does your facility currently utilize renewable energy sources?

NOTE: DO NOT include your use/purchase of Renewable Energy Credits (RECs) or Energy Attributes Certificates (EACs). You will be asked about these purchases later in the survey.

**This is a multiple choice question. Please select according to your facility's energy source(s).*

4.02

What classification of renewable energy are you using? (excluding Renewable Energy Credits (RECs) or Energy Attributes Certificates (EACs))?

**This is a multiple choice question. Please select according to the type(s) of renewable energy utilized by your facility.*

4.03

What types of renewable energy does your facility use?

NOTE: DO NOT include your use/purchase of Renewable Energy Credits (RECs) or Energy Attributes Certificates (EACs). You will be asked about these purchases later in the survey. This question should only be for onsite or Power Purchase Agreement (PPA) renewables.

**This is a multiple choice question. Please select according to your facility's renewable energy portfolio.*

4.04

Does your facility track the usage quantity of its renewable energy use?

**This is a multiple choice question. Please select according to your facility's details.*

4.05

What quantity of energy was used by each source from January 1, 2022 to December 31, 2022, in megajoules (MJ)?

*When entering a numeric value, please **exclude commas and units**. This number should be supplied in **megajoules (MJ)**. Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

What quantity of energy was used by each source from January 1, 2022 to December 31, 2022, in megajoules (MJ)?

*When entering a numeric value, **please exclude commas and units**. This number should be supplied in **megajoules (MJ)**. Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

Solar thermal	100
Solar photovotalic	205
Wind	710
Hydropower	0
Biomass - general	60
Biomass - wood	5
Biodiesel	0
Geothermal	75
Other	0

Please input your energy use for each applicable renewable energy resource in megajoules (MJ), using this converter tool if needed.

4.06

Does your facility purchase Energy Attribute Certificates (EACs) or Renewable Electricity Certificates (RECs) to offset your energy usage?

An Energy Attribute Certificate (EAC) or Renewable Electricity Certificate (REC) represents proof that 1 MWh of renewable energy has been produced and added to the power grid in any given country where they are offered. They allow a buyer to claim consumption of that specific renewable energy and its various benefits, offsetting the use of their conventional power used.

EACs are named differently in regions around the globe. In your region, they may be called one of the following:

- *RECs (Renewable Energy Certificates)*
- *I-REC (I-REC standard certificate)*
- *AIB GO (AIB Guarantee of Origin)*
- *Non-AIB GO or REGO (Non-AIB Guarantee of Origin or Renewable Energy Guarantee of Origin)*
- *NZECS (New Zealand Energy Certificate Syste*
- *LGCs & I-REC (Large-scale Generation Certificates)*
- *TIGRs & I-REC*
- *T-RECs & TIGRs & I-REC*
- *J-Credit & NFCs & I-REC*

**This is a multiple choice question. Based on the criteria above, please select according to your facility's details.*

4.07

What kinds of EACs or RECs does your facility purchase and how much do each of them offset, in megawatt hours (MWh)?

Examples of EAC or REC sources include:

- Solar
- Wind
- Hydro

- Geothermal
- Biomass
- Biodiesel
- Other

*When entering a numeric value for the amount of energy offset, **please exclude commas and units**. This number should be supplied in **megawatt hours (MWh)**. Please make any conversions from a different unit of measure (KWh, MJ, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MWh**, you can use the unit of measure converter tool here.*

For each EAC/REC purchased, enter the source and amount offset. For any remaining empty cells, enter "N/A". You will not be able to proceed in the survey until each box contains a type, number, or N/A designation.

What kinds of EACs or RECs does your facility purchase and how much do each of them offset, in megawatt hours (MWh)?

Examples of EAC or REC sources include:

- *Solar*
- *Wind*
- *Hydro*
- *Geothermal*
- *Biomass*
- *Biodiesel*
- *Other*

*When entering a numeric value for the amount of energy offset, **please exclude commas and units**. This number should be supplied in **megawatt hours (MWh)**. Please make any conversions from a different unit of measure (KWh, MJ, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MWh**, you can use the unit of measure converter tool here.*

For each EAC/REC purchased, enter the source and amount offset. For any remaining empty cells, enter "N/A". You will not be able to proceed in the survey until each box contains a type, number, or N/A designation.

	Source of EAC or REC	Amount of energy offset (MWh)
REC / EAC #1	EAC Source A	7010
REC / EAC #2	REC Source B	115
REC / EAC #3	EAC Source C	390
REC / EAC #4	N/A	N/A

**Please be sure to specify the name of your source and indicate whether it is a REC or EAC. Please report the amount of energy offset in megawatt hours (MWh), using this conversion tool if needed.*

4.08

If your facility is NOT using renewables, do you have plans to do so in the future?

**This is a multiple choice question. Please select according to your facility's details.*

4.09

If you have a plan to start using renewables in the future, please describe your plan for implementation below.

If you have a plan to start using renewable energy in the future, please describe your plan for implementation below.

At our facility, we are evaluating renewable energy sources to integrate into our energy portfolio. Our focus is on solar and wind energy options from local plants. We're assessing factors such as energy consumption, infrastructure, and budget feasibility. Our plan involves a phased implementation to ensure a smooth transition without disrupting operations. We'll monitor energy production and consumption data to optimize system efficiency. Our objective is to reduce reliance on non-renewable energy sources and decrease carbon emissions. Here is a list of the steps we have proposed:

**A plan refers to a defined project or objective to utilize renewable energy sources at your facility. There should be actionable steps, milestones, or other clearly established methods to track the plan's progress. Please be as detailed as possible. Alternatively, if there is a website or other external link to a public version of your plan, please link it here.*

4.10

Does your facility currently have science-based targets for carbon reduction set in place?

- **Science-based targets:** provide a clearly-defined pathway for companies to reduce greenhouse gas (GHG) emissions, helping prevent the worst impacts of climate change and future-proof business growth

The definition is sourced directly from the Science-Based Targets Initiative (SBTi). To find out more about science-based targets and how they work, please visit this website.

**This is a multiple choice question. Please consult the website if needed and answer according to your facility's details.*

4.11

What is your target for reducing your overall carbon emissions? Enter a negative percentage (e.g., -5 for 5% reduction) for a reduction target, and enter your base year and target year.

What is your target for reducing your overall carbon emissions? Enter a negative percentage (e.g., -5 for 5% reduction) for a reduction target, and enter your base year and target year.

	Base Year	Reduction Target	Target Year
Carbon Reduction Target	2018	-20	2025

4.12

Are your targets verified by the Science-Based Targets Initiative (SBTi)?

**This is a multiple choice question. Please answer based on whether or not you have reported your greenhouse gas (GHG) emissions to SBTi and had them validated.*

4.13

What types of non-renewable (conventional) energy sources does your facility utilize?

**This is a multiple choice question. Please select according to your facility's conventional energy portfolio.*

4.14

What was the total amount of combined purchased non-renewable energy at your facility from January 1, 2022 to December 31, 2022, in megajoules (MJ)?

*When entering a numeric value, **please exclude commas and units**. This number should be supplied in **megajoules (MJ)**. Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

What was the total amount of combined purchased non-renewable energy at your facility from January 1, 2022 to December 31, 2022 megajoules (MJ)?

*When entering a numeric value, **please exclude commas and units**. This number should be supplied in **megajoules (MJ)**. Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

97920

**Please input your energy use for each applicable renewable energy resource in megajoules (MJ), using the converter tool if needed.*

4.15

What quantity of energy was used by each non-renewable source from January 1, 2022 to December 31, 2022 calendar year?

*When entering a numeric value, please exclude commas and units. This number should be supplied in megajoules (MJ). Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

What quantity of energy was used by each non-renewable source from January 1, 2022 to December 31, 2022 calendar year in megajoules (MJ)?

*When entering a numeric value, **please exclude commas and units**. This number should be supplied in **megajoules (MJ)**. Please make any conversions from a different unit of measure (KWh, MWh, etc.), before entering the numerical value. If you need assistance converting your energy unit of measurement into **MJ**, you can use the unit of measure converter tool here.*

Coal	1020
Diesel	565
Petrol	90080
Natural Gas	5475
Propane	0
Liquefied Petroleum Gas (LPG)	130
Liquefied Natural Gas (LNG)	0
Steam	0
Other	650

Please input your energy use for each applicable renewable energy resource in megajoules (MJ), using the converter tool if needed.

Section 5 – Supply Chain Mapping

Instructions: In this section you will be asked to supply details about the upstream supply chain for the products and materials that the facility creates for Everlane. This section will ask you to provide details about the facility's production capabilities, and the number of units/production shipped during the year. You will also be asked to provide details related to supply chain mapping of the fabrics/materials that you produce for Everlane, including: yarn supplier details and raw material supplier details.

As part of our ongoing commitment to sustainability and transparency, we are embarking on a critical initiative to map our full supply chain and trace the sources of fabric materials used in our products. The primary goals of this survey section are to increase transparency and enhance supply chain management across all tiers. By understanding the origins of our materials and supplier relationships, we aim to evaluate the overall environmental impact throughout our entire supply chain to make informed decisions on buying practices moving forward.

5.01

Facility Type:

*This is a multiple choice question. Please select according to your facility's details.

5.02

Please select all of the production processes that your facility operates:

This is a multiple choice question. Please select according to your facility's details. You may select more than one process if it applies to your facility.

5.03

For each product category, report the total amount of product shipped from the facility IN UNITS/PAIRS, from January 1, 2022 to December 31, 2022.

If your facility does not produce one of the below categories, please enter 0 in the corresponding quantity box.

For each product category, report the total amount of product shipped from the facility IN UNITS/PAIRS, from January 1, 2022 to December 31, 2022.

If your facility does not produce one of the below categories, please enter 0 in the corresponding quantity box.

For a visual example, please refer to the accompanying How-To-Guide.

Pants	2910
Skirts	660
Shirts	4225
T-shirts	5015
Dresses	230
Jackets	0
Sweaters	51
Activewear Leggings	49
Underwear	730
Swimsuits	0
Footwear	90
Others	0

5.04

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms or meters)?

You only need to fill out one, either the volume OR the weight of total annual production. Please enter in a single numeric value and exclude any commas or units when entering your response. Type "0" into the cell for the unit you are NOT reporting on.

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms or meters)?

You only need to fill out one, either the volume OR the weight of total annual production. Please enter in a single numeric value and exclude any commas or units when entering your response. Type "0" into the cell for the unit you are NOT reporting on.

For a visual, please refer to the accompanying How-To-Guide.

Yarn - Weight of production (kg)	4005
Leather or Finished Fabric - Volume of production (meters)	710

5.05

Please select the fabric type(s) your facility is responsible for:

**This is a multiple choice question. Please select according to your facility's details.*

5.06a

Sourcing Everlane's associated fabric materials by *fabric code*:

Instructions:
For each fabric code you select, a following question will appear to fill out the yarn supplier details for each fabric material associated with that code. Based on the specific fabric code you select, there will be default materials in the "Fabric Content" cell that the fabric code contains (e.g. Cotton, Polyester, Lyocell, Elastane, etc.).

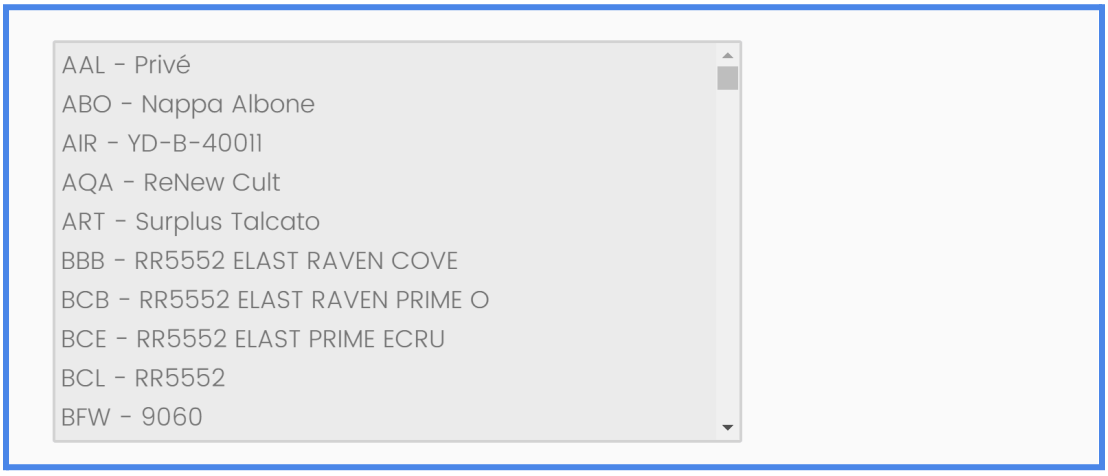
Some may have only one default material automatically written in, some may have multiple. Please provide the corresponding supplier information for each fabric or material listed. For our transparency efforts to be the most effective, we ask that you fill in as much detail as you can provide for each material's yarn supplier.

PLEASE FILL IN THE DEFAULT FABRIC MATERIAL INFORMATION FIRST, and then move on to the additional suppliers (if needed).

From this list of Everlane fabric material codes, please select all of the codes your facility produces for Everlane. They are listed in alphabetical order. Please select each code that you produce for Everlane.

**To select more than one fabric article code, hold down "Ctrl" (on a Windows/PC) or "Cmd" (on a Mac) when selecting each option.*

5.06b



***Examples 5.07 – 5.12 apply to <u>all</u> fabric codes. In the survey, fabric content has been automatically filled based on fabric code for your convenience.**

5.07

For fabric code [“EXAMPLE-CODE”], please provide yarn supplier details.

<u>PLEASE READ:</u> If you are viewing this question in a language other than English, the fabric article code will be displayed in your own local language. In order to properly view the fabric article code that this question is referring to, please change the language back to English using the dropdown on the right hand side of this screen. Once you confirm the fabric article code, you may return back to your own language to complete the question.

The content materials are pre-populated based on this specific fabric article code (for example, in the column headers, a fabric material such as "Cotton" will be listed, etc.). Please complete the information about the yarn supplier for each fabric article listed in the column header.

If there is more than one yarn source for a single material (including a heather or melange), please select “yes” on the subsequent question “Would you like to add another response for additional supplier information?” and complete the information for any additional suppliers.

For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter the primary supplier in the first set of questions that is specific to that code and any additional suppliers in the subsequent question set.

Please note! *For any column with the content material listed as “N/A,” you will need to enter “N/A” into the remaining text boxes in that column.*

All text boxes must be completed before you can move on to the next question.

For fabric code "**BLB - 8795-ST-ACT**", please provide yarn supplier details.

The content materials are pre-populated based on this specific fabric article code (for example, in the column headers, a fabric material such as "Cotton" will be listed, etc.). Please complete the information about the yarn supplier for each fabric article listed in the column header.

If there is more than one yarn source for a single material (including a heather or melange), please select "yes" on the subsequent question "Would you like to add another response for additional supplier information?" and complete the information for any additional suppliers.

For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter the primary supplier in the first set of questions that is specific to that code and any additional suppliers in the subsequent question set.

Please note! *For any column with the content material listed as "N/A," you will need to enter "N/A" into the remaining text boxes in that column. For a visual example, please see the accompanying How-To-Guide.*

All text boxes must be completed before you can move on to the next question.

	Cotton	Polyester	N/A	
Supplier Name	Supplier A	Supplier B	N/A	
Supplier Address	123 Cotton Dr.	123 Polyester St.	N/A	
City	Gangneung	Hanoi	N/A	
Country/Region	South Korea	Vietnam	N/A	
Supplier Contact Email Address	supplier1@email.c	supplier2@email.c	N/A	

5.08

Would you like to add another response for additional supplier information?

Please select "yes" below and complete the next questions for any additional suppliers for each article code, including heather and/or melange versions of the article code.

**This is a multiple choice question. Please select 'Yes' if you source the same content (i.e. "Cotton") from multiple yarn suppliers, including for heather and/or melange versions of the same article code.*

5.09

Please provide additional yarn suppliers for fabric article code ["EXAMPLE-CODE"].

PLEASE READ: If you are viewing this question in a language other than English, the fabric article code will be displayed in your own local language. In order to properly view the fabric article code that this question is referring to, please change the language back to English using the dropdown on the righthand side of this screen. Once you confirm the fabric article code, you may return back to your own language to complete the question.

If there is more than one yarn source for a single material (including heather and/or melange), please complete each column in this question for any additional suppliers. For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter any additional suppliers for that cotton in this section that were not listed in the previous question. If entering additional supplier information, please use the same "Yarn Content" name from the previous question in each cell for "Yarn Content" below.

Please provide additional yarn suppliers for fabric article code "BLB - 8795-ST-ACT".

If there is more than one yarn source for a single material (including heather and/or melange), please complete each column in this question for any additional suppliers. For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter any additional suppliers for that cotton in this section that were not listed in the previous question. If entering additional supplier information, please use the same "Yarn Content" name from the previous question in each cell for "Yarn Content" below. For a visual example, please see the accompanying **How-To-Guide.**

	Supplier	Supplier	Supplier	Supplier
Yarn Content	Cotton	Cotton	Polyester	N/A
Supplier Name	Supplier C	Supplier D	Supplier E	N/A
Supplier Address	123 Cotton Dr.	123 Cotton Dr.	123 Polyester St.	N/A
City	Hong Kong	Paris	Bangkok	N/A
Country/Region	China	France	Thailand	N/A
Supplier Contact Email Address	supplier3@email.	supplier4@email.	supplier5@email.	N/A

5.10

For fabric code **[“EXAMPLE-CODE”]**, please provide **raw material** supplier details.

PLEASE READ: If you are viewing this question in a language other than English, the fabric article code will be displayed in your own local language. In order to properly view the fabric article code that this question is referring to, please change the language back to English using the dropdown on the righthand side

of this screen. Once you confirm the fabric article code, you may return back to your own language to complete the question.

The **raw material** content materials are pre-populated based on this specific fabric article code (for example, in the column headers, a fabric material such as "Cotton" will be listed, etc.). Please complete the information about the **raw material** supplier for each fabric article.

If there is more than one **raw material** source for a single material, please select “yes” from the subsequent question “Would you like to add another response for additional supplier information?” and complete for any additional suppliers. For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter the primary supplier in the first set of questions that is specific to that code and any additional suppliers in the subsequent question set.

At a minimum, we require the Country/Region for each raw material supplier. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "Unknown".

Please note! For any column with the content material listed as “N/A,” you will need to enter “N/A” into the remaining text boxes in that column. See example below.
All text boxes must be completed before you can move on to the next question.

All text boxes must be completed before you can move on to the next question.

For fabric code "BLB - 8795-ST-ACT", please provide **raw material** supplier details.

The **raw material** contents are pre-populated based on this specific fabric article code (for example, in the column headers, a fabric material such as "Cotton" will be listed, etc.). Please complete the information about the **raw material** supplier for each fabric article.

If there is more than one **raw material** source for a single material, please select "yes" from the subsequent question "Would you like to add another response for additional supplier information?" and complete for any additional suppliers. For example, if the cotton in a fabric article code is sourced from more than one vendor, please enter the primary supplier in the first set of questions that is specific to that code and any additional suppliers in the subsequent question set.

At a minimum, we require the Country/Region for each raw material supplier. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "Unknown".

Please note! *For any column with the content material listed as "N/A," you will need to enter "N/A" into the remaining text boxes in that column. For a visual example, please see the accompanying How-To-Guide.*

All text boxes must be completed before you can move on to the next question.

	Cotton	Polyester	N/A	
Supplier Name	Supplier X	Supplier Y	N/A	
Supplier Address	100 Cotton Rd.	200 Polyester Dr.	N/A	
City	Mumbai	Bejing	N/A	
Country/Region	India	China	N/A	
Supplier Contact Email Address	supplier6@email.	supplier7@email.	N/A	

5.11

Would you like to add another response for additional raw material supplier information?

Please select "Yes" below and complete the next questions to add additional supplier details for content. For example, if your cotton supplier sources organic cotton from multiple raw material suppliers for this article code, select "yes" below and disclose the additional supplier details.

**This is a multiple choice question. Please select according to your facility's details.*

5.12

Please provide additional raw material suppliers for fabric article code ["EXAMPLE-CODE"].

PLEASE READ: If you are viewing this question in a language other than English, the fabric article code will be displayed in your own local language. In order to properly view the fabric article code that this question is referring to, please change the language back to English using the dropdown on the righthand side of this screen. Once you confirm the fabric article code, you may return back to your own language to complete the question.

At a minimum, **we require the Country/Region for each raw material supplier**. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "Unknown".

Please provide additional raw material suppliers for fabric code BLB - 8795-ST-ACT:

At a minimum, **we require the Country/Region for each raw material supplier**. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "Unknown". For a visual example, please see the accompanying How-To-Guide.

	Supplier	Supplier	Supplier	Supplier
Raw Material Content	Cotton	Cotton	Cotton	Polyester
Supplier Name	Supplier Z	Supplier XY	Supplier XZ	Supplier YZ
Supplier Address	300 Cotton Rd.	400 Cotton Rd.	500 Cotton Rd.	600 Polyester
City	Bangalore	Adana	Zhejiang	Kaohsiung
Country/Region	India	Turkey	China	Taiwan
Supplier Contact Email Address	supplier8@email.	supplier9@email.	supplier10@email	supplier11@em

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You have reached the end of the survey. Thank you for your time and participation!

Appendix E: Tier 3 Survey Guide

Please see the next page for the complete Tier 3 Survey Guide we sent to Everlane's suppliers' suppliers to help in the completion of our second survey.

How-To Guide:
A Reference Guide for the 2023 Everlane Supply Chain Survey

This document is meant to serve as a guide to help Everlane's suppliers complete the water and supply chain survey. The question number on the survey will correspond to the ones on this document. Some questions may be skipped depending on your answers, so please only consult the questions that are relevant to your facility on this guide. For variations of questions based on previous branching selections, they will be denoted with a letter (i.e. 3.05a and 3.05b).

Supplementary instructions for questions are noted with a red asterisk(*). Example answers to non-multiple choice questions will be provided through images bordered in **blue**. Please do **not** use the example answers when completing your own survey – they are meant to serve as a guide for the format of the answers we are seeking.

For translations in other languages, please download a copy of this document and use the documents translation function on Google Translate or another reliable translation tool.

If you need assistance converting your area unit of measurement into the request unit., you can use the converter tool here.

Thank you for your cooperation!

Saving and Continuing

This survey may require you to collect documentation or do research into your facility's record keeping. Because of this, you may not be able to complete it all in one sitting. Once you begin the survey, your answers will automatically be saved so that you may return to it at any time within the survey deadline timeframe or until the final submission at the end of the survey.

To access your previously saved answers and continue the survey after exiting, you must follow the same initial access link that was sent to you, while using the same browser and computer. You will then be able to resume the survey from where you left off and continue your submission.

Section 1 – Introduction

The objective of this survey is to gather essential information on water usage and sourcing transparency throughout Everlane's supply chain. The data collected will allow us to conduct environmental analyses for the production of our materials and identify opportunities to implement positive environmental practices. The following questions will be asking you to report production information for calendar year 2022 (January 1, 2022 to December 31, 2022).

If you need time to gather materials in order to complete the survey, you may exit the survey and your answers will automatically be saved until the survey is complete. You will be able to access it again by clicking the same initial link you were sent, from the same computer and browser. If you need help or guidance answering a question, please refer to our How-To-Guide as a resource for completing the survey.

REMINDER: This survey should be completed for EACH facility location that manufactures material for the Everlane associated Tier 2 supplier. This means you may be required to fill out this survey multiple times, using a different survey link for each separate facility. ***If you have multiple facility locations and need additional survey links, please email us back and request additional links.***

Please be assured that all the information provided will be treated with strict confidentiality and used solely for the purpose of this survey and analysis. Your responses will help us gain a comprehensive understanding of sustainability practices within our supply chain.

Instructions: In this section you will be asked general questions about the facility that produces yarn or raw materials within Everlane's supply chain.

1.01

Facility name:

REMINDER: This survey should be completed for **EACH** facility location. If you have multiple facilities producing yarn or raw materials for the Everlane associated Tier 2 supplier, one survey entry should be completed for each location. This means you may be required to fill out a survey multiple times, using a different survey link for each separate facility.

Facility name:

Everlane Factory

1.02

Facility location:

Facility location:

Address: 2170 Folson St, San Francisco, C

Postal code: 94110

1.03

Please select the country your facility is located in:

**This is a multiple choice question. Please select according to your facility's details.*

1.04

Location of facility owners or parent/holding company

Optional - please answer only if applicable:

Location of facility owners or parent/holding company.

Optional - please only answer if applicable:

Name	Everlane Parent Company
City	1234 Folson St, San Francisco, C
Country	United States

1.05

Contact Information:

Please enter the first and last name of the best person to contact for environmental/sustainability practices at this facility. If there is more than one person, please include all names & emails, separated by commas.

Contact Information:

Please enter the first and last name of the best person to contact for environmental/sustainability practices at this facility. If there is more than one person, please include all names & emails, separated by commas.

Contact Name	Jane Smith
Contact Email Address	janesmith@email.com

1.06

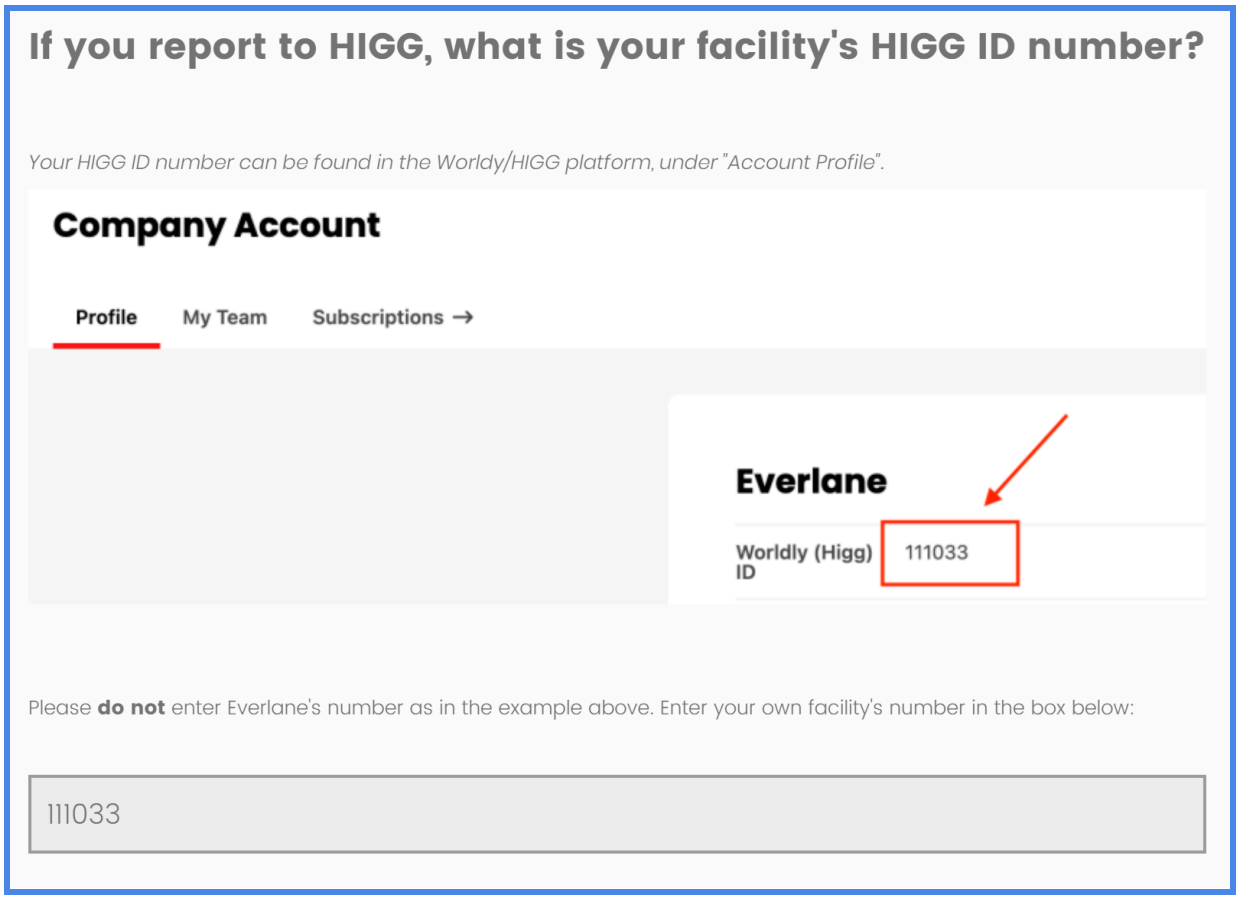
Is your facility reporting to the Higg FEM Index (part of the Sustainable Apparel Coalition)?

**This is a multiple choice question. Please select according to your facility's details.*

1.07

If you report to HIGG, what is your facility's HIGG ID number?

Your HIGG ID number can be found in the Worldy/HIGG platform, under "Account Profile".



Please **do not** enter Everlane's number as in the example above. Enter your own facility's number in the box below:

1.08

Please share your 2022 Higg FEM with Everlane. Everlane's Higg ID is 111033.

If you have not completed your 2022 report, please share your most recent report.

**This is a multiple choice question. Please select according to your facility's details.*

1.09

Please select the facility that you provide either yarn or raw materials for. This will be the same name as the mutual facility indicated in the email):

**This is a multiple choice question. Please select based on the mutual supplier name in our email to you.*

Section 2 – Facility Type

Instructions: This section will ask you to provide details about the facility's production capabilities, and the number of units/production shipped during the year. You will also be asked to provide details related to supply chain mapping of the materials that you produce, including: yarn supplier details and/or raw material supplier details.

As part of our ongoing commitment to sustainability and transparency, we are embarking on a critical initiative to map our full supply chain and trace the sources of materials used in our products. The primary goals of this survey section are to increase transparency and enhance supply chain management across all tiers. By understanding the origins of our materials and supplier relationships, we aim to evaluate the overall environmental impact throughout our entire supply chain to make informed decisions on buying practices moving forward.

2.01

Facility Type:

**This is a multiple choice question. Please select according to your facility's details.*

2.02

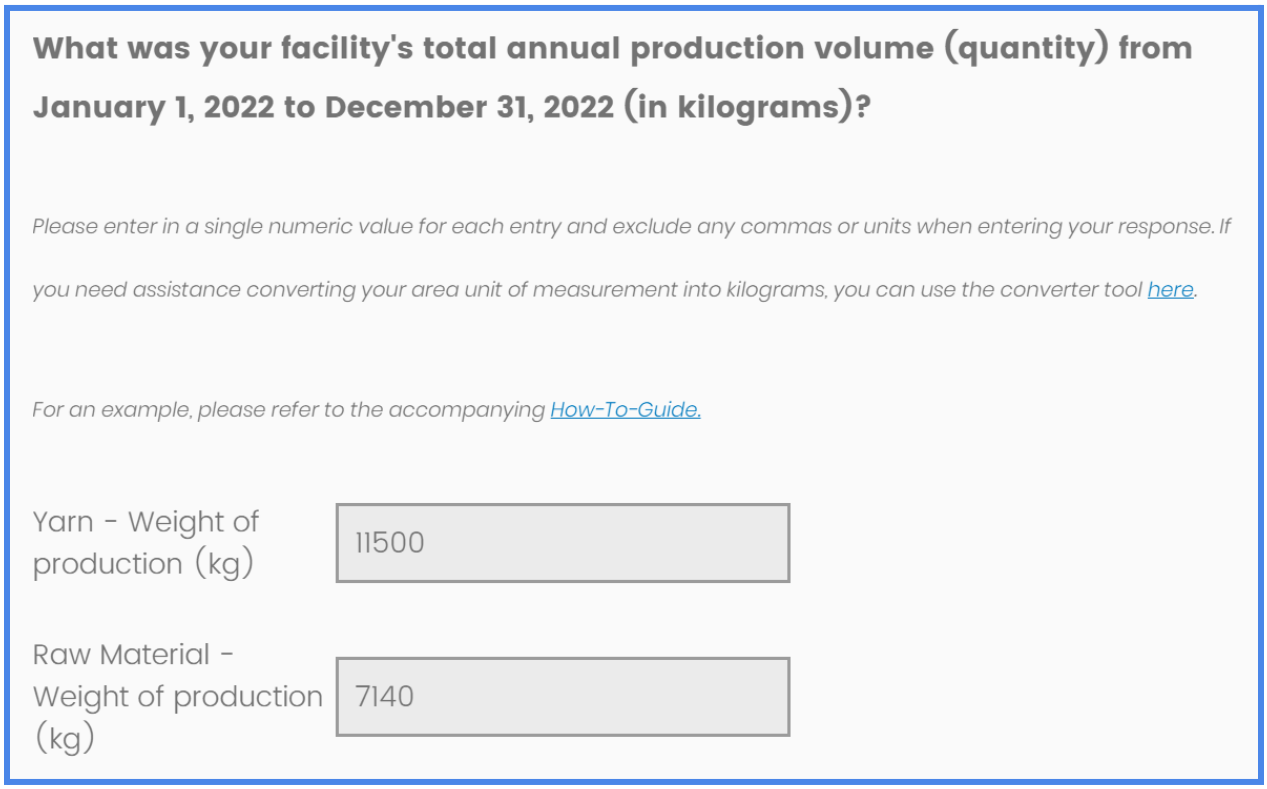
Please select all of the production processes that your facility operates:

**This is a multiple choice question. Please select according to your facility's details. You may select more than one process if it applies to your facility.*

2.03a

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms)?

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.



2.03b

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms)?

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms)?

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

For an example, please refer to the accompanying How-To-Guide.

Raw Material - Weight of production (kg)	7140

2.03c

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms)?

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

What was your facility's total annual production volume (quantity) from January 1, 2022 to December 31, 2022 (in kilograms)?

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

For an example, please refer to the accompanying How-To-Guide.

Yarn - Weight of production (kg)	11500

2.04

What type of yarn material does your facility use in its production processes for [Facility X]?

Please note: The following list of materials are based off of the materials specifically supplied to the mutual facility indicated in the email. If your facility produces materials outside of this list as well, please disregard those. Only indicate which materials you supply to the mutual facility we mentioned in our email to you. It is the same supplier you selected for Question 1.09.

**This is a multiple choice question. Please answer based on the materials you provide to the mutual supplier. For example, if we said that [Supplier X] gave us your contact in our email to you, indicate which materials you provide for that specific supplier.*

2.05

What was your facility's total annual production volume (quantity) of each yarn material from January 1, 2022 to December 31, 2022 (in kilograms)?

Please fill out the corresponding weight of production in kilograms (kg) for each material you indicated.

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

What was your facility's total annual production volume (quantity) of each yarn material from January 1, 2022 to December 31, 2022 (in kilograms)?

Please fill out the corresponding weight of production in kilograms (kg) for each material you indicated.

Please enter in a single numeric value for each entry and exclude any commas or units when entering your response. If you need assistance converting your area unit of measurement into kilograms, you can use the converter tool here.

For an example, please refer to the accompanying How-To-Guide.

Cotton	300
Organic cotton	6000
Polyester	9200
Recycled polyester	850
Viscose/Rayon	325
Modal	2470
Lyocell	585
Acetate	101
Other(s)	50

2.06

What raw materials does your facility produce for [Facility X]? Please select all that apply.

Please note: The following list of materials are based off of the materials specifically supplied to the mutual facility indicated in the email. If your facility produces materials outside of this list as well, please disregard those. Only indicate which materials you supply to the mutual facility we mentioned in our email to you. It is the same supplier you selected for Question 1.09.

**This is a multiple choice question. Please answer based on the materials you provide to the mutual supplier. For example, if we said that [Supplier X] gave us your contact in our email to you, indicate which materials you provide for that specific supplier.*

2.07

You indicated that your facility produces the following yarn materials: [*Material X, Material Y, Material Z]*

Based on these materials, where does your facility source its raw materials for yarn formation? For each listed yarn material above, please enter material type in "Raw Material Content" and the corresponding supplier details. If there are multiple suppliers for one material, fill out a column for each supplier.

At a minimum, we require the Country/Region for each raw material supplier. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "N/A".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details.

You indicated that your facility produces the following yarn material(s): Cotton, Organic cotton, Polyester

Based on these materials, where does your facility source its raw materials for yarn formation? For each listed yarn material above, please enter material type in "Raw Material Content" and the corresponding supplier details. If there are multiple suppliers for one material, fill out a column for each supplier.

At a minimum, we require the Country/Region for each raw material supplier. Additional information for each raw material source is highly encouraged. If you are unable to provide address, city or email address for the supplier, please state "N/A".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details.

For an example, please refer to the accompanying How-To-Guide.

	Supplier #1	Supplier #2	Supplier #3	Supplier #4
Raw Material Content	Cotton	Cotton	Polyester	N/A
Supplier Name	Supplier A	Supplier B	Supplier C	N/A
Supplier Address	123 Cotton Dr.	456 One Cotton R	123 Polyester Dr.	N/A

2.08a

You indicated that your facility uses the following raw materials: [*Material X, Material Y, Material Z]*

Based on these materials, in which country or region are your raw materials farmed/manufactured from? (e.g. Raw material type "Cotton" is farmed in Country/Region "X" and then sent to our facility for processing; Raw material type "Polyester" is manufactured in Country/Region "Y")

For each raw material type listed above, please type in the name under the "Raw Material Type" column and provide the corresponding column information for "Country/Region" and "Name of Grower/Manufacturer".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details.

You indicated that your facility uses the following raw material(s): Cotton, Organic Cotton, Polyester

Based on these materials you indicated, in which country or region are your raw materials farmed/manufactured from? (e.g. Raw material type "Cotton" is farmed in Country/Region "X" and then sent to our facility for processing; Raw material type "Polyester" is manufactured in Country/Region "Y").

For each raw material type listed above, please type in the name under the "Raw Material Type" column and provide the corresponding column information for "Country/Region" and "Name of Grower/Manufacturer".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details. (You may not have indicated 5 raw materials, so for any text boxes not used, enter in "N/A").

For an example, please refer to the accompanying How-To-Guide.

	Raw Material Type	Country/Region	Name of Grower/Manufacturer
Raw Material #1	Cotton	China	Grower A
Raw Material #2	Cotton	India	Grower B
Raw Material #3	Organic Cotton	India	Grower C
Raw Material #4	Polyester	Indonesia	Manufacturer A
Raw Material #5	N/A	N/A	N/A

2.08b

You indicated that your facility uses the following yarn and/or raw materials: [*Material X, Material Y, Material Z]*

Based on these materials, in which country or region are your raw materials farmed/manufactured from? (e.g. Raw material type "Cotton" is farmed in Country/Region "X" and then sent to our facility for processing; Raw material type "Polyester" is manufactured in Country/Region "Y")

For each raw material type listed above, please type in the name under the "Raw Material Type" column and provide the corresponding column information for "Country/Region" and "Name of Grower/Manufacturer".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details.

You indicated that your facility uses the following raw material(s): Cotton, Organic Cotton, Polyester

Based on these materials you indicated, in which country or region are your raw materials farmed/manufactured from? (e.g. Raw material type "Cotton" is farmed in Country/Region "X" and then sent to our facility for processing; Raw material type "Polyester" is manufactured in Country/Region "Y").

For each raw material type listed above, please type in the name under the "Raw Material Type" column and provide the corresponding column information for "Country/Region" and "Name of Grower/Manufacturer".

PLEASE NOTE: All text boxes must be completed before you can move on to the next question. Please enter "N/A" in the text box if you do not need to fill out all of the supplier details. (You may not have indicated 5 raw materials, so for any text boxes not used, enter in "N/A").

For an example, please refer to the accompanying How-To-Guide.

	Raw Material Type	Country/Region	Name of Grower/Manufacturer
Raw Material #1	Cotton	China	Grower A
Raw Material #2	Cotton	India	Grower B
Raw Material #3	Organic Cotton	India	Grower C
Raw Material #4	Polyester	Indonesia	Manufacturer A
Raw Material #5	N/A	N/A	N/A

Section 3 – Water Usage

Instructions: In this section, you will be asked to provide details about water use and water effluent at the facility. Please provide responses about details such as: source of water supply, the amount of water used at the facility, and your water management plan.

Definitions as stated by the CDP Reporting Guidelines:

- **Water withdrawal:** The sum of all water drawn into the boundaries of the organization (or facility) from all sources for any use over the course of the reporting period.

Reporting your facility's water consumption by source: (all definitions sourced from the Higg FEM Glossary 2022).

- **Produced/process water:** Water which, during extraction or processing, comes into direct contact with or results from the production or use of any raw material (e.g. crude oil or a by-product from sugar cane crushing), intermediate product, finished product, by-product, or waste product. Note this also includes reused and/or recycled water.
- **Municipal water:** Water provided by a municipality or other public provider.
- **Surface water:** Water that is naturally occurring on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers, and streams.
- **Groundwater:** Water that is beneath the soil surface, usually under conditions where the pressure in the water is greater than the atmospheric pressure and the soil void is substantially filled with water.
- **Collected rainwater:** If a company is managing rainwater, either to harvest and use, or to prevent flooding for example, they should try to estimate and disclose it as withdrawal from the hydrological system.
- **Brackish or seawater:** Brackish water is water in which the concentration of salts is relatively high (over 10,000 mg/l). Seawater has a typical concentration of salts above 35,000 mg/l.

Please provide details about your facility's water sources and report the quantities used from January 1, 2022 to December 31, 2022.

3.01

Does your facility withdraw water from any of the following sources? Select all that apply.

**Using the definitions above, please select which source(s) your facility withdraws water from.*

3.02

Does your facility track its volumetric water withdrawal from any of the previously selected sources?

**This is a multiple choice question. Please select according to your facility's details.*

3.03

Indicate the total quantity of water withdrawal that was measured from January 1, 2022 to December 31, 2022, for each source in cubic meters (m^3):

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m^3)**, you can use the unit of measure converter tool here.*

Indicate the total quantity of water that was measured from January 1, 2022 to December 31, 2022, for each source in cubic meters (m³):

Enter only the numeric value and exclude any units or commas. If you need assistance converting your water supplier's volume unit of measurement into cubic meters (m³), you can use the unit of measure converter tool here.

Municipal water	100
Surface water	250
Groundwater	390
Collected rainwater	40
Produced/process water	5000
Brackish or seawater	620
Unknown origin	75

**Please share the total quantity of water withdrawal that was measured, in cubic meters (m³). If needed, please use the converter tool.*

3.04

Implementing action plans with specific actions and strategies is crucial to achieving future water reduction targets.

Does your facility have a water management plan in place to ensure the most efficient water use?

Answer "Yes" if you have an implementation plan in place that demonstrates you are taking action to achieve your targeted reductions.

**This is a multiple choice question. Please select according to your facility's details. A plan refers to a defined project or objective to reduce water use for your facility. There should be actionable steps, milestones, or other clearly established methods to track the plan's progress.*

Section 3 – Wastewater Discharges

Instructions: In this section you will be asked to provide details about wastewater discharge at the facility. Be prepared to provide responses about details such as: types of wastewater generated at the facility (domestic, industrial), amount of wastewater discharged, wastewater treatment measures, wastewater quality testing, and wastewater management programs at the facility.

Wastewater refers to the water that is of no further immediate value to the purpose for which it was used or in the pursuit of which it was produced because of its quality, quantity or time of occurrence and is normally discharged from a facility. Measurement and reporting of wastewater are critical aspects of environmental monitoring and sustainability efforts to ensure proper management and mitigate potential impacts on water resources and ecosystems.

The following questions seek to gather information on your facility's approach to wastewater treatment and discharge.

- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(All definitions sourced directly from the Higg Index)

4.01

Does your facility generate industrial wastewater?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

4.02

Does your facility treat industrial and domestic wastewater together?

**This is a multiple choice question. Please select according to your facility's details.*

4.03

Does your facility track its annual volumetric wastewater discharges?

**This is a multiple choice question. Please select according to your facility's details.*

4.04a

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m^3)?

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m^3)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

*Enter only the numeric value and **exclude any units or commas**. This number should be supplied in **cubic meters (m³)**. please make any unit conversions before entering the numerical value. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

Domestic	700
Industrial	1400

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

4.04b

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in m³ (cubic meters)?

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

*Enter only the numeric value and **exclude any units or commas**. This number should be supplied in **cubic meters (m³)**, please make any unit conversions before entering the numerical value. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

Domestic & Industrial combined	2100

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

4.04c

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in m³ (cubic meters)?

*Enter only the numeric value and **exclude any units or commas**. If you need assistance converting your water supplier's volume unit of measurement into **cubic meters (m³)**, you can use the unit of measure converter tool here.*

What is the volumetric wastewater quantity discharged from your facility during the 2022 year from January 1, 2022 to December 31, 2022 in cubic meters (m³)?

Enter only the numeric value and exclude any units or commas. If you need assistance converting your water supplier's volume unit of measurement into cubic meters (m³), you can use the unit of measure converter tool here.

Domestic	700

**Please report your total wastewater discharged for the domestic and industrial categories. Definitions for domestic and industrial wastewater can be found at the beginning of Section 3. Report in cubic meters (m³) and, if needed, use the converter tool.*

4.05

Zero-liquid discharge (ZLD): A treatment process that designs for no water to leave a facility in liquid form. At a facility with on-site ZLD treatment system, almost all wastewater is treated and recovered such that the only water discharged from the facility exists by evaporation or as moisture in the sludge from treatment plant operations.

Definition sourced directly from the ZDHC website.

Does your facility have a Zero-Liquid Discharge System?

**This is a multiple choice question. Please review the above definition and answer based on your facility's details.*

4.06

Is your facility ZDHC (Zero Discharge of Hazardous Chemicals) compliant?

For more information, you can visit their official website.

**This is a multiple choice question. Please select based on your facility's qualification under the ZDHC certification standard.*

4.07a

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.
- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to the environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's domestic wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's method of treating domestic wastewater.*

4.07b

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the

wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.

- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to the environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's industrial wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's method of treating industrial wastewater.*

4.07c

- **On-site wastewater treatment:** The wastewater treatment plant used and managed by the factory only. After being treated by the on-site treatment, the wastewater can meet with relevant limits and be directly discharged into the environment, or into an off-site third-party treatment plant.
- **Off-site wastewater treatment:** A third-party enterprise or organization who provides wastewater treatment service for more than two pollutant discharging entities by collecting their wastewater, and the wastewater discharged directly to the environment should meet with the relevant limits. The off-site treatment can be public wastewater treatment facility, regional wastewater treatment facility (i.e. industrial park, industry area etc.)
- **Domestic use:** Includes all domestic wastewater generation including wastewater/effluent from dormitories, bathrooms, showers, and kitchens, etc.
- **Industrial use:** All manufacturing and/or commercial activities within your facility; production, lubrication, cooling, maintenance, cleaning of production machines, etc.

(Definitions sourced directly from The Higg FEM Glossary 2022)

Where is your facility's <u>combined</u> industrial & domestic wastewater treated?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

4.08

You indicated that your facility uses on-site water treatment methods.

What primary treatment methods or technologies does your facility use to treat its wastewater on-site?

- **Electrocoagulation:** is an electrochemical process for the treatment of wastewater using an electric current without adding chemicals where tiny particles are removed in wastewater
  (Definition sourced from The National Library of Medicine. For more information please visit their official website.)

- **Coagulation:** is the chemical water treatment process used to remove solids from water, by manipulating electrostatic charges of particles suspended in water. This process introduces small, highly charged molecules into water to destabilize the charges on particles, colloids, or oily materials in suspension.
  (Definition sourced from the Dober Chemical Company. For more information, please visit their official website.)

- **Flocculation:** is a water treatment process where solids form larger clusters, or flocs, to be removed from water. This process can happen spontaneously, or with the help of chemical agents. It is a common method of stormwater treatment, wastewater treatment, and in the purification of drinking water.
  (Definition sourced from CleanAWater. For more information, please visit their official website.)

- **Advanced Oxidation Processes:** are a set of chemical treatment environmental engineering techniques designed to remove organic and sometimes inorganic materials in water and wastewater by oxidation through reactions with hydroxyl radicals
  (Definition sourced from American Water Chemicals. For more information, please visit their official website.)

- **Membrane Filtration:** relies on a liquid being forced through a filter membrane with a high surface area. There are four basic pressure driven membrane filtration processes for liquid separations. These are, in ascending order of size of particles that can be separated: reverse osmosis, nanofiltration, ultrafiltration and microfiltration.
  (Definition sourced from the Wastewater Digest. For more information, please visit their official website.)

- **Adsorption:** is a physical process in which dissolved molecules or small particles in water (the adsorbate) are attracted and become attached to the surface of something larger (the adsorbent).
  (Definition sourced from Danamark Watercare. For more information, please visit their official website.)

- **Membrane Bioreactors (MBR):** is a process which combines a microfiltration or ultrafiltration membrane unit with a suspended growth bioreactor, and is now widely used in both municipal and industrial WasteWater Treatment Plants (WWTPs).
  (Definition sourced from PCI Membranes Filtration Group. For more information, please visit their official website.)

- **Photocatalytic Membrane Bioreactor (PMR):** is a system coupling photocatalysis and membrane filtration to produce high-quality permeate. Photocatalysis creates strong oxidizing radicals that degrade the pollutant.
  (Definition sourced from the Royal Society of Chemistry. For more information, please visit their official website.)

**This is a multiple choice question. Please select according to your facility's details.*

4.09

You indicated that your facility uses on-site water treatment methods.

- **Wastewater quality:** May be measured using many factors, such as suspended solids, reduced biological oxygen demand (BOD) or chemical oxygen demand (COD), metals content, oil/grease content, temperature, pH, etc. It can be improved through reducing strength/concentration of contamination at the source of generation and should be considered top priority, before targeting to reduce wastewater volume. Wastewater treatment volume and quality are tightly linked.

- **Wastewater quality test:** A method of quantifying and identifying pollutants in wastewater through testing. For domestic wastewater tests, the categories often include physical properties, solids, biologicals, and chemicals. For industrial wastewater, various heavy metals may also be included.

(Definitions sourced directly from The Higg FEM Glossary 2022 and Wastewater Testing)

Do you have a report of your facility's wastewater quality results AFTER on-site treatment?

**This is a multiple choice question. Please select based on if you have a copy of the results.*

4.10

Based on the wastewater quality results from your facility AFTER on-site treatment, what are the top 3-5 most concentrated pollutant(s) present in the wastewater after treatment? Select all that apply.

**This is a multiple choice question. Please select according to the most concentrated pollutants established in your wastewater quality results.*

4.11

Based on the pollutant(s) you selected in the last question, please rank them by highest concentration. (Entering in "1" for the most highly concentrated pollutant, and then "2" for the next highest, and then "3", and so on..)

**This is a ranking question. Please rank the order of concentration of the pollutants established in your wastewater quality results.*

4.12

You indicated that your facility uses off-site water treatment methods.

- **Wastewater quality:** May be measured using many factors, such as suspended solids, reduced biological oxygen demand (BOD) or chemical oxygen demand (COD), metals content, oil/grease content, temperature, pH, etc. It can be improved through reducing strength/concentration of contamination at the source of generation and should be considered top priority, before targeting to reduce wastewater volume. Wastewater treatment volume and quality are tightly linked.
- **Wastewater quality test:** A method of quantifying and identifying pollutants in wastewater through testing. For domestic wastewater tests, the categories often include physical properties, solids, biologicals, and chemicals. For industrial wastewater, various heavy metals may also be included.

(Definitions sourced directly from The Higg FEM Glossary 2022 and Wastewater Testing)

Do you have a report of wastewater quality results from the <u>OFF-SITE</u> treatment plant?

**This is a multiple choice question. Using the definitions provided above, please select according to your facility's details.*

4.13

Based on the wastewater quality results from the off-site treatment plant, what are the top 3-5 most concentrated pollutant(s) present in the wastewater <u>before</u> treatment? Select all that apply.

**This is a multiple choice question. Please select according to the most concentrated pollutants established in your wastewater quality results.*

4.14

Based on the pollutant(s) you selected in the last question, please rank them by highest concentration. (Entering in "1" for the most highly concentrated pollutant, and then "2" for the next highest, and then "3", and so on..)

**This is a ranking question. Please rank the order of concentration of the pollutants established in your wastewater quality results.*

4.15

Does your facility reuse or recycle any of its process wastewater as process water (closed loop)?

- **Produced/process water:** Water which, during extraction or processing, comes into direct contact with or results from the production or use of any raw material (e.g. crude oil or a by-product from sugar cane crushing), intermediate product, finished product, by-product, or waste product. Note this also includes reused and/or recycled water.

Definition sourced directly from the Higg FEM Glossary 2022)

Answer 'Yes' if you have wastewater treatment in place to reuse and/or recycle your production wastewater back into production processes. The reused and/or recycled water must be used in production processes - other uses like irrigation, toilets, etc. are excluded.

**This is a multiple choice question. Please select according the reuse and/or recycling system present or not present for your facility's wastewater.*

4.16

What percentage of your facility's wastewater is recycled for reuse?

*Enter a single numeric value and **exclude the percentage** sign.*

What percentage of your facility's wastewater is recycled for reuse?

*Enter a single numeric value and **exclude the percentage** sign.*

51

You have reached the end of the survey. Thank you for your time and participation!

Appendix F: Fabric Category Key

List of fabric categories and subcategories that fall within the scope materials.

Cotton	Polyester	MMCFs
Conventional Cotton	Conventional polyester	Acetate
Organic Cotton	Recycled polyester	Lyocell
Pima Cotton/Supima Cotton	Recycled PET	Modal
Recycled Cotton		Triacetate
Regenerative Cotton		Viscose

Table 6: List of fabric categories and subcategories excluded from the scope materials, non-exhaustive.

- Animal products
    - Wool
    - Leather
    - Cashmere
    - Suede
    - Alpaca
    - Yak
    - Mohair
- Nylon
- Linen
- Elastane
- Hemp
- Rubber
- Acrylic
- Others not listed in the previous table

Appendix G: World Wildlife Fund (WWF) Water Risk Filter Categories

Table 1. Three-level hierarchy of the basin risk assessment framework: risk type, category and indicator. This table lists the global indicators.

Risk type	Risk category	Indicator *
BPH - PHYSICAL	BRC1 - Water Scarcity	B1_0 - Aridity Index B1_1 - Water Depletion B1_2 - Baseline Water Stress B1_3 - Blue Water Scarcity B1_4 - Available Water Remaining (AWARE) B1_5 - Drought Frequency Probability B1_6 - Projected Change in Drought Occurrence
	BRC2 - Flooding	B2_1 - Estimated Flood Occurrence B2_2 - Projected Change in Flood Occurrence
	BRC3 - Water Quality	B3_1 - Surface Water Quality Index B3_1_1 - *Biological Oxygen Demand (BOD)* B3_1_2 - *Electrical Conductivity (EC)* B3_1_3 - *Nitrogen (N)*
	BRC4 - Ecosystem Services Status	B4_1 - Fragmentation Status of Rivers B4_2 - Catchment Ecosystem Services Degradation Level B4_3 - Projected Impacts on Freshwater Biodiversity
BRG - REGULATORY	BRC5 - Enabling Environment	B5_1 - Freshwater Policy Status (SDG 6.5.1) B5_2 - Freshwater Law Status (SDG 6.5.1) B5_3 - Implementation Status of Water Management Plans (SDG 6.5.1)
	BRC6 - Institutions & Governance	B6_1 - Corruption Perceptions Index B6_2 - Freedom in the World Index B6_3 - Private Sector Participation in Water Management (SDG 6.5.1)
	BRC7 - Management Instruments	B7_1 - Management Instruments for Water Management (SDG 6.5.1) B7_2 - Groundwater Monitoring Data Availability and Management B7_3 - Density of Runoff Monitoring Stations
	BRC8 - Infrastructure & Finance	B8_1 - Access to Safe Drinking Water B8_2 - Access to Sanitation B8_3 - Financing for Water Resource Development and Management (SDG 6.5.1)
BRP - REPUTATIONAL	BRC9 - Cultural Importance	B9_1 - Cultural Diversity
	BRC10 - Biodiversity Importance	B10_1 - Freshwater Endemism B10_2 – Freshwater Biodiversity Richness
	BRC11 - Media Scrutiny	B11_1 – National Media Coverage B11_2 – Global Media Coverage
	BRC12 - Conflict	B12_1 - Conflict News Events B12_2 - Hydro-political Likelihood

* Indicator names in the Global dataset - For names in Local datasets, go to https://riskfilter.org/water/explore/data-and-methods