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Shop Less, Shop Better: ethical and sustainability concerns throughout the fast fashion supply chain

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Cotton: A Life Cycle Analysis

If there is a single item of clothing in your closet that represents every issue with the fast fashion supply chain, it would be a cotton tee-shirt. This unassuming item is the result of a broken system, one that prioritizes profit over basic environmental and ethical concerns. To begin discussing individual issues within the supply chain, we can follow the cotton tee-shirt along its path to the back of a closet or, eventually, a landfill.

Every cotton garment begins its life as a humble crop, grown all over the world. Globally, cotton production has increased irregularly since the 1950's. The most recent spikes of cotton production were in 2017-2018 where cotton yields were 16% higher than the previous year's season¹. Projections for the 2022-2023 season estimate an increased yield of 15% from last year². In the past, cotton yields were largely dependent on local weather patterns, but today the spike in demand for cotton has forced farmers to use unsustainable practices and large amounts of irrigation and pesticides to meet the demand. Conventional cotton farming accounts for 6% of global pesticide use and as yields increase, so too will pesticide use increase³. Equally concerning is the amount of water cotton crops need. Some estimates say that a single tee-shirt represents 7,000 liters of water - and this is for growing the crop, not the water-intensive dyeing practices that also account for huge amounts of water and carbon use later in its lifecycle⁴. Unsustainable farming practices and excessive pesticide use threaten local ecosystems.

One of the leading cotton producers globally is India, where there has been shown to be a link between cotton production and drought conditions. This is a result of how the cotton crop (often grown in large quantities year-over-year, termed monoculture crops) change the nature of the soil such that the soil stores nutrients and water less effectively⁵. And, once this cotton is grown and ready to be sold, artificially low prices are common in the global market. American cotton farmers received \$2

¹ UK, FashionNetwork.com. "Cotton Consumption to Reach All-Time High in 2018-19." FashionNetwork.com, August 6, 2018. <https://uk.fashionnetwork.com/news/Cotton-consumption-to-reach-all-time-high-in-2018-19,1003809.html>.

²Bhosale, Jayashree. "India's Cotton Production to Increase by 15% in 2022-23." The Economic Times. India Times, September 22, 2022. <https://economictimes.indiatimes.com/news/economy/agriculture/indias-cotton-production-to-increase-by-15-in-2022-23/articleshow/94288018.cms>.

³ Sumner, Mark. "Following a T-Shirt from Cotton Field to Landfill Shows the True Cost of Fast Fashion." The Conversation. The Conversation US, Inc., September 13, 2022. <https://theconversation.com/following-a-t-shirt-from-cotton-field-to-landfill-shows-the-true-cost-of-fast-fashion-127363>.

⁴Sumner, 2022.

⁵ Siegle, Lucy, *To Die For: Is Fast Fashion Wearing out the World?* (2011), Fourth Estate, pg. 126.

Billion in 2019 from government subsidies of cotton - this accounted for almost half of their total incomes⁶. Able to take a loss in pricing, American farmers sell at a loss and deflate cotton prices and profit, leaving other nations' farmers in debt⁷. In India, this farmers debt crisis has been shown to correlate with an increase in farmer suicides - an increase that has been steadily advancing since 1998⁸. Farmers across the globe are feeling the effects of an artificially low cotton price while working harder each year to meet the increasing demand.

Once the cotton crop is mature, the process of picking and spinning cotton is labor-intensive. Below are just two examples of reported forced labor practices that workers along the cotton supply chain are subject to. The first was reported in 2020, detailing forced labor practices in Xinjiang province, China. This region produces "85% of China's cotton and 20% of the global supply," and is home to 11 million Uighur muslims⁹. Shocked by this news, calls for major clothing manufacturers to stop sourcing from the region were widely ignored. Currently, no major clothing manufacturers can verify that their cotton is not sourced from the region¹⁰. Chinese cotton makes up a large portion of the American clothing market. However, European fast fashion companies source their cotton from other regions, including Uzbekistan. In Lucy Siegle's 2010 novel, *To Die For: Is Fashion Wearing out the World*, she interviews a young woman who worked in the Uzbekistan cotton fields as part of mandatory school curriculum. Investigations have revealed that school-age children were removed from classes to pick cotton; lacking fresh water and protective equipment, many adults now describe their horrific experiences laboring under harsh quotas¹¹. There is, similarly, no guarantee that any conventional cotton garment sold in Europe is not made with forced or coerced labor.

Cotton grown, picked, and spun into fabric is finally subject to an extensive dyeing process before it can be sewn into cheap, mass-produced clothing. Toxic synthetic dyes have a large impact on local waterways as the garment industry outsources these practices to countries with less stringent environmental regulations - the result of this is that up to 90% of industrial wastewater is dispensed directly into waterways¹². For cotton dyers in Xinjiang, China, the dyes used to dye cotton products

⁶ Gvheff. "The Fashion Industry Is Waking up : Cotton Subsidies." Kingpins Show. Kingpins Show, August 5, 2021. <https://kingpinsshow.com/cotton-subsidies/>.

⁷ Siegle, pg. 126.

⁸ Siegle, pg. 127.

⁹ Batha, Emma. "China Accused of Forcing 570,000 People to Pick Cotton in Xinjiang." Reuters. Thomson Reuters, December 15, 2020.

<https://www.reuters.com/article/china-cotton-forced-labour-trfn-idUSKBN28P2CM>.

¹⁰ Batha, 2020.

¹¹ Siegle, pg. 136.

¹² Siegle, pg. 113.

like denim are linked to rashes, infertility, and lung infections¹³. Similarly, those who cut and sew the garments often lack masks and spend long working days inhaling fibers, leading to increased respiratory disease for those workers.

The cotton tee-shirt is realized in cut-and-sew facilities where worker-abuses are near-ubiquitous. As will be discussed, these facilities are staffed by women in the developing world. Often, these women lack freedom of association and are forced to work in unsafe conditions for long hours¹⁴. It is only then that the cotton tee-shirt, nearly identical to millions of others produced in massive orders, can be distributed to fast fashion chains globally. Once there, it will be sold for a price that does not reflect the amount of labor that went into its production, and after a few short weeks on the rack it will be discounted again and again, or sent to a second hand market or, in an alarming cases, be fast tracked to a landfill, never worn. After this, the amount of water it takes to make a single tee-shirt requires around 10,000 liters of water to produce throughout its entire lifecycle¹⁵. This water usage has already caused water scarcity in major cotton producing countries, like China¹⁶.

If it does land in a closet, odds are it will be worn a small number of times before disposed: Americans, for example, send almost 90 lbs of clothing per year to landfills¹⁷. The cotton tee-shirt lives a short life before being replaced by another. And so on does this cycle repeat itself - that is, unless the industry changes. The following essays will describe in-depth a global system that is accelerating out of control. How, then, do consumers face up against this reality and demand better? What tools are at their disposal? What ethical dilemmas are presented for middle-market consumers? How can informed consumers change their purchasing behavior for a better, more equitable fashion future?

¹³ Thomas, Dana, Fashionopolis, Apollo, pg. 77.

¹⁴ Siegle, pg. 84.

¹⁵ Fixing fashion: clothing consumption and sustainability, House of Commons Environmental Audit Committee, 16th report, session 2017-2019, 19th February 2019, [Sustainability of the fashion industry \(parliament.uk\)](https://www.parliament.uk/publications/54240/summaries/fixing-fashion-clothing-consumption-and-sustainability), pg. 29.

¹⁶ Fixing fashion, 29.

¹⁷ "Volume and Consumption: How Much Does the World Buy?" Common Objective. Common Objective, May 14, 2018.

<https://www.commonobjective.co/article/volume-and-consumption-how-much-does-the-world-buy>.

Landfill or a Second Life? What Do We Do with all of the Clothes?

Your tee-shirt, the one made from conventional cotton, grown using thousands of liters of water, dyed in a cocktail of toxic chemicals that will later be discharged into a local river, manufactured in a (usually) unsafe facility thousands of miles away from the fluorescent-lit store it was bought in, will eventually become waste. Preconsumer waste describes its material and chemical trail of byproducts that it left before someone bought it. Waste is a reality of any supply chain, but it is the foundation for a fast fashion economy. Fast fashion items are typically worn less than 5 times and discarded after a month: they are accountable for 400% more GHG emissions than an item worn 50 times and kept for only a year¹⁸. This is both because the quality of purchased items has decreased, such that clothes do not wear for as long, and because of constant trend cycling and “microseasons” inspiring new designs weekly. Rather than the previous 4-times a year seasonal wardrobe cycling, a practical predecessor, modern consumers are expected to keep up with a constant influx of clothing consumption. And, as a result, modern consumers throw away lots of clothes. 300,000 tonnes of textile waste ends up in household black bins every year, sent to landfill or incinerators. Less than 1% of material used to produce clothing is recycled into new clothing at the end of its life. Meanwhile, retailers are burning new unsold stock to preserve their brand’s exclusivity¹⁹. Clothing, alone, makes up more than 9% of municipal waste in the United States and Americans throw away about 80 lbs of clothing yearly²⁰.

Americans do not just throw away tattered, worn out pieces. More than \$500 billion of value is lost every year due to clothing underutilisation and the lack of recycling, according to the Ellen MacArthur Foundation²¹. The throwaway culture applies to the whole economy, not merely the clothing sector. If consumers are to be encouraged to buy fewer clothes there needs to be a wider public debate on [the] future of the ‘consumer society’, including an evaluation of its benefits and costs²². But, there are solutions to addressing clothing waste that do not end in a landfill, or so it is thought. Recycling and second-hand donation or resale are two underutilized solutions to clothing waste.

Sustainable manufacturing and clothing recycling are expensive and require industries to work quickly and efficiently. Currently, on average, 15% of fabric is

¹⁸ Conca, 2015.

¹⁹ Fixing Fashion, pg. 40.

²⁰ Gilmore, 2018.

²¹ How to Build a Circular Economy, The Ellen McArthur Foundation, Accessed 20th October, 2022, [How to Build a Circular Economy | Ellen MacArthur Foundation](#).

²² Fixing Fashion, pg. 41.

discarded during cutting²³. To address preconsumer waste, the industry needs simply to get more creative: before a garment is sold, there is a significant amount of preconsumer waste in the form of cuttings from fabric at the sewing facility: sustainable design could eliminate a majority of this²⁴. Another simple solution is that clothing sellers need to break the habit of wasting unsold and unworn clothing. Currently, luxury brands are the biggest offenders. Also, it is not uncommon for luxury brands to discard or deliberately destroy unsold merchandise to promote a brand image and keep supply low²⁵. Clothing not sold the first time around may be cut up or otherwise trashed such that it cannot be resold at a lower value²⁶. If these clothes could be donated, or repurposed, it would surely lower waste. Better yet, a future fashion economy would better estimate consumer purchasing habits and produce less. Less made equates to less wasted at all stages of production.

Another obvious solution to fashion waste at first glance is donation. Brands are less likely to donate unworn clothes, but conscious consumers may choose to dispose of old clothing this way. However, most clothing *donation* is more aptly deemed as clothing *recycling*: for profit companies collect donations and buy from second hand clothing vendors to use fabric for insulation, cushion stuffing, or to sell to second hand vendors in Africa and Asia who sell the clothing for a profit at local markets²⁷. The decreasing quality of fast fashion pieces, however, have plummeted resale values. Chile and Ghana are some of the largest second hand clothing receptors: the result is that they now manage mountains of textile waste that middle market consumers “donate” in good faith²⁸. Parallel to the issue of oversaturation of unwanted clothing is a decline in indigenous clothing production and markets: this poses a risk to local producers and works against rich cultural clothing conditions in countries where second hand clothing is sold. This solution would put an emphasis on domestic clothing trade but may potentially price out low-income consumers who rely on second-hand sellers and their supply of discarded donations. Another solution, Refurbished and rented clothing, has grown in popularity in recent years, allowing customers to experiment freely with self-expression in a less-impactful way. This is an imperfect solution: a significant percentage of greenhouse emissions associated with garments is their shipment. Worse, then, is a garment shipped by air or truck back and forth across the country. And, even if the garment is worn by many different people in

²³ Siegle, 233

²⁴ Niinimäki et al., 2020.

²⁵ Siegle, 233.

²⁶ Gillmore, 2018.

²⁷ Gilmore, 2018.

²⁸ Fashion Transparency Index, 2022.

its lifetime, an industry transitioning to rental and re-used clothing must acknowledge that producers still must create an item being rented or resold, and their fair wages and treatment is omitted from the transaction. Renting, secondhand clothing, or any other resale option necessitates a baseline of unethical treatment of workers and environmental exploitation unless the industry transitions to both sustainable manufacturing, use, and disposal or recycling.

Recycling is an important concept, but is often forgotten by the clothing industry and its consumers - many donated pieces end up being recycled, or consumers can choose to directly recycle their items. This may have its benefits, skipping the long trip to the second hand markets and saving unwearable garments from a landfill abroad. Some pieces are not worth reselling, or are beyond repair, and are better sent to recycling. This option is underemphasized in public discourse on the topic of fast fashion, but for-profit textile recycling is a booming business. Often, the garments are not transformed to more wearable clothing, but rather downcycled to insulation, cushion stuffing, or the like. This is both influenced by the profitability of second-hand fabrics (insulation pays more) and the current technology for recycling. The ability to recycle textiles is increasing throughout the industry but, as it currently functions, recycling practices damage fibers and are not fully circular - as in, they are an incomplete solution to the root problem of over consumption²⁹.

The best solution, then, is to buy less and use more. The shocking numbers of wear-per-item in the United States could be improved by a simple solution: repairing. A world where consumers are more likely to hem pants, or replace a button, or stitch up a torn seam is a world that consumes less clothing. And, if buyers are unwilling to repair themselves, low-cost repair campaigns by brands could inspire a second-life for an item. Currently, only 20% of brands have established repair or take-back programs for their clothes³⁰. This may very well change with the growing emphasis on sustainability and demand for longer lasting pieces. Fashion industry analysts recommend collaborative business models, pairing clothing producers, the clothing repair industry, and recycling plants. In this way, a more circular style of clothing waste management would close the loop of unsustainable clothing production³¹.

A review of fast fashion's practices indicate that the future of manufacturing must carry with it core tenants of transparency and sustainability. Accounting for one aspect of production will be insufficient if the other links of the supply chain lack basic health and safety measures, fair labor practices, and environment and resource-conscious sourcing and design. One way that consumers can hold industries accountable is the system of third party certification which allows consumers to choose

²⁹ Parliament, 32.

³⁰ Fashion Transparency Index, 2022.

³¹ Niinimäki et al., 2020.

brands and products that reflect their values. However, in addressing overconsumption and social pressure for consumers, it is revealed that until the system of overconsumption (advertised excessively by brands and reinforced by social pressure) is halted, there will always be a pressure to forgo ethics in favor of new, and more, clothing. A cultural shift, then, will accompany structural changes to the industry, benefiting all along the supply chain and forging a fashion-conscious future that encourages individual expression and honors the rights and livelihoods of manufacturers globally.

Forced Labor, Fair Trade, and the Fashion Industry

It is an unfortunate reality that an unknown amount of clothing is currently produced by individuals forced into precarious labor situations: stripped of their rights and working with no freedom of association, safety precautions, or (in many cases) dignity, the industry relies on cheap labor to deflate prices of clothing items despite rising cost of raw materials. The fashion industry currently employs between 25 to 60 million workers, many of whom live in countries with low cost of labor and minimal government oversight³².

Well before a crop of cotton or flax (or a barrel of oil) is processed into fabric, there is evidence of worker abuse. In Xinjiang China, 570,000 workers or more were forced to pick cotton in 2019³³. Forced labor in the cotton supply chain: Forced labor is used to pick cotton in two of the world's biggest cotton producing countries, Turkmenistan and Uzbekistan³⁴. As Reuters reported in 2020 when the news of forced labor in the cotton supply chain again resurfaced, "Some minorities may exhibit a degree of consent in relation to this process, and they may benefit financially. However ... it is impossible to define where coercion ends and where local consent may begin,³⁵".

Once harvested, the crop becomes fabric in a factory. Today, technology exists to modernize factories such that safety and health risks from moving machinery and fiber particles in the air are reduced, but these are expensive upgrades. The vast majority of global factories are out-of-date or downright dangerous facilities³⁶. Many of the largest factories in the world fail health and safety inspections and are staffed by workers working long hours, beyond legal limits, without collective bargaining or union representation³⁷. One of the issues with this system is that oversight is minimal: often times, a brand is not aware of a factory's condition due to the frequency of subcontractors and other industry work-arounds that allow major corporations to feign ignorance to the rights abuses throughout their supply chain³⁸. It is a hopeful fact that 48% of clothing brands now disclose their first-tier suppliers, but over half still report nothing³⁹. Still concerning is the reality that of 71 leading retailers in the UK, 77% believed there was a likelihood of modern slavery occurring at some stage in their supply chains⁴⁰.

³² Fixing Fashion, pg. 12.

³³ Batha, 2020.

³⁴ Fixing Fashion, pg. 15.

³⁵ Batha, 2020.

³⁶ Thomas, 124.

³⁷ Fixing Fashion, pg. 12.

³⁸ Fixing Fashion, pg. 13.

³⁹ Fashion Transparency Index 2022, July 14th, 2022, Fashion Revolution, accessed November 26th 2022, [Fashion Transparency Index 2022 by Fashion Revolution - Issuu](#).

⁴⁰ Fixing Fashion, pg. 10.

There are different approaches to solving the issue: some advocate for increased union representation for garment workers and others want to put pressure on corporations to exercise corporate social responsibility and proactively improve worker conditions. Both of these solutions leave out an important factor in the supply chain: the consumer. 3rd party, independent labor ethics certifications are already popular and well known - Fair Trade is a universal indicator of fair treatment, decent pay, and global supply chain cooperation.

Fair Trade

One of the most well-known and important third-party certifications is Fair Trade. Fair Trade, now expanded well beyond coffee beans, is a global third party certification that seeks to equalize trade between the Global North and South through a product's achievement of ethical production standards. Notably, this certification does not address local sustainability⁴¹. The certification benefits from its ubiquity: its label is easily recognized and can be found in supermarkets. Though widely available for purchase, the certification carries with it a guarantee of above-market prices on consumer goods that make the purchasing decision a less obvious choice for consumers. The World Fair Trade Organization is a group of brands that commit to the standards of fair trade, but the achievement of these standards are given by any of the many fair trade certification organizations, between which discrepancies may exist. Broadly, the World Fair Trade Organization (WFTO) recognizes five participants: Southern producer groups, umbrella organizations, Northern buyers, retailers, and consumers⁴². These relationships must be conducted in accordance with WFTO standards: there are ten fair trade principles that WFTO certified manufacturers must comply with⁴³. The root of their standards is founded on a principle that consumers pay fair prices for products, and that fair prices reflect a consumer and a brand's commitment to ethical treatment of workers⁴⁴. When a brand or product achieves this, their packaging can boast a certification, and their prices increase to above-market values. The purchasing decision for a consumer is based on more than just price, value, or the product itself. It is a

⁴¹ <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1470-6431.2006.00530.x>

⁴² <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1470-6431.2006.00530.x>

⁴³ <https://wfto.com/who-we-are>

⁴⁴ <https://link.springer.com/content/pdf/10.1023/A:1016161727537.pdf>

question of identity, values, and a moral obligation that individuals hold to right the institutional wrongs that exist along global supply chains.

But because of the price-hike that fair trade goods have compared to other products on the market, the choice to purchase relies on an ideological constraint that some consumers place upon themselves: this is a privilege not all consumers can meet. An ideological constraint is not a budget constraint, which means that only some consumers are able to exercise this choice day-to-day⁴⁵. This complicates the impact that ethically-produced products have on the market. In 2006 it was found that “most ethical products have captured only modest market shares of less than 1%.⁴⁶” More recently it was found that the Fair Trade market generates \$ 1.5 Billion per year in the United States⁴⁷. This is growth, but it in no way reflects a transformed consumer base and an effective prohibition of child labor, forced labor, or unethical worker treatment broadly. Questions of the effectiveness of this certification arise. Another observation of the fair trade certification is that the consumer decision making process is an example of “life politics” or “consumer citizenship”, luxuries that consumers have and that producers do not⁴⁸. Producers in the global south, supposedly uplifting by fair trade practices, are at the whim of consumer decision making in the Global North, perhaps placing too much weight on the willingness of markets to adjust to long-overdue calls for better working standards. Critics of fair trade point out that the fair trade certification normalizes global inequalities and reinforces colonial trade relationships⁴⁹. Largely, this can be attributed to the fact that our standards for what is appropriate or *fair* in trade is ever-evolving and markets are slow to adjust to expensive changes when less ethical choices exist at lower price-points. Over emphasizing the customer in the trade process absolves governments regulating trade and suppliers importing from the Global South of their responsibility in the prevalence of forced and child labor throughout supply chains.

Many of the critiques of Fair Trade and the WFTO mirror the critiques against any 3rd party certification: too much focus on the consumer, not enough ensured equity for producers of a good across the entire industry, and high prices that equate the moral standing of a consumer to how much they spend.

⁴⁵ <https://link.springer.com/content/pdf/10.1023/A:1016161727537.pdf>

⁴⁶ <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1470-6431.2006.00530.x>

⁴⁷ https://www.google.com/books/edition/Fair_Trade/TqFi7HjBhJ0C?hl=en&gbpv=1&dq=fair+trade&pg=P1&printsec=frontcover

⁴⁸ <https://link.springer.com/content/pdf/10.1007/s10551-011-1008-5.pdf>

⁴⁹ <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1470-6431.2006.00530.x>

However, these certifications allow consumers important chances to communicate their values and place market emphasis on their values. The interest in ethical and sustainable goods is increasing and these certifications can simplify the process of purchasing for interested consumers, or increase awareness for others. The key to an effective certification process relies on consistent and robust achievement standards that brands or products must meet, something that Fair Trade risks losing sight of as it continues to expand. Fair trade, however, benefits from its brand recognition and is well-understood by consumers. In order for change to come, consumers and manufacturers must concurrently adjust their expectations and habits to create an industry where forced labor, unsustainable manufacturing, and environmental injustice are non-existent. Each day that textiles are grown, processed, and shipped across the world, the problem grows more urgent. Positive improvements in sustainable clothing production, changes in consumer expectations, and an industry-wide shift to prioritize ethical labor practices, however, are already becoming more mainstream. For this problem to be solved in a timely manner, consumers must adjust their expectations and buy accordingly.

Transparency is the goal: by encouraging (or, alternatively, regulating) corporations to disclose more about their manufacturing practices, the public can scrutinize and push for better worker treatment. Third party certifications play an important role in this in that they simplify the transparency process - rather than forcing individuals to do extensive research on a product, an informed consumer can look for the Fair Trade label and feel confident in their decision. In this way, responsibility is achieved at two scales: the consumer is responsible for their ethical purchasing decision and the corporation or manufacturer is responsible for upholding the standards set in the certification process.

Environmental Consequences of the Fashion Industry

One of the largest arguments against the current system of clothing manufacturing is that it is, in every sense, unsustainable. The massive emissions release and land use associated with clothing manufacturing, as well as the daily impact of toxic dyes and chemicals used in manufacturing, and the role that petroleum plays in synthetic fibers are all draws on the climate and ecosystem. When evaluating this, we must look at different scales of climate and ecological impacts. Once the problem is appropriately summarized, introducing 3rd party environmental certifications can allow consumers to make more conscious decisions regarding the source and impact of purchased textiles.

We can start “small” and look at the impacts that a town or village suffers once a cotton farm, spinning mill, or fabric dyeing facility moves in. When crops are grown, there is a necessary environmental toll that is exacerbated by excessive use of pesticides. The industry shows no signs of stopping its rapid expansion: by 2030 it is predicted that another 115 million hectares will be added to the fashion industry’s growing area, taking away valuable land resources from food production or biodiversity efforts⁵⁰. These chemicals’ long-term impact on human health and the environment are not yet fully understood, but this is not slowing the rate of their being used⁵¹. This is concerning, especially given the fact that the textile industry accounts for 10 to 20 percent of pesticide use (and 6% of greenhouse-gas emissions)⁵². Cotton alone accounts for 11 percent of pesticides used annually and is the largest pesticide-consuming crop: its cultivation is shown to adversely affect soil and water quality⁵³. Once the crop is being processed into textiles, the areas around dyeing facilities are vulnerable to pollution. In many clothing-manufacturing nations, up to 90% of industrial wastewater is dispensed directly into waterways⁵⁴. In Cambodia, for example, where clothing comprises 88% of industrial manufacturing, the fashion industry is responsible for 60% of water pollution⁵⁵. In places like Xintang, China, exposure to polluted water and toxic dyes is proven to cause rashes, infertility, and lung infections in factory workers and their families⁵⁶. These toxic chemicals travel all

⁵⁰ Fixing Fashion, pg. 28.

⁵¹ Fixing Fashion, pg. 40

⁵² McKinsey, State of Fashion 2022.

⁵³ Conca, James, Making Climate Change Fashionable - The Garment Industry Takes On Global Warming, December 3rd, 2015, Forbes,

<https://www.forbes.com/sites/jamesconca/2015/12/03/making-climate-change-fashionable-the-garment-industry-takes-on-global-warming/?sh=61192c0979e4>.

⁵⁴ Siegle, 113.

⁵⁵ Cambodia’s water and sanitation crisis, Water.Org, Accessed 20th November, 2022, <https://water.org/our-impact/where-we-work/cambodia/>.

⁵⁶ Thomas, 77.

over the world: waterproofing chemicals used in textile processing have been found in the remote Arctic, in the bodies of polar bears and seals⁵⁷. So, the combination of regional environmental problems amplifies the issue into a global scale one - and a global issue that is threatening the health of humans and the environment. Corporate accountability for these issues is low: 4% of brands publish or have established wastewater remediation strategies while 31% have declared broad decarbonization targets⁵⁸.

When it comes to textiles, water is an important resource, and an important risk factor. Pollution naturally decreases the amount of safe drinking water for communities in textile producing nations, but the issue of water scarcity is made worse by huge amounts of water being used in textile processing - water that often goes untreated and returns to waterways. 79 billion cubic meters of freshwater are used to process textiles annually⁵⁹. A quarter of all chemicals used are used to process textiles⁶⁰. This makes for a dangerous combination that threatens local and global water resource security. The problem is larger than the sum of impacted communities, however, and requires a global-scale assessment to understand its true impact. Textile production is responsible for more greenhouse-gas emissions than international flights and maritime shopping combined: 1.23 billion tons of CO₂ annually, or 26% of the global carbon budget associated with 2°C of global temperature increase⁶¹. This should not come as a surprise given that 60% of all fabrics are synthetic - so when this clothing makes its way to a landfill as a great majority of all textile waste does, it will not break down⁶². Often, when being washed, and eventually discarded in an unsecured landfill, clothing sheds hazardous microfibers into the environment. Most garments are made up of at least some synthetic fiber component. When these garments are worn and washed, they shed microfiber plastics into the environment: these fibers often make their way into the food chain, harming marine life and eventually ending up on our kitchen tables⁶³. As much as 20-35% of all microplastics in the ocean are from synthetic clothing and over 9 trillion microfibers are released into the environment weekly⁶⁴. Modifying the laundering process and improving water system filtration are reasonable advances to decrease microfiber shedding into the environment⁶⁵. No matter the material, production of new garments necessitates an environmental toll. Therefore, it

⁵⁷ Niinimäki et al., 2020.

⁵⁸ Fashion Transparency Index, 2022.

⁵⁹ Fixing Fashion, pg. 29.

⁶⁰ Conca, 2015.

⁶¹ Fixing Fashion, pg. 28-29.

⁶² Thomas, 2019.

⁶³ Fixing Fashion, pg. 32.

⁶⁴ Fixing Fashion, pg. 33.

⁶⁵ Fixing Fashion, pg. 34.

is pertinent that consumers begin to ask themselves if their wardrobes, instead, necessitate new purchases.

Given the multiple scales of the environmental problem, any solution must be a result of cooperation between industries, local manufacturers, and informed consumers. Some have also suggested that the root cause of the issue is in fashion design classrooms, globally. Changing the way that fashion and design students learn about the industry would be one way to inform the new generation of designers and make lasting changes in how fabrics are dyed and sourced⁶⁶. Another is for consumers to become more aware of their purchases, aided by 3rd party environmental certifications. Some of the most well-known certifications are described below:

OekoTex

The emphasis of Oekotex is that certain chemicals used in textile manufacturing (there are currently over 100 identified) are not used in manufacturing. Traceability and transparency along both textile and leather supply chains is an emphasis of the Oekotex certification. Some of the chemicals are identified as having adverse impacts on human health. Certain dyes, asbestos, and formaldehyde are some of the agents identified. See the image below to see the various steps that a product or brand must satisfy to be included in the OekoTex certification⁶⁷. The Standard 100 certification has five classes, adjusted for the type of textile and how often it will come in contact with skin. Once a brand has achieved Standard 100, it can concurrently achieve Made In Green. Made In Green is a certification provided to brands that have met Standard 100 certification standards for all products committed to transparency and social responsibility⁶⁸. In order to meet this, facilities must be approved under STeP⁶⁹. STeP certification is awarded to facilities that comply with the rigid standards set by OekoTex for chemical use and dye standards as well as cooperating with fair labor practices and employee protection⁷⁰.

⁶⁶ Fixing Fashion, pg. 45

⁶⁷ Oeko-Tex® Standard 100, Tiltro Til Tekstiler, Accessed October 15th, 2022, https://fraster.dk/media/131203/Faktaark-Human-oekologisk_produktn%C3%A6rknin_Oeko-Tex_Standard_100-Feb_2013.pdf.

⁶⁸ OEKO-TEX®, Hohenstein, Accessed October 15th, 2022, <https://www.hohenstein.us/en-us/oeko-tex/>.

⁶⁹ Worthington, Bethany, What is OEKO-Tex? & What Are The Oeko-Tex Standards?, July 7th, 2022, Ecoclothes, <https://ecothes.com/blog/what-is-oeko-tex>.

⁷⁰ Tidswell, Emma, Building a nontoxic tomorrow: What is OEKO-TEX® certified?, Accessed October 15th, 2022, <https://goodmakertales.com/what-is-oeko-tex-certified/>.

Global Organic Textile Standard (GOTS)

The Global Organic Textile Standard (GOTS) is a ecolabel that certifies cotton, wool, silk, linen, and hemp-based textiles⁷¹. To achieve certification, the entire manufacturing and distribution processes must be approved by a GOTS consultant and a larger certification body: once certified, brands must renew their certification annually⁷². GOTS certified textiles can contain anywhere from 70-100% of the organic textile (predominantly cotton). However, most contemporary textiles are mixed material textiles containing less than 70% cotton so this certification cannot account for the majority of current textiles and is therefore diminished in its effectiveness. Its premise is simple, however, which makes for easy consumer-understanding and decision making.

1% For the Planet

1% for the Planet is an organization that companies participate in through donating 1% of profits to environmental nonprofits through paying into the 1% fund. 1% for the Planet (1%) was created by the founder of Patagonia Yvon Chouinard as a way to encourage corporations who use natural resources and land space to repay into community-based action. Though Patagonia as a brand emphasizes transparency along its supply chain concurrently with its philanthropy post-production, the 1% for the Planet label does not concern itself with the growing, production, or manufacturing of a product⁷³. In this way, all companies participating regardless of true impact pay 1% of their profits.

⁷¹ What is the GOTS Certification?, Ethically Dressed, Accessed 10th October, 2022, <https://www.bing.com/ck/a?!&&p=01e34bc8cae7cc61JmltdHM9MTY2MzcxODQwMCZpZ3VpZD0yZWFiODFmMy1jZjRhLTZmYjYtMzQyNS05MDQ0Y2VhZTZNmlmaW5zaWQ9NTI4Nw&ptn=3&hsh=3&fclid=2eac81f3-cf4a-6fb6-3425-9044ceae6e6b&u=a1aHR0cHM6Ly9ldGhpY2FsbHktZjJlc3NlZC5jb20vd2hhdC1pcy10aGUtZ290cy1jZXJ0aWZpY2F0aW9uLw&ntb=1>.

⁷² Certification, Global Organic Textile Standard, Accessed 15th September, 2022, <https://www.bing.com/ck/a?!&&p=3f19ee9a3983bd4cJmltdHM9MTY2MzcxODQwMCZpZ3VpZD0yZWFiODFmMy1jZjRhLTZmYjYtMzQyNS05MDQ0Y2VhZTZNmlmaW5zaWQ9NTE5OQ&ptn=3&hsh=3&fclid=2eac81f3-cf4a-6fb6-3425-9044ceae6e6b&u=a1aHR0cHM6Ly9nbG9iYWwtdC3RhbmRhcmQub3JnL2NlcnRpZmljYXRpb24tYW5kLWxhYmVsbGluZy9jZXJ0aWZpY2F0aW9u&ntb=1>.

⁷³ Muthu, S. S. (2022). *Sustainable approaches in textiles and fashion*. Springer.

Also, no matter what realm of pollution, environmental degradation, or resource use a company is involved in, its contribution is paid out by 1%⁷⁴. 1% also provides advising for participating companies and has a significant positive reputation amongst industry leaders and consumers. However, some have argued that there is no gap in the market that 1% can fill and therefore participating in the program will not necessarily promote growth. However, there is limited data on this and existing evidence points out an increasing trend and interest in sustainability sourced and produced goods in the market.

B Corp

B Corp is an ecolabel that closely aligns with the UN guidelines for sustainable business practices. Transparency is a common thread amongst the ecolabels. B Corp values transparency, sustainability, and ethical practices in addition to its requirement that participating corporations make a legal commitment towards accountability and social good⁷⁵. Similar to GOTS, recertification is an important pillar of a company's B Corp Certification status and is required to be completed every 3 years. Once a company is registered with the B Corp, it gains access to B Corp data which can improve internal sustainability and cost-efficiency. Certification is not available globally nor for all 50 states: the relative obscurity of the B Corp label, then, acts against it when it comes to customer messaging and advertisement. However, B Corp Impact Assessment correlates with growth for most businesses who achieve certification and can promote long-term growth as sustainability measures improve over time. The proactive measures taken by corporations to achieve B Corp certification are one example of prosocial actions taken by companies which indicate a willingness and flexibility to change and respond to markets increasingly focused on ecofriendliness and sustainability. However, the achievement of B Corp certification has in some instances allowed corporations to rest on their laurels and not develop future sustainability plans or work to eliminate unsustainable practices. Further sustainable achievement is one of the stated goals of

⁷⁴ Lucchesi, et. al, 1% For the Planet: Value added services, May 17th, 2018, MIT Management, <https://mitsloan.mit.edu/sites/default/files/2018-10/1Percent-Report-2018.pdf>.

⁷⁵ Measuring a company's entire social and environmental impact. B Corp, Accessed 15 September, 2022, [B Corp Certification demonstrates a company's entire social and environmental impact. \(bcorporation.net\)](https://www.bcorporation.net/en-us/our-impact). ; 1% For the Planet, Accessed 10 September, 2022, <https://onepercentfortheplanet.org/>.

the B Corp and so far is not widely realized by B Corp certification holders.

Empowering consumers to better understand the impact of their purchasing through the use of 3rd party certification labels could change the way they navigate through purchasing decisions. However, there is a fear that consumers could be confused by illegitimate or insufficient certification information on packaging - the solution is that 3rd party certifications should make themselves widely known and have information about their values widely available, and that consumers should be informed about various non-certified terms like *green*, *natural*, or *healthy*. Allowing consumers to make this decision is an important step and will influence that market by demonstrating environmental priorities among the consumer base. The industry has changed before. Well on the way to another paradigm shift in production standards, consumers play an important role in purchasing clothing that reflects their values and priorities: 3rd party certifications make the process more transparent and accessible.

Women in Textiles / Women in Fashion

The dichotomy of women's experiences with fast fashion lends insight to the way that the global middle class is increasingly alienated from the experiences of workers in the developing world. Everyone gets dressed in the morning, but it is a fact that women account for much more clothing purchases and are larger economic drivers of fashion trends - they make up 85% of consumer spending in the United States and buy on average 76% more clothing than men, regardless of income level⁷⁶. At this rate, the fashion industry will account for an estimated 25% of Earth's carbon budget by 2050.⁷⁷ These women represent a huge market force and are the drivers of increasing demand for more clothing, driving up production of garments globally. However, the image of women in fashion, from Coco Chanel or Devil Wears Prada to the average middle class consumer shopping for leisure rather than utility is incomplete. Fast fashion is made possible by the invention of machines that can spin fiber much faster than by hand - an invention that allowed for the introduction of the ready-made market in the 1770's⁷⁸. The ready-made market sought to cut time and cost in the garment industry even further, and 200 years later nearly 90% of all garment production was outsourced to lower income nations⁷⁹. The majority of the workers who are responsible for the construction of garments are women (about 80%), and most of the rest are children⁸⁰. It is important to understand the long-standing delegation of fashion and textile production to women. The issue of equitable clothing production intersects with discussions of women's rights, forced labor in developing nations, and environmental detriment. In fact, ensuring the health and safety of the women in these industries is ensuring women's rights and economic development while also affording them dignity.

Gender discrimination is a major issue for clothing manufacturers. Currently, the Asia-Pacific market has the most egregious gaps in pay for garment workers and only a third of companies surveyed for a 2019 report could confirm they had implemented policies to prevent wage discrimination in the workplace⁸¹. However, insufficient

⁷⁶ Statistics on the purchasing power of women, Unified Strategies Public Relations, Accessed November 10th, 2022, <https://girlpowermarketing.com/statistics-purchasing-power-women/>. Average Cost of Clothing Per Month Will Surprise You, CreditDonkey, February 23rd, 2021, [Average Cost of Clothing Per Month Will Surprise You \(creditdonkey.com\)](https://www.creditdonkey.com/average-cost-of-clothing-per-month-will-surprise-you).

⁷⁷ Siegle, Lucy, Fast fashion is on the rampage, with the UK at the head of the charge, June 21st, 2019, The Guardian, [Fast fashion is on the rampage, with the UK at the head of the charge | Fashion industry | The Guardian](https://www.theguardian.com/fashion/2019/jun/21/fast-fashion-is-on-the-rampage-with-the-uk-at-the-head-of-the-charge)

⁷⁸ Siegle, 2019.

⁷⁹ Siegle, 2019.

⁸⁰ Thomas, 6.

Sanders, Libby and Mawson, Jasmin, The 2019 Ethical Fashion Report, April 2019, Baptist World Aid Australia, [FashionReport_2019_9-April-19-FINAL.pdf \(business-humanrights.org\)](https://www.bwaid.org.au/wp-content/uploads/2019/04/FashionReport_2019_9-April-19-FINAL.pdf).

⁸¹ Sanders and Mawson, 2019.

policies and corporate marketing are not uncommon in this broken system: New Balance debuted an education program for women working in their factories. 2,000 of their employees benefited from the short-lived program but no tangible change in wage nor working conditions could be documented⁸². Such is this oft-repeated argument against just trading practices: that the fast fashion industry has created jobs and supports entire national economies. Even more to the point, these industries claim to create unique opportunities for women in the developing world to socially advance and earn their own incomes. This may be true, if there were not abundant evidence suggesting and proving that many workers in these industries lack freedom of association, the ability to openly discuss workplace conditions, issues, and their wages. And more, reports of forced labor, child labor, and workplace abuses tell a different story. Specifically, a story where an industry deliberately uses women and children not only for their smaller hands, but for their inability to stand up to abuses, pinning them into a corner of the market where physical abuse, wage theft, and unsafe working conditions are their last option. As recently as 2020, 60% of American women identified with the Feminism movement or the label *feminist* (as did 4 in 10 men)⁸³. Feminism, a movement that championed issues like fair pay, consumers must evaluate whether an iconic 1869 feminist letter is true still:

“Equal work should command equal pay”⁸⁴

How, then, can consumers continue to support an industry predicated on unfair treatment labor exploitation? It should seem that this rampant exploitation of women workers around the world poses a “feminist issue,” as director of Fashion Revolution, Sarah Ditty notes⁸⁵. However, this issue has not, as market trends indicate, slowed purchasing. Perhaps advertising is partly to blame. There is also a neurological component to the pleasure consumers get from engaging with fast fashion. Frequent restocks and new products, combined with the accessibility of low prices, and the welcoming allure of well-decorated storefronts combine to leave a satisfied consumer

⁸² Sanders and Mawson, 2019.

⁸³ Barroso, Amanda, 61% of U.S. women say ‘feminist’ describes them well; many see feminism as empowering, polarizing, July 7th, 2020, Pew Research Center, [61% of American women see themselves as feminists; many see term as empowering, polarizing | Pew Research Center](#).

⁸⁴ Alter, Charlotte, Here's the History of the Battle for Equal Pay for American Women, April 14th, 2015, Time Magazine, [Equal Pay Day: Here's the History of the Fight for Equal Pay for Women | Time](#).

⁸⁵ Fixing Fashion, pg. 13.

base⁸⁶. The average American consumer purchases a new clothing item every 5.5 days⁸⁷.

Of course, it goes without saying that women are not solely impacted by the effects of advertising. However, advertising has long played to the domestic sector and played an important role in the perception of women in society. Deceptive or downright cruel advertisements coax non-existent insecurities out of the middle-market consumer: the prescribed remedy is overconsumption. Being aware of this, and working to communicate against these advertising campaigns may inspire a revolution of critical consumers. In any case, for consumers knowledge is power. Designers and industry leaders must be held accountable, both by consumers, non-governmental certification organizations, and international governmental oversight. A shifting industry, a shifting market, and shifting consumer expectations will combine to revolutionize how consumers purchase clothing, a benefit of the increasing concern for transparency and sustainability along supply chains. In 2022, market trends predicted a consumer focus on sustainability, a possible sign of changing priorities in the industry⁸⁸.

The industry has changed before. Well on the way to another paradigm shift in production standards, consumers play an important role in purchasing clothing that reflects their values and priorities. This shift is not happening fast enough to address the egregious human rights concerns that surround much of the clothing on the market. Instead, an emphasis on the retelling of workers' stories and a concerted effort by industry leaders is needed to make these changes in a timely manner.

Finally, there is the issue of self-expression, which will only be briefly discussed here. Fashion is not just a utility, it is an artform and mode of self-expression for men and women alike. A transition to sustainable and ethical fashion must not necessitate a loss of creativity - but should rather inspire a revolution within material intentionality. There exists a great potential for artists and designers to create using sustainable materials, in the same way that there exists a great potential for individual consumers to become more discerning of their tastes and preferences, such that they can make choices for the long term. Often, the sustainable fashion revolution is described in terms of conformity and lack of choice, but this does not have to be the case. Rather, it would allow consumers the opportunity to shop vintage, second-hand, sustainable,

⁸⁶ Gilmore, Nicholas, Ready-to-Waste: America's Clothing Crisis, January 16th, 2018, Saturday Evening Post, <https://www.saturdayeveningpost.com/2018/01/ready-waste-americas-clothing-crisis/>.

⁸⁷ Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of Fast Fashion. *Nature Reviews Earth & Environment*, 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>

⁸⁸ McKinsey & Company. (2022, July 26). State of Fashion 2022: An uneven recovery and new frontiers. McKinsey & Company. Retrieved November 26, 2022, from <https://www.mckinsey.com/industries/retail/our-insights/state-of-fashion>.

hand-made, unique markets, rather than mass-produced cheaply garments that result in many individuals dressing exactly the same for the season.

In summary, women play an important role in the future fashion industry. They make up a majority of the work force and spend much more of their money in the industry. Middle-market consumers have an opportunity to support women globally by making more intentional choices with their buying decisions, empowering women garment workers, inspiring self-expression, and facing the reality of the unsustainable fashion industry as it currently is.

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