8-15-2021

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TMD402, Spring 2021

By the year 2030, the damage we have caused to our planet from carbon emissions and poor waste management will be irreversible (United Nations, 2015). Carbon emissions have increased by 90% in the past 30 years significantly contributing to climate change (EPA, 2021). 10% of these emissions are due to the textile industry alone, that is more than international flights and maritime shipping combined (Sustain Your Style, 2020). With the fast-paced nature of the fashion industry it is inevitable that it would fall into this cycle, but leaders of the industry are finding new and innovative ways to break this trend. Fast fashion, cheap labor, destructive chemicals, and insufficient waste management and trade regulations have been leeching off not only the earth but the artistic integrity of the fashion industry. Many brands have worked to slow this down and use more sustainable practices, but Patagonia by far has become a model for a sustainable, stylish, and successful business within the fashion industry. Patagonia offers sustainable solutions to the climate change issue the fashion industry has been ignoring.

With a constantly moving industry it was only expected that it would begin to move too rapidly. Fast fashion has become one of the leading causes of climate change; the constant consumption combined with poor manufacturing and waste management practices have proven to be incredibly toxic to our environment. We produce 400% more clothes than 20 years ago, and that is 80 billion garments a year (Sustain Your Style, 2020). The fashion cycle is morphing into more than just four seasons; there are around 52 micro collections a year for some retailers (Sustain Your Style, 2020). E-commerce sites like Shein and Romwe are coming out with 1-2 collections a week to try and please their consumers. These collections are filled with marketing schemes including fads and celebrity collaborations to drive business and promote unhealthy consumerism. Fast-fashion retailers are constantly promoting shoppers to buy the latest trends; however, by the time their order gets shipped to them it is already out of style.

So, if more people are buying clothes, then consumers must spend a hefty amount of their income on them, right? Well not really; overall, consumers spend only 3.5% of their income on clothing, a dwindling number compared to the 10% it was in 1960 (Sustain Your Style, 2020). Companies are selling their garments at unheard of prices; there are jeans for $10, shirts for $4 and that is without markdowns. In turn, this has caused a disassociation between our lives and our clothes. No one values a shirt they bought for $4 enough to repair it when they could easily buy a new one. Sentiment associated with clothes is getting lost since we usually don't own these low-quality garments long enough to make memories with them. Many brands are able to sell garments at this abnormally low cost thanks to the overworked and underpaid workers driving fast fashion.

Imagine waking up at 6:30 a.m. every morning and working until 9 p.m., no breaks, no water, and you still are barely able to support yourself and your family. Millions of people have no choice but to work in these unrewarding, unsanitary positions in order to provide for their families. The typical overseas textile worker is paid an average of 73% under a livable wage (CleanClothes.org, 2021). Many times, just working is not enough and they must put their children to work in these same positions to bring in a livable wage. 168 million children are forced to sell their childhoods for a lump sum payment or basic wage (Yvette, 2017). The treatment citizens of these countries face would never be allowed in the U.S., yet we continue to promote this behavior and buy their products. In turn, this pushes the fast-fashion industry forward and driving climate change to new heights.

Not only does low cost contribute to the fast fashion cycle and degrades the value of our clothes, but it has created a larger waste management problem. On average consumers get 5 wears out of their clothes; when something tears, stretches, or stains, they buy a new one

(Patagonia, 2021). Accessibility of e-commerce has propelled online shopping and everything that comes with it, including low costs and more collections to choose from. While this may benefit consumers, it has ravaged the environment. The average American throws away approximately 80 pounds of clothing and textiles annually; that is the equivalent to occupying nearly 5% of landfill space (Bick et al., 2018). Additionally, a large majority of this waste gets exported abroad from the United States each year; in 2015 alone over $700 million worth of used clothing was exported (Elmer, 2017). Over the past year that number will only rise with our growing population and rise in online shopping tendencies due to the pandemic.

Without landfill waste there is still the greater issue of water waste. Between dyeing fabric and growing fibers, the textile industry is known for using a lot of water. 17-20%, nearly a quarter of industrial water pollution, is from the treatment and dyeing process used to make textiles (Muthu et al., 2020). When water is used to dye textiles, it contaminates the water with dyes and other chemicals and must be treated accordingly before it is released. Many dyehouses in the developing world completely ignore this step, contaminating rivers and polluting the environment. Besides the direct chemical impact, the water has, it also destroys a local water source from the community and kills its ecosystem. Meanwhile 2.6% of global water is used to grow cotton; this water usually becomes contaminated with pesticides and other agricultural toxins, polluting runoff, and evaporated water (Champagain et al., 2006). The toxins present in the water harm both the earth and its local ecosystem, causing plants and animals to die as well as further producing greenhouse gases.

Recently, it has come to researchers' attention that synthetic fibers emit a gas called N_2O which has shown to be 300 times more damaging in the fight against climate change than CO_2 (EPA, 2021). Not only this, but it also contaminates and depletes the ozone layer. CO_2 caused from industrialization is the leading cause of climate change, its concentration rising 48% above preindustrial levels (European Commission, 2021). Greenhouse gases such as CO_2 create climate change by trapping the sun's heat into our atmosphere, thus causing climate change. Obviously, this has proven to be extremely toxic for our environment and just one of many reasons' sustainability leaders are working to distance themselves from synthetics.

Additionally, synthetic fibers are extremely hard to recycle and end up sitting in landfills for decades. In turn, our planet is overflowing with waste and toxic emissions. Not to mention the extensive waste it takes to produce these textiles in the first place. Fibers that impact the climate in a negative way tend to have the following traits: high water consumption, high energy need, non-renewable, harmful chemicals, use of GMOs, soil erosion, rainforest destruction, non-biodegradable, and involve animal cruelty. Understanding the difference between good and bad fibers and fabrics requires knowledge of the consequences they incur. Just because a fiber may be natural and come from the earth doesn't mean it is necessarily good for the environment. For example, cotton can be extremely unsustainable if it is not organic due to its large water consumption and heavy use of pesticides and other chemicals during its growing process (WWF, 2021). Even materials such as vegan leather that you may consider environmentally friendly because of its lack of animal cruelty have a dirty truth behind them. Vegan leather specifically is made of polyurethane which is a harmful synthetic material. However, there is always a more sustainable alternative, in this case pineapple fiber and cactus leather are two natural alternatives that have been making their way into the market. Specifically, the branded pineapple leather fabric is known as Piñatex. Using the by-product from pineapple harvested in the Philippines, fiber is extracted from the plants leaves through a process known as decortication. This unwoven textile then becomes the base of Piñatex while the remainder of the manufacturing by-product is

biomass which gets converted into organic fertilizer which can be used by farming communities (Ankita, 2018). Sometimes however, brands like this are hard to find.

With greenwashing labels and "all-natural" written on everything it may feel hard to decipher what is actually good for the environment. Luckily there are some key qualities to look for when it comes to sustainable fashion that you have probably been hearing about since kindergarten: reduce, reuse, recycle. It is important to look to see if a material is either made from recycled products, a renewable resource, or uses low amounts of water and energy. Of course, other factors also contribute such as the chemicals used and effects the manufacturing of the garment may have had during production, for instance soil erosion. Within the agricultural aspects of the fashion industry soil erosion is very common, specifically regarding the production of cotton. From heavy tilling and other cotton production practices there has been a huge loss of fertile land. Currently, most cotton farmers continue to overcrop due to its high economic reward (WWF, 2021).

However, in 2021 companies have had big benefits from going green, with the concerned public more people want to buy products that have the future in mind. Brands that pursue sustainability have been shown to have increased operational efficiency, a higher competitive advantage and customer outreach, a strong reputation, and long-term viability and success (EPA7, 2021). Environmentally friendly clothes effectively connect with sustainability conscious consumers by fulfilling their wants and needs for a product that keeps the future in mind. It positions their garments as "good," making the consumer feel confidently about their purchase (McGrath, 2012). A brand that goes above and beyond in the fight against climate change with great economic success is Patagonia.

For 48 years the outdoor activewear brand has been paving the way to a sustainable future for all. Currently they are set to be carbon neutral by 2025, a huge step for such a considerable company (Patagonia16, 2021). By addressing every aspect of the supply chain, they have gotten to the core of the fashion industry's contribution to climate change and used their team to come up with cutting-edge, creative solutions. More recent efforts by the company look to inspire competitors to take responsibility for their actions and critique their own business flaws. Valued at 1 billion dollars, Patagonia is a small gear in the motor of the fashion industry, compared to competitors such as Nike and Adidas valued at over 35 billion dollars. However, they have still managed to make a huge impact on the industry, with their nearly carbon neutral business model and work to rebuild forests that other companies have destroyed. In effect, the company is setting new standards for the industry.

How do they do this, you may ask; the answer is their circular business model. A circular business model modifies their pattern of production and materials to reduce adverse environmental side effects (OECD, 2019). Basically, they are able to strive for zero waste at their own pace. One of the most shocking marketing strategies the brand has to sell their clothes is actually telling their consumers not to buy them. This seems contradictory but completely on brand with their circular economy and values. By telling people to buy less they aim to slow down fast fashion and the fast-paced consumer mindset and let consumers reflect on what they really need. Patagonia sells clothes to last, not fads. They believe so much in the quality and longevity of their garments that they even include a second-hand section on their website.

On wornwear.patagonia.com, you can buy and sell back verified secondhand items directly from them. Whether the item is torn or heavily used they promise to make the necessary repairs and resell it to a new consumer to keep the garment's lifespan going. Buying used extends a garment's life by about two years, cutting its carbon footprint by 82% (ThreadUp, 2021). In

fact, the only time Patagonia really promotes buying new to consumers is when they need it. Just because Patagonia believes so heavily in buying garments to last, they also offer a lifetime guarantee on all of their items. If you head to wornwear.patagonia.com they will also allow you to send any item to them (usually free of charge) to be fixed. Of course, sometimes garments are just beyond repair, resale, and maybe even recycling but Patagonia hasn't taken that as a final answer yet. All of the clothes the company has received since they began this program back in 2017 that they weren't able to repair or recycle they keep in their Reno, Nevada warehouse. Currently they are in the process of finding new ways to recycle and maybe even upcycle these products, so they don't end up as more landfill textile waste. This method of thinking has awarded the brand with countless sustainability and ethics awards from Corporate Responsibility Officers and even the UN.

To promote their worn wear campaign, they told the story of Patagonia garments people own from all over the world. All of the adventures and sentiments that make their Patagonia garment so special are attached. This campaign really resonates with consumer ethos and strives to bring meaning back into clothing. In the spirit of making memories in their clothes they also hosted a "celebrate what you already own party" on the biggest shopping holiday of the year, Black Friday. What is one of the biggest sales days for most retailers was a chance to reduce, reuse, and recycle for Patagonia. In select locations customers were able to come in, watch movies, listen to live music, eat food, drink beer, and even fix their old clothes with a team member while they were at it. In the process, they completely debunked the stigma that old clothes are unfashionable.

Experiences like this make it hard not to love your job at Patagonia. Whether it is working as a sales associate or preserving customers' stories through their garments, employee satisfaction is kind of their thing. Since they opened, Patagonia has been coming up with innovative ways to make their employees love going to work. In 1980 they started offering in-house childcare and even promoted bonding with your child during work. To this day children are able to play at their parent's desks and even take a lunch break with them. Back in 2019 an employee even breastfed her child during a meeting with the VP and it was a quite normative interaction (Reneau, 2019). Compare this to the workers mentioned earlier that could get fired for even getting pregnant; this is the difference between conformance and innovation. High employee retention is vital to grow a cutting edge and sustainable company that is going to effectively fight climate change.

Hence why they work so hard to show their employees respect and protect them, especially their migrant workers. Patagonia realizes that fast fashion is only one part of this cycle leading up to the urgent warming of our planet, which is why they have made it their responsibility to set their own trading and employee standards for their brand. Billions of workers are mistreated around the world and severely underpaid, that is why Patagonia is committed to eradicating all forms of human trafficking and forced labor from their supply chain. With a comprehensive set of standards for not only themselves but their business partners to follow they are able to acknowledge the suffering many textile workers have had to go through and assist in putting it to an end. Since they recognize this long-term commitment to protect workers globally, they are continually seeking partnerships with key stakeholders including government, non-profit organizations, and local communities to make systematic changes. Support is even offered to their suppliers in order to ensure they comply with the brands ethical standards. Patagonia's "Migrant Worker: Employment Standards & Implementation Guidance" specifically lays out every detail of their sustainability promise, and

explains how suppliers can keep that agreement and even improve on it. Their 4-step program makes sustainability more accessible and understandable than ever taking it step by step. By laying out the overview of responsibilities, they have specific standards for employment of their migrant workers, a guide of implementing these standards, and of course what the implementation and success of these programs look like. Once again the company is proving that sustainability is not as hard as everyone makes it seem when you have a helping hand.

This guide along with their multitude of blog articles is one of many Patagonia has released to aid the environment in the urgent difficulties it has been facing, including issues in the dyeing industry. Many manufacturers use wasteful and harmful dyeing methods as discussed earlier. However, Patagonia opts to use solution dyeing, a dyeing process that diverts from the typical wet processing which waste tons of water per batch. By incorporating pigment before the fiber is made their solution dyeing methods have been shown to reduce CO2 emissions by 96% compared to batch dyeing (Patagonia, 2021). Solution dyeing has also been shown to reduce microfiber shedding overall. This means less water, less CO2, and less microplastics in our oceans. You may be asking, "what's the catch?" This process can only be used on synthetic fibers. Although the new sustainable synthetics Patagonia's researchers and many other textile scientists have come up with, this is not a deal-breaker; they must find a way to utilize this method on other materials.

One of their most popular innovations regarding dyeing is their Advanced Denim fabric. This refers to their denim fabric dyed with sulfur dyes rather than indigo. Incorporating sulfur dyes into their dyeing process has allowed for the dye to adhere better to fabric in turn using 84% less water, 30% less energy overall, 50% less electricity, and 25% less CO_2 emissions [17]. Unfortunately, there are very few companies using this method to dye their denim due to the added cost and low consumer demand. Patagonia hopes to be the first of many to adopt this process. A variety of denim mills in various regions are ready to use this method giving high hopes to its inclusion as a normative practice.

Until then, Patagonia is pushing forward to find innovative solutions to the wasteful dyeing industry, including natural pigmentation methods such as growing cotton in different colors. Patagonia may have just hopped on board; however, an American cotton breeder named Sally Fox has been researching and developing naturally colored cotton for decades. Fox's research, which began in 1982, has been making progress ever since. By 1988, Fox and her team were able to develop colored cotton hybrids that were able to be machine spun successfully (Matusiak and Frydrych, 2014). With this she was able to create her own patent known as "Fox Fibre" that is still for sale today as she furthers her research (Gunaydin et al., 2018). Patagonia is looking to take this a step further, creating more pigments, stronger fibers, and using less emissions. Maybe one day we will have a hot pink ball of cotton ready to be turned into a bright new sweater, no water necessary.

Not only would this be beneficial to dye more sustainably but it would also help greatly with moving towards their preferred sustainable fibers. Organic cotton is one of the brand's most used fibers, and for good reason: it is free of chemicals and good for the environment. Due to cotton's high water needs there is more expansion to be done. Regenerative Organic Certified Cotton is their newest form of cotton they have been testing out. With the alarming rise in our climate Patagonia wanted to start from the ground up; by going from industrial techniques to low or no till practices, their farmers are working to build healthy soil and draw carbon back into the ground (Patagonia(16), 2021). Currently in India they have over 150 farms with over 800 farmers working to improve not only the soil and cotton farming habits but farmers' lives. Thus,

proving cotton farming to be a sustainable and rewarding life's work. After all, organic farming and recycled materials are one of Patagonia's specialties.

An array of recycled and organic materials are used at the brand, even recycled fishing nets. Patagonia alone has helped keep more than 28 tons of plastic waste out of the world's oceans through their unique Net Plus program. Recent work has allowed them to recycle old fishing nets into their hat brims and even a high-quality yarn which debuted in their Spring 2021 collection with their Guidewater II fishing pants. In turn, this manufacturing process revived many ecosystems that were getting suffocated from these local fisheries, as well as providing coastal communities who bring their old nets in with a supplemental income and a clean solution to their inevitable waste.

These sustainable and innovative solutions to their fabric production methods have put Patagonia on track to use only recycled or renewable materials by 2025. This is a completely doable goal considering seemingly everything on their material list with the exception of a few fabrics is recycled or plastic free. Their zero-carbon emissions goal and recycled or renewable materials go hand in hand with each other. Recycling will drastically decrease the company's carbon emissions/footprint and having zero carbon emissions requires completely sustainable materials. With the looks of it they may even hit this goal sooner than expected. Currently they use renewable energy for all of their retail locations, distribution centers, and global headquarters, but stores are the easy part. Nearly 86% of Patagonia's emissions come from creation of materials used in products. Currently, they are working with their suppliers to reduce emissions and share their goal with other brands as well for long run sustainability and success.

By 2025 their carbon emissions and hopefully those who follow their leadership will be drastically reduced contributing positively to putting an end to climate change. Sustainability is a group effort that requires balance and continuous improvement. Everyone being 100% sustainable 100% of the time is unlikely, but if world leaders and big fashion brands set regulations and standards for fair and sustainable trade and manufacturing the world would be changed for the better. This slowdown of toxic waste and fast fashion would break the fast-paced consumerism they created. In turn, it would take back the fashion industry's place as a solution, not the problem.

However necessary action can no longer be prolonged, and for the sake of our rising climate, action needs to be taken now. Textile workers, local communities, and our own planet are suffering irreversible damage for our indecisive closets. American consumers' love of fast fashion has sped up the fashion cycle, and in turn, resulted in more polluting factories churning out cheap clothes and encompassing our landfills with waste. By taking necessary action towards a more ethical fashion industry, we can change the way consumers look at their clothes and start producing less. With slower fashion cycles, higher wages for workers, and more recyclable fabrics in use, the answer to climate change can be hiding in the back of everyone's closet.

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