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Module 2 Paper

### Fashion Companies Are Looking Into Alternatives To Obtain Sustainability

We need sustainable alternatives to reduce the risk of waste and mitigate harmful effects on people and the planet. Manufacturers who adopt a zero-waste supply chain model increase the value to their customers and improve their marketplace advantage, this results in shifting sources strategies and developing closed-loop supply chain methods. Closed-loop supply chain completely reuses, recycles, or composts all materials but can also be used to refer to corporate take-back programs, where companies that produce a good are also responsible for its disposal. Sustainability is essential to improve and keep environmental quality to have healthy communities, we all need natural resources, clean air, and a non-toxic environment. Some benefits of embracing sustainability are reducing the energy-related cost, the biggest worry for manufactured are energy and water costs, focusing on improvements can quickly reduce those expenses. For example, switching to energy-efficient lighting within production scheduling will reduce long-term electric costs. Companies and manufacturers can increase sales and attract new customers which a lot of companies don't realize because green sustainability practices can make the company more marketable and can strengthen the company's reputation tremendously (Lagas, 2015) sustainability brings ethical fashion more revenue, attention, and a good reputation.

Ethical fashion is what certain apparel brands consider when making their products and they choose this because they value social welfare and workers' rights. When it comes to making clothing there are certain fiber sources that are sustainable that doesn't involve many dyes and bad chemicals that release into the air. Silk, even organic silk to be exact is an example of one sustainable fiber because silk is a protein fiber that's spun by silkworms and is a renewable resource and biodegradable. Another sustainable fabric is Lyocell which is also made within a closed-loop system that recycles almost all the chemicals and is 100 percent biodegradable, meaning it can be broken down naturally, decomposed by natural bacteria and or other living

organisms. Another fiber source that's sustainable is Hemp, which is mainly used in rope, textiles, animal beddings, and garden mulch. Hemp is a unique one-of-a-kind plant species that are popular in Asia and Europe and are harvested and has a woody-like core from bast fibers that are separated by a sequence of mechanical process (Thyavihalli Girijappa et al., 0001). The woody core is cleaned to obtain the required core content and sometimes they are cut to the desired size. Furthermore, the separated bast fibers are further processed to form yarn or bundles. Raw materials will run out at some point in time, but not too soon, the estimated time is less than 100 years, since rare earth minerals are always occurring resources that can't be replaced, some are only available in small quantities. Some minerals are being extracted through recycling but the rarest elements aren't being recycled and recycling is a major key that fashion designers want to do with their collections to incorporate sustainability.

Some fashion designers are considering ethical practices and incorporating sustainability practices into their work and two fashion companies that are doing this are Se'zane and Patagonia. Se'zane is an apparel company based in France that has vintage pieces that use raw materials, ethical critical choice of production methods, and working conditions with their environmental footprint and engagement in the community. They are a B-corporation that is certified in meeting a high standard of verified performance, transparency, and accountability on factors including employee benefits and charitable giving to supply chain practices.  $\frac{3}{4}$  of the materials in their current collections are eco-friendly and their pieces are certified by 5 of the industry's reliable certifications which are GOTS, Oeko-Tex, FSC, RWS, and RMS. They have received over 13,00 pieces, their shipping boxes are made from recycled cardboard or obtained from sustainably--managed forest. All of their locations are powered by renewable energy and they reached the main goal of sustainability in fashion companies which is reducing the carbon footprint of their garments by 22%. Patagonia outdoor clothing and gear company researches and investigates execution of social and environmental responsibility to build and execute their brand and be leaders in the future of business. They raise awareness for environmental issues and the initiatives they incorporate are monitoring and publishing their supply chain information, they donate one percent of profits to environmental organizations. They incorporate a recycled system within their clothing where they have an additional website that is mainly used to resell used clothing to reduce waste. Getting rid of toxic materials and incorporating more sustainable materials to replace the traditional materials that are widely used such as petroleum-based

materials, while instead, they incorporate desert shrub-based rubber to replace the based wetsuit materials. Based wet suit materials are “somewhat of an environmental catastrophe” ( Kortum, 2018) because the main material involved is neoprene foam which is a synthetic fiber made from petroleum. Neoprene can be manufactured in different ways based on its base, for oil base is created by the immense amount of oil drilling and transportation, and the limestone-based which involves a lot of mining ( Hook, 2018). Both Neoprene materials are not renewable and harm the earth long term which results in them not being environmentally friendly. Overall Patagonia and Se’zane seek to serve their own business interests while addressing environmental and sustainability practices.

For brands to continue environmental practices and not use nontoxic materials and chemicals that can add additional harm to our earth, fashion designers are starting to educate themselves and look into a more natural dyeing process. There are a lot of natural dye options that fashion brands can use for naturally dyed clothing. Natural dyes have benefits such as lightfastness and great washing. For example, one natural dye called Lac is extracted from an animal insect (see figure 1) called *Laccifer lacca* with its extract of an insect, where it can be found naturally in the wild and also planned to be made to crop and farm in a cultivated environment. Like other natural dyes that are mostly brown, yellow, or green Lac is a bright rich red powered color and texture, when it comes to dyeing materials and fabrics lac dye was used to color leather and silk. Lac is also an alternative to create many different shades of the colors pink, purple, burgundy, and red and this can be obtained by adding additional citric acid and alum mordant. Lac originated back from 250 AD in ancient times and many people use it as different alternatives, Lac is found throughout India, Southeast Asia, Nepal, Burma, Bhutan, and south China ( MAIWA,2022 ) . For example in India, they also use it for wool and silk but use lac dye as a skin cosmetic, in China, they use it for leather dyeing. Up until the late 19th-century lac wasn't as valuable anymore as it used to be, a chemist was testing the dye and happened to mess up its natural form. His name was Perkins and he synthesized the first chemical aniline dyes, ( synthetic dye ) which decreased and killed the usage and sales of the natural dye industry.

Dyes and fabrics have been altered, processed, and experimented on with synthetics, previously mentioned to alter the hue, intensity, durability, and lastness, especially in the fashion apparel industry. Many designers now are incorporating a greener way into their clothing and these are fabrics that can help clean the air to help tackle climate emergencies and reduce carbon

footprints. Designers are looking to carbon negative clothing that is made with algae which is an organism that is able to conduct photosynthesis and is capable of producing oxygen through photosynthesis (Vidyasagar,2016). To develop algae ( see figure 2) fabric, one can make it into powder and process it into the fabric with minimal effort and one cannot process the fabric in any way with heat for example because you will be killing the organism. In order to take care of this natural organism fabric, you will have to expose your clothing to sunlight and add water to it, sort of like a plant since Algae is a plant in its natural form. People are looking into certain textile industries that can consider and do photosynthesis, the important idea to keep in mind is to make sure this fabric can last forever and continue to carbon absorption after its produced. Other natural fabrics that have been around and experimented with for clothing haven't made their way to be considered a greenhouse fabric for clothing 100 % as of yet but some are used. Bamboo, cactus, and beechwood haven't reached zero carbon emission and this is why algae are the only fabric reasonable to reach the standards of greenhouse fabric.

Algae is not the only natural organism that can be considered a good greenhouse fabric ( previously stated before some are used ) and can help clean the air that fashion designers are considering using such as Charlotte McCurdy ( Tapper, 2020). Additionally, there is also a fabric called Pinatex ( see figure 3) which is made from pineapple leaves that is a leather-based fabric and is taking over the leather industry. It is known for its longevity and sustainability if treated correctly, the reason why it's superior and compared to leather is its firmness and similar texture to animal skin leather but an eco-friendly version. It is a nonwoven material that originated in the Philippines and farmers collect the leaves to make pineapple leather out of it, the process is quite simple, it goes through a process called decortication and this happens when the cellulose fibres of the leaves get extracted and it takes place at the farm as well which decreases the Co2 emissions. After the fibers get extracted the biomass leftover material doesn't get thrown out, it is then used for the soil because it is a rich natural fertilizer that is used as a biofuel. Overall Pinatex is an excellent fiber because not only does it reduce waste, it helps the farmers with additional income source within the Philippines and the farmers can continue to use it to grow their farm and improve their plantation. Ferragamo orange fiber is another fiber and it is the first fiber in the world made out of citrus fruits ( Zargani, 2017). Orange fiber was originally founded by two people Adriana Santanocito and Enrica Arena who owns an Italian company that creates sustainable textiles from citrus juice. Fashion company Salvatore Ferragamo is launching a

collection with this fiber and is continuing to develop collections with innovative materials, for this collection and project they are using the orange fiber to create their apparel to look like silk, which is a twill that also feels like silk. This collection aesthetic ( see figure 4) is a soft island nature look with flowers and soft drapery pants material with a powerful Mediterranean feel, additionally includes shirts, trousers, and foulards which is a lightweight material of silk, rayon, and often cotton in a twill or plain weave, usually printed with a small design.

The future of fashion is slowly starting to get invested in sustainability and there are many different fashion designers from different countries that utilize their natural resources to incorporate them into their designs, for example, Salvatore Ferragamo incorporated oranges into their brand because in Italy, “After Spain, Italy is also the second oranges producer country in Europe” ( Amore, 2010). Substantial fibers in the collection are not cheap and are on the costly side, they are expensive and people who wear sustainable apparel are people with more income and an older mature demographic. These people are willing to spend their money on durability, and quality for their clothing to last over time and are targeted for a specialized group that cares about sustainability. Sustainable fashion brands are expensive and not catered to people who are looking for inexpensive products. Se’zane and Patagonia prices are high Patagonia range from \$50 to \$300 starting from accessories onto apparel, Se’zane prices start from \$50 to \$500. Other popular sustainable brands like Levis are working towards 100% sustainably sourced cotton by 2025 and currently reducing greenhouse gas emissions by 40% across their whole supply chain. Addidas has been incorporating sustainable activewear for years with their overall mission to end plastic waste, Eileen Fisher is a leader in suitability in her line and she makes sure of it by focusing on regenerative farming and always finding new techniques to repurpose materials (Shipin et al., 2021 ). All of these designers and companies want their designs to be the future of tomorrow and never leave because their apparels are here to stay forever due to their timeless durable sustainable clothing.

Sustainability in fashion caters to minorities like us because not only are workers given a safe clean working environment but there is an authentic openness between consumers and companies from design to production, distribution, and consumption overall. Sustainability emphasizes quality over quantity, overall it is proven we can wear our clothes for longer, and by wearing these sustainable companies' apparel we are also supporting them and supporting a clean environment and this is one step closer to saving our earth. sustainability fashion is proven that

we can rework, recycle garments, suitability is the future of fashion and one step closer to saving our earth we live on.

## Image References



Figure 1 [https://en.wikipedia.org/wiki/Kerria\\_lacca](https://en.wikipedia.org/wiki/Kerria_lacca)



Figure 2 <https://www.livescience.com/54979-what-are-algae.html>



Figure 3 <https://danandmez.com/blog/pinatex/>



Figure 4 <https://www.designscene.net/2017/04/ferragamo-orange-fiber.html>



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