Stripped Down:
A Look into the Sustainability of Hong Kong’s Fashion Industry

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ABSTRACT

The project goal was to work in collaboration with Friends of the Earth Hong Kong to determine the best methods for local businesses and consumers to increase sustainable practices in Hong Kong’s fashion industry. We collected information about sustainable company and consumer habits through extensive research, interviews with industry stakeholders, and existing consumer survey data. The project resulted in four core recommendations to address the lack of sustainability in Hong Kong fashion industry. These include developing a catalog of fashion technologies for designers, encouraging Friends of the Earth to host upcycling events for consumers, improving the Higg Index, a company self-evaluation tool on sustainability, and educating consumers on fashion sustainability.
EXECUTIVE SUMMARY

Hong Kong citizens embrace a fast-paced lifestyle where staying up to date with current fashion trends is essential. This mentality causes many consumers to purchase unsustainably. The education on sustainable practices is limited as are the variety of sustainable products offered. Over purchasing is common for consumers; either buying more than they need, or buying items of such low quality, they need to keep buying more. This is a result of the fast fashion business model. Many companies within the fashion industry focus on getting clothes on the shelves as fast as possible, not worrying about the environmental and social implications that go along with this idea.

Friends of the Earth Hong Kong is an advocacy group focused on protecting the environment around Hong Kong. The overall goal of this project was to assist Friends of the Earth in obtaining knowledge from representatives of the fashion industry in order determine the best methods for local businesses to improve fashion sustainability as well as the role consumers can play in sustainability improvement.

METHODOLOGY

To achieve the project goal, the team established the following objectives:

1. Characterize the environmental impacts of the textile industry and apparel supply chain from upstream to downstream in Hong Kong through background research;
2. Understand the logistics of becoming and maintaining a sustainable company along with barriers preventing companies from becoming sustainable through interviews with representatives from the fashion industry;
3. Evaluate consumer behaviors from surveys conducted through past research;
4. Provide Friends of the Earth and other industry representatives with recommendations for improvement in the fashion industry, as well as a promotional video providing consumers with information on the sustainability problem within the fashion industry and ways to fix these problems.
While conducting the interviews with fashion industry representatives, the team kept the following three research questions in mind:

1. **What the company is doing to make improvements**
2. **Barriers preventing companies from being sustainable and how to overcome them**
3. **Barriers preventing consumers from being sustainable and how to overcome them**

**FINDINGS AND ANALYSIS**

*Finding #1: A closed-loop product lifecycle is essential to the sustainability success of a smaller business.*

Through interviews, the team discovered that limiting the amount of waste deposited into landfills can be achieved by evaluating product lifecycles. When speaking with Toby Crispy, the owner of LastbutnotLeast, he states, “From an eco-angle, [a brand] must be fulfilling the cradle-to-cradle system. Once a design is produced, it must be reused, recycled, and then re-nourish the earth at the end [of its lifecycle] instead of adding toxins to the ecological cycle.” The disposal aspect of product lifecycle should not be the end of the chain.

*Finding #2: Sustainable practices are costly and implementing them at various stages of product production are expensive. However, these costs decrease after implementation and time.*

The cost of producing a sustainable product is more expensive from the start. The cost of organic cotton can be roughly 30-50% more expensive than regular cotton. The cost of organic cotton decreases after proper harvesting training has been completed and farms have become appropriately equipped to handle the differences in growing organic cotton versus traditionally grown cotton.

*Finding #3: Companies face a lack of drive and motivation from consumers in becoming more sustainable.*

Consumers are more concerned with price, quality, style design, and materials than they are with environmentally friendly materials, the brand they are choosing, social responsibility, and ease
of repair. Therefore companies have no incentive to work with manufacturers on implementing stronger sustainable business practices.

**Finding #4: Companies who prioritize recycling programs receive positive consumer support and increase collection of recycled clothes.**

Patagonia and H&M have recently implemented recycling initiatives. H&M has collected over 32,000 tons of recycled clothing since 2013 and Patagonia has collected 95 tons of purely Patagonia brand clothing since 2005, putting a large emphasis on consumer repair and promoting recycling (H&M, 2017; Patagonia, n.d.).

**Finding #5: Change is a hard barrier for both consumers and industry representative to overcome.**

Industry executives are hesitant to change due to unknown risks and without the guarantee of success. Executives will usually not spend time and money on sustainable practices without a guaranteed reward. Consumers lack the education on sustainability to understand how their actions are harming not only the environment but their own communities as well.

**Finding #6: Technology has the ability to play a large role in the advancement of clothes.**

Throughout the interviews the team learned about several new technologies that have been developed but not implemented within the fashion industry. These technologies include self-cleaning clothing, waterless dyeing, and fabrics made from recycled fibers.

**Finding #7: The concept behind the Higg Index is strong and has the potential to positively impact sustainable practices throughout the industry however there is little motivation for companies to adopt the Higg Index.**

The Higg Index is a self-evaluation tool that is structured for company representatives to determine how sustainable their company is. The Index evaluates environmental impacts and labor practices. The index lacks an accountability feature and without one, there is no way to measure a company improvement.
CONCLUSIONS AND RECOMMENDATIONS

As a result of the team’s findings, they have created five recommendations and believe that if these recommendations are adopted, over time the fashion industry within Hong Kong will improve. The changes won't happen quickly but will begin the process of increasing sustainability within the fashion industry in Hong Kong. If these measures are successful locally, the practices have potential to be adopted in other countries around the world.

Recommendation #1: The team recommends that Hong Kong Research Institute of Textiles and Apparel collaborates with the Mills and Friends of the Earth, to produce and distribute a catalogue describing available clothing technologies.

The team believes creating a catalog with available technologies could help inform designers of all textile options, allowing them to create more sustainable designs.

Recommendation #2: The team recommends that Friends of the Earth partners with a local upcycling clothing company to host seasonal events to collect clothing donations from consumers. The team also recommends that the local upcycling company provides incentive for consumers to donate clothing during the event.

The goal of this event is to get consumers to take a look at their wardrobe and realize what they are and are not wearing. The event will promote donating instead of disposal of clothes into landfills, and by partnering with upcycling companies, consumers can discover new, sustainable stores to buy from.

Recommendation #3: The team recommends that the Sustainable Apparel Coalition (SAC) offer a Higg Index certification evaluation along with membership to the SAC.

The Higg Index measures many aspects of sustainability; however, in its current implementation, the index is purely informational. The team believes that creating a certification tool with the Index could motivate more companies to become sustainable.
Recommendation #4: The team recommends that Friends of the Earth use their social media following as well as events held in Hong Kong to educate consumers about the fashion industry.
Throughout the interviews conducted by the team, a common trend discovered was how essential education is in improving the consumer mindset. If consumers understand the importance of sustainability, they can alter their habits accordingly.

Recommendation #5: The team has recommend research questions for Friends of the Earth’s next group of interns.
Throughout the project, there was information the team wished was available, and so have created the following research questions for their successors to consider during their study:

- Why do consumers go shopping
- Consumer knowledge on sustainability
- Disposal practices
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1 INTRODUCTION

The fashion industry is the world’s second largest polluting industry (Ecowatch, 2016). Environmentally harmful practices used throughout the lifecycle of clothing include using pesticides when growing raw materials, using toxic dyes in the production of textiles, excessive use of energy in the assembly of garments, emissions of toxins during transportation, poor consumer care of clothing, and increased runoff from degradation of clothing in landfills. The current methods of production and disposal are not sustainable and are harming the environment (Allwood, Laursen, Rodríguez, & Bocken, 2006). While the production of textiles and apparel is necessary, the practice by which these items are produced needs to be reevaluated.

In recent years, the fashion industry has become increasingly aware of the need to enhance its performance in social and environmental sustainability. Many companies have developed policies to strengthen corporate social responsibility (CSR). For example, strict labor policies, prohibiting unfair treatment of workers and substandard working conditions are promoted throughout the product lifecycle (Allwood et al., 2006). Many companies have explored ways to reduce the adverse environmental impacts from resource extraction to waste disposal (Kozlowski, Bardecki, Searcy, 2012). Many companies under public scrutiny have begun to assess their activities through the lens of sustainable supply chain management (SSCM) rather than focusing on ways to enhance the efficiency of production to minimize costs and maximize profits (Turker & Altuntas, 2014). Both CSR and SSCM reflect promising changes in the fashion industry; however, company executives need to put more effort into reducing environmental damages and improving social conditions.

Fashion companies are producing clothing more quickly to keep up with consumer demands (Turker et al., 2014). People want to be fashionable with what they wear but at an affordable price. ‘Fast fashion’ allows consumers to do so easily, even though such practices have adverse social and environmental impacts (Allwood et al., 2006). Slow fashion has emerged as a counter
trend (Pookulangara, Shepard, 2013). Slow fashion products may be more expensive but are often of higher quality and result in fewer negative impacts on the environment and workers.

The overall goal of this project was to assist Friends of the Earth in obtaining knowledge from representatives of the fashion industry in order to determine the best methods for local businesses to improve fashion sustainability as well as the role consumers can play in sustainability improvement.
2 BACKGROUND

This background section covers sustainability issues within the fashion industry. The problem of sustainability within the fashion industry in Hong Kong is significant, because the actions of companies within the Special Administrative Region have effects worldwide.

2.1 THE PROBLEM WITH FASHION

The fashion industry has undergone significant change over the past 30 years, and today, represents 7% of the world’s total exports. In 2000, the workforce in clothing and textile production consisted of 26.5 million people. As technology advances and productivity increases, employment drops (Allwood, et al., 2006). While manufacturing was predominantly localized during the early 1900s, increasing labor costs in the industrialized world pushed companies to outsource their work to developing countries for cheaper labor costs (Gerbi, Mcivor, Loane, & Humphreys, 2015). Tracing one garment of clothing through production, from start to finish involves a trip around the world. The fashion industry is extraordinarily mobile and tends to go where labor costs are cheap. Figure 1 depicts the hourly wages in the clothing industry throughout the world. The difference in cost of labor from Pakistan, at $.23 per hour compared to the USA, at $11.16 per hour, is a factor that allows the industry to keep clothing prices low. As a result, “[d]eveloping countries account for almost three quarters of world clothing exports and for half of the world textile exports” (Chapagain, Hoekstra, Savenije, & Gautam, 2006).
The use of energy and toxic chemicals are the two most prominent environmental problems caused by the fashion industry. Throughout the entire supply chain, practices implemented often do not consider the effects of high energy use and chemical emissions on the environment. These practices are not sustainable (Allwood et al., 2006).

The environment, society, and the economy are the three aspects of sustainability. Conserving natural resources, utilizing more environmentally friendly materials, like organic cotton, and maintaining a closed-loop supply chain are all practices of environmental sustainability within the fashion industry. Social sustainability encompasses corporate social responsibility laws including good working conditions, fair pay, and ensuring strong outsourcing laws. Establishing
strong capital and financial stability achieves economic sustainability. Incorporating these three aspects into business practices will help achieve overall sustainability (Choi, Li, 2015).

2.2 Lifecycle Analysis

Lifecycle analysis identifies each environmental impact caused by the production and use of a garment from cradle to grave. Figure 2 portrays the lifecycle of the fashion industry. Each part of the lifecycle produces a myriad of impacts on the environment. The process starts with the acquisition of raw materials, moves into the initial processing of raw materials, followed by textile production and manufacturing stages, clothing production, distribution and sale, consumer use, and finally to the disposal phase (Kozlowski et al., 2012).

![Figure 2: Lifecycle Analysis of Products in the Fashion Industry](Adapted from Kozlowski et al., 2012)

Table 1 lists different types of textile products and the environmental impacts generated by the production and use of each product. Organic fibers, such as cotton and silk, are biodegradable, but their production may pollute air, water, and soil with pesticides and fertilizers. Products originating from livestock, such as wool and leather, are renewable because they come from animals. Synthetic textiles such as polyester and nylon are produced from petroleum, which is a nonrenewable resource. The chemicals used in dyeing both natural and man-made fibers are often harmful to the environment (Chen, Burns, 2006).
The apparel production phase leads to further adverse environmental impacts such as water pollution from wet processes in the production of textiles and the vast amount of energy used in assembly facilities (Kozlowski et al., 2012). The use of toxic chemicals, wet pre-treatment, dyes, and finishing products result in wastewater that is harmful to the environment. Manufacturing
also uses vast amounts of energy, increasing the industry’s carbon footprint. Furthermore, clothing scraps produced during manufacturing go to waste in landfills and add to the non-biodegradable waste (Allwood et al., 2006).

After production, the apparel is shipped to retailers. Time to market is prioritized to meet consumer demands, resulting in products being shipped out at a fast pace (Tokatli, 2007; Christopher, Lowson, Peck, 2004). Distributors often send half-full freight containers across the world, resulting in excess deliveries, more fuel consumption, and more carbon dioxide emissions (Tokatli, 2007). Figure 3 shows the percentages of textile and apparel distributed by each continent, highlighting that Asia is a top exporter, and continues to grow as the leader.

Consumers are responsible for the next stage in the lifecycle of the fashion industry. Clothing is purchased by consumers, worn, laundered, and discarded. Consumers often make high impulse purchases influenced by trends (Christopher et al., 2004). These impulses lead consumers to purchase excessive amounts of clothing. If the clothes are inexpensive, they will not likely last and are therefore quickly discarded, potentially ending up in landfills (Turker, Altuntas, 2014). Some consumers will donate or reuse their clothing; however, landfill use is more prominent. Degradation of textiles in landfills leads to pollution of the soil and water surrounding the landfills. Incineration is an alternative method, which does not require a lot of space. However, the process releases toxic chemicals into the atmosphere, further polluting the air. Recycling is another method of disposal, which leads to less environmental problems in that clothing is reused or repurposed as opposed to being discarded (Environmental Protection Department, 2016).
Figure 3: Percentages of Exported Textiles and Clothing in Different Continents

(Lu, 2014)

2.3 Social Impacts

In the 1990s, society became aware of the negative socioeconomic impacts of the fashion industry. This resulted in a change in corporate social responsibility and accountability, specifically focusing on labor practices throughout factories in third world countries. The low wages, as well as poor labor conditions became top concern. Corporate social responsibility became a leading topic in the fashion industry. ‘Green fashion’ in the ’90s slowly evolved into
‘eco-fashion’ or ‘sustainable fashion,’ which enhanced awareness among consumers and promoted sustainability in the industry (Allwood et al., 2006).

2.3.1 Corporate Social Responsibility (CSR)

Corporate social responsibility (CSR) is defined as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (European Commission, 2011). The globalization of the fashion industry has made it difficult for companies to regulate policies across various suppliers. Negative publicity from the discoveries in the ’90s led to some companies implementing CSR policies, however there still remains the challenge of implementing these policies throughout companies worldwide (Allwood et al., 2006). CSR in the fashion industry has been slowly growing and gaining support from governments, international organizations, and non-government organizations (NGOs), as well as retailers and manufacturers (Allwood et al., 2006). Figure 4 outlines the overall flow of CSR. The inner circle of Figure 4 addresses the three main focuses: environmental (playing in our environment), social (playing in our communities), and economical (fair play). The outer circle gives more detail on how each of these focuses can be adapted. Sustainable uses of natural resources and reporting emissions are two helpful ways to manage the amount of harm a company is causing the environment. Social responsibility refers to improved working conditions and making a positive impact in the community. Fair play is another large factor in CSR, which focusing on fair and safe treatment of workers.

CSR policies have been implemented in a variety of ways. Workers’ rights have been a major focus since textile and clothing ‘sweatshops’ were exposed during the 1990s. Codes of practice ensure fair hours and pay, as well as vacation time, sick leave, and anti-discrimination laws.
In the fashion industry, corporate social responsibility policies have also emphasized the use of clean and sustainable resources, such as crops that use little water and organic pesticides or synthetic materials from ‘green’ chemicals produced using renewable energy (Allwood et al., 2006). Buyers and retailers, such as Marks and Spencer, implemented a ‘Look behind the label’ program. This ensures the company goes beyond the ‘Made in China’ description on the tag and gains a deeper understanding of where the materials and textile originated, not just where the garment was assembled. Buyers have been able to ensure that they are making ‘responsible purchases’ by establishing long term relationships with distributors, clearly stating codes of conduct, and addressing concerns, both socially and environmentally (Allwood et al., 2006).
Cambodia has been especially proactive in the development of CSR practices. Manufacturers that are recognized as ‘ethical sourcing suppliers’ show that they are improving upon their CSR practices and therefore increase their competitiveness as a company. The International Labor Organization has been working closely with the factories in Cambodia as well as with their customers in westernized countries to improve working conditions. Factory working conditions are reported and factory leaders gain assistance in improving upon product quality and workers’ productivity (Allwood et al., 2006). CSR checks are necessary throughout all stages of the lifecycle that have potential to harm the environment, employees, or the surrounding communities.

2.3.2 Sustainable Supply Chain Management
Sustainable supply chain management (SSCM) is “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development” (Turker et al., 2014). The fast fashion industry does not lend itself easily to a sustainable supply chain due to its shortened lead-times and quick inventory turnovers. Competition within the industry has put an enormous emphasis on cost reductions as well as staying up to date, and ahead, of the ever-changing fashion trends. Just-in-time is a quick response system that allows clothes to move through the supply chain with a fast turnaround time. This allows retailers to place trendy apparel on the shelves, ready to sell, as quickly as possible. While this system can operate sustainably, the fast fashion industry overuses the quick turnaround time (Turker et al., 2014).

Due to the globalization of the supply chain, the sustainability of the industry has suffered. Manufacturing sites in Europe have been moved to Asia. The spread of the industry has also led to an increase in transportation miles, therefore increasing carbon dioxide emissions (Turker et al., 2014).

2.4 Fast Fashion vs. Slow Fashion
The demand for more products and the increase in cheap labor led to the practices of fast fashion. This allowed clothes to be made in bulk, cheaply, and quickly, but at the cost of the
environment and favorable working conditions. A more sustainable method of slow fashion also began during the 1990s, with a focuses on making a higher quality product, using more expensive labor and fewer resources, creating less pollution, but longer lead times (Pookulangara et al., 2013). Both methods are used throughout the world, and have benefits and drawbacks.

Fast fashion is described as a “system [that] combines quick response production capabilities with enhanced product design capabilities to both design ‘hot’ products that capture the latest consumer trends and exploit minimal production lead times to match supply with uncertain demands” (Cachon, Swinney, 2011). This profit-driven way of delivering clothing has caused both retailers and consumers to use fast fashion as their main way of obtaining clothing. New styles come out quickly allowing consumers to shop often. “Zara can take as little as 14-21 days from design room to retail floor for a new style” (Kozlowski et al., 2012). Retailers who stay up to date with current trends enable consumers to purchase new clothing continuously. Customers are inclined to buy new styles because they are inexpensive and can easily replace the ‘old trends’ without worrying about overspending. There is little regard for the negative impacts production of clothing has on the environment. The ‘cheap chic’ is popular “among people in their teens and early twenties and it is likely that fast fashion will continue to maintain a presence in the industry” (Pookulangara et al., 2013).

Slow fashion is the system created to counter the adverse effects of fast fashion. The main focus of slow fashion is quality rather than rapid production and delivery. This practice results in a more sustainable fashion chain. “Consumers have become savvy about environmental and social concerns” (Pookulangara et al., 2013). Concerned consumers put pressure on companies to incorporate more sustainable and ethical practices. Designers are therefore encouraged to “design a product with all stages of the garment’s lifecycle in mind” (Pookulangara et al., 2013). They are expected to create something with longevity, which is lacking in fast fashion clothing. Figure 5 illustrates the goals that slow fashion strives to achieve versus the goals of fast fashion. The dilemma with slow fashion is that the higher cost of production leads to higher costs for
consumers. Young people are interested in fast fashion because they can easily afford large quantities of clothing. With slow fashion, most consumers are not able to buy as much clothing, or purchase clothes as frequently. Overall, slow fashion is a rising business but still has many hurdles to overcome. The disparity between sustainable fashion and affordability will keep slow fashion from changing the fashion industry (Pookulangara et al., 2013).

Figure 5: Slow Fashion Production Chain versus Fast Fashion Production Chain
(Pookulangara et al., 2013; adapted from Pookulangara et al., 2013)
2.5 **THE HIGG INDEX**

The Sustainable Apparel Coalition (SAC) is an organization focused on promoting sustainability within the apparel, home textile, and footwear industries. The SAC created a tool known as the Higg Index, which companies can use to conduct self-analysis on their sustainable practices. The SAC was founded in 2009 with the goal of creating a system with universal guidelines for sustainability. This resulted in the Higg Index, a set of questions addressing the three aspects of sustainability; environmental, social, and economical, and how the questions address different parts of the supply chain. Members within the coalition can use these guidelines to measure their company’s performance. Company representatives use the Index as a guide when beginning to implement sustainable practices within their companies. For companies who practice sustainability, it serves as a ‘benchmark’ measuring where the company started, how it has improved, and where there is room for improvement. Overall, company executives can use their results to determine what future improvements to make within the company (The Sustainable Apparel Coalition, n.d.).

2.6 **THE FASHION INDUSTRY IN HONG KONG**

Hong Kong is a bustling, metropolitan city where residents like to stay up to date with current fashion trends. People in Hong Kong want to be stylish and are big consumers of fast fashion. A consultant in Hong Kong was recorded saying “You may keep an item after ten washes, but the item may lose its luster, or...gone out of fashion” (Joy, Sherry Jr., Venkatesh, Wang, Chan, 2012). Consumers in Hong Kong embrace the notion of fast fashion with cheap clothes that look good yet lack quality. For consumers who desire to stay up to date on current trends, fast fashion is convenient but environmentally costly.

The slow fashion industry is struggling amongst the younger generation (ages 15-44), which make up roughly 45% of the Hong Kong population (GovHK, 2015). A complaint from a consumer about the current state of sustainable fashion was that it is “just plain dull and for older people perhaps” (Joy et al., 2012). Modern individuals are unlikely to wear something that is not appealing or trendy. However, a gradually emerging market for sustainable, slow fashion
has come about to combat this fast, in trend, fashion. “Consumers are really waking up to the impact caused by the fashion industry” (Springer, 2015), which has resulted in a smattering of stores opening that offer sustainable new clothing and secondhand clothes. These clothes are not the most up to date, but instead offer a timeless style intended to be worn and enjoyed for many years.

When it comes to waste, “young people separate fashion from sustainability” (Joy et al., 2012). Clothing waste is seen as an “acceptable waste” which is concerning as the landfills in Hong Kong are growing at an alarming rate. Every day, 217 tons of textile waste is generated (Springer, 2015). One woman was interviewed about her disposal habits and she admitted to throwing away entire garbage bags full of clothes. She felt guilty but said “I have a small apartment and I cannot keep them” as a way of justifying her actions (Joy et al., 2012). This mentality is a main contributor to the problem. Lack of space in Hong Kong is a common problem with consumers, which is not conducive to a fast fashion lifestyle. With current practices, estimates predict that landfills in Hong Kong will reach capacity by 2019 (Ecowatch, 2016).
3 Methods

The overall goal of this project was to assist Friends of the Earth in obtaining knowledge from representatives of the fashion industry in order to determine the best methods for local businesses to improve fashion sustainability as well as the role consumers can play in sustainability improvement. In order to achieve this goal, the team established four project objectives, each with a set of associated tasks described below.

- Objective 1: Characterize the environmental impacts of the textile industry and apparel supply chain from upstream to downstream in Hong Kong through background research;
- Objective 2: Understand the logistics of becoming and maintaining a sustainable company along with barriers preventing companies from becoming sustainable through interviews with representatives from the fashion industry;
- Objective 3: Evaluate consumer behaviors through surveys conducted through past research;
- Objective 4: Provide Friends of the Earth and other industry representatives with recommendations for improvement in the fashion industry, as well as a promotional video providing consumers with information on the sustainability problem within the fashion industry and ways to fix these problems.

The process for interviews consisted of four stages: identification of contacts to be interviewed, scheduling an appropriate time, developing and refining the interview script, and conducting the interviews.

Prior to each interview, the team conducted sufficient background research regarding the company and interviewee to ensure that the team was well prepared and would make the best use of their time. The companies’ websites were a main resource for obtaining information specific to individual companies. The team took into consideration the type of the company; advocacy group, big business (chain stores), or small business (single store), to determine if it would be appropriate to contact the founder or the public relations chair via email, or use the
website’s contact us page. The list of companies interviewed may be found in Appendix B along with a brief description of each company.

In the initial contact, the team introduced themselves and the reason for the interview. After confirmation from the contact, the team began to develop and refine the interview scripts as seen in Appendix C. These scripts were outlines of the interview questions and were appropriately tailored to each company and interviewee. Once finalized, the team sent out a second email including the interview questions and confirmation of appointment.

The team conducted interviews in person whenever possible. If unable to meet in person, the team emailed questions to the interviewee, which they answered through email. At the start of each interview, the team ensured that the interviewee was comfortable with all the questions previously sent to them and would allow written publication of their responses. The interviewee was allowed to decline any questions asked or end the interview at any time. When the interview was recorded on video, the team had the interviewee sign the video release form, found in Appendix D, and the team answered any questions regarding the process.

3.1 CHARACTERIZE THE ENVIRONMENTAL IMPACTS OF THE TEXTILE INDUSTRY AND APPAREL SUPPLY CHAIN

In order to characterize the environmental impacts of the textile industry and apparel supply chain, the project team performed significant amounts of background research. The initial research began before arriving in Hong Kong and consisted of reviewing academic journals and articles regarding the fashion industry as a whole in order to understand the need for sustainability within the industry.

Once in Hong Kong the team continued to conduct research at Friends of the Earth. The team watched The True Cost (Ross & Morgan, 2015) in order to see the effects the industry has on the entire supply chain. This documentary discusses the environmental impacts as well as the social
injustices that have resulted from the current clothing demands and practices. In addition to
watching the video, the project team researched the Higg Index, a tool used by the Sustainable
Apparel Coalition to evaluate the sustainable practices of a company (The Sustainable Apparel
Coalition, n.d.).

3.2 **INTERVIEW REPRESENTATIVES IN THE FASHION INDUSTRY FOCUSING ON
SUSTAINABLE FASHION**

The second objective was to interview members of the fashion industry practicing or advocating
for sustainable fashion. To identify relevant companies, the team used two main sources, the
Sustainable Apparel Coalition (SAC) and the Sustainable Fashion Business Consortium (SFBC).
The SAC has 180 members, of which 12 companies are local to Hong Kong (The Sustainable
Apparel Coalition, n.d.). The team determined that five of those 12 companies related to the
fashion industry and would be able to provide information relating to best practices of
sustainability in the fashion industry. The team contacted appropriate representatives from these
five companies. The team did not receive any interviews from these five companies, however,
representatives from both H&M as well as Patagonia shared information regarding sustainability
within the company and directed the team to additional online resources. The SFBC has 39
members. While all 39 members are companies related to the textile industry, only 11
companies are related to the apparel supply chain. The team contacted representatives from all
11 companies however did not receive positive responses from any of the contacted
representatives (Sustainable Fashion Business Consortium, n.d.).

The team also interviewed seven contacts at various local fashion stores that focused on
upcycling, recycling, or selling clothes produced with sustainable materials. During the
interviews, the team collected qualitative data on practices that interviewees thought would be
effective in aiding other local fashion companies in becoming more sustainable. The team also
gathered suggestions for increasing consumer support in the sustainable fashion industry.
The project team interviewed Anderson Lee, a board member for the SAC as well as the Chairman for the SFBC. The team selected him due to his extensive knowledge regarding the Higg Index and the fashion industry. The interview questions are given in Appendix C. They concern sustainability in the fashion industry throughout Hong Kong, ideas on how to improve sustainability, and common trends from the Higg Index.

The team also interviewed Edwin Keh, CEO of Hong Kong Research Institute of Textile and Apparel (HKRITA), who specializes in supply chain management. The interview was used to obtain expert opinion on how local fashion companies can implement sustainable practices. The interview questions may be found in Appendix C. The team determined areas throughout the supply chain conducive to change as well as areas less likely to change. Furthermore, the team obtained information on the role of consumers in the fashion industry and how their opinions influence business practices. Keh was also able to give the team additional contacts, which could be useful in achieving the goal of the project.

After each interview, the team analyzed the responses, focusing on three main ideas:

- What the company is doing to make improvements in sustainable practices.
- Barriers preventing companies from becoming more sustainable and how to overcome them.
- Barriers preventing consumers from becoming more sustainable and how to overcome them.

A summary of each interview may be found in Appendix E.

3.3 Evaluate Consumer Opinion from Surveys Conducted Through Past Research

Upon arriving in Hong Kong, the project team met with two students from Hong Kong Polytechnic University (HKPU). These HKPU students collaborated with Friends of the Earth from October through December 2016. The students surveyed 293 consumers regarding personal shopping habits and knowledge on sustainability throughout the industry. The HKPU
students conducted surveys at the Causeway Bay MTR stop and through an online survey. The electronic surveys were distributed with assistance from members of Friends of the Earth. The HKPU students also posted the survey to the university’s Facebook page. The survey questionnaire, passed on to the project team for further analysis, appears in Appendix F. The team used the demographics from the data as well as certain questions from the survey to make correlations in consumer shopping habits. Due to the survey methods used by the HKPU students, the team took into consideration potential sampling bias in the data.

3.4 DATA ANALYSIS AND DELIVERABLES
The project team compiled and analyzed the data obtained through interviews. The interviews provided the team with suggestions to improve sustainability within the fashion industry as well as the current best practices. The survey results gave the team insight on consumer buying and recycling habits. Together, the interviews and surveys allowed the team to obtain an idea of the current state of sustainability within the fashion industry in Hong Kong. The team then created a feasible strategy to promote sustainability in a way that would encourage local companies to practice sustainability, improve, or implement sustainable practices, and improve upon the consumer's views of sustainable fashion. The team created recommendations for Friends of the Earth, HKRITA, The Mills, and the SAC.

Friends of the Earth also requested a video on the environmental impacts of consumer purchasing behaviors. The video produced was a compilation of highlights from interviews with Cherry Chan (Person in Charge at The Mills), Christina Dean (CEO at Redress), Edwin Keh (CEO at HKRITA), Royce Ng (Corporate Social Responsibility Manager at Cotton Leaf), and Samathy Woo (CFO at JupYeah). The video highlights include how to motivate consumers to become more sustainable in their buying habits along with ideas on what sustainability can mean to an individual. The video also contains facts on the environmental impacts of the fashion industry. The video was tailored towards consumers.
The team used the methods described in this chapter to determine the best ways to improve sustainability within the fashion industry in Hong Kong. The analysis of the data collected can be seen in the Findings chapter of this report.
4 FINDINGS

Sustainability throughout Hong Kong’s fashion industry was analyzed through interviews with industry representatives and local business owners along with data from consumer surveys. The team determined how environmental, economic, and social sustainability, are addressed by different companies in Hong Kong. Interviewees gave the team insight on the weaknesses in sustainability throughout the clothing lifecycle and how consumers and company owners contribute to those deficiencies.

4.1 LOGISTICS OF BECOMING AND MAINTAINING A MORE SUSTAINABLE COMPANY

The team interviewed a variety of contacts from different sustainable sourcing companies, upcycling, and recycling companies. “Sustainable sourcing is the integration of social, ethical, and environmental performance factors into the process of selecting suppliers” (Ecovadis, n.d.). Upcycling companies in the fashion industry take pieces of clothing and transform them into unique new articles of clothing. Recycling companies, often called second hand stores, resell donated clothes, continuing the lifecycle. The interviews with representatives from these companies helped the team to determine a variety of practices that make companies more sustainable.

A company buyer must be cognizant of the sources of their products and the working conditions in the factories of their suppliers. A close relationship between company buyers and suppliers is vital to ensure that the product can be traced back through the supply chain. Royce Ng, Corporate Social Responsibility Manager at Cotton Leaf¹, described the importance of purchasing materials from a reliable distributor. There is a high level of trust in this type of relationship to be confident that the supplier is honest about the source of the raw materials. Ng explained that his company “… always buy[s] fabric from our partner supplier - working with them for many years now, we know they are reliable and use certified organic cotton.”

¹ Descriptions of the companies whose representatives were interviewed can be found in Appendix B
Establishing this strong relationship takes time but Ng does not have to worry about false information about his clothing and source of materials because of the strong connections he has with suppliers. Ng praises his relationship with cotton suppliers and touts it as one of the reasons Cotton Leaf is able to maintain their level of sustainability. The company’s agreements with their suppliers allows them to offer durable articles, made with organic cotton.

Management at successful sustainable companies who limit the amount of waste deposited into landfills evaluate the lifecycle of their product from cradle-to-cradle as opposed to cradle-to-grave. Toby Crispy, owner of LastbutnotLeast says, “From an eco-angle, [a brand] must be fulfilling the cradle-to-cradle system. Once a design is produced, it must be reused, recycled, and then re-nourish the earth at the end [of its lifecycle] instead of adding toxins to the ecological cycle.” Upcycling has been an essential strategy in the success of smaller businesses, where textiles from worn clothing are repurposed into materials for new clothing. Samathy Woo, Chief Financial Officer of JupYeah says that the most innovating factor for her company has been the redistribution of second-hand items. Following the idea of Crispy, Woo knows that the end of the lifecycle should be recycling, not disposal, and that the lifecycle of clothing should indeed be a cycle, not a line with a defined endpoint.

4.2 BEST PRACTICES CURRENTLY IMPLEMENTED BY COMPANIES IN HONG KONG

The team researched several companies within the fashion industry demonstrating strong sustainable business practices. These practices include at least one of the three branches of sustainability. The successful initiatives have been included in this report to provide examples for companies trying to increase their sustainability.

H&M group is a fashion company made up of several different brands. The company has implemented several successful sustainable practices. H&M stores worldwide encourage consumers to donate their unwanted clothes by staging recycling bins in all of their stores and providing consumers with a discount ranging from 15-20% off their next purchase. These bins
can usually be found directly next to the checkout counter. This initiative began in 2013 and has since collected over 32,000 tons of clothing. The clothes collected are sorted by type of material, broken down and made into something new, or resold as a second hand item. In addition to the collection bins, H&M’s website provides consumers with information on how to extend the lifespan of clothing by proper care (H&M, 2017a). Although H&M has implemented successful sustainability practices on the recycling side of the product lifecycle, their CSR practices are still a work in progress. While H&M praises themselves on having strong CSR laws, representatives from the company are not willing to openly speak about fair wages throughout the world and where they source their materials from (Ross & Morgan, 2015).

Patagonia is a company that uses “business to inspire and implement solutions to the environmental crisis” (Patagonia, n.d.). Patagonia’s Worn Wear program is another successful recycling initiative. Worn Wear allows customers to send in damaged Patagonia products for repair. Currently Patagonia employs 45 full time employees strictly dedicated to product repair (Patagonia, n.d.). “This simple act of extending the life of [Patagonia]’s garments through proper care and repair reduces the need to buy more over time - thereby avoiding CO2, emissions, waste output, and water usage required to build it” (Marcario, 2015). Furthermore, Patagonia also practices Reuse and Recycle, where their products can be returned at the end of their use. This recycling program has collected 95 tons of Patagonia branded clothing since 2005 (Patagonia, n.d). The products received are repaired, if needed, and then resold. Materials from garments that cannot be repaired are reused in products, limiting the amount of waste added to landfills (Patagonia, n.d.). Patagonia puts an emphasis on consumer repair, offering extensive online step-by-step photo tutorials on how to fix items that are in need of repair.

4.3 Barriers Preventing Companies from Becoming More Sustainable and How to Overcome Them

Many barriers prevent companies from becoming more sustainable. Cost is the most common and difficult barrier to overcome. Ng discussed the struggle Cotton Leaf faced when deciding to use certified organic cotton over traditionally grown cotton. According to Andy Wong, a
designer at Loom Loop, organic cotton is more expensive than conventionally grown cotton due to the certification costs and profit margins set forth by the cotton plantations. However, there is more to the high cost. If a farmer has to switch from regular cotton to organic cotton, they need to retrain their workers. This is because organic cotton farming requires different fertilizers, different tactics for reducing pests, and intercropping for pest control and soil enrichment. (Raj, Sridhar, Ambatipudi, Lanting, & Brenchandran, n.d.). Wong states that using recycled cotton increases the cost of his products because recycled cotton is roughly 30-50% more expensive than regular cotton. Using sustainable sources, while more expensive, causes less harm to the environment. The production of certified organic cotton does not use harsh chemicals that pollute the water and soil. The cotton production factory has strong corporate social responsibility policies that positively benefit the community.

The risk of change is a barrier that, according to Edwin Keh, CEO of the Hong Kong Research Institute of Textiles and Apparel (HKRITA), could be a major factor in the lack of sustainability in the industry. In the business world, company executives often avoid making risky policy changes. However, Keh believes the fashion industry needs a disturbance to alter how the industry is operated, which could, in turn, better the industry as a whole. Company executives may know how to make their companies more sustainable, but the unknown risk of implementing new technologies overrides their willingness to change. Implementing new ideas is expensive and without the guarantee of success, companies are not willing to risk the loss of money. Keh does not agree with this mentality. He believes that if one company has a good idea and shares it, other companies could also implement that idea. Toms, a brand that Keh briefly mentioned, disrupted the norm and took a risk. The goals and policies of Toms highlight sustainability. The concept of buying a pair of shoes for oneself and in turn having Toms donate another new pair to someone in need was new and innovative. The company’s model was new and radical when it debuted. Now Toms is a successful, world-renowned company. Consumers purchase Toms products knowing that their purchase is helping someone else. According to their website, Toms places a large focus on CSR principles. Toms outsource to foreign companies, however they have factory checks to ensure that CSR standards are properly in
place. The company hires experts from third party companies to evaluate the practices being used in these factories. The experts either confirm that the factories are following CSR practices or make suggestions on ways to improve the current practices. To support environmental sustainability, the company offers biodegradable products and packages their product in recycled materials (Toms, 2017).

Another barrier that companies face is the consumers’ lack of interest in sustainable options. In a survey conducted by students from the Hong Kong Polytechnic University (HKPU), consumers were asked to rank eight given purchasing factors on a scale from one to eight, eight being the most influential factor considered when buying clothes, and one being the least influential factor. No two or more factors were able to be ranked the same. The results collected were then analyzed. The team took into consideration a demographic bias, seeing that two-thirds of the consumers were under the age of 30 and almost half of the respondents were students. The data was analyzed using a weighted average. Results from each purchasing factor were totaled based on score. For example, 7 consumers ranked price as their least influential purchasing factor. This number (7) was then divided by the total number of respondents (293) to determine the frequency of consumers ranking price as their least influential factor. This analysis was done for all rankings and all influential factors. The frequencies of each were then multiplied by the rank. For example, the frequency of price as the most influential factor (a rank of 8) was 0.345. This number (0.345) was then multiplied by 8 to determine the weighted frequency. The eight weighted frequencies were then totaled and divided by 8, providing an average rank for each purchasing factor. Each average rank is shown in Figure 6. Green bars represent sustainable purchasing factors. Consumers do not consider sustainability when shopping for clothes. Instead, consumers are focused on looking trendy for a cheaper price. Figure 6 shows that the consumers from the survey rank price, quality, style design, and materials higher than the use of environmentally friendly materials, company brand (choosing between a sustainable and not sustainable company), company’s social responsibility practices, and ease of repair. To overcome this barrier, companies need to provide consumers with sustainable options and
advertise why these choices are better. These options need to fulfill the consumer desire to look fashionable for a reasonable price.

Many Hong Kong fashion companies struggle with lack of support from the government. As mentioned by Cherry Chan from The Mills, the government is not providing any incentives or initiatives to promote sustainability within the fashion industry. Chan noted that excessive waste from all industries is prevalent around Hong Kong, however, the Hong Kong government is doing little to improve upon the situation. Chan would like government officials to be more prominent in installing stricter business regulations to help businesses become sustainable and be held responsible for their harmful polluting actions. In Japan, recycling is heavily enforced. In 2008 The Fundamental Plan for Establishment of a Sound Material-Cycle was introduced.

**Figure 6: Ranking of Purchasing Factors when Buying Clothes**
(Adapted from: Ting & Sing, 2016)
Japan was producing massive amounts of waste and needed to curb it effectively. This newly implemented plan would limit the amount of the waste produced, reuse it, create something new with the materials from it, recover the heat used to destroy it, and improve the disposal methods of it. In order to ensure the plan is being followed, laws were put in place that held all parties contributing to the waste accountable. In addition to the citizens doing their part in the program, the government agreed to help aid communities who are struggling with waste management and work towards improving the technologies used in waste management (Government of Japan, 2008). Overall, the collaboration throughout Japan has led to an advanced waste management system and if Hong Kong could adopt some of the principles used, the waste management practices of Hong Kong could also improve.

4.4 BARRIERS PREVENTING CONSUMERS FROM PRACTICING SUSTAINABILITY AND HOW TO OVERCOME THEM

Through interviews, the team recognized different consumer barriers explained by representatives in the fashion industry. These barriers include consumers’ reluctance to change, lack of consumer knowledge, limited implementation of recycling programs, lack of understanding how to care for clothing, and the pressure from society to maintain trendy styles. These barriers are hindering consumers’ abilities to be more sustainable in Hong Kong.

Consumers’ lack of willingness to change their current practices is a barrier that needs to be overcome. Keh believes consumers are set in their ways and, according to Woo, consumers are reluctant to change. Buying new items, especially clothes, is a prominent tradition in society and many people are not willing to give it up. Woo believes the older generation is more likely to base their habits on tradition, but thinks that the younger generation is less influenced by traditional customs. She believes the younger generation purchases fashion on their own accord. Either way consumers fail to see the problem with constant shopping and over consumption. Education is a way for consumers to become aware of the consequences of overindulging and to provide consumers with motivation to change their current practices.
Educating consumers on the detrimental impacts of over-consumption, such as the lack of landfill space, is imperative in the movement towards sustainability. Hong Kong citizens add 217 tons of textile waste into landfills every day (Springer, 2015). With little space remaining in landfills, constant disposal needs to be reconsidered. In an interview, Christina Dean stated that “consumers around the world, they are not stupid, they are not horrible, they are not evil, and they just want to be told how [to practice sustainability]. Not everyone has the time to spend ten years looking into the topic…” Dean does not believe consumers are against recycling or bettering their habits, rather that consumers just need someone else to tell them how to make improvements to their current practices. Keh believes the younger generation is the smartest, most well-educated group of consumers who will be responsible for making positive changes in fashion sustainability. Continuing to educate the young generations is essential. Chan believes that consumers, especially the younger generation, want to change their disposal habits.

Teaching the older generation about the negative effects of excessive consumption and disposal is a solution for better informing the older generation. The Hong Kong Consumer Council conducted a study in February 2016 on consumer behaviors. The report stated, “While people believe in the benefits and effectiveness of recycling and energy conservation, real actions on these issues significantly dropped off. People therefore need to be helped through education, better recycling infrastructure and by ensuring there is a range of suitable sustainable product choices to assist them translate belief into action” (Sustainable Consumption for a Better Future (Rep.), 2016). Consumers are not putting into action the ideas they are discussing. Consumers are interested in being environmentally friendly, but they are not actually showing it. Education on how to implement these sustainable ideas is important throughout all generations.

Recycling is not prominent throughout Hong Kong. While Chan referenced all materials while discussing disposal, recycling can be applied directly to the fashion industry with a focus on recycling clothing. The government has implemented recycling programs throughout the city, however the lack of promotion for the programs has resulted in a lack of participation from residents. The Environmental Protection Department (EPD) of Hong Kong is currently running a program called Source Separation of Domestic Waste (SSDW) where housing estates or
buildings can sign up to receive recycling bins. As of December 2016, there were 2098 estates signed up for the program. The program classifies each estate on the amount of recycled waste collected (Environmental Protection Department, 2016). The classifications are broken down by total weight of clothes collected. The highest classification requires over 30 kg of recyclables per household collected each month. The classifications then are broken down to between 22-30 kg, 17-22 kg, 10-17 kg, or less than 10 kg of recyclables collected per household. In the 2015/2016 collection year, 51.72% of Hong Kong’s total population had access to bins located at estates or other bins located throughout rural areas of Hong Kong. Only 1% of the population reached by these bins achieved the highest classification, and less than 5% of the reached population received any classification higher than the minimum one (Environmental Protection Department, 2016). While these numbers represent all recyclables, the amount recycled per household is still alarmingly low. The SSDW program is a start and with time, may result in more products being recycled, more frequently. Continuing the SSDW and implementing other similar programs will hopefully encourage consumers to make recycling a larger part of their lives.

The need to care for clothes properly is another barrier that consumers struggle with. Taking proper care of each article of clothing is a simple but often overlooked solution to increase the lifespan of clothing. Understanding and following the proper laundering methods printed on tags can keep clothes from becoming worn out or dull in color. Clothing repair is another way to limit disposal and increase longevity of clothes. Repairing clothing is not as common as it was in the mid-1900s, whether it is due to the lack of skill or cost (Fisher, Cooper, Woodward, Hiller, and Goworek, 2008). Consumers who mend their clothes will have a considerable impact on the amount of clothing ending up in landfills.

The pressure in modern society to always be trendy is another barrier. Most interviewees agree that consumers should not make purchases influenced by current trends, since the trends are constantly changing. Instead consumers should look towards buying timeless items that are made to last. Fast fashion is constantly changing and with new trends coming out as frequently
as once a week, it is difficult to always own the most up-to-date pieces without over-consumption. Buying timeless items, which will remain in style longer than fast fashion trends, leaves the consumers not needing to shop as frequently.

4.5 **The Higg Index**

The Higg Index is a self-evaluation tool created by the Sustainable Apparel Coalition (SAC) for companies to evaluating how sustainable their company is. The tool contains evaluation areas focused on materials used, manufacturing practices, packaging methods, transportation protocols, product care, and end of use disposal. These topics encapsulate all parts of sustainability in the fashion industry (The Sustainable Apparel Coalition, n.d.).

The Higg Index consists of two modules regarding environmental impacts and one module regarding labor. The environmental modules contain questions covering the manufacturing processes, including material sourcing, manufacturing, packaging, transportation, product care and repair, and end of use policies. In the materials section, the Higg Index heavily weights programs installed to reduce harmful environmental impacts. The chemical reduction management section is emphasized, where companies are evaluated on their use of damaging chemicals. The manufacturing category evaluates company’s water and energy uses. Scores for packaging are determined by how recycled the packaging materials are for a company. Transportation scores are determined by the frequency of shipments along with how well companies maximize the utilization of space within containers. Sections regarding product care and repair evaluate a company’s repair program as well as the durability of items produced. End of use policies are evaluated by the company’s efforts to encourage consumers to recycle or reuse products. Most of the criteria focus on the ideals of implementing sustainable practices rather than gauging the effects from these practices (The Sustainable Apparel Coalition, n.d.).

The fashion lifecycle can be divided into three tiers. Figure 7 diagrams the pyramid scheme, with the base representing the largest portion of production, including the sourcing of materials, the middle representing the assembly, and the top the finished products. Scores from the Higg
Index are heavily biased towards aspects further up the production line (tier 3). Dean believes that the most impactful sustainably practices come from the lower tiers. Sustainable sourcing upstream will lead to a more sustainable production further downstream.

![Figure 7: Tiers of the Production Cycle of the Fashion Industry](image)

(Adapted from The Sustainable Apparel Coalition, n.d.)

Keh believes that while the Higg Index has the potential to be a powerful tool, it is not enforced. Anderson Lee, SAC board member, believes that some companies do not take the time to fill out the Higg Index due to the immense amount of time required for completion and because having a score has yet to hold any significance in the industry. Currently the SAC is creating a Higg Index 3.0, which will streamline all of the current modules from the previous index into one for a more simple completion process. Lee explained a new technology currently being tested with manufacturing plants to monitor the amount of waste produced, including carbon emissions and water pollution, as well as limit the electricity used. This technology would analyze the waste produced and determine the manufacturing scores based on the questions in the Higg Index.
Companies who source materials from the manufacturing plants with this technology will be able to upload responses collected by this technology to the Index.

Evaluation certifications, like what the Higg Index is striving towards, have been successfully implemented in other industries. For example, BEAM Plus is a voluntary evaluation certification, provided by the BEAM Society, which evaluates buildings on efficiency, air quality, lighting, and overall performance. All BEAM Plus evaluations are administered by a group of people trained by the Hong Kong Green Building Council (HKGBC) and the BEAM Society (Hong Kong Green Building Council Limited, 2017a). These evaluators are required to pass certain exams before receiving their evaluation certification (The BEAM Society, 2012). The trained evaluators provide accuracy across accreditations ensuring that all buildings are being evaluated in a fair and consistent manner. This BEAM Plus certification is not required for membership into the BEAM Society, however, many contractors elect to have their buildings certified (Hong Kong Green Building Council Limited, 2017b). Buildings that achieve set minimum requirements are logged into the BEAM Society website where they are then available for other contractors to use as examples. The SAC and the BEAM Society both provide memberships into sustainability groups where assistance is available for members wishing to improve upon their practices. The Higg Index has not evolved to the same level of certification as BEAM Plus has and is not yet accepted within the industry. The Higg Index currently does not have any certification accompanying it nor does it provide validation from a trained group of people, like BEAM Plus provides.

4.6 ADVANCEMENTS IN TECHNOLOGY

Faculty and researchers at Hong Kong Research Institution of Textile and Apparel (HKRITA) are proprietors of new textile technologies helping to solve common problems in the fashion industry. These new technologies address pollutants throughout the production process, laundering, and manufacturing efficiency.
To offer a solution to the amount of water polluted from dyeing fabrics, researchers at HKRITA discovered a method of dyeing textiles without the use of water. This new technology significantly reduces the amount of water needed to dye textiles and is 99% renewable, according to Keh. Currently, this technology is only available in a small scale testing phase, however if companies were to show interest in adopting this practice into their production, there is potential for it to be developed on a larger scale.

Determining how to use recycled clothing to produce new garments is a problem that HKRITA has been working on. Researchers at HKRITA designed a process that involves breaking down old sweaters into fibers, blending the fibers with other fibers of similar colors, and spinning them back together to form a new textile. Mainstreaming this method of producing new textiles from recycled clothes would reduce the amount of virgin materials needed to produce textiles at a comparable cost to current methods. H&M currently uses this blending technology with their jeans and other recycled fabrics. “Currently, one single garment can contain up to 20% recycled fibres (recycled cotton or recycled wool from collected garments) without any loss of quality or durability” (H&M, 2017b). H&M is working towards increasing this percent and hopes to be able to use 100% recycled fibers in the near future.

Another technological advancement is self-cleaning clothes. The outer layer of clothes are sprayed with a metal coating which when left in the sun, reacts to UV rays and removes all dirt and grime picked up by the fabric. This advancement would decrease the amount of laundering needed, which would then, in turn, increase the longevity of the clothing. Washing and drying 1kg of dry clothing under average conditions uses about 26 liters of water (Koemer, Seth, & Turk, 2015). With the use of self-cleaning clothes water consumption will be reduced and the longevity of the garment will increase.

HKRITA develops these technologies with funding from other companies. These companies have the rights to the technology and therefore dictate how each technology is distributed. Designers interested in using these technologies would have to consult with the licensee for
permission. The two parties will then work together to get the technology into production. HKRITA can help with technical support throughout the process, connecting the designers with the proper licensees.

Another improvement towards sustainability has been an optimization method used to increase efficiency in manufacturing lines. Lee believes that an activity-based costing (ABC) method of optimization should be applied to the manufacturing process. An ABC method involves analyzing key procedures of multiple production lines in the manufacturing stages, taking the most efficient parts of each, and combining them to make a new, more efficient production line. Lee used the ABC method to trial run a new process for a startup company, where he was able to piece together a more efficient production line than the one currently in place. Using this ABC method of optimization, sustainable production techniques can be applied in a way that does not affect lead times.

4.7 CONTENT FOR VIDEO DELIVERABLE

The team obtained video footage from interviews, which was compiled into a testimonial video on the environmental impacts of the fashion industry. The storyboard for the video, along with a link to view the video, can be found in Appendix G. The video informs consumers about the effects that their purchasing behaviors have on the environment. The video is partitioned into four main sections: the concept of sustainability, sustainability with regards to the fashion industry and Hong Kong, benefits of practicing sustainability, and the effects of consumer behaviors on the environment. The beginning introduces sustainability to the audience. Interviews were then used to portray the problem of sustainability in the fashion industry through information regarding material sourcing and the effects current practices have on the environment. Sustainable practices are described through additional interview footage providing consumers with ways to implement sustainable habits in their lives. The video concludes with photos showing the effects consumer behaviors have had on the environment. The ending should invoke consumers to think about changing their habits.
The team determined where improvements within the fashion industry and consumer behaviors were needed and formulated recommendations for respective groups. These can be found in the Recommendations chapter of this report.
5 CONCLUSIONS AND RECOMMENDATIONS

Throughout the project, the team learned about the difficulties the fashion industry faces with sustainability. New, environmentally-friendly materials are under development, but few designers are aware of these materials. New technologies need to be scaled up to production levels. Consumers do not fully understand the ramifications of their actions including purchasing habits and care for clothes. The Higg Index has been in the developmental stage for years and has the potential to be a useful self-evaluation tool for companies, however representatives are not taking advantage of this opportunity. The team also realized that there were gaps in knowledge about the fashion industry in Hong Kong. Consumer surveys conducted by students from the Hong Kong Polytechnic University provided information about what consumers are looking for in general when shopping, but the limited sample may be biased. Based on what the team found throughout the project, they have created five recommendations that they believe will improve the fashion industry over time.

Recommendation 1: The team recommends that HKRITA collaborate with The Mills and Friends of the Earth to produce and distribute a catalogue describing available clothing technologies. The technologies developed by HKRITA are not widely known or utilized. Researchers are coming up with useful ideas to improve fashion, but designers in the fashion industry are not incorporating them into their designs, and there is no push to employ these technologies on a wider scale. By creating a catalogue of available new technologies for the fashion industry, designers could become more aware of these new materials, and create more sustainable designs. The Mills Incubator Project is essential to this plan because they are an organization that aids startups and up-and-coming designers. The team recommends that HKRITA creates a catalogue for designers, describing each of the materials, their properties (i.e. flexibility, texture, etc.), use, and sustainability implications. Making the catalogue simple and detailed would make it easy to work with. The Mills would then distribute the catalogue to the startups they are mentoring as part of the resources they provide. To ensure that all questions
asked by designers are properly answered, a liaison from HKRITA should be assigned to work in collaboration with The Mills’ designers. The liaison would be in charge of providing information about all of the materials and answering questions that mentors from The Mills cannot answer. The liaison would also be responsible for connecting the designers with the licensees of the technologies in order to start the production of the clothes. If the partnership with HKRITA and The Mills is successful, the catalogue can be introduced to a larger audience. FoE’s role in this plan is to publicize the catalogue and its success to further promote ways to become sustainable. FoE are in contact with organizations and industry representatives ranging from small businesses to large companies such as H&M and can reach a variety of companies. After bringing the idea to Keh, and receiving his approval, the team believes the catalogue will be successful.

Limitations: The team understands there are limitations involved in implementing a catalogue. Having a paper product is obsolete when everything is digital, but sending something digitally means it could get lost amongst other files. Providing designers with the online option would be more environmentally friendly. The limitation of an online catalog is that a written description and photo do not fully express all the properties each material has to offer. To improve upon this, HKRITA could provide swatches of these materials to interested designers. The team was able to see swatches during their visit with HKRITA, and agree that seeing the product provided a better insight of the looks and feels of these materials as well as a realistic idea of how they can be used.

Recommendation 2: The team recommends that Friends of the Earth partners with a local upcycling clothing company to host seasonal events to collect clothing donations from consumers. The team also recommends that the local upcycling company provides incentive for consumers to donate clothing during the event. Currently, upcycling companies like LastbutnotLeast receive clothing from individuals who want to upcycle an old piece of clothing. Toby Crispy, designer for LastbutnotLeast, works on transforming the article into a unique piece of work, which is then resold. Secondhand shops, like Green Ladies, rely on
donations from corporate sponsors and consumers to run their business. The current collection method is lacking consistency because consumers are on their own donation schedule. The seasonal event would encourage consumers to clean out their closets once a season, donating clothes they no longer wear, as opposed to throwing them away. The team recommends that FoE partners with Hong Kong upcycling companies to encourage consumers to recycle their clothes, and bring awareness about upcycling to more consumers. The partnering company would offer a discount for shopping at their store in return for the clothes donated. This incentive would expose consumers to new stores and show them how ‘trendy’ upcycled or second hand clothing can be. The team recommends that FoE works with a different upcycling or recycling company each season to determine what clothes are most needed for donations. For example, if the event takes place in the spring, the focus of the event would be for consumers to clean out their summer clothes before the season starts and see what they can donate. Asking for clothes a season in advance would give upcycling and recycling companies time to sort through the donated clothes before consumers start shopping for them. This ‘pre-season’ cleaning is a way for consumers to see what they have in their closets before going out and buying new clothes, which could reduce the amount of seasonal shopping they do. FoE would be responsible for all advertisement, partnership, and organization of events. FoE would be able to promote the event through their Facebook following of 15,000 people as well as through the connections with other sustainable companies, like Redress. Each season would serve as an opportunity to partner with a new upcycling or secondhand company, exposing consumers to a range of new, more sustainable places to shop.

The team is aware that FoE is currently working on an incentive program for participants who donate clothes to their recycling bins. The current incentive for the best performing participants and estates is name recognition and a certificate. FoE could work with partnering companies that would receive the clothes, and discuss providing the participants with compensation for their donations.
**Limitations:** A major limitation of this event would be monitoring the clothes donated. To increase the efficiency of collection, FoE would need to bring in volunteers to sort through the clothing. The partnering company cannot go through every piece of clothing consumers want to donate. To ensure the clothes brought in are to the standards the partnering company wants, the standards for donation would have to be explicitly posted prior to the event. Another limitation of this event would be determining a central location, large enough for collection. Consumers are scattered across Hong Kong and determining a central location without forcing consumers to go out of their way would be difficult.

**Recommendation 3:** The team recommends that the Sustainable Apparel Coalition offer a Higg Index certification evaluation along with membership to the SAC. Currently, SAC membership is open to any company interested in joining. Companies that join are able to use the Higg Index to perform a self-evaluation on the sustainability of their company. The Higg Index is currently the only a tool that fashion companies have to measure their sustainability, however there is no incentive to complete it. The team recommends that Anderson Lee, SAC board member, suggest an addition of a two part Higg Index certification, to the SAC, much like the BEAM Plus certification. The Higg Index certification should include an evaluation based on the environmental impacts (Higg Environmental certification) and a separate evaluation based on socioeconomic impacts (Higg Social certification). There are different modules on the Higg Index that evaluate the environmental and socioeconomic impacts allowing for the breakdown into two different certifications. Companies will have the option of whether they want to be evaluated or not.

The Higg Environmental certification will show a company’s compliance to standards in sustainability set within the fashion industry. The certification will be awarded per product line and will require each line to get a separate certification. Starting on an individual line can give companies motivation to improve upon their other lines. Materials and manufacturing should be heavily weighted in the evaluation, as both have direct impacts on the environment, and are currently heavily weighted in the Index. The Higg Environmental certification should consist of
three rankings. The first rank, Higg Environmental Bronze, defines the baseline for each product line. This level should include excellence in materials and manufacturing, as these are two important categories in which all companies should strive to achieve high scores. Higg Environmental Silver should include all aspects of the Higg Index including packaging, product care, and repair services, as well the qualification required for Higg Bronze. Higg Environmental Gold should include all requirements previously mentioned as well as score at least a 630/700 (90%) on the Higg Index.

The Higg Social certification will evaluate the company’s social and labor policies as a whole. The audit should be based on the social-labor module from the Brand section. This certification will be awarded to companies demonstrating excellence in consideration of socioeconomic issues within their company.

The team recommends that the Sustainable Apparel Coalition train third party auditors to administer the Higg Index certification. Completing the Higg Index is a time consuming task. Creating a third party audit system will allow for consistency throughout companies and minimize the time required from company representatives. The team recommends that auditors become trained on how to complete the Index, including where to find each piece of information needed and how to properly evaluate the information. The auditors will then evaluate companies using the Higg Index and provide each company with their respective scores.

Limitations: A limitation of implementing the Higg certification is the global scale of the fashion industry. Implementing this new certification worldwide will be a challenge, especially during the early stages when problems are likely to arise. To combat this limitation, the SAC should have a trial run for the Higg certification in Hong Kong. This is an ideal location because Lee is local to Hong Kong and with his extensive knowledge of the Index, would be able to answer questions. There is also a lack of incentive for companies who request Higg certification. There are is nothing to gain financially or competitively for a company to be Higg certified. This could result in a lack of companies showing interest in the certification. Another limitation to
consider is the cost of the auditor. Companies will be responsible for paying the auditor to appraise their company, however, receiving a high score on sustainability will improve the company’s corporate image, which could result in additional profits.

**Recommendation 4: The team recommends that Friends of the Earth use social media as well as events held in Hong Kong to educate consumers about the fashion industry.** A common trend throughout the interviews was the need to educate consumers about the affect their shopping habits have on people and places around the world, as well as educate them on how to improve their buying habits. Many of the interviewees believe that consumers are not shopping sustainably because they do not know the toll unsustainable shopping is taking around the world. Using their Facebook page, the team believes Friends of the Earth could inform consumers about these effects. Stating the effects of over shopping and showing photos of the negative effects on unsustainable habits, including images on the harm caused to the environment and poor working condition, could encourage people to make changes necessary to bring sustainable clothing into their wardrobe. The movie *The True Cost* uses intense images and ‘hard facts’ to get the point across and Friends of the Earth could use these methods to educate consumers as well.

In addition to letting consumers know how their decisions impact others, Friends of the Earth could teach consumers how to go about shopping for their clothes and how to treat them properly during the laundering stage. FoE can work in collaboration with The Crossroads Foundation to host an informative event teaching consumers about the negative effects caused by the fashion industry. The Crossroads Foundation works by “bringing together those in need and those who can help” (Crossroads Foundation Hong Kong, n.d.). Crossroads collects clothing donations for people who cannot afford to purchase clothes themselves and works with companies to educate employees on the importance of CSR practices in the workplace. Crossroads currently runs a program called the X-perience project. This project teaches ideas of CSR through simulation experiences to corporate clients (Crossroads Foundation Hong Kong, n.d.). Although Crossroads does not specialize in consumer education, this simulation method of
experiencing concepts first hand could be applied to educating consumers and FoE would be responsible for providing the content. Consumers would not be just be told what changes to make, they would see how to purchase sustainably, repair their own clothes, and correctly launder clothing. Scaring consumers and not telling them how to improve will not help the situation.

To promote sustainable practices, FoE could host a workshop. The workshop could be a day of events, educating consumers about being more conscious of their purchasing. The event could be held at housing estates or schools because there are large groups of people in those locations who have the potential to spread the knowledge they gain from the program to other people in their life. FoE could partner with some of the designers and fashion businesses they have connections with, such as Kay Wong and Green Ladies, respectively. Some ideas that could be included are how to repair clothes and extend their life, how to dress up old clothes into new ways, and how to shop for more sustainable clothing. Each of these topics is important because they promote reasonable ways to be sustainable. People should walk away realizing how easy it is to be sustainable, not be discouraged because it seems difficult.

**Limitations:** The team understands that like anything posted to social media, getting interest could be difficult. The main form of advertisement for the event would have to be Facebook, and it is not a guarantee that people will see it. People can easily ignore posts made to social media and could disregard this. People have to actively try to be a part of this movement, even if that means simply clicking a link to Friends of the Earth’s Facebook page.

**Recommendation 5:** The team has recommended research questions for Friends of the Earth’s next group of interns. The incoming interns, starting in May 2017, will be conducting consumer surveys focusing on the psychology of consumers shopping for clothes. Before the creation of the survey, the team suggests that the interns focus on the following:

- Why do consumers go shopping?
- Consumer knowledge on sustainability.
● Disposal practices.

These four topics were determined based on knowledge that the team would have found helpful throughout the project along with questions that arose during interviews and research.

**Limitations of analysis from demographics:** The team received consumer survey results from prior students in which the demographics were highly skewed. Obtaining a statistically significant sample size from surveys is essential, however, there also needs to be variance in consumers surveyed. Accurate demographic conclusions cannot be drawn if the same type of consumer is surveyed. Demographics, including gender, age, average income, and occupation should all be equally represented in order to draw accurate conclusions. The survey would need to be given in different areas around the city in order to have the necessary variance in demographics.

**Why do consumers go shopping:** Through interviews, the team found that interviewees believe consumers over purchase. This could be a result of the constant sales, low costs, quickly changing styles, or a combination of all three. Having data specific to Hong Kong to back up this type of comment would have been helpful. The team also wanted to know what types of clothes are frequently purchased to determine if consumers are shopping for leisure outfits or work clothes. Many interviewees believe that consumers buy too much, however that is without knowing exactly what they are buying and if it is necessary. Knowing this would have helped the team target specific companies, so they could have the greatest impact on the industry.

**Consumer knowledge on sustainability:** Interviewees stressed the lack of knowledge consumers have with regards to sustainability. Are consumers not practicing sustainability because they do not understand what it means to do so? Are consumers unsure of where to purchase sustainable clothes? What is the predominant factor consumers focus on while purchasing clothes? Do consumers know what not being sustainable does to the environment? Answers to these questions would have allowed for a further analysis of statements made during interviews. A ranking system was used in the previous survey, which did not measure the
relative importance of each factor in the consumer’s decision-making process. While this question was useful, a more accurate portrayal of the question would be to list the eight factors and have the participant choose one answer as the most influential factor they most look for and one answer as the least influential factor. The ranking system does not allow for there to be a single definitive answer, because people can rank several of their top choices closely. Having only one option means that participants need to pick their highest priority. Better understanding the knowledge consumers have on sustainability will determine how much education consumers require.

**Disposal practices:** Interviewees focused on the disposal mentality of consumers and the consensus was that not enough people are recycling their clothes, they are just throwing them away into landfills. The previous survey allowed consumers to check multiple modes of disposal, however, this setup does not show the most commonly used method. To obtain more straightforward results, consumers should be asked about their most frequently used disposal method. Phrasing the question to only allow for one choice would limit a response claiming that a consumer recycles their clothes just as often as they throw them away, when in reality they could be recycling only 20% of the time.
REFERENCES


46
Friends of the Earth (Hong Kong) [1], Board and Structure. (2015, November 1). Retrieved from http://www.foe.org.hk/e/content/cat_page.asp?cat_id=37#.WBenM-ArKhc


Friends of the Earth (Hong Kong) [3], Corporate NGO partnerships. (n.d.). Retrieved from http://www.globalhand.org/en/organisations/25261

Friends of the Earth (Hong Kong) [4], What We Do. (n.d.). Retrieved from http://www.foe.org.hk/e/content/cat_page.asp?cat_id=40#.WEqyQqIrLXE

Friends of the Earth (Hong Kong) [5], No Car Day 2016. (2016, September 22). Retrieved from http://www.foe.org.hk/e/content/cont_page.asp?content_id=1715#.WBelFuErLXE

Friends of the Earth (Hong Kong) [6], Public. (n.d.). Retrieved from http://www.foe.org.hk/e/content/cat_page.asp?cat_id=45#.WBequOArKhc

Friends of the Earth (Hong Kong) [7], Incinerator. (n.d.). Retrieved from http://www.foe.org.hk/e/content/cat_page.asp?cat_id=182#.WBemqOErLXE


and the Ethical Appeal of Luxury Brands, Fashion Theory, 16:3, 273-29


Tokatli, N. (2007, October 23). Global sourcing: Insights from the global clothing industry the


# Authorship

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**Recommendations**

| 1 | Monique | Monique |
| 2 | Sarah | Monique |
| 3 | Chris | Monique |
| 4 | Monique | Monique, Sarah |
| 5 | Monique, Sarah | Monique, Sarah |

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| Appendix B: Video Release Form | Chris | Monique, Sarah |
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| Appendix D: Overview of Interviewees | All | All |
| Appendix E: Analyzed Interview | All | All |
| Appendix F: HKPU Survey Questionnaire | --- | Sarah |
| Appendix G: Video Storyboard | Chris | Chris |

**Extras**

| Video Deliverable | Chris | n/a |
| Survey Analysis | Sarah | n/a |
APPENDIX A: SPONSOR DESCRIPTION

Friends of the Earth Hong Kong, referred to as FoE was founded in 1983 and has a current membership of almost 13,000 people. The charitable organization is led by a Board of Governors which includes a chairperson, vice-chair, secretary, and treasurer, along with nine other members (Friends of the Earth [1], 2015). Figure 8 details the structure of various departments in the company and outlines what is included in each department. The organization is now one of Hong Kong’s more prominent “green” groups. The overall goal of FoE is to promote a healthy and sustainable environment for everyone to enjoy and live in (Friends of the Earth [2], n.d). FoE works with government and non-government organizations to promote the benefits of environmentally friendly practices and increase awareness through research, education, and campaigns (Friends of the Earth (Hong Kong) [3], n.d).

Figure 8: Department Structure of Friends of the Earth
(Friends of the Earth (Hong Kong)[1], 2015)

Friends of the Earth attempts to reach its goals of creating an eco-friendly Hong Kong by lobbying with the government and engaging the public through different campaigns (Friends of
the Earth (Hong Kong) [4], n.d.). “No Car Day” is an annual event hosted by Friends of the Earth. The goal of “No Car Day” is to promote the use of Hong Kong’s public transit system, the Mass Transit Railway (MTR), in an attempt to reduce carbon emissions produced by cars, in turn creating a healthier planet, positively affecting the health of Hong Kong residents, and bettering the economy (Friends of the Earth (Hong Kong) [5], 2016). FoE also works closely with university students to promote sustainable living on campus by encouraging them to cherish foods, reduce water, and lower carbon footprints (Friends of the Earth (Hong Kong) [6], n.d.).

Another campaign that Friends of the Earth ran was to stop the use of incinerators. According to Friends of the Earth “the operation cost for incineration is three times more expensive than the landfill processing, though eight times more expensive than implementing the waste reduction policy” (Friends of the Earth (Hong Kong) [7], n.d.). Friends of the Earth encourages the reduction of waste during the manufacturing process rather than when the product is being disposed by the consumer. They lobbied against LegCo who proposed building an Incinerator on the island of Shek Kwu Chau in 2012, and successfully stopped its construction the same year. In turn the occupied area of the three main landfills of Hong Kong expanded (Friends of the Earth [7], n.d.).

The people of Hong Kong are not ecologically friendly and throw away roughly 9,000 tons of waste each day. The accruement of waste in landfills is unsustainable because there is limited space in the country and landfills are exceeding capacity. Friends of the Earth is working towards changing these poor habits. The “Used Clothing Recycling Program” began in 2001 and has since collected clothing that would have otherwise gone into landfills. FoE has set up donation centers in public areas all over Hong Kong allowing easy disposal for citizens. These locations can be seen in Figure 9. The items collected are either donated to locals in need or are sold to other countries where recycled clothing can be used for various purposes. The profits gained help aid other Friends of the Earth programs that further help educate citizens to live environmentally conscious lives (Friends of the Earth (Hong Kong) [8], 2011).
In recent years, Friends of the Earth has been collaborating with several charitable organizations that collect and reprocess recycled clothes which are redistributed according to the needs in the community. These partner organizations include CityU Scope, an organization that collects used clothes for fashion shows, Veterinary Service Society Ltd., an organization that redistributes used towels for daily pet use, and Tsz Wan Shan Integrated Family Service Centre, a shelter that collects winter clothes for low income families. Not only have these efforts improved environmental sustainability in Hong Kong, but they have also raised awareness of FoE and contributed to the growth of the organization (Friends of the Earth (Hong Kong) [9], n.d.).

The goal of the team’s project will be to look deeper into the environmental impacts of the fashion industry and determine ways to improve upon sustainability throughout the industry. The team will work with Friends of the Earth to identify other ways in which the organization can assist the Hong Kong fashion industry in lowering its carbon footprint while still maintaining financial viability.
# APPENDIX B: OVERVIEW OF INTERVIEWEES

## 1. PEOPLE INTERVIEWED

<table>
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<th>Name of Interviewee</th>
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<th>Position in Company</th>
<th>Company</th>
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<tr>
<td>Cherry Chan</td>
<td>February 14th, 2017</td>
<td>Person in Charge</td>
<td>The Mills</td>
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<tr>
<td>Christina Dean</td>
<td>February 9th, 2017</td>
<td>Chief Executive Officer</td>
<td>Redress</td>
</tr>
<tr>
<td>Edwin Keh</td>
<td>January 25th, 2017</td>
<td>Chief Executive Officer</td>
<td>Hong Kong Research Institute of Textiles and Apparel</td>
</tr>
<tr>
<td>Anderson Lee</td>
<td>February 2nd, 2017</td>
<td>Board Member</td>
<td>The Sustainable Apparel Coalition</td>
</tr>
<tr>
<td>Royce Ng</td>
<td>January 20th, 2017</td>
<td>Corporate Social Responsibility Manager</td>
<td>Cotton Leaf</td>
</tr>
<tr>
<td>Andy Wong</td>
<td>January 23rd, 2017</td>
<td>Designers</td>
<td>Loom Loop</td>
</tr>
<tr>
<td>Samathy Woo</td>
<td>January 20th, 2017</td>
<td>Chief Financial Officer</td>
<td>JupYeah</td>
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<tr>
<td>Kate Falconer</td>
<td>February 14th, 2017</td>
<td>Director of Operations</td>
<td>Crossroads</td>
</tr>
<tr>
<td>Toby Crispy</td>
<td>January 10th, 2017</td>
<td>Designer</td>
<td>LastbutnotLeast</td>
</tr>
</tbody>
</table>
2. DESCRIPTION OF INTERVIEWEES

Cotton Leaf - Royce Ng, Corporate Social Responsibility Manager
Cotton Leaf is a company that specializes in organic cotton products such as shirts and undergarments. They have partnerships with various NGOs to promote sustainable living.

Crossroads - Kate Falconer, Director of Operations
A company that brings people together to help people around the world. Examples of their work are helping the poor and promoting local businesses around the world. In regards to this project, the main focus was on their X-perience program, focusing on corporate social responsibility.

Hong Kong Research Institute of Textiles and Apparel - Edwin Keh, CEO
An institution focused on researching and developing new technologies for the fashion industry.

JupYeah - Samathy Woo, Chief Financial Officer
JupYeah is a sustainable living website that includes a marketplace, blog and donation center. They promote minimalist living in Hong Kong to lessen people’s environmental impact.

LastbutnotLeast - Toby Crispy, Designer/Owner
LastbutnotLeast is a boutique brand that specializes in upcycled clothing. Toby produces upcycled high fashion clothing, and promotes a sustainable lifestyle.

Loom Loop - Andy Wong, Designer
A company focused on producing quality product made to last created with sustainable materials.

The Mills - Cherry Chan, Person in Charge
The Mills is an organization focused on helping fashion startups. They offer the space, mentoring, and resources to help new designers work on their skills and learn new things.
Redress-Christina Dean, CEO
Redress is an organization with the goal of reducing waste from the fashion industry and “creating a positive change in the fashion industry” (Redress, 2017). The organization holds events such as the Ecochic design award and the 365 Challenge.

The Sustainable Apparel Coalition- Anderson Lee, Board Member
The Sustainable Apparel Coalition (SAC) created the Higg Index, a tool with the intention of evaluating sustainability within the fashion industry. There are over 100 companies within the SAC.
APPENDIX C: INTERVIEW QUESTIONS

1. PREAMBLE
Hello, I am a student at Worcester Polytechnic Institute in the United States of America, working with Friends of the Earth, and I am wondering if you would be willing to consent to a voluntary interview about the sustainability of your company. You are welcome to decline to answer any question asked and may stop at any time, without question. The responses from this interview will be used to evaluate the current state of the fashion industry in Hong Kong. You will be shown anything that has the potential to be published and may deny publication for any or all parts.

2. GENERAL INTERVIEW QUESTIONS
1. Can you tell us about your in your own words and how your role as [insert specific role] plays a part in the success of the your company?

2. To ensure that we are on the same page when discussing these next questions, what does sustainability mean to your company?

3. What was the driving factor for your company to practice sustainability?

4. What are the benefits and drawbacks of being a sustainable company within the fashion industry?

5. Can you go into detail about the innovations that your company has put in place to become more sustainable?

6. Were there any challenges in adopting sustainable practices, and if so could you describe them?
7. What practices can you suggest to other companies who might be struggling with becoming sustainable or are trying to make advancements in their sustainability?

8. What practices can you suggest to consumers to promote sustainable fashion?

9. How can your company influence consumers to be more sustainable in their fashion consuming habits?

10. How does your company encourage consumers to increase the longevity of your products? (i.e. instructions for product care, how to wash, how to repair, how to replace, etc.)

11. If you could tell consumers one thing to motivate them to become more sustainable in their shopping habits, what would you say?

Life cycle analysis is the tracking of an article of clothing from the cradle to the grave. The next question deals with the assessment of your clothing in regards to life cycle analysis.

12. What are the steps the company uses to determine the source of textiles used in the clothing produced?

13. On average, how long do you expect consumers to wear your clothes (break down by different types of clothing if possible)?

14. Are there any further contacts that you would suggest we talk to?
3. **QUESTIONS FOR EDWIN KEH**

1. Can you define sustainability in your own words and how it applies to the textile manufacturing industry?

2. Looking back 10 years, what changes have been made to improve sustainability within the textile industry?

3. What changes in sustainability within the textile industry do you anticipate in the next 5 years? 10 years? 50 years? Both local to Hong Kong and also worldwide.

4. You have funding for all of this research. Where/Who does the funding come from?

5. We see that you are researching new ways to produce different types of textiles. Are these textiles being made with more environmentally friendly practices than the current ones? How are they more environmentally friendly? What changes have been made to make this possible?

6. What is the most difficult part about integrating new technology textiles into the manufacturing part of the fashion industry?

7. Why are you making these new materials? Who are you making them for?

8. How can you influence the manufacturing side of the fashion industry to promote sustainability?

9. What current innovations, if any, have been put in place in Hong Kong to improve sustainability in the fashion industry?

10. What part of the supply chain starts the initiative towards sustainability?
11. A part of the mission and vision of HKRITA is to “support the continual development of technologies to enhance the competitiveness of the fashion and textile industry. How is enhanced competition going to help the industry?

12. If you could tell manufacturer's one thing to motivate them to become more sustainable in their practices, what would you say?

4. **QUESTIONS FOR ANDERSON LEE**

1. Can you define sustainability in your own words and how it applies to the fashion manufacturing industry?

2. Looking back 10 years, what changes have been made to improve sustainability within the fashion industry?

3. What changes in sustainability within the fashion industry do you anticipate in the next 5 years? 10 years? 50 years? Both local to Hong Kong and also worldwide.

4. What current innovations, if any, have been put in place in Hong Kong to improve sustainability in the fashion industry?

5. What is the primary motivating factor for companies to become more sustainable?

6. If you could tell consumers one thing to motivate them to become more sustainable in their practices, what would you say?

We also have a few questions regarding the HIGGs Index. We see you are a board member for the Sustainable Apparel Coalition and our sponsor Friends of the Earth told us that you would be a great contact to discuss the HIGGs index with.
7. How does a company become a member of the SAC?

8. What kind of support does the Higg Index provide to companies?

9. We see that the Higg Index measures different aspects of apparel production, such as materials, packaging, and transportation for example.

10. As consumers we do not have access to the results of the Index. Why are the results only available to people within the Index?

11. Do you see the Higg Index becoming a standard in the future? Will it be treated similar to a BEAM+ standard?

12. What are your future plans for the Index?

We understand that you are the chairman of the SFBC. We would like to discuss some aspects of your role and the role of the SFBC in the fashion industry.

13. How do the requirements for entry into the SFBC compare to those of the SAC?

14. We are familiar with your projects, such as Energy Reduction Review, Cut & Sew Waste Recycling and Dye Stuff Recycling, but unable to find information on the scope of the projects.

15. The end of our project consists of a deliverable with suggestions on how companies can be better about their sustainable practices, help others become more sustainable, and influence consumers. In your opinion, what would be the best way to reach these industry representatives in the Hong Kong area?
16. Are there any further contacts we should be getting in contact with to help us with our project?
APPENDIX D: VIDEO RELEASE FORM

By signing this waiver, I understand the terms and conditions specified by Friends of the Earth Hong Kong and Worcester Polytechnic Institute;

The purpose of this recording is to create a promotional video regarding sustainable fashion in Hong Kong. The video will be a compilation of various responses given during interviews to various sustainable fashion companies, organizations and experts. I understand that I may appear in the aforementioned promotional video with other fashion companies, organizations and experts.

I grant Friends of the Earth in collaboration with Worcester Polytechnic Institute the unrestricted right to use my image and responses given during the interview in any manner or medium with any retouching and/or alteration needed.

I waive any right to inspect or approve any media prior to and after completion of the works produced, unless specified during the time of signing this video release form.

I understand that I am free to address any specific questions regarding this release form by submitting those questions or concerns in writing prior to signing. I agree that failure to do so will be interpreted as a free and knowledgeable acceptance of the terms or this release.

Comments: _________________________________________________________________________
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I have read this release form carefully and completely understand its meaning and implications.

Given Name (print): ________________________ Surname (print): __________________________
Organization: ______________________________________________
Signature: ____________________________________________ Date: _________________

APPROVED BY
WPI IRB1
1/18/17 to 1/2/18
APPENDIX E: SUMMARY OF INTERVIEWS

1. COTTON LEAF, ROYCE NG (JANUARY 20TH, 2017)

What the company is doing to make improvements:
Cotton Leaf provides the people of Hong Kong with the option to be “green.” The company is passionate about the environment, and wants to conserve it. Unlike conventional cotton, organic cotton is grown without chemicals that are harmful to the environment. The resulting cotton is gentler on the skin. This could cause people to consider organic cotton more so than the pesticide treated variety. One of the ways in which Cotton Leaf practices sustainability is by ensuring the people who work for the company are happy and enjoy what they are doing. This supports the idea of CSR.

Barriers preventing companies from being sustainable and how to overcome them:
Royce believes that in order for a company to improve and be successful, it needs to find the right product. If they have the right product but it is not sustainable, they should look into how to make them more sustainable. This can be accomplished by breaking down the production of the product step-by-step in order to see where the flawed areas are and make improvements. This reflects on a company’s ability to evaluate the lifecycle of their product. Sourcing from trusted suppliers and forming strong business relationships is essential to ensuring the sustainability claims of companies. They should research the customers they are looking to attract and see where the current market stands. This ensures that companies are not just creating a product for the sake of sustainability, but also something that people will be willing to invest money in. Cost will always be a barrier that sustainable companies need to overcome. Sustainable products are often more expensive, as is the case with organic cotton, and in order to be successful the company needs to convince consumers that it is worth the extra price.

Barriers preventing consumers from being sustainable and how to overcome them:
Royce believes that consumers should look to buy things that are durable, but that does not mean they are in style. Fast fashion will always compete with slow fashion, but it is not meant
to last like Royce would like. It takes more energy to buy a new T-shirt than washing one you already own. People should know that buying something of better quality that costs more is worth it. Even though the upfront cost is more, the return on investment is better. It is also important to educate people of sustainable practices like these because if enough people know about these practices, it will eventually become a trend and that leads to changes in the future. Royce has a focus on the future. He wants people to know that, decisions made now are not just for the current generations, but also our children’s generation and grandchildren’s generation. People need to think of the bigger picture, not just be in the moment.

2. CROSSROADS, KATE FALCONER (FEBRUARY 14TH, 2017)

What the company is doing to make improvements:
Crossroads is a company with a focus on Corporate Social Responsibility (CSR). The company just added a Director of Operations position which allows the director to look into the efficiency of the company and determine what new systems can be implemented to benefit the company. This new position elevates the company by ensuring that there is someone to check business practices and continually improving upon their sustainable practices. Crossroads offers external companies to try an ‘X-periences’ where company employees experience what it is like to suffer. The goal of this simulation is to have employees understand how others feel when CSR laws are not implemented, or how someone in another area of production is being treated. Crossroads encourages all companies to try an ‘X-perience’ to put into perspective what others experience. Falconer praises this simulation and explained how other company employees walk away from these understanding ‘why’ there are CSR practices in place and become more driven to make a positive impact in their community. She says, “Some companies have, on the spot, decided to walk away and review who sections of their business because they have had an empathy ‘light switch’ moment about the people that are being impacted by their business model.”

Recommendations for consumers to better their habits:
Falconer talked about the convenience consumers need be provided in order to be more inclined to make a change. If incentives were offered, consumers would be more likely to drop
Falconer said, “You have to change consumer behavior first. Companies follow the consumers lead!” Consumers need to become more motivated and realize how much all of this sustainability efforts will end up positively affecting them in the end.

**Recommendations for members of the industry to better their habits:**
Overall industry leaders need to care more. Falconer points out that when executives make CSR-like objectives for a company, everyone works towards a shared value goal. This in turn saves costs, increases staff recruitment and retention rates, increases positive environmental impacts and increases the development of community. Falconer also recommends companies using a Global Reporting Initiative (GRI) in order to have a concrete measurement of how well your company is performing. The ‘X-periences’ are something else to consider and really give companies the push they need to start reforming CSR laws.

**3. Hong Kong Research Institute of Textile and Apparel, Edwin Keh**

(January 25th, 2017)

**What the company is doing to make improvements:**
HKRITA is an applied research center that specializes in fabricating materials and technological clothing. Their current projects include self-cleaning clothes, waterless dyeing systems and blending old sweaters to make textiles. These methods promote sustainability because they are technologies that produce less pollutant throughout the processes. Self-cleaning clothes allow the consumer to wash the clothes less frequently because the dirt comes off in the sun. This in turn lengthens the life of the garment because it has to be washed less. Waterless dyeing systems implemented into factories will cut down on the amount of wastewater factories use, which will lower the amount of pollutants in the planet’s water supply. Finally, blending old sweaters into new textiles means that manufacturers do not need to use virgin materials to create their product, thus promoting reuse and recycling.

**Barriers preventing consumers from being sustainable and how to overcome them:**
Edwin mentioned that one reason why clothing is being disposed of often is because of the way the consumers treat their clothes after purchase. The care labels are not clear to consumers which leads to mistreatment of the clothing; thus, the lifespan of the clothing is lessened. The inappropriate cleaning methods results in premature degradation of the clothing. Consumers should also understand the reasons why buying quality clothing is beneficial. Rather than be “in trend” consumers should purchase quality, timeless pieces that are meant to last longer than the fast fashion options. Buying lower quality clothing leads to a cycle of purchasing too much and disposing of clothes.

Consumers should also propose a change in the fashion industry. The companies are profit driven, thus changing purchasing habits amongst consumers will influence what the companies will produce. If customers demand the production of sustainable products and stand by that demand, the industry has no choice but to change their ways to please the consumers. Ultimately, consumers are the final say in the production of clothing because that is where the revenue occurs.

**Barriers preventing companies from being sustainable and how to overcome them:**

According to Edwin Keh, beliefs are the last thing that people change. They tend to be reluctant to do so and hold onto their beliefs. Sustainability is one practice that goes against some of those beliefs, thus people are reluctant to start practicing sustainability. This is an issue as pollution hits an all-time high, and the global resources run dry. An environmental crisis is what will drive the whole industry to change, but that is not a reasonable method because by that point it is too late for change. Implementing sustainability is also a risk because there will be changes to the product line, and the company does not know how the consumers will respond. Changing the production practices and sourcing new materials is also costly and the return on investment is slow and not as high as it could be. Edwin said that executives plan to leave these problems for “the next guy” as they do not want to risk their pension on these matters. There needs to be an agreeing consensus to completely change the industry as a whole. Furthermore, these changes of sustainability need to be enforced.
An implementation of a certification system would be needed. The fashion industry needs to be more transparent and provide the consumer with information on their production practices. There needs to be more information about the clothing a company produces at a consumer level. This will result in the consumer understanding what they are buying and the sustainability implications of their purchases.

4. JupYeah, Samathy Woo (January 20th, 2017)

What the company is doing to make improvements:
JupYeah is focused on the upcycling area of sustainability. The company is not a proprietor of buying new items, but instead reusing the old. This is a sustainable practice because people are not throwing things away, which detracts from the amount of textile waste in landfills. People who shop with JupYeah are not buying new things, therefore companies do not need to put new resources into creating more product, reducing waste throughout the supply chain. To promote the sharing program, JupYeah has created a website. This website is used to swap items and does not require monetary transactions. There are also places where people can donate their used items to those in need. Other than the website the company holds events in which people can bring their unwanted secondhand items for others to look at, and bring home items from other people. The goal of the website and the events is to make access to second hand items as easily as possible. Samathy believes that just giving things away for free makes people a lot more likely to accept them.

Barriers preventing companies from being sustainable and how to overcome them:
Because JupYeah gets their product from consumers, Woo did not have a lot to say on large companies and sustainable practices. She does believe that companies should think about upcycling and recycling fabrics in their designs instead of using all new materials. They should be looking for new ways to use old items. She believes that because there are so many cheap chain stores, people are more likely to make impulse purchases without thinking. This is great for the company and profit, but they are not thinking about the overall impacts, these purchases.
have. The company will even use extreme sales, just to get consumers to feel as though they need to buy the clothes because the deals are too good to pass up.

**Barriers preventing consumers from being sustainable and how to overcome them:**
Samathy believes that if consumers change their ways the fashion industry will improve. She wants people to think before they buy, because most people buy recklessly. People can live minimally, they just feel compelled to buy more because that is what is expected. She thinks that tradition is a big proprietor of the extra purchases. Old traditions that are harmful, need reforming so that they are more modern and taking current events into consideration. People feel the need to buy new things because that is what has always been done, but they should only buy the things they need and not things they are apathetic towards. One of the goals of JupYeah is to educate people about making good choices when they shop for clothing, and Samathy believes that the younger people will be more willing to change compared to older people. The older generation is more set in their ways, according to her, but the younger generation is open to change, and wants to do better. In order to make a change people need to support the ideals of sustainability. She discussed the disparity between the rich and the poor, and although the rich are willing to donate to the poor, who accept the clothes, the rich are not willing to stop their constant purchasing. People need to stop buying so much. As great as it is to upcycle, it would be better if people just did not buy the excess items that do not even get used.
5. LASTBUTNOTLEAST, TOBY CRISPY (JANUARY 10TH, 2017)

What the company is doing to make improvements:
The company’s model is to make fashionable upcycled pieces. Crispy believes that upcycling is the best way to be fashionable and “pay tribute to our past and earth.” Upcycling reduces the need for new resources.

Barriers preventing companies from being sustainable and how to overcome them:
Crispy understands that starting a sustainable business is hard, but someone has to do it and be the model for other companies to follow. Consumers are becoming more concerned about the transparency of brands, and companies need to start complying with this consumer want. They should be transparent about what they are selling. The other barrier is cost. Consumers want things at a reasonable price, so companies have to find the right balance between sustainable fashion and a good deal. Crispy also believes that the idea of sustainability must be accepted by larger scale corporations seeking a change.

Barriers preventing consumers from being sustainable and how to overcome them:
Crispy did not have a lot to say about consumers. He believes consumers are paying more attention to transparency, but price is still a big factor in purchasing decisions.

6. LOOM LOOP, ANDY WONG (JANUARY 23RD, 2017)

What the company is doing to make improvements:
Loom Loop uses Canton silk which they dye in a process that uses solar energy as opposed to fossil fuels. Recycled materials, such as denim and cotton, are used in several of their designs. The ink in their digital prints is environmentally friendly.

Barriers preventing companies from being sustainable and how to overcome them:
Cost is an issue with becoming sustainable. Wong states that recycled cotton costs 30-50% more than the conventional version. Another problem is not having a enough customers. Wong talked about how the suppliers have minimum requirements that are higher than what they actually need. They have to purchase the larger quantity, but end up with excess materials.

Barriers preventing consumers from being sustainable and how to overcome them:
Wong did not have a lot to say on consumer behavior. He believes consumers should buy durable clothes so that they last for years. He believes clothes should be passed on to the next generation.

7. **The Mills, Cherry Chan (February 14th, 2017)**

**What the company is doing to make improvements:**
The Mills are focused on the future of textiles. The old textile mills are out of commission now but can be restored to still maintain the rich history while serving another purpose as well. Cherry Chan, Person in Charge at The Mills, discussed how The Mills does not only focus on upcycling and recycling when it comes to sustainability. Maintaining cultural sustainability is important to portray the history of the textile industry. The Mills works on maintaining upkeep of the old textile mills and transforms them into offices while keeping the original infrastructure. Socially they work with startups to give opportunities to people who cannot always afford to take the plunge into starting a new company. The Mills works with designers to also give them a chance to start something they might not have had the original opportunity to start. The Mills focuses on a ‘closed loop’ fashion cycle with no disposal, just reuse.

**Barriers preventing companies from being sustainable and how to overcome them:**
The Mills sees may startup companies struggle due to time. Implementing sustainable practices takes time to have a direct impact. Ideas for new companies have to be organic and something that will get the attention of consumers, not an idea that has already been exhausted. Cherry believes that starting with the factories is the main focus. Convincing factories that changing their ways of production to be more sustainable is the biggest challenge. The big players, government officials, need to start to implement guidelines in order to see a change in practices. Until the government starts implementing stronger recycling programs, similar to what Japan has, consumers are not going to change. Cherry stressed how quickly Hong Kong people adapt to change and how if the industry starts to change, the people will get behind it very quickly. The challenge here is that the industry has yet to change.
Barriers preventing consumers from being sustainable and how to overcome them:
Education was the top barrier Cherry described when talking about consumers becoming more sustainable. Consumers, especially the older generation, are not educated on recycling and need to be better educated in order to see the need for recycling. She believes that people under the age of 40 are more likely to buy upcycled clothing, over older people. The younger generation wants to change and work towards better practices. Cherry also believes that the industry needs to do a better job of offering as well as advertising upcycled clothes. If consumers knew better about the different options out there then they might be more likely to check out different, more sustainable, places. Consumers are not aware that some of the big stores that they shop at, like H&M, and how these companies are using sustainable fashion in their products already.

8. Redress, Christina Dean (February 9th, 2017)
What the company is doing to make improvements:
Redress is a company focused on promoting better clothing habits throughout the industry and consumers. One of the ways they hope to improve consumers’ mindset is through the book they have coming out in April. The title is Dress with Success and the goal of the book is to teach consumers how to have a conscious closet with step by step ways to improve upon their purchasing habits. Christina Dean believes that consumers are not trying to be bad people in their buying habits, they just need to be explicitly told what to do and that is the intention of this book. Another project the organization did to promote improvement in sustainability was the 365 challenge in which Christina wore clothes only from donation boxes for an entire year. The purpose of this project was to show people that you can do a lot with ‘old’ clothes. She promoted fixing pieces if they needed repair, dressing them up with accessories, and altering them.

Barriers preventing companies from being sustainable and how to overcome them:
Dean believes one of the largest barriers stopping companies from being sustainable is the cost. Companies are very cost driven and want to make the most money possible. To overcome this she believes there has to be incentives for the company to be willing to spend money on
sustainable practices. She talked about stock markets that will not include companies that are not implementing sustainability. The senior executives of companies want the financial benefits the market has to offer and are willing to make necessary changes. They will also see where throughout the supply chain they can save money, which could mean becoming more sustainable to do so. Dean also believes that the sourcing of materials could make a huge difference in a company's sustainability. If all companies obtained materials from sustainable sources, and did not change anything else in their company Dean believes it would be enough to see a substantial change in the industry as a whole. Overall Dean believes that executives should be proud of their companies. They should want to have CSR practices and offer more sustainable options. More than just the executives, the individual workers of the company should stand up for what they believe in and work for companies that follow their morals.

**Barriers preventing consumers from being sustainable and how to overcome them:**
Dean believes a barrier stopping consumers from practicing sustainability is their own lack of initiative. Consumers are not focused on the bigger picture. They do not see how their fashion choices affect people other than themselves. Dean talk about the concept of a ‘green halo,’ and how when people buy organic food they have a close halo because they feel the positive effects. However, when shopping for clothes, buying sustainably has an extended halo in that the consumer will most likely not see the positive benefits to their purchases. To promote the extended green halo idea, Dean stressed the importance of education. She believes it is a simple solution to recommend, but consumers have to follow through. They need to know about what they are buying and understand the ramifications. She also said that consumers need to be willing to put in the money for sustainability. They cannot preach that they want a better product, but not be willing to pay for it.
9. **Sustainable Apparel Coalition, Anderson Lee (February 2nd, 2017)**

**What the company is doing to make improvements:**

Anderson Lee works with numerous companies to improve upon the many aspects of the fashion industry. As a leader in the Higg Index and the SFBC he has collected knowledge from groups from all over and used that to instill knowledge in companies to help them better themselves. He has worked to create standards that all companies can follow so they can measure their progress and compare with others. He has worked to create modules for facility, brand, retail, and manufacturing; all of which can be used to monitor and improve these areas of the business. Anderson realizes that the fast fashion companies are not the most sustainable, however, they are still a part of the index and have the opportunity to improve. He says that although they are not great, they are better. He knows that fast fashion is around to stay and that it is not about getting rid of it, it is about making it better.

**Barriers preventing companies from being sustainable and how to overcome them:**

Money will always be a top priority of a company, and therefore one of the biggest barriers to become sustainable is the cost. The return on investment when switching to more sustainable practices is not seen quickly, and takes longer than if the company just continues with the practices already in place. Companies have to collaborate. When a company has a good idea or is using good practices they do not always share with everyone, but if they do it could result in improvement, throughout the industry. It is easier to make a change if more companies are in agreement and working together to accomplish something. Companies also need to work on making product in a realistic time line. Companies are producing so many lines of clothing that they do not have time to put into making a better product. It is all about getting the styles out there so they can focus on the next ones. Companies should be creating products with an actual lead time. This will result in a larger focus on quality and could even cause people to buy less. This partially results from designers with a lack of experience due to poor schooling and lack of training on the job. In companies that focus on producing a lot of product, the designers they hire are not always the best trained. This means that they are not thinking about what they are creating. They do not think about the product as a whole and the ways to improve it. Another
step companies can take to become more sustainable is to be more forward and honest with their practices. Companies will “greenwash” to come across as better. It is not enough to say a company is “green” when in reality it is not. They should be honest with the data they show and try to fix the areas that are not good.

**Barriers preventing consumers from being sustainable and how to overcome them:**
Anderson did not have a lot to say about consumers compared to how businesses should appeal to consumers. He believes consumers do not fully understand where their clothes come from and the background of the companies they are buying from. Company websites do not usually put their sustainability information on the front page and therefore consumers need to actively look to find the information. This means that customers have to show initiative to be better, not just accept things for how they are. Customers should also look into buying products of quality, not in large quantities. Timeless items made with good materials are better than items that are in trend, but made with poor quality. The trendy items are not made to last and will be worn only a few times before being discarded. They are not a practical trend and are detrimental to the wellbeing of the fashion industry.
APPENDIX F: HONG KONG POLYTECHNIC UNIVERSITY

SURVEY QUESTIONNAIRE

Demographic Data

1. What is your gender?
   - Male
   - Female

2. Which age group do you belong to?
   - Under 20
   - 21-30
   - 31-40
   - 41-50
   - 51-60
   - 61 or above

3. What is the highest level of education you have completed?
   - Primary school
   - Secondary school
   - Associate degree/ higher diploma
   - Bachelor degree or above
   - Which of the following categories best describes your primary area of employment?
     - Homemaker
     - Retired
     - Student
     - Unemployed
     - Agriculture and Fisheries
     - Insurance
     - Transport
     - Education
     - Legal
Accountancy
Medical
Health services
Engineering
Architectural, Surveying, and Planning
Labour
Social Welfare
Real Estate and Construction
Tourism
Commercial
Industrial
Finance
Financial Services
Sports, Performing Arts, Culture and Publication
Import and Export
Textile and Garment
Wholesale and Retail
Information Technology
Catering
Other

4. Which is the range of your month income?
Under 10,000 HKD
10,001 HKD - 15,000 HKD
15,001 HKD - 20,000 HKD
20,001 HKD - 25,000 HKD
25,000 HKD or above

Short Quiz
1. What do you think is the ranking of the apparel industry on their pollution levels in the world?
(1 represents the largest polluters in the world)
2. One of the brand companies has used child labour in the production of their products in Pakistan.
   - Yes, I know
   - No, I do not know

3. What factors would affect your shopping behavior? (Can choose more than one)
   - Child Labour
   - Pollution
   - Poor Working Environment
   - Low Pay
   - Extinct / Non-sustainable Materials
   - Animal Cruelty
   - Other

4. How do you rate yourself on the knowledge to the environmental impacts of the apparel industry? (1 represents “have not heard this before” while 5 represents “have known this well”)
   - One
   - Two
   - Three
   - Four
   - Five

5. How well do you know about the concept of slow fashion before taking this survey? (1 represents “have not heard this before” while 5 represents “have known this well”)
   - One
   - Two
6. How well do you know where your clothes come from?
   - Yes, I know
   - No, I do not know

7. How well do you know where they go after you dump them? (Can choose one or more)
   - Landfills
   - Transferred to other counties
   - Recycled by environmental NGOs
   - Transferred to people in need
   - Other

8. Do you know how much the clothes makers in Bangladesh are paid each day?
   - Less than $1
   - $1
   - $10
   - $100
   - More than $100
   - I don’t know

9. How often do you purchase your clothing?
   - Once a week
   - 2-3 times a month
   - Once a month
   - Once a season (2-3 months)
   - Once every half year
   - Once a year

10. How much do you monthly spend in buying clothes?
    - Under 500 HKD
    - 501 HKD - 1,000 HKD
11. What is/are the brand company/ies that you always purchase your clothing? (Can choose one or more)
   - H&M
   - Forever 21
   - Zara
   - UNIQLO
   - Timberland
   - A&F
   - Nike
   - Muji
   - Other

12. Please rate the following factors influence your purchasing decisions of clothes 1-8? (8 represents the most influential factor while 1 represents the least influential)
   - Product Price
   - Product Quantity
   - Product Materials
   - Product Brand
   - Product Style Design
   - Product Environmentally Friendly Design/ Materials
   - Social Responsibility of Manufacturers
   - After Sales Services

13. Do you shop second-hand items?
   - Yes, I perceive the selection as exciting
   - Yes, I perceive the items as cheap in terms of price
   - Yes, when I want to buy something uncommon or extraordinary
14. Some clothing stores collect used clothes in their stores in exchange for discount vouchers. How does this affect your perception of the company?
   - Positively affected
   - Negatively affected
   - Not affected

15. How do you find information about how to take care of your garments? For example, laundry. (Can choose more than one)
   - To look at the care label
   - To look for information online
   - To ask the retail associates
   - To ask my friends and relatives
   - Other

16. Do you repair broken clothes?
   - Yes, it is environmentally friendly
   - Yes, I can use the clothes for a longer time
   - No, I do not consider it worthwhile
   - No, I do not know how to do it
   - Other

17. How often do you clean out your closet?
   - Once a month
   - Once a season (2-3 months)
   - Once every half year
   - Once a year

18. If you throw away some clothing from your closet, which could be the reason? (Can choose more than one)
Because of the breakage / stains / transformation / bleach of garment
Because the storage space of closet is already full
Because it is out of fashion
Because the fit / color / quality is different from your imagination
Other

19. How do you usually handle your unwanted clothes? (Can choose one or more)
   - Dump to rubbish bin
   - Dump to recycle bin
   - Give them to friends
   - Resale them
   - Other

20. How well do you know about the concept of slow fashion after taking this survey? (-3 represents “still do not have any concepts” while +3 represents “have much better understanding about this term”)
   - -3
   - -2
   - -1
   - 0
   - +1
   - +2
   - +3

21. Who should be most responsible to promote buy less and slow fashion to reduce impact to our environment?
   - Government
   - Designers
   - Manufacturers
   - Green Organizations
   - Retailers
   - Customers
22. Please rate 1-5 on the below Rs (1 is most important, 5 is least important)

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### APPENDIX G: VIDEO STORYBOARD

**Video Link:** [https://vimeo.com/205744806](https://vimeo.com/205744806)

**Password:** hkfashion

**Focus:** Environmental Sustainability & Consumers

**Length:** 4:18

**Time:** 00:00:00 - 00:00:14

**Goal:** Set a baseline of knowledge for the audience, as well as define sustainability.

**Description:** This section defines the concept of sustainability to the viewer.

**Breakdown:**
- Interesting starting image.
  - Time lapse of the sky.
  - Drama added through color grading.
- Definition of sustainability.
  - Image of nature to show that humans are not the only inhabitants of the Earth

**Time:** 00:00:14 - 00:02:05

**Goal:** Narrow down to sustainability in the fashion industry, and the impacts of fashion in Hong Kong.

**Description:** While the prior portion of the video focused on sustainability as a whole, this portion focuses on fashion sustainability and its impacts on the environment. This explains that the impacts are mostly found in the sourcing of materials (tier 3 processes).

**Breakdown:**
- Edwin Keh
  - Tier 3 processes
- “The fashion industry is the second biggest polluter in the world”
- Samathy Woo
- Hong Kong traditions of over consumption
- Images of Hong Kong

- Royce Ng
  - It takes many more resources to create, rather than washing.

- Environmental facts
  - Images portraying this:
    - Water pollution
    - Air pollution
    - Pesticides

**Time:** 00:02:05 - 00:03:07

**Goal:** Explain the benefits of being sustainable, and why consumers should become sustainable.

**Description:** This portion describes reasons why sustainability is an important concept. The use of industry experts and companies deliver this idea. This section also explains to the viewer what they can do to become sustainable.

**Breakdown:**
- Royce Ng (Cotton Leaf)
  - Reasons their company practices sustainability
  - Reasons consumers will benefit
  - Shots taken around Cotton Leaf store
  - Nature shots to portray nature, when he mentions nature.

- Samathy Woo (JupYeah)
  - Mission of JupYeah
  - Incentives on why people should become sustainable

**Time:** 00:03:07 - 00:03:57

**Goal:** Convey that people should practice sustainability for the future generations, and that consumer’s choices are not only affecting them.
**Description:** This section of the video includes the opinions on industry experts on why consumers should be considering sustainability. The statements from the companies back each other’s beliefs up.

**Breakdown:**

- Samathy Woo (JupYeah)
  - Consumers should think before they buy
  - They already have many of the items, they just need to upcycle.
- Cherry Chan (The Mills)
  - Consumer practices do not only affect them, they affect their sons, daughters and grandchildren.
- Royce Ng (Cotton Leaf)
  - Think about what happens after you buy clothing
- Facts on large companies
  - H&M’s recycling program
- Christina Dean (Redress)
  - Powerful quote from interview
  - Impacts of consumer choices are not limited to the consumer
    - People making the clothes
    - The environment
    - The future
- Shots of:
  - Landfills
  - Earth
  - Rana Plaza
  - Polluted River
- Music for this portion is building

**Time:** 00:03:57 - 00:04:18

**Goal:** Close out the video with a powerful message that may inspire change.
**Description:** This includes a quote that gets the viewer thinking about what they can and should do for sustainability.

**Breakdown:**

- Provide a sunrise in the video symbolizing a time to change.
- Quote from Nigerian Chief
- Pictures showing a recycling event
- Finish the video with a recycling bin
  - “What will you do?”