

## SUSTAINABLE FASHION FABRICS

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### **ABSTRACT**

Textile fabrics can be produced directly from webs of fibres by bonding, fusing or interlocking to make non-woven fabrics and felts, but their physical properties tend to restrict their potential end-usage. The mechanical manipulation of yarn into fabric is the most versatile method of manufacturing textile fabrics for a wide range of end-uses. There are three principal methods of mechanically manipulating yarn into textile fabrics: interweaving, intertwining, and interloping. All three methods have evolved from hand-manipulated techniques through their application on primitive frames into sophisticated manufacturing operations on automated machinery. A wide variety of woven fabrics are available in today's market. An average consumer is unaware of many fabrics and their suitability for a specific end use. Clothing refers to the various articles used to cover the body. Apparel may be divided into two classes- first one, the desire for warmth and for protection against elements, and secondly, the desire for the satisfaction we receive from wearing clothing that makes us appear more esthetical. Sustainable fashion is clothing that does not harm our environment and is made out of organic materials. More conclusive research is required in order to develop resilient fabrics that are organic and can biodegrade without causing any harm. Through the utilization of recycled material for the manufacturing of clothing

(clothing and textiles can be collected, baled and recycled back into raw materials to be made into new apparel or non-apparel products), we make sure it provides an additional realm of economic world profit. Sustainable Clothing will also provide a new market for additional job opportunities.

**Keywords:** Textile, Clothing, Sustainable, Recycled, Environment

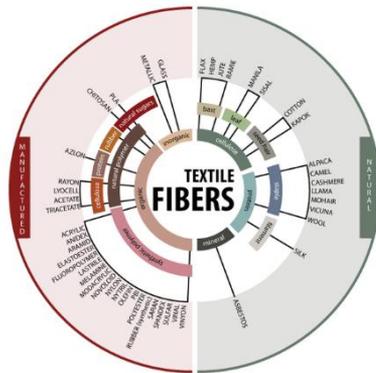
### **INTRODUCTION**

Cheap, Fast Fashion means spending less and buying more, but where does it end up, and what can we do to get rid of our textile waste responsibly? The fashion industry is in the top three industries contributing to global warming. Clothing not only responds to practical needs; fashion has become a form of self-expression with the result that the sheer volume and variety of textile products available in the market have reached unprecedented levels. Textiles are not used just for clothes; they are also in our homes, hotels, hospitals, workplaces, vehicles and leisure equipment. The term 'textiles' encompasses a plethora of items from apparel to linens and upholstery, from geo-textiles to building materials.

**Sustainability** is the process of maintaining change in a balanced fashion, in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future

potential to meet human needs and aspirations.

Figure 1: Generic classification based



\*Generic classification based on chemical composition as defined by the Textile Fiber Products Identification Act. (Manufactured Category)

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**Sustainable clothing** refers to fabrics derived from eco-friendly resources, such as sustainably grown fiber crops or recycled materials. It also refers to how these fabrics are made. The season sees a host of opportunities in delivering new developments through to new target markets for all sectors of the active wear industry. Here I would like to say, the mood is changing as we all start to share and embrace new ideas and ideologies. Technology transforms the sector, allowing a forward thinking to basic bestsellers alongside delivering newness. What can we do to take a step forward and revive traditional products and produce enticing (to attract) products that will appeal to the consumer?

With this in mind, we need to look at what we have and readdress the appeal of a product, enhancing the final look through content, finish and touch through to final application. We need to take the familiar and create the unfamiliar, without neglecting traditional aspects but also not avoiding the new generation developments coming through. It is time

to play around, mix and match and create topnotch unique aspects that will drive sales.

**Sustainable development** is the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. Sustainable development can be classified as development that meets the needs of the present without compromising the ability of future generations.

**Sustainable fashion**, also called **eco fashion**, is a part of the growing design philosophy and trend of sustainability, the goal of which is to create a system which can be supported indefinitely in terms of human impact on the environment and social responsibility. It can be seen as an alternative trend against fast fashion.

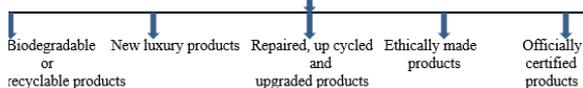
The main objective of this research is to develop resilient fabrics that are organic and can biodegrade without causing any harm. Through the utilization of recycled material for the manufacturing of clothing (clothing and textiles can be collected, baled and recycled back into raw materials to be made into new apparel or non-apparel products), we make sure it provides an additional realm of economic world profit. By using some step we can produce six form of sustainable fashion. Sustainable Fashion Fabrics and Clothing will also provide a new market for additional job opportunities. This paper will explore the how to six form effectively involve for sustainable fashion.

## LITERATURE REVIEW

Manufactured in Brazil, the CO2 Control family of fabrics offers production traceability from start to finish. To begin with, raw materials are fair trade, locally produced and sourced.

Amni Soul Eco is produced in a closed cycle manufacturing system, a production process which collects and recycles scrap, wastewater, raw materials found in the water, and heat that is generated in some of the production phases. This maintains environmental standards throughout the industrial cycle so to limit the consumption of natural raw materials and reduce environmental impact. In addition, the factory adheres to the four pillars of decent work, which is work that "respects the fundamental rights of the human person as well as the rights of workers in terms of conditions of work safety and remuneration. ... respect for the physical and mental integrity of the worker in the exercise of his/her employment." Aqua Vida is proud to join the ever-growing number of organizations working together to mobilize our resources to create opportunities and to help reduce and eradicate poverty. This is just the beginning of our commitment to contribute to a future that is bright, safe, and clean for you and Mother Earth. We acknowledge that sustainable fashion journey has only begun, and many paths of the sustainable improvement are created along the way. To contribute to those efforts, we provide a framework that might direct the sustainable fashion classification. We propose six forms of sustainable fashion:

Table 1: Classification of six form of Fashion-



Biodegradable    New luxury products  
 Repaired, up cycled    Ethically made  
 Officially  
 or  
 and                      products                      certified

recyclable products  
 upgraded products  
 products

**a- Biodegradable or recyclable products** that can be naturally decomposed or technologically recycled.

**b. New luxury products that are durable** and repairable. Sustainable luxury brands that can be both locally (artisan work) and globally relevant (traditional luxury).

**c. Second-hand and vintage products** that are donated, redistributed, and resold for reuse purposes.

**d. Repaired, up cycled and upgraded products** that were previously discarded, but repurposed to gain new life (e.g. patchwork denim collections).

**e. Ethically made products** taking into consideration the workers' rights in the entire supply chain - from raw material to the final stage of product suppliers.

**f. Officially certified products** labeled with approved trademark that guarantees product safety, quality, and production ethics (e.g. Fair Trade).

Table 2: Six forms of sustainable fashion

Sustainable fashion form	Qualities
1. Biodegradable or Recyclable	<b>Biodegradable</b> <ul style="list-style-type: none"> <li>Of natural origin</li> <li>Biologically decomposable</li> <li>Environmentally friendly</li> <li>Skin friendly</li> </ul> <b>Recyclable</b> <ul style="list-style-type: none"> <li>Chemically or mechanically decomposable</li> <li>Prevents waste accumulation</li> <li>Reduces need for new materials use</li> </ul>
2. New luxury	<ul style="list-style-type: none"> <li>Produced in small scales</li> <li>Based on unique (designer/ artisan) expertise</li> <li>Custom made and/or well fitted</li> <li>Durable</li> <li>High quality</li> <li>Repairable</li> </ul>
3. Second-hand and vintage	<ul style="list-style-type: none"> <li>Pre-loved</li> <li>Compassionately shared</li> <li>Affordable</li> <li>Unique finds</li> </ul>
4. Repaired, upcycled, and upgraded	<ul style="list-style-type: none"> <li>Upgrades the quality</li> <li>Gives new purpose</li> <li>Entrance to the new lifecycle</li> </ul>
5. Ethically made	<ul style="list-style-type: none"> <li>Free from human exploitation</li> <li>Protecting human rights</li> <li>Ethically sourced and produced</li> </ul>
6. Officially certified	<ul style="list-style-type: none"> <li>Guarantee of production/ consumption safety</li> <li>Cruelty free</li> <li>Zero hazardous</li> <li>Approved/pretested quality</li> </ul>

**What are Biodegradable Fabrics?**

'Biodegradable' is a term that is often used when talking about the textile

industry from an environmentally conscious angle. If you want to make environmentally conscious fabric and fashion choices, it's worth knowing a little more about biodegradable fabrics, the impact they have and why they're a greener choice. The term 'biodegradable' refers to the ability of a substance to decompose naturally via living organisms. Not all fabrics are safely biodegradable as they are made with artificial and chemical components that do not get broken down by microorganisms easily. Do not confuse biodegradable with the term "bio-based". Bio-based fabrics may have been produced from naturally grown fibers, **such as cotton**, but are not always easily biodegradable after being manufactured into fabric and can also include synthetic fibers blended in. So while synthetic fabrics are technically able to biodegrade, they take too long to do so and are imbued with many chemicals, causing them to emit greenhouse gases such as methane into the environment. This creates damage to our environment and is not therefore sustainable. Some fabrics, even though not made from synthetic fibers such as non-organic cotton, cannot simply biodegrade due to the large number of dyes or finishing chemicals applied.

### Naturally Biodegradable Fabric

The majority of fabrics and fibers will biodegrade, whether synthetic or not. However the time it takes along with the amount of damage dealt to our environment will vary, depending largely on what fibers a fabric is made from. The below list details a few 100% environmentally friendly fabrics which will biodegrade seamlessly back into nature's cycle.

### Organic Cotton

Organic cotton is cotton that is produced without the use of chemicals, pesticides or synthetic substances inside. It is a thirsty crop requiring more

than 20,000 litres of water to produce 1kg of cotton (source). Recently, however, it has also been suggested that organic cotton farming uses less water after two to three years or via crop rotation. This is because the soil, once rich in nutrients, is better able to hold water. It is-

Safer conditions for organic cotton pickers in a **chemical free** environment

Concerns about **child and slave labour** during harvest

Biodegradable  
Easily recycled



Figure 2: Cotton ripe for picking



Figure 3: Final products made from cotton

### Linen

Flax is a plant that grows worldwide and the production process is

quite simple and sustainable, which is one reason why linen has been used for so long. The fibres first have to be naturally degraded from the plant. This is achieved through “retting“. Retting is the process of bacteria to decomposing the pectin that binds the fibres together. Natural retting usually takes place in tanks and pools, or directly in the fields. There are also chemical retting methods; these are faster, but are typically more harmful to the environment and to the fibres themselves.

Flax can be **grown on marginal lands**

Very **breathable fabric** that is good for the skin

It creases easily and wearing linen clothing requires ironing thereby **requiring more energy**

Since linen is created from a totally **natural material**, it is completely **biodegradable**



*Figure 4: Linen fiber*



*Figure 5: Linen fabric*

## Hemp

An incredibly versatile plant in terms of fibers, hemp is used in the production of garments, paper, biodegradable plastics, paint, insulation, biofuel, fabric and even a food source for essential omega oils. Mostly still produced using natural methods, hemp is cut and stripped manually of fibers that are spun into threads.

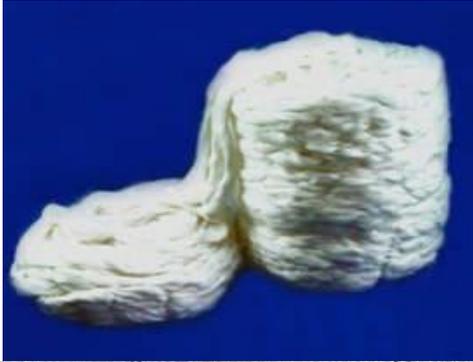


*Figure 6: Hemp fabric*

There is little information on how long it takes hemp fibers to biodegrade; however the old saying. The reason hemp is so tough as an all-natural fiber is the fact that the fiber is made up of a large portion of silica (sand), withstanding the test of time and ultimately able to biodegrade back into sand.

## Ramie

Ramie fabric is produced from the Bohemia Nivea plant, aka Chinese nettle or Rhea, a Malaysian equivalent plant. This fabric has been produced from these plants since ancient times as well, known by the ancient Egyptians and Asian cultures for centuries.



*Figure 7: (Left) Ramie fiber; (Right) Ramie fabric*

Ramie is shown to degrade slower than cotton inside the lab, indicating it takes slightly longer for it to naturally degrade into the soil.

### **Jute**

This is the plant or plant fiber that is used to make burlap, hessian or gunny cloth and rope. These fibers are naturally stripped from the white jute plant in a process called retting. Jute is used mostly in making sacks for its durable anti-rot properties. One hectare of jute plants can consume up to 15 tons of CO<sub>2</sub>!



*Figure 8: (Left) Jute fiber; (Right) Jute fabric*

Due to very little processing, jute is biodegradable, despite its anti-rot properties. It can be used under a thin layer of soil to prevent weed growth in agriculture, taking 2-3 years to biodegrade.

### **Organic Bamboo**

This prolific plant is actually one of the tallest species of grass known to man. Instead of being completely harvested, bamboo is cut like grass, which is far more sustainable for soil health. Bamboo is also grown without use of pesticides or fertilizers.



Figure 9: (Left) Bamboo tree; (Right) organic bamboo fabric

However, non-organic bamboo is usually soaked in hydrogen peroxide to break it down into its fibers before being spun into Rayon, so you will want to look for clothing made from organic bamboo fiber.

Organic bamboo is broken down quickly with natural enzymes to produce a fabric and is often a more expensive process. Manufacturers of pure bamboo fabrics and fibres say it takes 4-6 months to biodegrade naturally.

### Abaca

Abaca, also known as 'Manila hemp' is a leaf fibre made from the leaves of the Abaca plant. The leaf stalks are usually manually handled, stripped and pulped, before being simply washed and dried to make the fibres. Abaca has been used for centuries as a natural fibre in rope, twine and nets for its high lignin content,

making it exceptionally strong. It also used to be used for ships rigging.



Figure 10: Abaca fabric

Despite being so highly durable, Abaca was shown to start disintegrating after 2 months in a degradation experiment done. The sample of abaca fabric had water poured on it each day in the same spot, proving that Abaca is biodegradable.

### Silk

Silk is produced completely naturally from the fibers used by silk worms when they spin themselves cocoons to become moths. Silk, even pure silk, has always been one of the most resilient natural fibers, getting tougher as time wears on. It starts to show signs of biodegradation after about 4 years. Science has proven that the use of acidic enzymes speeds up the biodegradation of silk, which makes sense when one considers that the original purpose of silk was to be eaten by the moth hatching from the cocoon.



Figure 11: (Left) cocoon; (Right) Silk fabric

### **Wool**

Wool is produced under natural conditions without the addition of chemicals (it's harvested from livestock) and has been adopted as a leading textile for many thousands of years in clothing, upholstery and blankets.



Figure 12: Wool fabric

When untreated with chemicals, wool is 100% biodegradable in a span of 1-5 years based on the techniques adopted to convert it into fiber.

### **Why More Fabrics are not Biodegradable?**

Very few fabrics are organically biodegradable owing to the fact that they contain some amount of chemicals to increase their lifespan and resilience.

Biodegradability of fabrics is largely determined by the amount of chemicals used in the textile-life-cycle. Typically, the more the chemicals used, the longer it takes to biodegrade. And the more damage to the environment and people it causes.

More conclusive research is required in order to develop resilient fabrics that are organic and can biodegrade without causing any harm.

### **Methodology**

#### **How to compost textiles**

**Shredded:** Start off by getting the size down, we can cut things into little squares or just rip them into strands. They'll break down quicker, and it can scatter the pieces evenly.

**Remove anything that won't biodegrade:** This includes any plastics

(look for tags!) metals such as buttons and zippers, and keep them for repairs.

**Use a hot compost for faster results:** Ok, hot compost involves a little more love and attention. Consider hot composting the 'leveling up', but if it keeps on textile composting it is worth it. Hot composting can break down matter within 18 days.

### **Recyclable is Sustainable Fashion or Eco Fashion?**

Sustainable fashion is clothing that does not harm our environment and is made out of green materials. Many people do not realize the negative impact that fabric and excessive clothing purchases make to the environment.

### **How you can Practice Sustainable Fashion Habits:**

Only buy a new item if you think you will wear it at least 30 times.

Buy clothing second-hand or at thrift stores.

Encourage hand-me-down clothing.

Repair, mend, or tailor clothing instead of throwing it away.

Donate clothes you no longer need to a friend or thrift store.

Up-Cycle clothing or textiles into something new.

Instead of buying one-time use clothes for a special occasion, borrow them from a friend.

Support clothing manufacturers who have sustainable practices and materials.

Look for sustainable textiles derived from eco-friendly resources.

Purchase pieces that are versatile and classic that you can wear many different ways.

### **How Clothing and Textiles are Recycled**

If clothing has hit the end of its life cycle, there are ways to recycle it:

Clothing can be donated or sold to another person at a discount price (i.e. garage sale, eBay, thrift, Goodwill Stores, etc.)

Clothing and textiles can be collected, baled, and exported in bulk to developing countries.

Clothing and textiles can be collected, baled and recycled back into raw materials to be made into new apparel or non-apparel products.

Clothing recycling is part of Textile Recycling. It involves recovering old clothing for sorting and processing. End products include clothing suitable for reuse, cloth scraps or rags as well as fibrous material. Interest in garment recycling is rapidly on the rise due to environmental awareness and landfill pressure. For entrepreneurs, it provides a business opportunity. In addition, various charities also generate revenue through their collection programs for old clothing.



*Figure 13:*

Garment recycling involves a series of sequential activities as outlined below:

## **Creating awareness of clothing recycling**

Website information- A basic step for garment recyclers is to raise public awareness with information about the importance and benefits of donating used items like clothing and shoes. As such, recycling companies often provide educational materials at their websites regarding garment recycling and its importance. They may also explain what items they accept for recycling.

Informative bins and truck signage- Other approaches to raising awareness truck and bin markings. Colorful bins help describe what articles of clothing are accepted and what charity benefits from the contribution. Truck signage can be useful in raising awareness, for example, of home pickup programs for old clothing.

Process involve in of garment recycle-

Collection

Sorting

Processing

**Collection**

Clothing recyclers use a variety of strategies for picking up clothing. Post-consumer clothing is picked up generally from bins placed in public places, as well as from clothing drives and door-to-door collection. Bins are typically placed strategically in public places like parking lots in business centers and shopping malls. Colorful bins are positioned in high traffic, high visibility locations to help maximize donations.

One recent development has been the partnering of leading retailers with garment recycling companies such as I:Co. In collaboration with its partners, I:CO collected around 17,000 tons of clothing and shoes in 2015 (or 37 million

pounds) while recycling 40 percent of the clothing or almost 15 million pounds.

## **Clothing sorting**

Once collected, clothing is classified into three groups: reuse, rags, and fiber. Typically this is a manual sorting process that requires expertise in identifying various types of material. The process can be aided by such mechanical systems as conveyor belts and bins to segregate various grades of material. There is, however, at least one initiative to automate the sorting process, known as Textiles4Textiles.

Recyclers report that about one-half of donated garments can be reused. Some recyclers bale this clothing for export to developing countries, while some garments are used domestically for sale in thrift shops. Industrial cloth rags and wipes are another important residual of the recycling process. Additionally, clothing may be reduced to fibrous material.

## **Processing**

Textile fabric and clothing commonly consist of composites of synthetic plastics and cotton (biodegradable material). The composition will influence its method of recycling and durability.

Collected clothing is sorted and graded by highly experienced and skilled workers. These sorted items are sent to different destinations as outlined.

For natural textiles, incoming items are sorted in terms of color and material. By segregating colors, the need for re-dyeing can be eliminated, reducing the need for pollutants and energy. Then the clothing is torn into sloppy fibers and combined with other chosen fibers, conditional on the planned end use of the recycled fiber. Once cleaned and spun, fibers can be

compressed for use in mattress production. Textiles which are sent to the flocking industry are used to produce filling material for furniture padding, panel linings, loudspeaker cones, and car insulation.

maximize the value of recovered material.

## 2- New Luxury Fabric

The luxury industry has come a long way in enforcing sustainable business

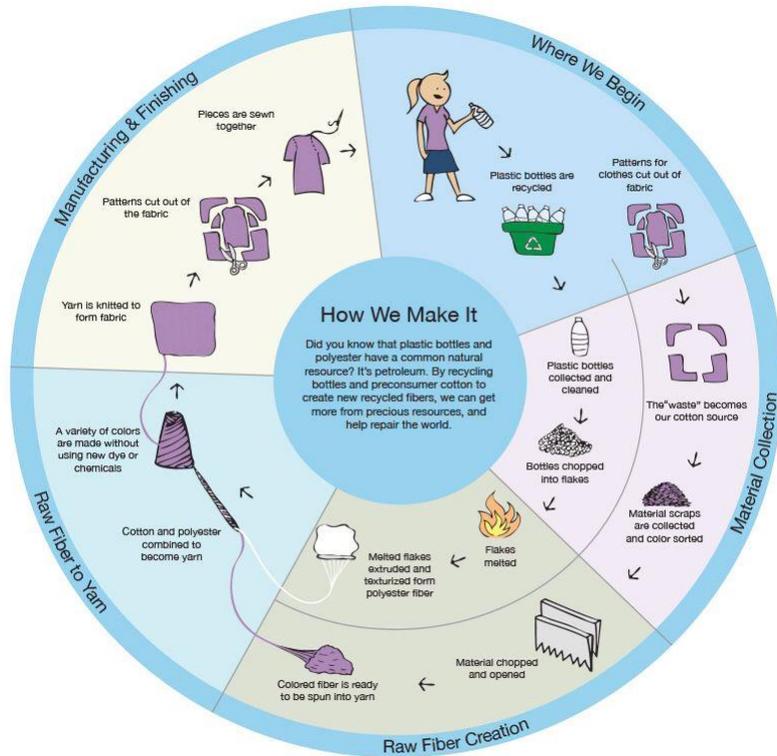


Figure 14: Recycle process

The recycling process works somewhat differently for polyester-based materials. In this case, the first thing is to remove zippers and buttons and then to cut the clothing into smaller pieces. Those shredded small fabrics are then granulated and shaped into pellets.

As the textile industry continues to grow, it will be challenged to devise ways to boost recycling rates as well as to develop technologies that will help

practices, but some brands are taking further action through creative projects in a bid to connect with ethically-minded consumers.

Luxury brands are increasingly becoming environmentally conscious and many are adopting more sustainable business strategies in a bid to appease ethically minded – specifically millennial – consumers. On the websites of most high-end brands, there are usually sections dedicated to illustrating their eco-friendly stances. But for today's young luxury consumer, actions speak louder than words.

In order for luxury brands to be taken more seriously on these issues, they need to show consumers that they are indeed making the effort to be more sustainable. Their items need to be noticeably eco-friendly while still appealing to affluent millennials with modern and highly creative designs. Here are a few environmentally conscious collaborations that aim to do just that.

Luxury is a quality that is difficult to define as the historical concept of luxury appears to be both dynamic and culturally specific. The everyday definition explains a 'luxury' in relation to a necessity: a luxury (product or service) is defined as something that consumers want rather than need. However, the growth of global markets has seen a boom in what are now referred to as 'luxury brands'. This branding of products as luxury has resulted in a change in the way consumers understand luxury goods and services. For the purposes of discussing fashion design however, quality and craftsmanship are inseparable while creativity and innovation exist under different conditions. The terms 'creative' and 'innovative' are often used interchangeably and are connected with most descriptions of the design process, defining 'design' and 'fashion' in many cases.



Figure 15:

Luxury fabrics are top quality fabrics produced on a complex loom under careful supervision, often with a lot of handwork. Once any fabric made of rare fibers, such as silk, cashmere, or Egyptian cotton, was considered 'luxury'. Today, it's more about the subtleties of design than actual composition. Embroidered lace, sequined tulle, fringed chiffon, appliqued wool, laser-cut silk or cotton – these are just some fabrics that belong to the luxury segment

#### **Luxury Fabric vs Designer Fabric**

While some luxury fabrics are classified as designer, and some designer fabrics are considered luxury, they are not the same. What is the difference?

**Luxury fabric is an expensive cloth either**

woven of exclusive fibers,  
 with one-of-a-kind design, or

made using high-tech machinery or handwork.

**Designer fabrics** are those created by specific designers. In other words, there is an author behind every novelty print or pattern. They are usually of impeccable quality and can be found both in haute couture and pret-a-porter clothes collections.

### Designing Sustainable Textiles

One group of people who work with textiles are textile designers. A **textile designer** is a person who creates the look and feel of textiles. Their tasks might include deciding what processes to use to create a desired texture, and/or what types of designs or patterns adorn textile surfaces. So **sustainable textile designers** create textiles that take environmental issues into account. They might work with organic cottons, grown without fertilizers and pesticides. Or they might create woven fabrics with synthetic fibers made from non-petroleum based substances. They might also prefer to use recycled or cast-off materials, which prevents those materials from ending up in a landfill.



Figure 16: Fabric printing

Most designers buy their fabrics from manufacturers. Since fabric producers work one season ahead of fashion

companies, every designer can choose what he or she likes from the collections they offer. Some fashion houses create their own fabrics or might request special prints, colors and designs, but this is rather the exception than the rule.

*Table 3: Here's what we need to know about types of exclusive fabrics:*

Type	Characteristics	Best For
Brocade	A jacquard fabric with a raised texture, woven with silver or golden threads	Elegant dresses, jackets, skirts, coats, vests
Lamé	Lightweight fabrics made with metallic yarn, usually golden or silver in color	Fancy dresses, jackets, skirts, tops, trims
Laser cut fabrics	Laser treated cloths with sealed edges and clean cuts, highly detailed designs	Tops, dresses, skirts, shirts, overlays
Appliqued fabrics	Adorned with appliques of all sorts for 3D effect	Gowns, skirts, bridal dresses, overlays
Embroidery	Resembles delicate guipure lace, often woven with multiple colors	Gowns, skirts, bridal dresses, overlays
Embroidered lace	Chantilly, guipure, or corded lace decorated with sequins, glass beads, pearls, Swarovski crystals, feathers, satin stitch embroidery	Gowns, skirts, bridal dresses, overlays

Amongst other factors, the current economic climate appears to have contributed to the trend of acquiring and reusing vintage clothing, accessories, and home ware products, particularly with young consumers. The popularity of vintage has also been linked to a change in consumer attitudes towards wearing and utilizing secondhand goods. In addition to a change in attitudes, other factors that contribute to the growth of the vintage trend include a change in values, the inclusion of vintage inspirations used in current designs by fashion designers, and in the trends marketed by the forecasting sector, eco-sustainability, the media, and technology. Also vintage consumers and vintage retailers appear to share the viewpoint of the movement towards vintage fashion that has been assisted by a reaction against mass-produced fast fashion, as consumers strive for more individuality in their styling and garments. Eco-fashion and sustainable fashion ideals have emerged as solutions to the environmental issues that are currently inherent in the industry's manufacturing processes, which have government and pressure group support. This ideal and

practice complements the vintage trend phenomenon. This article explores the principal factors and the demographics of vintage consumers in the UK and their consumption habits to better understand the appeal and scope of this growing trend.

There are some ways to re-purpose vintage fabric

### Curtain

## 2.Fabric Headboard



Figure 17: (Left)Curtain; (Right) fabric headboard

## 3.Wall arts

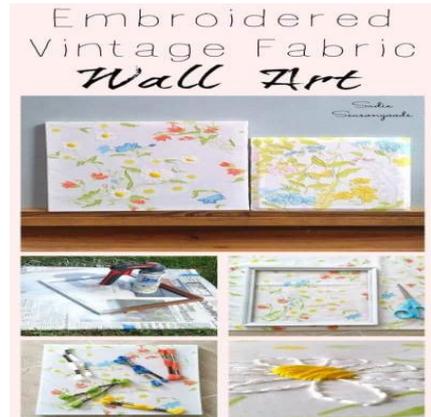


Figure 18: Wall Art  
 Decorative Pillow Cover



Figure 19: Pillow cover

## 4-Repaired, Upcycled and upgraded Product-

Upcycling is a process in which used materials are converted into something of higher value and/or quality in their second life. It has been increasingly recognized as one promising means to reduce material and energy use, and to engender sustainable production and consumption. For this reason and other foreseeable benefits, the concept of upcycling has received more attention from numerous researchers and business practitioners in recent years.

### A Circular System

Textiles made from **Recover Yarns** can flow through the **Upcycled Textile System** for many life-cycles. Recover creates **long-lasting, high-value products** in each successive generation.



Figure 20:

Used clothes and garment production waste is submitted.



Figure 21:

Old garments and textile waste are deposited at collection bins for re-wear or recycling. We recover used clothing and textile waste.

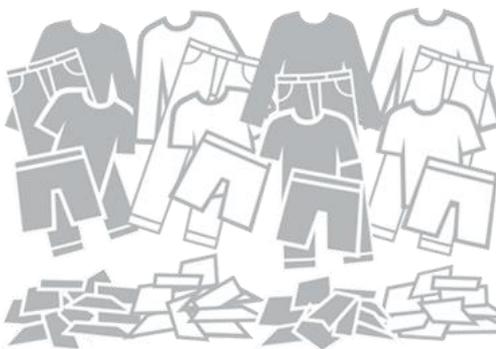


Figure 22: (Above)Shredded fabric ; (Below)process of yarn making

**Ferre upcycles textile waste into new Recover fiber.**

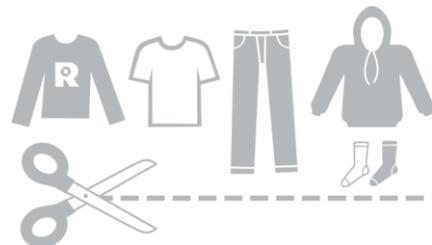
Cutting/Shredding and Spinning what was once considered “waste” into valuable new recover yarns.

Recover yarns are made into new fabrics.

Recover yarns are knit or woven into new textiles for virtually every product application imaginable.



Figure 23: Fabric printing



New products are made from recover fabrics. Apparel, accessories, home, and industrial products are cut and sewn from textiles made with Recover yarns. Products made with Recover are purchased.

Fashion, accessory, and home goods are bought, used, and eventually worn-out, at which point they are returned to the Recover Upcycled Textile System.



Figure 24: new product

Closing the Loop on Fashion

### 5- Ethically Made product-

The aim is to contribute to a better understanding of ethical fashion consumption. Even though consumers demand more ethical responsibility from companies, it is debatable if consumers would sacrifice their own personal needs to support ethically produced clothing.

Although consumers report positive attitudes toward ethical goods, their intentions and behaviors often do not follow suit. Just-world theory highlights the conditions under which consumers are most likely to prefer fair-trade products. This theory proposes that people are motivated to construe the world as a just place where people get what they deserve. In the current research, when people are confronted with high levels of injustice (communicated need is high) and avenues for justice restoration seem uncertain or unavailable, assisting others by supporting fair trade *decreases*.

### 6-Officially Certified Product-

The market for green products is expanding worldwide in a variety of

industries, such as food, fashion and cosmetics. However, there is little research about consumer behaviour regarding green fashion and beauty, or consumers' knowledge of green labels and certifications. consumers do not understand the meaning of all terms and labels used to describe and guarantee green products, such as, for example, eco-labels on organic cosmetics. Regarding the motivation of consumers for consuming eco-fashion and green beauty products, protection of the environment is not a priority. Respondents' motives for purchasing these products appear to be egocentric and related to health. Also, such purchases constitute a 'license to sin': they relieve the guilt of non-environmentally-friendly behaviors. Lastly, motivation for consuming eco-fashion is based on self-expression

## DISCUSSION

The discussion is focused on recycling of textile material to manufacture fabric/clothing by collecting reusable textile material, sorting and processing it to make new product. The methodology focuses on creating a convenient cycle that can be industrialized to create sustainable, reusable fabric.

Here, the point to be noted is that due to fast fashion trend, most of the used textile and apparel are being wasted. This is an adverse consequence and side effect of consumerism. Disposal of such unused or rejected material is a major environmental problem.

As we try to reduce our carbon footprints in an effort to reverse the ill effects of this materialistic approach on the environment, the need of the hour is to install mechanisms and industries in place that use sustainable approach and yield greener results.

The data on textile industry as a major contributor to global warming calls for

reparative measures on the part of all stakeholders concerned in order to reduce this contribution. I hereby suggest a methodology to produce sustainable fashion, not merely in terms of clothing but other textile components as well. This is to be done in three steps-

**collecting** reusable discarded and waste material from different sources,

**sorting them** according to their quality, grade, type and color , and

**processing** this raw material to manufacture new sustainable fashion fabric/ textile product.

Such reusable textile will not be of an inferior quality, contrary to popular thinking. It would be reinforced and just as good as a little used and discarded old fashioned product. Most importantly, it would be a reprieve for the environment from piles of discarded material that are not appropriately managed and end up burnt or dumped, causing irreparable damage in their wake. Sustainable clothing will also provide a new market for recyclable textile as well as skill development, alongside additional job opportunities.

### **CONCLUSION**

In this paper, I have based my work on the fact that all collected textile material is not biodegradable; this can be processed as manmade fiber. Raw material of manmade fiber is obtained from natural resources which have been processed to make textile fiber. Accordingly, collected material can be converted into collied solution by appropriate process to make new sustainable fashion fabric, according to the intended end use. It also ensures an additional realm of economic world profit.

### **ACKNOWLEDGEMENTS**

I would like to thank my husband Mr. Jagmohan Saxena for his co-operation and valuable suggestions while writing this research paper. I am buoyed by the continuous love, affection and motivation given to me by my daughter Kritee and son Akaash. This paper is dedicated to my parents and mother-in law for their tremendous support throughout.

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GARI Publisher | Sustainable Fashion | Volume: 04 | Issue: 04

Article ID: IN/GARI/ICATFD/2018/133 | Pages: 66-84 (18)

ISSN 2424-6492 | ISBN 978-955-7153-00-1

Edit: GARI Editorial Team | Received: 28.09.2018 | Publish: 05.11.2018

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