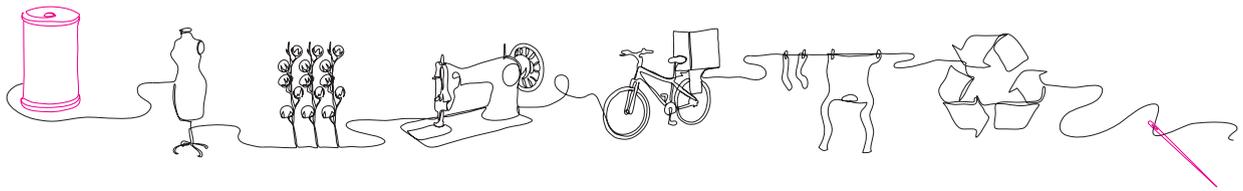


The Sustainable Thread of a Product Lifecycle



Sustainable fashion encompasses many areas. Considering the impact the fashion industry has on humans and the environment, it has become increasingly important to consider the ways in which the various stages of a product's lifecycle can affect our surroundings. This document raises issues at each stage and aims to provoke inspiration to look at the product lifecycle in a holistic way.

- *What impact does the fashion industry have on our environment? What changes are needed in order to continue?*
- *What does it mean to be sustainable, eco-aware, eco-friendly, ethical or environmentally conscious in the fashion industry?*
- *What is your story and why do you care? How do you reflect these worries or issues in your collections from design through to end of life of a product?*



DESIGN

“Design has [the] potential to influence both groups [industry and consumer] and affect change in all of these areas, working both to shape products and to facilitate new types of behaviours” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p164)

The initial design stage is important to consider when planning your sustainability strategy. Decisions made at inception can determine the social and ecological footprint your design will have through the product's lifecycle.

Intelligent Design

Intelligent design, also known as **Eco Design**, is “a way of thinking about design which takes into account the environmental impact of a product or packaging across its entire existence” (WRAP (2009) Topics and Issues). Innovation, aesthetic and clever solutions can reduce negative impacts on surrounding environments during each stage of the lifecycle.

- *When designing, do you consider using **GOTS-approved** fabrics and production processes to minimise environmental and social impacts in the product's lifecycle?*
- *Could you focus on simpler designs to allow for spending on sustainable options of fabrics or printing?*
- *Can you produce the product using fewer steps? Is it possible to use **standard modular components** to create a complete product range and make production more efficient?*
- *Can you use one material in your product, making recycling easier and potentially reducing waste at the production stage?*
- *Have you thought about a **zero waste** strategy? Have you considered using end of line fabrics for trimmings and finishes to ensure all material is recycled or reused?*

Zero Waste

Zero waste is a philosophy that encourages the reuse of all products through redesigning the lifecycles of resources, maximising their potential to be repaired, reused or recycled. All product components are reused to create a closed-loop system.

- *Could natural impurities in your fabric be part of the design to avoid the need for **wet processes** that harm the environment? (see Raw Material section for further details)*
- *Can you reduce the weight of the product by using fewer or lighter materials?*

Light Designs

“Designing light is a powerful way to reduce resource use without compromising function” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p151). Create light designs using lightweight material, better garment construction and efficiency of product use.

- *How efficient is your sampling process? Could you improve initial designs creating less waste and reducing transport?*
- *Can you work with suppliers to make designs more **efficient**? Could you simplify the pattern cutting process?*
- *Do you plan your collections around simple shapes for **maximum wearability**? Does your collection focus on timeless pieces or seasonal and often disposable designs?*
- *Are your garments adjustable allowing for versatility? Have you considered offering unisex or unisex?*
- *Do you consider the quality of materials, function, fit and design in order to create a longer-lasting and better-functioning product reducing the impact of producing replacements?*

Longer-Lasting Product

Creating a longer-lasting product requires **durability**, which is directly dependent on the quality of the material and the garment being robust.. Offering a **repair service** or **warranty** for high value products can lengthen the life of a product. The product must also be **appropriate** in terms of time and place in order for it to be indispensable. If a durable product does not get used because it is inappropriate to the culture and time this is a misuse of resource. “Making a product last is very different to making a long-lasting product” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p166)

- *Could you do more with less? Have you considered combining functions of different products into one which increases wearability and function?*
- *Can modular components be detached from the main garment body in order to wash them separately?*
- *When designing, do you consider the end of life impacts of components?*

For further reading, see the following websites:

Eco Index Design Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/Design-Guidelines.pdf>

O2 UMV - <http://www.o2umw.org/5Rs-GreatDesign.html>

The Centre for Sustainable Design - <http://www.cfsd.org.uk/>

NICE Production - <http://www.nicefashion.org/en/professional-guide/production/scouring.html>

Zero Waste Alliance - <http://www.zerowaste.org/about.htm>

WRAP (2009) Topics and Issues - <http://envirowise.wrap.org.uk/uk/Topics-and-issues.html>



RAW MATERIALS

Raw Materials are “natural, unprocessed materials used in a manufacturing process” (NICE, Dictionary) to create fabrics and materials used in the fashion industry. There are many issues to consider when selecting your raw materials. Farming raw materials as well as turning them into fabric can have detrimental effects both environmentally and socially.

- *Where do your raw materials come from?*
- *What are the water pollution impacts of your fabric selection? How much water waste occurs in farming the fibre?*

Water Use

Water is rapidly becoming a scarce resource hence contamination and waste is a growing concern. Natural fibres in general require more water during farming and refinement processes, also creating wastewater (Breds D., Hjort T., Kruger, H. (2002) Guidelines: A handbook on the environment for the textile and fashion industry).

Water quality management during **material processing** is important, especially where pesticides have been used so as to minimize contamination to local water supply. Ensuring that **dye houses** have waste water treatments, good chemical management and water saving measures, such as **purification systems** or **steam redistribution practices**, are further measures that can be taken. Encouraging your supplier to employ the ‘**right-first-time**’ approach in their dyeing is another method to reduce environmental damage. More accurate dyeing can also be achieved through the use of **digital printing** (which is a non-contact method where controlled ink jet nozzles are used and thereby produce more accurate printing). Using **water-based printing systems** over petrol-based systems is also an option.

- *Do you consider the land use and biodiversity effects of farming fibres for your collection?*

Land Use

Efficiency in land use is a growing concern considering the rapidly increasing global population. Using crops for textiles with the **highest possible yield** is therefore becoming important. As a designer be aware which crops use land more efficiently than others.

Soil nutrition also falls under this topic as certain crops drain soil of nutrients more than others, making seasonal re-use of land difficult, forcing land to ‘rest’ for a year or two in order to replenish nutrients. Hemp for instance improves soil structure, requires little fertiliser or chemical input and rapidly takes up CO₂, helping to mitigate green house gases (Hemp global solutions 2009)

- *Are pesticides needed in farming? What effect might this have on the community's health as well as other social consequences such as debt issues?*

Cotton Issues

Conventional cotton is known to be sprayed with large amounts of **pesticides** due to it being a very fragile plant (NICE (2010) Raw Materials: Cotton). This not only raises issues of health and safety to the farmer, but also to the community as a whole as water and other crops inevitably can get contaminated. Pesticide use is closely linked to problems of debt in the third world, and there are increasing numbers of 'debt suicides' amongst farmers in countries such as India where the return on cotton (whose price is continuously decreasing) doesn't cover the costs of the pesticides used, creating a cycle of debt (P. Sainath (2010) Nero's Guests).

Sustainable alternatives apart from Organic cotton include cotton initiatives such as **Cotton made in Africa (CmiA)** which works with 200,000 farmers from 6 African countries to achieve developmental aims so that the farmers are empowered to bring themselves out of poverty. Economic, social and environmental indicators are used to ensure the cotton is grown in a manner which is sustainable for the community and the environment. Another option is the **Better Cotton Initiative (BCI)** which aims to improve the livelihoods of the producers of cotton using measurable key indicators, to make producing cotton more environmentally, socially and economically sustainable.

- *Have you considered sustainable alternatives to the raw materials you are currently using, for instance instead of using conventional cotton, could you use organic cotton? Tencel® instead of viscose? Recycled polyester instead virgin polyester?*

Renewable vs Non-Renewable

The renewability of a raw material is also important to consider due to the fact that non-renewable man-made fibres such as polyester, nylon and viscose that are made from crude oil, are becoming scarce. Renewable fibres, such as Lenpur (made from the bark of trees which prevents deforestation) and Tencel® (a fibre made from eucalyptus trees in a bleach-free process) don't face this problem.

For a more sustainable synthetic product, look for polyester made from **recycled plastic** or **recycled polyester**. Polyester can only be recycled a finite number of times meaning that it becomes a non-recyclable resource ending up in landfill sites. Cotton and polyester are sometimes blended to increase the lifetime of a garment, however, these blends are more difficult to recycle.

- *Does your fabric selection have negative animal welfare implications? Have you considered hand-woven peace silk which is animal friendly and has a near zero energy footprint as opposed to machine woven generic silk?*
- *If fabric quality is important to your brand, can you blend more sustainable fabrics into your fabric selection such as blending recycled polyester with virgin polyester?*

MADE-BY's Environmental Benchmark for Fibres

Knowing what impact fabrics have on the environment is difficult, especially since knowledge is incomplete and more research is necessary in many areas. There are several issues and angles to consider and the most common assumption may not be the correct answer. For instance, natural isn't always the more sustainable option.

MADE-BY is a not-for-profit organisation which aims to improve environmental and social conditions in the fashion industry by advising fashion brands on how to adopt more sustainable fashion common practices. They have developed a benchmark that **classifies raw materials** from most sustainable; (Class A), to least sustainable (Class E). Some fabrics have been labelled as 'unclassified' due to lack of sufficient research to determine which class they fall under. These benchmarks consider the impacts of green house gases, human toxicity, eco-toxicity, energy input, water input and land use (MADE-BY (2009), Environmental Benchmark for Fibres).

MADE-BY's

Environmental Benchmark for Fibres



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CLASS A	CLASS B	CLASS C	CLASS D	CLASS E	UNCLASSIFIED
Recycled Cotton	Tencel® (Lenzing Lyocell Product)	Conventional Hemp	Virgin Polyester	Conventional Cotton	Silk
Recycled Nylon	Organic Cotton	Ramie	Poly-acrylic	Virgin Nylon6	Organic Wool
Recycled Polyester	In Conversion Cotton	PLA	Lenzing Modal® (Viscose Product)	Rayon Cuprammonium	Leather
Organic Hemp		Conventional Flax (Linen)		Bamboo Viscose	Elasthan (Spandex)
Organic Flax (Linen)		Wool		Generic Viscose	Acetate
					Cashmere Wool
					Alpaca Wool
					Mohair Wool
					Fibre-based Bamboo

These Benchmarks cannot be printed, circulated or copied without the accompanying MADE-BY Logo and Website.

Fair Trade vs Fairtrade

The difference between Fair Trade and Fairtrade certification can be confusing. The MADE-BY Jargon Buster defines the difference as follows:

Fair Trade is "a trading partnership based on dialogue, transparency and respect that seeks greater equity in international trade. This is a wider movement promoting fairer trade practice, not restricted to products carrying the FAIRTRADE mark. Fairtrade relates only to FLO (Fairtrade Labelling Organisations International) and its partners (e.g. Fairtrade Foundation). The FAIRTRADE Mark is a registered trademark used by FLO to certify items that meet Fairtrade standards from Fairtrade producers."

Other Textile Certifications

Oekotex - http://www.oeko-tex.com/OekoTex100_PUBLIC/index_portal.asp?cls=02

Eco Label - <http://ec.europa.eu/environment/ecolabel/>

GOTS - <http://www.global-standard.org/>

EcoCert - <http://www.ecocert.com/?lang=en>

- What are the **wet processes** involved in improving the properties of the fabric? Do you know the more environmentally friendly alternatives in the different stages of wet processing?
- How well does the fibre absorb and hold dyes? Do you use low-water, azo-free and/or GOTS-approved dyes Could you eliminate the dyeing process from your production process altogether?
- Can **low-energy bleaching** processes be used such as pad-batch bleaching?
- Could the water be re-used by having a **purification system** which filters out the chemicals?

Wet Processes

Wet processes such as desizing, scouring, bleaching, dyeing and printing, can be necessary in order to achieve the fabric look and feel that you have designed, however these processes are all potentially harming to the environment due to the technologies used and lack of energy and waste management strategies employed.

Bluesign® is becoming an increasingly recognised standard to follow for sustainable wet processing. It is a tool which enables improved resource efficiency along the whole of the textiles supply chain, from raw material to final consumer. The aim of Bluesign® is to optimise sustainability and reduce the ecological footprint of the textiles industry.

Ingredients used in wet processes can also be harmful, such as the **colours** and **prints**. Certain colours such as turquoise and darker shades have a more negative impact on the environment because they use heavy metals (NICE (2010), Production Treatments). Certain prints such as metallic or softer colours can contain PVCs which are highly toxic.

- Do you source raw materials **locally** to reduce transport?
- Do you choose **versatile materials** that can be bought in bulk and used for various ranges?
- What are the **washing needs** of the fabric? Do you select materials that wash well at low temperatures and dry quickly without tumble drying or are non-creasing and do not require ironing?
- Do you think about the quality of the fabric and its construction in order to create a longer-lasting product? Will the textile **retain its quality** even after frequent washing?

Consumer Care

The selection of raw materials and their qualities and durability will also affect consumer use in terms of washing and care needs as well as whether the product will be long-lasting or not. For instance Alpaca repels stains and odours and therefore rarely needs washing. It also has a life-time expectancy of 10 years (Panamas (2010), Pachacuti and the Environment). Generally cotton items are washed on warmer temperatures whereas synthetics are washed cooler. Nylon and polyester also have low-impact laundering profiles (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p83).

- How does your fabric selection affect the **end of life** stage of your product? Do you use **non-hazardous materials** instead of using substances that may harm the environment after disposal?
- Are the fabrics **biodegradable** or will your garment contribute landfill? If the fabric is biodegradable, what about the dyes you have used?
- If you wish to blend different fabric types, do you consider the end of life implications, such as the **disposal** of mixed fabrics is a much harder and complicated process?
- Are the materials **recyclable** at the end of the product's life?

End of Life Box

A product's life doesn't necessarily go from product development and manufacture through to consumer use and end there. There are many philosophies, such as **Cradle-to-cradle**, that focus on a cyclical view, also known as a closed loop system, where at the end of a product's initial life it goes back into a **second lifecycle**.

If a product is made out of recyclable or biodegradable fabrics which can be disposed of sustainably, it can go back into a second lifecycle, be it in textiles or soil used to grow food crops. The durability of a fabric can also affect its ability to withstand a second life if the fabric is being directly reused by companies who re-work old garments into new products and designs.

For further reading, see the following websites:

- Right-first-time - <http://www.thesmarttime.com/processing/right-first-time-concept.htm>
- Well Dressed? - http://www.ifm.eng.cam.ac.uk/sustainability/projects/mass/UK_textiles.pdf
- Eco Index Materials Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/Materials-Guidelines.pdf>
- Organic Exchange 100 and Blended Standard - <http://organicexchange.org/oecms/>
- Silk - <http://www.nicefashion.org/en/consumer-guide/raw-materials/silk.html>
- Digital printing - http://www.huntsman.com/textile_effects/eng/lnk_jet/Facts_about_digital_printing/index.cfm?PageID=6418
- Fabric blends - http://www.ifm.eng.cam.ac.uk/sustainability/projects/mass/uk_textiles.pdf
- Bluesign - <http://www.bluesign.com/>
- MADE-BY - <http://www.made-by.org/>
- Biodegradable/Compostable Certifications: DIN CERTCO (European Union) - www.dincertco.de/en/index.html ASTM 6400 www.astm.org/
- Recycling Certification - <http://www.controlunion.com>
- WRAP Raw Materials - <http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design/Raw-Materials.html>
- Eco Profile of Conventional Cotton vs Organic Cotton - <http://www.nicefashion.org/en/professional-guide/production/cottoneco.html>
- Landuse and Agriculture - Sheep/Wool Industry - <http://www.anra.gov.au/topics/agriculture/sheep-wool/index.html>
- Cradle to cradle - <http://mbdc.com/detail.aspx?linkid=1&sublink=6>
- Debt suicides: 2010 documentary 'Nero's guests' - <http://www.slantmagazine.com/house/tag/p-sainath/>



PRODUCTION

Production processes can both have negative social and environmental impacts. However problems can be prevented through knowledge and you, as a buyer, have some control over setting more sustainable demands.

Supply Chain

Supply Chain is “a chain of production involving suppliers and activities which takes a raw material to product” (MADE-BY jargon buster, 2010). It is important to know your supply chain, and if you are not familiar with it, to know which questions to ask. For instance, audit reports and certificates can be requested to allow for greater transparency. If you are considering using a new supplier, ask for references and if it is not possible to visit the factory, try to use a third party inspector before starting a business relationship. Overall, being engaging with your supply chain and committed to a long term partnership usually is the best way to make a difference.

- *What are the social consequences of your production process?*
- *How do you monitor your supply chain or factories?*

MADE-BY’s Benchmark for Social Standards

The production of fashion is a labour intensive process and there are some social costs that need to be considered, such as worker’s rights, health and safety, child labour and living wages. Monitoring systems such as audits and certificates can be useful to facilitate transparency. MADE-BY have developed a benchmark which indicates what social compliances to aim for in factories (class A being the best) (MADE-BY (2009) Benchmark for Social Standards):

MADE-BY’s Benchmark for Social Standards



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CLASS A	CLASS B	CLASS C	CLASS D	CLASS E
SA8000	FLA	Wrap	Organisational Health and Safety	Non-Monitored
ETI	BSCI		Other	Non-Certified
Fair Wear Foundation				
Production in Low Risk Countries				

These Benchmarks cannot be printed, circulated or copied without the accompanying MADE-BY Logo and Website.

Other Social Standards Certifications

GOTS - <http://www.global-standard.org/>
European Ecolabel - <http://ec.europa.eu/environment/ecolabel/>
OTA (Organic Trade Association) - <http://www.ota.com/index.html>
Cradle to Cradle - <http://mbdc.com/default.aspx>

Purchasing Practices

Another issue to consider is your brand's purchasing practices as they can have a big impact on **social pressures**. It is important to be aware of the consequences of your actions on your supply chain, such as late order placement, late changes, unforecasted orders etc and how these can contribute to additional cost that falls on your manufacturer.

- Are your factories compliant with **international labour law** and if not, do you offer them support to improve their level of labour conditions?
- Would you be willing to work with smaller and less developed producers, offering them training and **technical support** in order for them to build up their business capacity?

WFTO

The **World Fair Trade Organisation** (WFTO) is a global representative body and authority on Fair Trade and offers membership to companies who follow their 10 Fair Trade principles from point of production through to sale and have a commitment to "eradicate poverty through sustainable economic development" (WFTO, 2010).

- Do you ensure workers rights are respected and factories are safe to work in?
- Are your factories in **low risk countries** or are they socially compliant?

Low Risk Countries

Countries are considered to be 'low risk' where there is a stable governmental body and advanced institutional capacity that protects workers' rights. MADE-BY have created a list of these countries that gets updated annually:

Australia	Finland	Latvia	Singapore
Austria	France	Lithuania	Slovakia
Barbados	Germany	Luxembourg	Slovenia
Belgium	Greece	Malta	Spain
Canada	Hungary	Netherlands	Sweden
Cyprus	Iceland	New Zealand	Switzerland
Czech Republic	Ireland	Norway	United Kingdom
Denmark	Italy	Poland	Uruguay
Estonia	Japan	Portugal	



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Waste Management and Recycling

“The overall aim of waste management strategies is to preserve the products/materials in their highest value state (i.e. with greatest embodied energy) for as long as possible” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p100)

Using recycled material in your collection, such as pre-consumer and **post-consumer waste** where materials are shredded and recycled back into the product lifecycle to produce new yarn reduces waste at the end-of-life stage of a product. Synthetic fibres produced in a closed loop recycling process can maintain fibre quality in continuous life-cycles and reduce the demand for new petroleum based fibres. Whereas when recycling natural fibres, the fabric quality is often reduced due to the fibres being broken down in the recycling process. Up-cycling post consumer waste such as vintage and second clothing helps to reduce landfill mass as well as reduction of energy use and green-house-gas emissions. Up-cycling **pre-consumer waste**, where cuttings and fabric leftovers at the production stage are reused, not only helps your suppliers to improve their waste management strategies but it also allows you to have a tighter control over the quality of the fibre.

- Do you produce **locally** to decrease the impact of transport and support local community employment and development? Or are your factories based in developing countries where you are **supporting marginalised people** to work their way out of poverty?
- Do you consider the **carbon footprint** in your production process? Could you use manual labour over machinery, which not only creates more employment but also reduces pollution?
- Do you have a sustainable production contingency plan for potential growth in the volume of production? What are your brand ambitions?

Locality

The production map of a piece of clothing is something to consider and if you are able to minimize the mileage needed to produce your clothes, then this is better for the environment.

“Designing local is concerned with developing a sector with a greater sensitivity to place and scale; a sector devised to sustain communities and support jobs while protecting the quality of the environment” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, p138).

On the other hand you may feel that offering employment and income to a community of marginalised people in a third world country can offset the environmental costs of increased transport.

For further reading, see the following websites:

Eco Index Product Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/Product-Guidelines.pdf>

WRAP Manufacture - <http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design/Manufacture.html>

Restricted Substance List - <http://www.apparel and footwear.org/Resources/restrictedsubstances.asp>

Recycling - <http://www.nicefashion.org/en/consumer-guide/recycling/words.html>

WFTO - <http://www.wfto.com/index.php>

Low Risk Countries : MADE-BY Social Policy in Developed Countries - <http://www.made-by.nl/downloads.php?lg=nl>

Sustainable Clothing Roadmap - <http://www.defra.gov.uk/environment/business/products/roadmaps/clothing/documents/clothing-briefing-Sept07.pdf>



PACKAGING & TRANSPORT

The packaging and transport phase of the product lifecycle is important from an environmental perspective, and is something that needs to be considered as early as the design stage of the product's lifecycle.

- *Have you considered using recycled materials in your packaging, labelling, price tickets and any other material you use in the presentation of your product?*
- *Are your packaging materials recyclable, reusable, biodegradable or compostable?*

Packaging and Branding

Reducing the **weight** and **volume** of packaging is crucial from an environmental perspective and optimising transport as well as resource use. Sourcing **certified materials** to use in your packaging and avoiding plastics that contain PVC is another issue to consider. Paper and cardboard packaging materials from sustainable sources ensure that any trees cut down are replaced; FSC is the most commonly found certification label. Prints used to brand your packaging can also be harmful and using water or soy based inks over oil based ones is more environmentally friendly (EcoIndex beta (2010) Packaging Guidelines).

Recycled packaging is another option. Most common are recycled paper and cardboard, however, plastics and metals are also available. Other alternatives include recycled paper made from denim, polypropylene shipping bags with recycled content, using recycled paperboard for product inserts, working with yarn suppliers to redesign shipping cases to use recycled content and manufacturing synthetic fabrics from plastic bottles (WasteWise (2002) Doing what it takes to be wastewise). If you use **biodegradable packaging** it is important to ensure it does not end up in landfill where it will not be able to biodegrade, and may also give off methane gas.

- *Are you able to use minimal packaging with your product while still providing the same function and protection needed? Or could you eliminate your packaging completely?*

Packaging Waste

Waste is any material which is perceived to have no further use (WRAP, 2010) and it can be hazardous. If your packaging is biodegradable, recyclable or reusable, you must inform your customer on how to dispose of the packaging correctly in order to maximize on these advantageous properties.

- *Are you able to plan far enough in advance to allow for earlier production and longer delivery time to be able to use sea or truck transportation over air-freight? Are you able to avoid re-orders that are sent by air-freight?*
- *Have you considered a local supply chain to decrease the mileage in the production process?*

- *Are you able to consolidate shipments from different producers or even with different brands to avoid containers being shipped half full?*
- *Are you able to transport by rail rather than road?*

Transportation

“In transportation, a fabric uses local resources and causes local pollution, both of which are seen as costs ‘external’ to the product, and are not passed on to the consumer” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, pg 140)

Transport impacts are contingent on various issues along the product lifecycle, such as meeting production deadlines, supply chain strategies as well as product design and weight. Lightweight and low-bulk fabrics are more efficient to transport.

For further reading, see the following websites:

NICE Transport - <http://www.nicefashion.org/en/professional-guide/transport/>

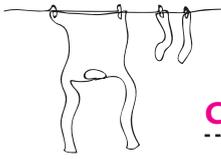
Eco Index Packaging Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/Packaging-Guidelines.pdf>

WRAP Retail - <http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design/Retail.html>

Certified Packaging Materials: Forestry stewardship - <http://www.fsc.org/>

Waste Wise: Doing what it takes to be WasteWise - <http://www.epa.gov/osw/partnerships/wastewise/pubs/texfact.pdf>

London Biopackaging - <http://www.londonbiopackaging.com/products-and-services.html?gclid=CKz4h-iUxaMCFUj-2AodLTISYA&vmcchk=1>



CONSUMER USE

The impact of the consumer use phase can be thought of as out of the brand's control as it is up to the consumer to make more or less sustainable decisions when it comes to caring for a product. However, as a brand you can influence the consumer by educating them and offer them the right options. The decisions you make regarding design, fabric selection and garment construction will also influence how durable the product is and will affect the consumer use phase.

Durable Design

Products that have been designed to last longer and have an extended life reduce the need for replacements and consequently save resources. Durability “represents long-established ‘good’ design qualities like efficiency and timelessness” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, pg 164). Product durability is dependent on it being able to withstand wear and tear and general consumer use.

- *Is the product easy to maintain and repair? Do you include standard components to repair the product such as spare buttons?*
- *Have you considered a repair policy? Could you offer a free mending/repairing service for the consumer instead of just offering an exchange or refund?*
- *Could you offer tailor or fit services to encourage greater wearability? Do you offer a warranty on your high value products?*
- *Do you select component materials, construction methods, product design, and finishing processes to maximize the useful life of the product (i.e. versatility, reliability, durability)?*

Customer Care

“Product care can be the largest environmental impact in some product lifecycles” (EcoIndexBeta (2010) Use and Service Guidelines) and as a designer you can make choices that influence the processes involved in it. When selecting your material, consider how the fabric retains odours, how it creases and whether it needs dry cleaning or not.

Fibres like polyester and nylon, for example, launder well on low temperatures and dry quickly with few creases (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, pg 152). The garment construction is also important in terms of retaining its quality after frequent washing, to avoid premature disposal. Informing and educating your customer through care instructions, for example to wash at 30 degrees, or line dry instead of tumble dry, can also make a big difference.

- *Could you print care label instructions on the garment itself thereby making the instructions permanent as well as eliminating the need of an additional label attached to the garment?*
- *Could you integrate instructions into your design relating to the product's durability, repairability, upgradeability, multiple use, disassembly and/or recycling? Do you offer storage advice on your clothes such as precautions to take to avoid moth-holes or temperature damage?*
- *If your garment is biodegradable or compostable, do you educate your consumer on how they can dispose of this garment?*
- *Do you offer your customers advice on how to update existing pieces or tips on how they can 'stretch' their wardrobe?*

For further reading, see the following websites:

NICE Use - <http://www.nicefashion.org/en/professional-guide/use/>

Eco Index Use and Service Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/Use-and-Service-Guidelines.pdf>

Laundering - <http://www.laundrylist.org/>

WRAP Use - <http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design/Use.html>



END OF LIFE

“End of life is defined as when a product is at the end of its functional life” (EcoIndexBeta (2010) End of Life Guideline). A product’s life doesn’t have to be linear and there are many philosophies, such as Cradle-to-cradle, that focus on a cyclical view, also known as a closed loop system, where at the end of a product’s initial life it goes back into a second lifecycle.

- *Is it possible to give the product a second life? Can you fix and reuse the product or parts of it?*
- *Are you able to offer a premium to customers who return items that you can recycle or reuse? Have you considered a take-back scheme?*

Second Life

Reusing a product is more environmentally friendly than recycling however both are sustainable options and gives a product a second life. Recycling in a closed loop system can either be of non-degradable materials and products; this is known as an industrial cycle, or it can be where products are returned to nature through composting; this is known as a biological cycle (Cradle to Cradle 2010).

Offering your customers a take-back or repair scheme is another way to enable your products to have a second life. If you are unable to store or process these take-back products, you could instead build links with second hand markets, charities or the post-consumer recycling industry, where you can pass on the used clothes (EcoIndexBeta (2010) End-of-life Guidelines).

- *Is your product recyclable or biodegradable?*

Recyclability

There are several advantages to using recyclable fabrics in your collection. It not only reduces the waste impact at disposal but also the impact at the production phase, especially for fabrics that have high impacts at this stage (Allwood J.M., Laursen S.E., Malvido de Rodríguez C., Bocken N.M.P., (2006) Well Dressed?). Issues such as certain fabric blends can be a problem in the recycling process and need to be considered.

Biodegradability

Biodegradation “involves the fibre being broken down into simpler substances” (Fletcher, K. (2008), Sustainable Fashion & Textiles: Design Journeys, pg 112). Most synthetic fibres cannot be broken down because they lack enzymes necessary for this process. There are many issues to consider with regards to offering a biodegradable product. If a product is to be fully biodegradable, it not only requires the fibres to biodegrade or compost, but also any dyes and finishes used. The facilities available for composting need to be logistically appropriate to you as a company and/or your customer.

The timeline for degrading is also a concern. In principle, biodegradability can only be claimed if following norms have been met (Green Plastics):

Europe: EN13432: 90% of biodegradation in 6 months

US: ASTM 6400: 60% biodegradation in 6 months

For further reading, see the following websites:

Eco Index End of Life Guidelines - <http://www.ecoindexbeta.org/sites/default/files/pdf/End-of-Life-Guidelines.pdf>

The Centre for Sustainable Manufacturing and Reuse/Recycling Technologies - www.centreforsmart.co.uk/

Teijin recycling of recycled PET textiles - www.teijin.co.jp/english/

WRAP End of Life - <http://envirowise.wrap.org.uk/uk/Topics-and-Issues/Eco-Design/End-of-Life.html>

Textile Environmental Design - http://www.tedresearch.net/resource_download.htm

<http://www.wasteonline.org.uk/resources/InformationSheets/Textiles.htm>

Recycling - http://www.tedresearch.net/research_downloads/recycling.pdf

Cradle-to-Cradle - <http://mbdc.com/detail.aspx?linkid=1&sublink=6>

Take-back schemes - <http://www.nicefashion.org/en/consumer-guide/recycling/Klespant.html>

Biodegrading textiles for Europe <http://www.european-bioplastics.org/index.php?id=158>

http://www.greenplastics.com/reference/index.php?title=EN_13432

Biodegrading textiles for the US - http://www.greenplastics.com/reference/index.php?title=ASTM_D6400