



Whether out of concern for people and planet, or concern for the survival of our businesses, we are starting to understand waste as an indication of inefficient production and consumption patterns, and are seeing a welcome shift in focus from the waste management industry and the typical end of pipe solutions, to the actual supply chain, waste prevention and reuse concepts.

Quick Facts and Statistics for Textile and Product Waste

Waste

- 10-20% of all textiles in the fashion industry are estimated to be wasted.¹
- About 15% of fabric intended for clothing ends up on the cutting room floor. This waste rate has been tolerated industry-wide for decades.²
- The U.S. EPA estimates that textile waste occupies nearly 5% of all landfill space.
- Whilst the exact volume of textile waste generated in China is not known, with estimates that China will soon make 50% of the world's clothing - the indications for textile waste there are mind-blowing. Daily in Hong Kong, there are 253 tons of textiles sent to landfill.³

Used Clothing

- Over 70% of the world's population use second hand clothes.⁴
- In 2010, the US exported over one hundred million kilograms of used clothing to Central America. To put this into perspective, in Honduras this meant 28kg for every man, woman and child in the country.⁵
- The world supply of used women's clothing is at least seven times that of men's.⁶
- The name they give imported used clothing in Ghana is obroniwuawu which means 'the white man is dead.'⁷

Recycling

- Using recycled cotton saves 20,000 liters of water per kilogram of cotton, a water-intensive crop.⁸
- The U.S. EPA estimates that only 15% of all textiles are recycled.
- If everyone in the UK bought one reclaimed woollen garment each year, it would save an average of 1,686 million liters of water and 480 tons of chemical dyestuffs.⁹
- In 2009, 700,000 tons per year (11 kilograms per inhabitant per year) of new clothing, textile products, household linen, and pairs of shoes were put on the French market. The selective collection rate is 15% (106,000 tons per

year or 1.7 kilograms/inhabitant per year). About 70% of the end of life textiles and shoes collected are sorted out (11% of the tonnage put on the market).¹⁰

- Up to 95% of the textiles that are land filled each year could be recycled.¹¹
- The European textile recycling sector employs about 100,000 workers.¹²

Informative and Provocative Videos and Slides

- We don't need more clothes by Agalorda - <http://www.slideshare.net/agalorda/we-dont-need-more-clothes-by-agalorda-12062502>
- Why is waste a concern? <http://vimeo.com/12220951>
- The journey of recycled clothes - <http://www.youtube.com/watch?v=2YB5x4rI86k>

Where to Begin with Laws and Regulations Regarding Waste

Governments are increasingly focusing on commercial waste and producer responsibility in order to meet the increased recycling/reuse/prevention targets. But sometimes the legislative landscape can be a minefield. Here's a few useful signposts:

In the US

For information on the RCRA (Federal law on commercial, industrial, household & municipal waste) and other environmental laws affecting the textile industry, as well as resources, waste hotlines, and other contacts, see:

<http://www.epa.gov/osw/inforesources/pubs/infocus/k02028.pdf>.

In Europe

Directive 2008/98/EC (<http://ec.europa.eu/environment/waste/framework/index.htm>) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling, recovery.

For a summary of other EU Directives also addressing waste, see: Revision of the European Ecolabel & Green Public Procurement Criteria for Textile Products (susproc.jrc.ec.europa.eu/textiles/docs/Ecolabel_Textile%20products_IPTS%20preliminary%20report_AHWG1%20final.pdf) by the Institute for Prospective Technological Studies, as part of the Commission's Roadmap for a Resource-Efficient Europe by 2020 pp.18-32.

In France, the Environment Code has led to the establishment of an organization called EcoTLC (<http://www.ecotlc.fr/actualite-13-etude-quot-les-francais-et-les-tlcquot.html#a13>) whose responsibility it is to encourage the further reuse, recycling and creation of value from used clothing, acting to support the collectors and sorters of textiles. The scheme is financially supported by organizations that place new textile products onto the French market, thereby encouraging extended producer responsibility.

IMPEL (<http://impel.eu/>), the European Union Network for the Implementation and Enforcement of Environmental Law, is an international association of environmental authorities in Europe, and deals with matters on Transfrontier Shipments of Waste.

NB. The EU Stringent regulations on waste only affect a small share of the total textile volume. Production residues or rejects primarily arise in Asia and are thus not affected by EU legislation. A high degree of reuse and recycling will only affect end-consumer products imported to the EU but not the majority of the textile industry.¹³

For legislation on shipments of recyclables to China, see <http://aqsiq.net/>.

Standards associated with waste

Textiles can be contaminated with heavy metals (e.g. from dyestuff) and be a significant source of dioxins and other POPs (persistent organic pollutants), which are set free or formed in incineration processes, or cause toxic reactions by re-use and recycling.¹⁴ For this reason, standards and certification are of equal importance when it comes to textile waste:



For Waste Management, Recovery or Recycling Companies

ISO 9001:2008, http://www.iso.org/iso/iso_9001_2008

For consumer safety

Öko-Tex Standard 100, looks at the potential harm of substances in raw materials as well as finished products, and every stage in between:

http://www.oeko-tex.com/oekotex100_public/content5.asp?area=hauptmenue&site=oekotexstandard100&cls=02

For products made of recycled materials

Global Recycled Standard, intended for companies that are making and/or selling products with recycled content.

Applies to the full supply chain and addresses traceability, environmental principles, social requirements, and labeling:

<http://textileexchange.org/content/global-recycle-standard>

Recycled Content Standards

http://www.scs-certified.com/gbc/material_content.php

For products designed for end of life

Cradle-to-Cradle Standard, a multi-attribute eco-label that assesses a product's safety to humans and the environment and design for future life cycles: <http://www.mbdic.com/detail.aspx?linkid=2&sublink=8>

Tools and Industry Solutions

Innovation is the key!



It is clear that there is a need to continue investment in new technologies for increasing the value of recycled textiles. This not only includes advances in mechanical and chemical processing but also managing the recycling of fiber and textiles containing larger quantities of biodegradable and compostable materials entering the waste stream.

RecycleMatch <http://www.recyclematch.com/landing/homelandingpage>

RecycleMatch is an online marketplace to address the \$90 billion market for business recycling and zero waste with a closed bidding system designed specifically for corporations, municipalities, recyclers, and buyers of high quality commercial waste, in order to maximize the economic value of zero waste initiatives as well as the environmental value of those resources.

There are hundreds of other exchange networks for industrial and municipal waste. Some of these are organized by non-profit organizations, government, or commerce chambers and it is free or inexpensive for companies to use them, others are run by specialized companies and financed by a fee for announcement, or are consultancy providers who provide advice to waste producers on potential applications of their waste streams. Some are local, some regional or national, and some international. You can do an online search for 'waste exchanges' to find the one that meets your criteria, but some of the main ones include:

Global Recycling Network <http://www.grn.com/a/1400.html>

EU Euro recycle net <http://euro.recycle.net/>

Worldwide Recycler's exchange <http://www.recycle.net/>

TEXTILES 4 TEXTILES (T4T) <http://www.textiles4textiles.eu/> and <http://www.youtube.com/watch?v=6RNBRTdNkQ8>

Sorting is considered essential in upgrading textile recycling. T4T is a sorting system that can be installed at a post consumer textiles and clothing sorting plant. The installation will be able to sort large quantities of textile materials based on fiber composition (cotton, wool, polyester, blends, etc.), color, structure, coating, or finish composition.

So what are brands and companies doing to tackle the problem?¹⁴

Many brands and retailers have shown interest in this issue and have started to take ownership of their products beyond retail, developing take-back programs with incentives.

It would be impossible to name all current initiatives but here are a few examples:

Klattermusen, of Sweden has launched the program rEOver that allows its used products to be returned to retailers, for cash: www.klattermusen.se

Mammut, is providing collection boxes in its stores in Switzerland and partnering with a collector who is sorting the products and reusing or recycling them as much as they can http://www.mammut.ch/cr_planet_ico.html

Since 2008, M&S and Oxfam have been developing a cloth exchange program. Since then, they have managed to collect over 2,500 tonnes of clothing which are put to reuse or recycled. http://www.oxfam.org.uk/shop/content/secondhandstore/fashion/ms_clothes_exchange.html and <http://www.youtube.com/watch?v=6tQ1i7fTlc>

Nike's Reuse-A-Shoe program claims to eliminate waste and close the loop by collecting Nike and other sneakers, and separating into three components, and then grinding them up. The resulting materials are then used to create sports surfaces, carpet padding, and playground cushioning, among other products. Since 1990 over 25 million pairs of shoes have been collected across Australia, Canada, Japan, United Kingdom, and United States: <http://www.nikereuseashoe.com/where-it-goes> and <http://www.youtube.com/watch?v=tkzAq4uTcCo>

Norrøna have put a warranty on their products against defects in materials and workmanship for the lifetime of the product. If a product ever fails due to a manufacturing defect, even after extended use, they repair or replace it, without charge: www.norrøna.com

Patagonia's Common Threads program - Garments manufactured using Teijin polyester are collected in-store or by mail for chemical recycling via Teijin's ECOCIRCLE™ Programme at a factory in Japan. This scheme is also being expanded to some nylon products: <http://www.patagonia.com/us/common-threads> and <http://www.youtube.com/watch?v=LF8HDFf2s-s>

Recycle Outdoor Gear promotes swapping, selling, donating, or buying used outdoor gear and is endorsed by the UK Outdoor Industry Association: <http://recycleoutdoorgear.com/> and <http://www.outdoorindustriesassociation.co.uk/>

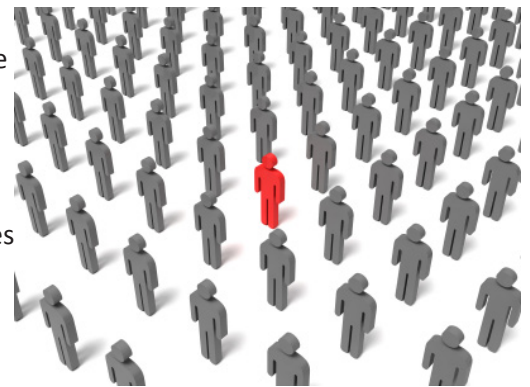
Case studies of corporate clothing reuse: <http://www.uniformreuse.co.uk/corporatewear-studies.html>

Who's Who in the Waste World?

It seems everyone who's anyone in the textile world is doing something on waste now, so it would be impossible to give an exhaustive list. Here are some of the most important Industry Associations and Working Groups who are active on the topic:

BIR www.bir.org/industry/textiles

The Bureau of International Recycling represents over 750 member companies from the private sector and 40 national associations in more than 70 countries. Together, these members form the largest international recycling federation. One of their expertise divisions is the industry of the Textiles Commodities.



European Outdoor Group – Sustainability Working Group – End of Life Task Group <http://www.europeanoutdoorgroup.com/sustainability-csr>

This Task Group is currently working on monitoring the infrastructure concerning reuse and recycling, ensuring that the industry is kept up-to-date on new ideas, new approaches, reaching out to organizations addressing closed loop systems, and informing the consumer as to the opportunities for the second life of their clothing.

ISWA www.iswa.org

The ISWA (International Solid Waste Association) has a Working Group on Recycling and Waste Minimisation (WGRWM) which addresses both minimisation of solid waste generation and the separation, processing and marketing of materials removed from the municipal solid waste stream.

NICE www.nicefashion.org/en/featured-projects/textile-waste/index.html

The Nordic Initiative Clean & Ethical is a joint commitment from the Nordic fashion industry to take a lead on social and environmental issues, and is partnering a research project by SIFO (Norwegian Institute for Consumer Research) on the potentials for substantial reduction in the material flow within the textile sector.

SMART www.smartasn.org

Founded in 1932, the Secondary Materials and Recycled Textiles Association is composed of companies from the United States, Canada, Mexico, South and Central America, Europe, and Pacific Rim countries who are involved in every phase of the textile recycling industry : Reclaiming, converting, and recycling textiles and secondary materials.

SUSPROC <http://susproc.jrc.ec.europa.eu/>

Sustainable Production and Consumption is a scientific project carried out by the Institute for Prospective Technological Studies of the European Commission and supports the implementation of its Thematic Strategy on Prevention and Recycling of Waste since 2004. This long-term strategy aims to help Europe become a recycling society that avoids waste and uses any unavoidable waste as a resource.

WRAP www.defra.gov.uk/publications/files/pb13461-clothing-actionplan-110518.pdf

The Waste & Resources Action Programme leads the UK government's Sustainable Clothing Roadmap launched in 2007, with the aim of improving the sustainability of clothing across its lifecycle, from the crops that are grown to make the fabrics, to the design and manufacture of the garment, retail, use and end of life.

Relevant Reports and Guidelines

The Eco Index's End of Life Guidelines

<http://www.ecoindexbeta.org/content/end-life-guidelines>

Sustainable Apparel Coalition's Apparel Index V1.0

<http://www.apparelcoalition.org/10.html>

'End of Life: Maximising reuse and recycling of UK Clothing and textiles' (2009)

http://randd.defra.gov.uk/Document.aspx?Document=EV0421_8746_OTH.pdf

Life cycle assessment for reuse/recycling of donated waste textiles compared to use of virgin material: An UK energy saving perspective(2005)

<http://aestivaltd.web.officelive.com/Documents/LCA%20in%20RCR.pdf>

Recycling of footwear products: position paper (2007)

<http://www.centreforsmart.co.uk/Footwear%20recycling%20position%20paper.pdf>

Study on the selection of waste streams for end-of-waste assessment, pp.130-145

Institute for Prospective Technological Studies

<http://ftp.jrc.es/EURdoc/JRC58206.pdf>

Design for End Of Life Tool and Guide for Corporate Wear

http://www.uniformreuse.co.uk/pdf/eol_report.pdf

Zero Waste Resources: <http://www.zerowaste.org/resources.htm>



End Notes

1. Christina Dean, ReDress - <http://redress.com.hk>
2. Timo Rissanen, "From 15% to 0: Investigating the creation of fashion without the creation of fabric waste," Presenter, Kreativ Institut for Design og Teknologi, September 2005.
3. Christina Dean, ReDress - <http://redress.com.hk>
4. www.wasteonline.org.uk
5. <http://graceandmending.blogspot.com/2011/03/globalization-and-textile-waste.html> (US Census Bureau)
6. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964887/>
7. <http://graceandmending.blogspot.com/2011/03/globalization-and-textile-waste.html> (US Census Bureau)
8. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964887/>
9. Bureau of International Recycling www.bir.org
10. www.ecotlc.fr/actualite-13-etude-quot-les-francais-et-les-tlcquot.html#a13
11. www.wasteonline.org.uk
12. <http://ftp.jrc.es/EURdoc/JRC58206.pdf>
13. Waste: A Handbook for Management, Letcher & Vallero (2011)
14. Study on the Selection of Waste Streams for EOW Assesment: <http://ftp.jrc.es/EURdoc/JRC58206.pdf>
15. for more examples see: <http://www.nicefashion.org/en/featured-projects/textile-waste/Defrareport.html>

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