

ENGINEERING OUT FASHION WASTE

THE 'FAST FASHION' SUPPLY CHAIN

Institution of
**MECHANICAL
ENGINEERS**

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IN SEPTEMBER 2018,
CONCERNS ABOUT
FASHION WASTE BEGAN TO
TAKE HOLD IN THE MEDIA
AND WITHIN
GOVERNMENT



THE QUESTION REMAINS,
HOW MUCH IS THE FASHION
INDUSTRY PREPARED TO
CHANGE AND HOW MUCH
CHANGE WILL THE PUBLIC
DEMAND?

ENGINEERS AND DESIGNERS
WILL BE READY TO CREATE
SOLUTIONS AND DELIVER
CHANGE IN THIS INDUSTRY

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Pressure grows to make fashion more sustainable

The rag trade is racing to avoid being seen as an environmental villain.

By ELINE SCHAAERT | 5/16/19, 10:20 AM CET | Updated 5/17/19, 4:48 AM CET

A "fashion clinic" workshop in Hong Kong | Isaac Lawrence/APF via Getty Images

Facebook Clothes contribute more to climate change than international flights and shipping combined, and the problem is getting worse. MOST READ ARTICLES

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Climate Changed

The Clearance Rack Has a Terrible Carbon Footprint, Gap CEO Says

By Emily Chasan and Dina Bass

May 17, 2019, 12:54 AM GMT+2

- ▶ Growth over 30 years has been driven by unsustainable fibers
- ▶ Retailer aims to boost use of recycled cotton in clothing

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Beyond recycling: Putting the brakes on fast fashion

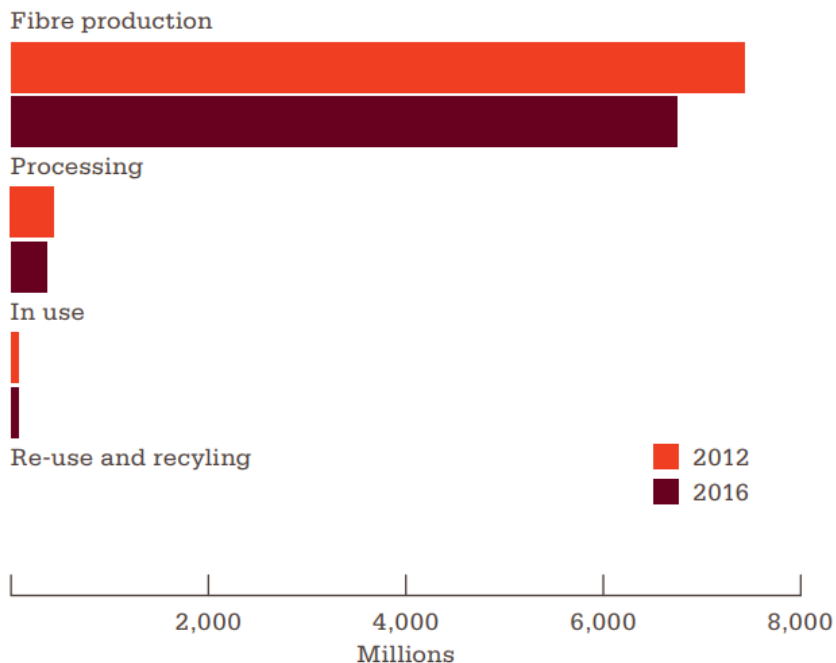
WHAT ARE WE ASKING THE GOVERNMENT AND INDUSTRY TO DO?

1. The U.K. Government in collaboration with the fashion industry should invest in initiatives which provide incentives for the development of more environmentally friendly fibres. Supporting existing projects and investing in research and development can make a significant impact on improving the sustainability and efficiency of textile manufacturing.
2. The UK government should work with the fashion industry and manufacturers to develop a comprehensive framework to tackle 'greenwashing', or false sustainability claims. Corporate social responsibility is an essential element of a brand's identity in today's market.
3. The UK government, fashion industry and manufacturers should support the development of mechanical and chemical fibre recycling technologies, particularly those which are able to separate blended fibres. A WRAP report has identified relatively few barriers to the uptake of the textile fibre recycling technologies

WATER AND DYES

FASHION – A THIRSTY INDUSTRY

Figure 1: Water footprint of clothing in the UK (m³) in 2012 and 2016, comparing lifecycle stages^[9].



In 2015, its processes consumed 79 billion m³ of water (the equivalent of 32 million olympic-sized swimming pools), a figure which is expected to increase by 50% by 2030.

Water is also used during the manufacturing process to remove excess dye, a procedure which can result in widespread pollution, often in countries that do not have appropriate environmental frameworks in place.

According to the World Bank, dyeing and treatment of clothing account for 17–20% of all industrial pollution.

Synthetic fabrics are not much greener than cotton. Above all, polyester, derived from oil, doesn't biodegrade after disposal and, every time it is washed, sheds miniscule fibres which then go on to have a detrimental impact on our oceans.

ENERGY USED ACROSS THE FASHION SUPPLY CHAIN

Energy use is prevalent throughout the fashion lifecycle:

Production – manufacturing- transportation – use - recycling

Figure 3: Energy used in production of various fibres^[16]

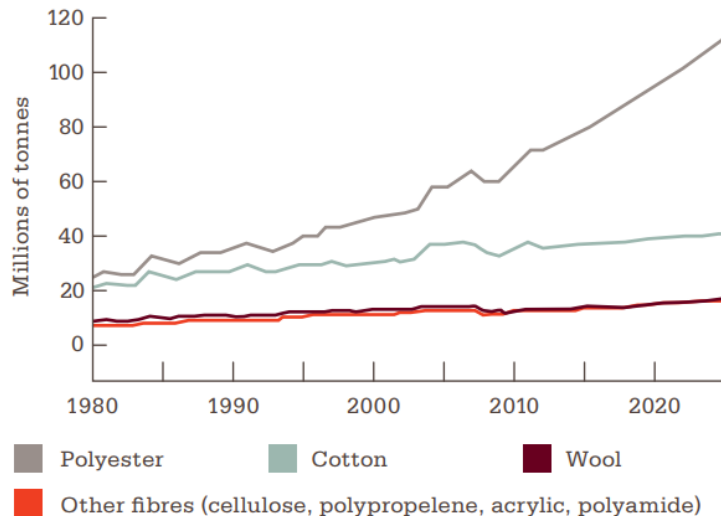
Fibres	Energy used to make the fibre (MJ/KG)
Flax	10
Cotton	55
Wool	63
Viscose	100
Polypropelene	115
Polyester	125
Acrylic	175
Nylon	250

Not only is fashion extremely energy-intensive, it is one of the most polluting industries, producing 1.2 billion tonnes of CO₂ equivalent (CO₂e) in 2015, more emissions than international flights and maritime shipping combined.

WASTE

GROWING CONCERNS OVER FASHION WASTE

Figure 4: World fibre production has been booming – with most of the increase in plastic-based polyester^[24]



The fashion industry operates on a largely linear Business model, with the British sending an enormous 235 million items of clothing to landfill in one season alone, rather than donating the items.

Clothes are not designed for longevity but for short lifecycles, which encourages consumers to buy new items.

Limited recycling options to recover fibres means that nearly three fifths of all clothing produced ends up in incinerators, or landfills, within a year of being made.

Synthetic fibres, such as polyester, nylon and acrylic, take even longer to biodegrade, taking hundreds, even thousands of years.

Ultimately, reducing the environmental footprint of the fashion industry is dependent on both engineers designing and delivering improved industrial processes, and the public changing their behaviours.

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