



WASTE IN FASHION

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SON OF A TAILOR

INTRODUCTION

The fashion industry is more than 150 years old. What originally started as local businesses has now turned into a multibillion mass production¹. Lately, there have been several examples of meaningless waste where large multinational companies burn their clothes^{2,3} or destroy perfectly wearable shoes⁴. Consumers are slowly realising the consequences of practices used in the fashion industry and are continuously adapting their purchase behaviour. However, now is the time for the industry itself to assume responsibility, stop overproduction and reduce its carbon footprint, as well.

This white paper provides an overview of the current state of waste in the fashion industry. Additionally, a second white paper has been published explaining the effect in carbon emission from this waste. Combined, these estimates show an industry with a serious problem. Nearly 40% of the fabric going into production ends up as waste and never reaches the consumer.

While several players have launched sustainability initiatives, such as reducing their CO2 footprint or sourcing recycled materials, there is nothing indicating that the fashion industry will significantly improve during the coming years. Since 2000, the amount of clothes being produced has doubled⁷. Additionally, multiple studies have shown that recycling opportunities are limited and that technology is lagging behind⁵. Simply put, the industry cannot absorb the amount of clothes produced, and with the current recycling capacity it takes 12 years to recycle the amount that is produced in 48 hours⁶ around the world. As a consequence, the consumer must improve their purchasing behaviour, but, far more importantly, the industry must reduce its waste and put an end to overproduction and try to limit their role in over-consumerism.

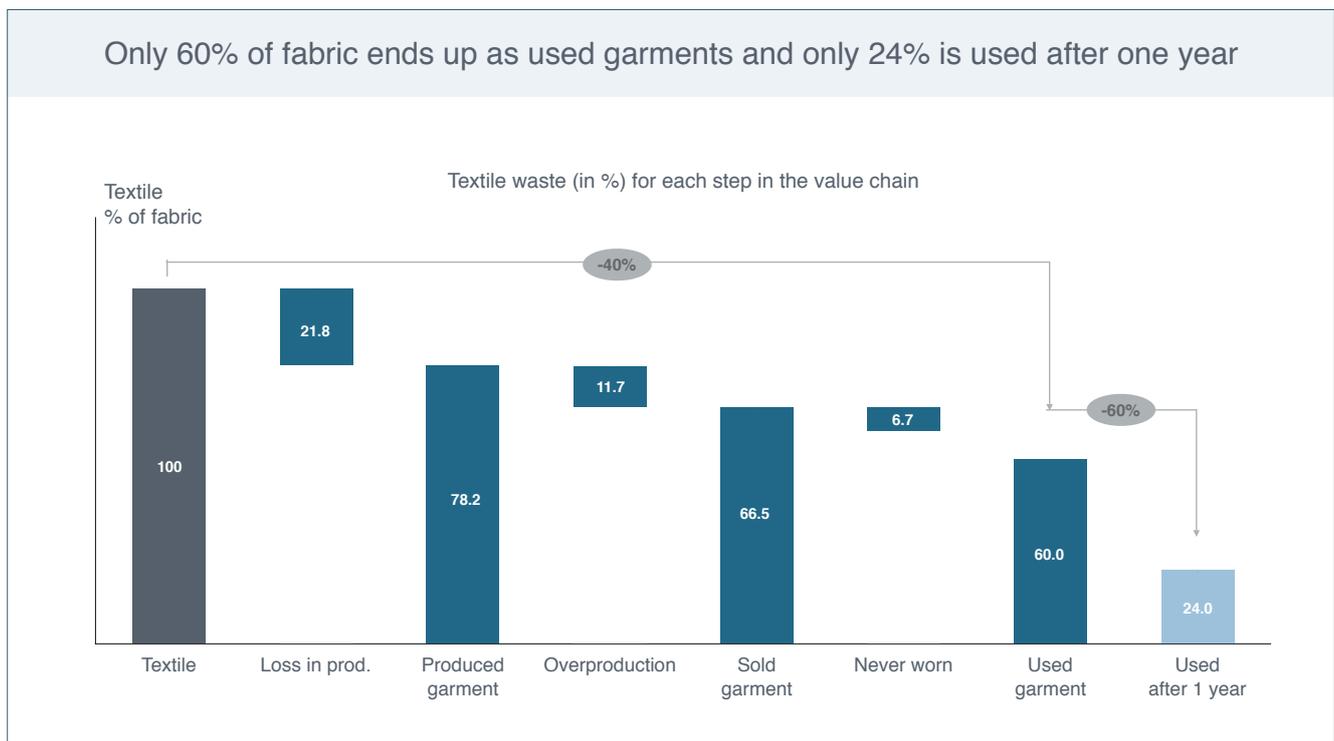


TEXTILE WASTE THROUGHOUT THE VALUE CHAIN

CONCLUSION:

Over the past years, new papers all over the world have published instances of large fashion companies with huge material waste, burnt clothes and unsold inventory. While the consumer holds part of the responsibility for the rising waste in the fashion industry, it is also clear that the fashion industry has done little to improve the waste throughout the value chain.

This analysis shows that **only 60% of the fabric entering production ends up as used clothes**, hence 40% of textile fabric is lost throughout the value chain as a result of cut-outs, overproduction and purchases without use. Additionally, **only 24% of the fabric entering production is used after one year** as the remaining 60% of all garments are thrown out.



METHODOLOGY:

Waste can be measured in various units and is often difficult to compare across the value chain. This analysis focuses on estimating the difference between fabric entering production and fabric used in garments actually being worn.

ASSUMPTIONS:

1. **Loss in production:** Kasemset et al.¹ did a study tracing production of 100 T-shirts and tracking the waste, hereof. They found that waste from cutting pieces out of fabric account for 16.36% of the total input fabric. Additionally, 6.37% of the fabric was lost in sewing the pieces together and 0.09% of the fabric was lost in quality control e.g. adjustments and remakes. In total, this amounts to 21.76% of the fabric being wasted in production. This analysis does not include fabric errors such as holes, marks and stains. It is also worth mentioning that larger size garments and complicated garments tend to have higher waste percentages than standard T-shirt production. Note that other resources yields estimates of both higher and lower waste e.g. Runnel et al.² estimates that at least 25% of the fabric is wasted in production while Nike (represented in Runnel et al.²) estimates that it is only 11%.

The fabric usage is estimated in 4 steps: textile input, produced garments, sold garments and used garments. Waste from processing raw material cotton into yarn and waste in the making of textile from yarn is not included in this analysis and is worth a separate study.
2. **Overproduction:** Only limited data on overproduction exists and the term overproduction is also difficult to define. One could argue that garments sold at a discount are a sign of overproduction but this analysis chose to exclude that in the estimates of waste from overproduction. Several sources refers to Matevosyan³ who claims that up to 30% of produced garments are never being sold. However, this analysis is based on lower numbers for a more conservative estimate. Runnel et al.² refers to Nike's estimate of waste in movement of goods from production to retailers and waste at retailers. They estimate 15% waste for both steps combined. Aftab et al.⁴ refers to Zara holding only 10% of unsold inventory. Finally, Havard Business review⁵ estimates that the industry average of unsold inventory is 17-20%. Zara and Nike must be frontrunners when it comes to optimizing supply & demand management as they own the entire value chain. Therefore, this analysis uses 18.5% (middle of the interval 17-20), hence 18.5% of the finished garments would never be sold corresponding to 14.5% of the fabric input.
3. **Never worn garments:** Several surveys claim that a large percentage of customers' wardrobes has never been worn and are thrown out before use. An insurance company estimated that in 2005 7.3bn⁹ GBP worth of clothes were thrown out in the UK without ever being used. That corresponds to 19% of the total spending in 2005¹⁰. A more conservative estimate is presented in the research of Niinimäki⁷ where she collected data on the longevity of a garment and the number of wears per garment. In this study, 10.3% of all men have owned a garment that they wore for less than one month. To be conservative, this analysis uses 10% as the estimated percentage of clothes being thrown out before use.
4. **Used garments after one year:** McKinsey⁸ estimates that 60% of all purchased clothes is thrown out after just one year. That corresponds to only 23.4% of the initial fabric entering production being used after one year.

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