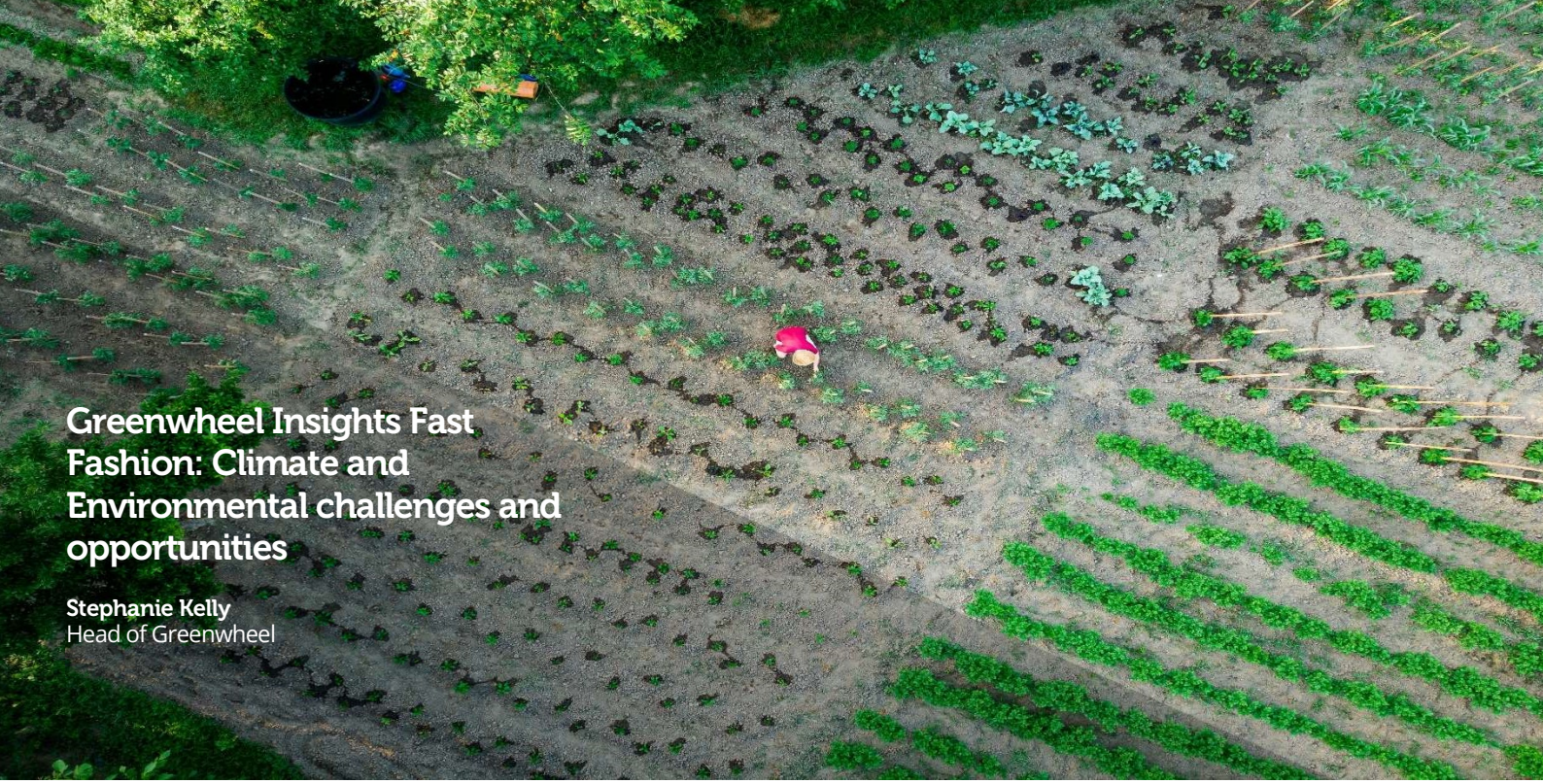

Greenwheel Insights Fast Fashion: Climate and Environmental challenges and opportunities

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Summary
Key Factors: Materials, Volumes, Product Lifecycle
Key Principles: Transparency, Traceability, Treatment
the research has informed their views on some of their fashion holdings.

Fast Fashion: Climate and Environmental challenges and opportunities

Fashion accounts for an estimated 10% of global carbon emissions, which is more than the emissions of the shipping and airline industry combined. Fast fashion, defined as 'inexpensive clothing produced rapidly by mass-market retailers in response to the latest trend', is heavily criticised for driving these emissions through a combination of high volumes and material choice. Relatedly, the environmental impacts of fashion are profound in terms of water use, microplastics and the use of synthetic dyes and chemicals in textile production.

Unsurprisingly, fast fashion companies have been under pressure in recent years to show commitment to greater sustainability. While much is said by companies about their commitment, it is important to dig deeper to evaluate the true sustainability credentials of these firms.

The key drivers of emissions and environmental damage in this sector are:

Materials

Producing clothes can vary significantly in terms of environmental footprint. Key factors to look out for in terms of climate and environment impacts include:

1. Energy inputs to production
2. Land use/management
3. Crop yield
4. Water & chemical use.

The treatment (i.e. use of pesticides, water, heating or cooling) required to produce source materials influences the climate and environmental impact they have. While some materials have a naturally lower carbon footprint and are less environmentally damaging, farming practices, land management and energy use can have a big impact too. On the latter, energy use in terms of efficiency and renewable use are seen as leading factors to reduce emissions in this sector.

Materials can be roughly categorised into plant-based fibres, animal-based fibres, plant-based man-made fibres and man-made synthetic fibres.

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Fibre:

Plant-based

Material:

Cotton, Hemp, Linen (Flax), Bamboo

Challenges:

Non-organic plant-based materials are damaging to the climate and biodiversity mainly due to fertiliser and pesticide use, soil degradation, land use and crop yield.

Cotton is heavily water intensive. Evidence is mixed on whether organic cotton is better for water use despite claims – it likely depends on farming practice and yields.

Bamboo is fast growing so has strong yield but manufacturing is often water and chemical intensive.

What to look for:

Organic natural fibres don't require pesticides so less damaging to environment.

Hemp and linen are less water-intensive than cotton.

Hemp provides best biodiversity profile.

For cotton, look for recycled options, organic (with caution – look for info on farming practices/yields) and/or certified Better Cotton Initiative.

Farming practices affect the climate and environment impacts of plant-based fibres: maximising crop yields and lower tillage, fertiliser management and efficient irrigation can improve climate and environment outcomes.

Fibre:

Animal-based

Material:

Wool, Silk, Fur, Leather

Challenges:

Animals – particularly cows and sheep – lead to land & forest clearing for grazing and they produce high amounts of methane.

Wool carries a high emission footprint because sheep are reared for this purpose.

For leather, the hide is technically a small proportion of the carbon footprint when it is a by-product of the meat industry but is a fundamental part of the cattle industry so hard to disentangle. It is also heavily water-intensive and requires extensive chemical treatment.

Be cautious on 'vegan leather' as they can carry a high emissions footprint too (avoid PVC-based). Faux fur contributes to microfibre pollution.

Silk production has high GHG emissions due to storage and production requirements.

What to look for:

Recycling schemes and initiatives to lengthen the life of a product can help reduce the impact of animal-based textiles but only to a point.

Recycled animal-based products are better than virgin products.

Natural alternatives like cork and pineapple leaf fibre are a more sustainable option for imitation leather than the plastic-based ones that proliferate, both in terms of emissions and biodiversity damage.

Fibre:

Plant-based man-made

Material:

Man-made cellulosics including viscose aka rayon, lyocell (branded Tencel), pineapple leaf fibre

Challenges:

Wood pulp fabrics deplete forests: estimates suggest almost half of rayon in the fashion industry has been linked to ancient or endangered forests.[1]

Viscose is also highly energy and chemical intensive.

[1] Professional Clothing Industry: https://pciaw.org/rayon-unravelled-fashions-most-confusing-fibre-has-a-dark-past-but-hopeful-future/

What to look for:

Look for company commitment to sustainable sourcing of wood pulp fabrics. This is likely to be challenging in fast fashion due to the high demand for these fabrics and high volume of production.

Lyocell is a strong option. It comes from eucalyptus trees that grow quickly, don't require irrigation, is a closed loop system in terms of chemical use and uses much less water than cotton. Investors should check the manufacturing process and energy inputs to fully understand the emissions footprint.

Ecovero is a good example of a pulp-based fabric with strong sustainable credentials in terms of forest protection and waste chemical management.

Pineapple leaf fibre (Pinatex) is growing in use and has relatively low environmental impact.

Fibre:

Man-made synthetic

Material:

Polyester, nylon, acrylic, polyolefin

Challenges:

Synthetic fibres are made from polymers derived from fossil fuels so carry a high carbon footprint, are not biodegradable and secrete microplastics into the environment.

Polyester is highly water intensive and polyester dye tends to be damaging to the environment.

Nylon production is energy-intensive and produces nitrous oxide so carries high emissions and is also water-intensive.

What to look for:

Recycled synthetic materials (recycled polyester, econyl) are better than virgin synthetic materials, particularly where the textile doesn't require frequent washing so reducing plastic secretion.

However, recycled polyester is still not biodegradable and eventually contributes to plastic pollution.

Volumes

The fundamental challenge for fast fashion in the context of sustainability is the high volumes of goods produced and distributed. Ever higher volumes of product limit the potential cuts to emissions and environment improvements.

Fast fashion inputs can be made more sustainable but the focus on volumes limits the ultimate path for sustainability in the absence of significant technological advances. While fabric choice, innovation and renewable energy inputs can help, there is a natural limit until broader clean energy technologies become available: high volumes of textiles mean high volumes of natural resources, which are fundamentally scarce, as well as emissions and damage from the packaging and transport required to get these high volumes of product to the consumer.

While consumer preferences play an important role in driving high volumes, consumer preferences are not created in a vacuum; marketing and advertising, particularly in the context of social media and influencer company collaboration, is an important driver of these preferences.

Life cycle

Related to the issue of volumes and material choice, the life cycle of textiles is an important component of sustainability. With high volumes of textiles being pumped out, the average life span of a high street garment is claimed to be just seven wears. The natural corollary of this is huge volumes of textile waste going to landfill or incineration, not to mention massive resource depletion.

This underscores the relevance of recycling initiatives to reduce waste and maximise the potential use of these textiles. Regulatory pressures are pushing in this direction in the EU; the Commission's environment minister has said that "by 2030, textiles placed on the EU market should be long-lived and recyclable, made to a large extent of recycled fibres."[2]

However, recycling is not straightforward and technology in this space is still evolving. While pure cotton or polyester is relatively straight forward to recycle, multi-material fabrics or garments with buttons, zips etc. are much more complex and problematic.

Furthermore, the type of recycling technology depends on the fabric composition. Synthetic fibres can be chemically recycled while natural fibres are mechanically recycled.

[2] European Commission, EU strategy for sustainable and circular textiles. https://environment.ec.europa.eu/strategy/textiles-strategy_en#:~:text=The%20Commission%27s%202030%20Vision%20for%20Textiles%20is%20that,in%20respect%20of%20social%20rights%20and%20the%20environment

Chemical recycling is generally thought to carry higher emissions and more toxic waste than mechanical recycling, though the precise approach and energy inputs affect the overall picture.

Indeed, the reality is that clothes are rarely recycled into new clothes. Materials (particularly natural fibres) lose value and structure when they are broken down in recycling, so, often recycled textiles are used for insulation or carpet padding rather than new textiles. Textiles are also burned for energy, releasing toxic chemicals and emissions into the environment.

Recycling schemes can mean exporting the problem from wealthy to poorer countries, with little visibility of the ultimate destination or result. As such, transparency and traceability in recycling statistics is an important component of the overall sustainability of a recycling scheme.

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