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Shrinking Fashion's Carbon Footprint: A Roadmap for Conscious Consumers

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ABSTRACT

The global fashion industry, valued at over USD 1.3 trillion, plays a pivotal role in the economy but is also one of the largest contributors to environmental degradation. Responsible for nearly 10% of global carbon emissions-exceeding those from international flights and maritime shipping combined-the industry's rapid growth has intensified its ecological footprint. Global fibre production has nearly doubled in the past two decades, while consumer demand for cheap, disposable clothing has surged, leading to massive overproduction, textile waste, and microplastic pollution. Fast fashion, a major sub-sector, accounts for nearly half of the industry's greenhouse gas (GHG) emissions due to its fragmented supply chains, heavy reliance on petroleum-based synthetics, and dependence on air freight for rapid delivery. Current sustainability efforts, though promising, are insufficient to address the climate crisis. This article examines the environmental impact of fast fashion, highlights the urgent need for Sustainable Supply Chain Management (SSCM), and proposes immediate actions such as supply chain transparency, low-impact material use, efficient production planning, circular design, and consumer education. By adopting these measures, brands, policymakers, and consumers can collectively work toward a low-carbon, resource-efficient, and circular fashion economy.

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INTRODUCTION

The fashion industry is one of the world's largest polluters, generating nearly 10% of global carbon emissions-more than all international flights and maritime shipping combined (Ellen MacArthur Foundation, 2017). While the industry is a vital economic driver-valued at USD 1.3 trillion and supporting over 300 million jobs globally-its rapid expansion has come at a severe environmental cost.

Global fibre production has nearly doubled over the past two decades, rising from 58 million tonnes in 2000 to 116 million tonnes in 2022, and is expected to reach 147 million tonnes by 2030 if current trends continue (Textile Exchange, 2023). Consumer behaviour has also shifted dramatically: people now buy 60% more garments than they did in 2000 but keep them for only half as long (McKinsey & Company, 2016). This surge in consumption has accelerated resource depletion, with the fashion industry becoming the second-largest consumer of water and contributing 2-8% of global greenhouse gas (GHG) emissions.

Moreover, the sector's reliance on energy-intensive synthetic fibres like polyester has worsened its carbon footprint, while 85% of textiles are discarded annually, often ending up in landfills (UNECE, 2018). Washing synthetic garments releases microplastics, further polluting marine ecosystems. If the industry continues along its current trajectory, it is likely to miss its 2030 emission reduction targets by nearly 50%, thereby accelerating global warming (GFA & McKinsey & Company, 2020).

This article explores the environmental impact of fast fashion, highlights the urgency for sustainable supply chain management (SSCM), and outlines immediate actions that can reduce the sector's ecological footprint

and pave the way for a more circular, low-carbon future.

Discussion

The Rise of Fast Fashion - and Its Toll

The fast fashion model, which churns out cheap, trend-driven clothing at lightning speed, is a major culprit. It accounts for nearly half of the fashion industry's GHG emissions (Global Fashion Agenda & McKinsey, 2020). Its business model is built on:

- **Fragmented global supply chains** – Most production occurs in developing countries with weak environmental regulations. H&M, for example, works with over 800 suppliers across Bangladesh, Vietnam, and other nations.

- **Air freight dependence** – To keep up with trends, many brands ship finished goods by air, significantly increasing CO_2 emissions.

- **Synthetic material reliance** – Polyester and nylon are petroleum-based and energy-intensive. Making a single medium polyester T-shirt emits 5.5 kg CO_2, more than double that of an organic cotton T-shirt (Nature Climate Change, 2018).

- **Overproduction & waste** – Only ~60% of fast-fashion items are sold at full price; the rest are heavily discounted or discarded. Globally, a garbage truck's worth of textiles is sent to landfills every second (Global Fashion Agenda, 2020).

Why Change Is Urgent

If the industry continues its current trajectory, it is expected to miss its 2030 emissions reduction targets by almost 50%—accelerating global warming (GFA & McKinsey, 2020). Producing textiles consumes massive amounts of water, chemicals, and energy, depleting

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natural resources and polluting rivers. Synthetic fabrics are non-biodegradable and often impossible to recycle, locking us into a cycle of waste.

Immediate Actions for a Sustainable Fashion Future

While systemic change takes time, several immediate steps can help mitigate fast fashion's environmental impact:

1. **Adopt Transparent, Traceable Supply Chains:** Map entire supplier networks including Tier 2 and 3 factories and use digital tools like blockchain to monitor compliance with sustainability standards.

2. **Switch to Low-Impact Materials:** Replace virgin polyester and conventional cotton with organic cotton, recycled polyester, hemp, or bio-based fibres, prioritizing certified sources to minimize water and pesticide use.

3. **Plan Production Smarter:** Use demand forecasting and lean manufacturing to curb overproduction, reduce markdowns, and prevent unsold clothes from reaching landfills.

4. **Invest in Cleaner Manufacturing:** Scale up waterless dyeing, closed-loop processes, and renewable energy adoption in factories to cut emissions and save billions of litres of water.

5. **Design for Circularity:** Create garments that are durable, repairable, and recyclable by using mono-materials and modular designs.

6. **Encourage Responsible Consumer Behaviour:** Promote clothing repair, resale programs, and take-back schemes, incentivizing consumers to return used garments for recycling.

7. **Reduce Air Freight:** Shift to greener shipping modes (sea, rail) and plan collections well in advance to eliminate the need for fast, high-emission transport.

8. **Set Science-Based Targets:** Publicly commit to Paris Agreement–aligned GHG reduction targets and report progress annually for accountability.

Inspiring Industry Examples

Several leading brands have already begun to take steps in the right direction:

- **H&M Group** aims for 100% recycled or sustainably sourced materials by 2030; as of 2024, 89% of its materials meet this criterion, with nearly 30% being recycled. The company has reduced Scope 3 emissions by ~22% since 2019 and sources 96% of its electricity from renewable energy.

- **Levi's Water<Less™ Program** has saved over 3 billion litres of water and recycled 5 billion litres since launch, with some denim finishing techniques cutting water use by 96%. Levi's also plans to cut freshwater use in high-stress areas by 50% by 2025.

These examples prove that meaningful progress is possible when sustainability is made a core business priority.

What Consumers Can Do

Change isn't just about brands—consumers play a critical role. Here's how you can make a difference:

- **Buy Less, Choose Better** – Prioritize quality and timeless pieces over fast trends.

- **Care Smarter** – Wash clothes less frequently, in cold water, and air-dry to cut energy use.

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- **Repair, Reuse & Resell** – Extend the life of your garments through mending, swapping, or resale platforms.

- **Choose Sustainable Fabrics** – Opt for organic cotton, hemp, linen, or recycled fibres where possible.

- **Rent for Special Occasions** – Avoid single-use outfits by renting clothing.

- **Advocate for Policy Change** – Support regulations on textile waste, recycling infrastructure, and supply chain transparency.

CONCLUSION: The Bottom Line

Fast fashion's environmental challenges are massive-but solutions exist and are already being implemented. By combining corporate accountability, smart policy, and conscious consumer choices, we can shrink fashion's carbon footprint and create an industry that is both stylish and sustainable.

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