Redesigning Fashion's Future

The Shift from Waste to Regeneration

Key Takeaways

- The current linear production model in the fashion industry, fueled by overconsumption, contributes significantly to adverse environmental impacts including waste, water depletion, and pollution, affecting local ecosystems and communities.
- Growing regulatory pressures, financial advantages, and environmental benefits of circular practices are accelerating the industry-wide shift toward more sustainable, circular systems.
- The key to making tangible change in the fashion industry lies within circular business models – embedding sustainability from design through end-of-life via reuse, recycling, and repair initiatives to help mitigate the significant environmental impact of the industry.

A Linear Model in the Fashion Industry

The global apparel market, a $1.84 trillion (2025)[1] industry, relies on a vast and complex supply chain. This linear model begins with the sourcing of raw materials (largely fossil-fuel based synthetics) followed by garment design and production, and, after a brief period of consumer use, sees garments discarded to landfills – perpetuating a cycle of overproduction and overconsumption.

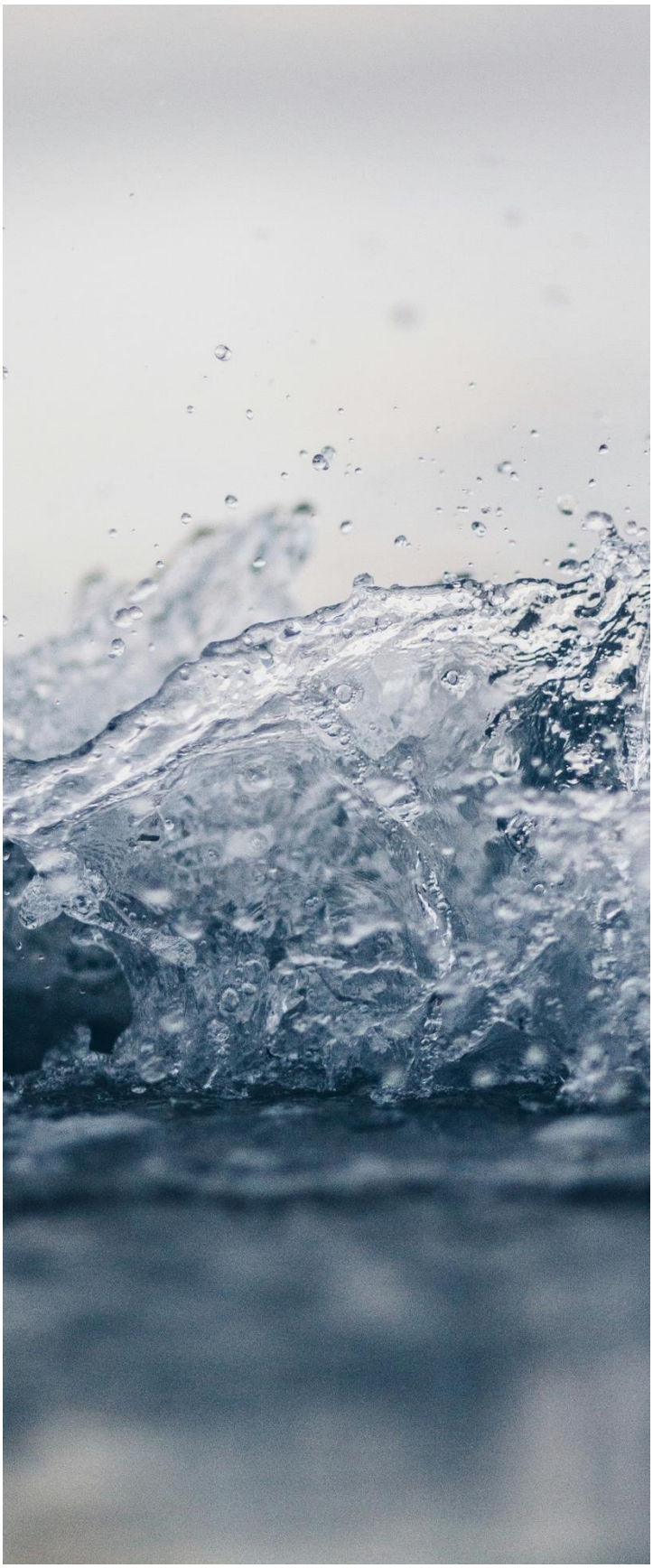
This model originates from 20th century industrial logic, which relies on optimizing economies of scale without accounting for resource depletion. The linear model is fueled by aggressive marketing, persuasive power of influencer programs, gamification of app experiences, scalable mass production manufacturer to consumer supply chain models, and the quickening of fashion season cycles. Globally, an estimated 92 million tons of textile waste is generated each year, yet less than 1% of used clothes are recycled[2], underscoring the large amount of waste generated by linear models. Historically, the fashion industry followed four seasonal cycles aligned with weather patterns. However, the rise of overconsumption has led to the emergence of more than 52 micro-seasons annually[3], intensifying trend turnover and increasing textile waste.

Additionally, the use of cheaper fossil-fuel based materials (e.g., acrylic, polyester) results in lower quality, lower life-span clothing. Studies have shown that the average garment has a shorter lifespan today than it did in 1980, with the average garment being worn only three times in China and seven times in the UK before being tossed out[4].

Water and Waste in a Linear Economy

An exceptional amount of water is used and wasted throughout the lifespan of a garment produced through the linear fashion model, introducing negative impacts to surrounding communities such as pollution and threats to biodiversity. ACT's Accountability and Monitoring Report found that brands' average forecasting deviation reached roughly 24% in 2025[5], indicating that factories are over- or under-producing by nearly a quarter relative to communicated demand, a mismatch that drives surplus materials, abandoned production inputs, and avoidable water and chemical waste upstream.

It is estimated that the fashion industry uses around 93 billion cubic meters of water per year, which is 2% of all freshwater extraction globally[6], and produces 1.92 million tons of textile waste per year[7]. Additionally, the fashion industry emits up to 10% of global carbon emissions and continues to be the second-largest consumer of water[8] behind the agricultural industry, reinforcing its negative contributions to the environment if not properly managed.



The fashion industry relies heavily on non-renewable and unsustainable materials, which contribute significantly to environmental harm through waste, excessive water use, and chemical pollution during extraction and processing.

- **Cotton**, one of the most common fabrics used in clothing, requires large amounts of water for irrigation and treatment, depleting local freshwater and groundwater resources. In order to produce a single cotton shirt, about 700 gallons of water are needed[9]. Additionally, pesticides and fertilizers used to increase production damage the soil quality and destroy underground microbial communities, introducing threats to local biodiversity and communities. This is exacerbated by the quickening of trend cycles and subsequent need to produce more garments.
- **Synthetic fabrics**, such as polyester, nylon, and acrylic, account for 69% of textile production[10] and require 70 million barrels of oil per year for production[11]. These textiles take hundreds of years to biodegrade while releasing lead, arsenic, benzene, and other pollutants into water sources.
- **Fabric dyeing and treatment**, essential components of the fashion industry, generate around 20% of the world's wastewater[12] due to the toxic and hazardous materials used including oil, phenol, dyes, pesticides, and heavy metals (e.g., copper, mercury, and chromium) which flow into neighboring streams and groundwater, harming local ecosystems.
- **Microfibers** from synthetic materials released during production and laundering can disrupt underwater ecosystems and have been detected in fish and other seafood consumed by humans[13], contributing to adverse environmental and human health impacts. Additionally, discarded clothing made from non-biodegradable fabrics can persist in landfills for up to 200 years[14], causing environmental degradation from the release of toxic dyes and chemicals.

In a practice known as "waste colonialism," textile waste from developed countries is exported to developing nations in the Global South where inadequate waste management infrastructure exacerbates environmental harm. For example in Ghana, over 150 million kilograms of clothing are imported annually which amounts to approximately 15 million items arriving each week[15]. This practice perpetuates debt cycles, as an estimated 40% of exported clothing is unsellable. It also leads to serious health impacts for involved actors, particularly for women who carry heavy bales of clothing weighing up to 55kg. Years of carrying such extreme weight leads to permanent spinal degeneration, bone fusion, vertebral fractures, and severe misalignment, as documented in X-rays showing visible damage to the growth plates of young workers[16]. Finally, it contributes to intense environmental pollution when discarded garments are burned as fuel and release toxic substances into the air.

Circularity in the Fashion Industry

A circular fashion model is designed to minimize waste and extend the product lifecycle by recovering and regenerating materials. The term circular model was coined in 2014 by two actors, Anna Brismar of Green Strategy in Sweden and H&M sustainability staff[17], to emphasize waste elimination and product longevity.

In the fashion industry, circularity focuses on durability, repairability, and recyclability. The circular model applied to materials prioritizes ease of disassembly, the use of recycled content over virgin materials, and careful evaluation of the chemical impacts of finishes. This model emphasizes minimizing dye processes and ensuring materials can decompose without harmful additives or oxo-degradability (i.e., plastic materials designed to fragment via oxidation). Natural fiber composites, such as flax and hemp have an about 50% lower carbon footprint compared to glass fiber composites[18]. Additionally, the use of mono-fiber materials simplifies recycling processes and lessens the overall environmental footprint of a design. Circular fashion leans on strategies like fiber-to-fiber recycling, repair and take-back programs, and resale and rental platforms to help close the loop by creating garments that can be fully recycled or biodegrade at the end of life.

Additionally, product design is a key component of success in circularity – designing products with fewer, more standardized materials can make recovery and reuse significantly easier. Some companies are beginning to explore this approach by developing materials intended to remain in circulation across multiple product categories and by investing in sorting and recovery systems that allow discarded materials, such as fishing nets or other nylon waste, to be processed into new inputs.

Several brands are already staking claim as industry leaders by embedding circularity into their business models through design for recyclability, reuse and repair programs, and alternative consumption models.

- Adidas imbeds a circular model into its design process by leveraging mono-material construction to improve recyclability, simplifying material recovery and supporting more efficient, lower-impact circular systems over the product life cycle.
- Eileen Fisher offers a renew program, which focuses on reuse and upcycling by taking back and repairing pre-owned Eileen Fisher garments to keep them out of landfills.
- Tulerie provides a peer-to-peer rental platform for customers to rent and loan high-quality apparel for short-term use, reducing the need to buy new items and promoting more efficient garment utilization.

Achieving a truly circular model requires collaboration among numerous stakeholders throughout the supply chain, from design and manufacturing to end-of-life management. Together, these initiatives demonstrate how circular fashion models can reduce environmental impact while reshaping how consumers engage with clothing across its entire lifecycle.

The Shift Towards a Circular Economy

A circular model offers numerous benefits beyond waste reduction and environmental protection, including long-term cost savings and improved regulatory compliance.

Cost Savings

The world discards 120 million metric tons of clothes per year[19] and about 40% of clothes made each year are not sold[20], costing organizations significant resources in materials, marketing, and labor that could have been avoided. Implementing a circular model can save organizations money in the long-run while appealing to sustainable-minded customers.

In the fashion industry, adopting circular practices can also generate new revenue streams and create additional jobs. Malk interviewed Adam Baruchowitz, co-founder of Return to Vendor (RTV), a company leading closed-loop nylon recovery, to gain a better understanding of the economic viability of textile recycling. Adam explained that in his experience with take-back programs, roughly 50% of items received retain resale or recycling value, meaning that these materials could be directly converted into revenue and generate profits. According to BCG, the industry could see waste recycling rates surpass 30%, generating new fibers (e.g., recycled cotton) with a raw material value worth more than $50 billion and creating approximately 180,000 new jobs[21], provided that the industry scales collection and sorting infrastructure, deploys advanced fiber-to-fiber recycling technologies, and aligns brands, policymakers, and consumers around circular demand[22].

Furthermore, consumers are increasingly attracted to sustainably produced offerings due to heightened environmental awareness, a desire for ethical labor practices, and the appeal of high-quality, durable garments. A 2024 PwC survey found that consumers are willing to spend an average of 9.7% more on sustainably produced or sourced goods[23] highlighting the potential to attract and maintain customers over time. Transitioning to a circular business model will increase costs in the short-term, however, this can be offset by long-term savings and increased consumer demand.

Case Study

Patagonia's Worn Wear and global repair infrastructure illustrates how circular business models can generate durable economic value by preserving product utility and reducing the need for raw material inputs. According to Patagonia's 2025 Work in Progress Report, the company repaired 174,799 products[24] globally in FY2025, directly extending garment lifespans that would otherwise require replacement purchases. This repair-first strategy feeds into Patagonia's resale platform, Worn Wear, which generated approximately $13 million in annual revenue[25], representing approximately 1% of Patagonia's total FY2025 sales of $1.47 billion[26], a meaningful revenue stream built on recovered inventory rather than new material extraction.

While resale remains a small share of total sales, it emphasizes that the primary economic benefit lies in avoided production costs, improved inventory efficiency, and reduced material demand. Patagonia explicitly frames durability and repair as tools to reduce long-term operating risk in a resource-constrained industry, noting that extending the life of products by even a few months can significantly lower the material, water, and energy intensity associated with replacement production.

Boston Consulting Group cites Patagonia as evidence that circular models such as resale and repair can drive 15–20% topline growth when scaled[27], while also improving customer lifetime value and loyalty, benefits Patagonia reinforces through its strong direct-to-consumer engagement tied to circular services rather than discount-driven sales growth. Collectively, Patagonia's 2025 data demonstrates that circularity functions not merely as an environmental ethic, but as a value-creation strategy that converts durability, repair, and resale into economic resilience in the face of volatile materials markets.

Regulatory Compliance

Environmental concerns surrounding the fashion industry are driving stricter regulatory requirements worldwide and accelerating the shift toward circular practices. For instance, in March 2024 the European Parliament passed the initial reading of the EU-wide textile Extended Producer Responsibility (EPR) legislation, which mandates schemes for the separate collection of textiles for reuse and recycling by January 2025. Additionally, under the Corporate Sustainability and Reporting Directive (CSRD), companies are required to disclose detailed, auditable information on circular resource use, including raw material inputs and outflows, waste prevention strategies, circular design practices, and the proportion of materials that are reused, recycled, or recovered. Although E.U. member states have until July 2027 to transpose CSRD mandates, regulatory expectations are already shaping corporate strategy and operational planning in the fashion industry.

Looking Forward

However, industry practitioners emphasize that circularity cannot be addressed at a single point in the value chain. As Adam Baruchowitz explained, meaningful change requires examining the entire product lifecycle, from raw material sourcing and product design to post-consumer collection and material recovery. Without coordination across each stage of the value chain, many materials lose quality and economic value, leading them to be downcycled into lower-grade applications or discarded altogether. As such, in adopting a circular model, companies should take a more holistic approach to sustainability by assessing the environmental impact of their supply chains, tracking emissions across production and distribution, exploring sustainable and regenerative fibers, and gaining a deeper understanding of consumer preferences and behaviors. Many are also investing in waste reduction strategies, improving material traceability, extending product lifecycles through repair and resale, and designing products with recyclability and reuse in mind. For instance, Good Culture, acquired by L Catterton, maintains strong supply chain transparency evidenced by its B Corp certification, which requires verified disclosure of environmental and social practices across the value chain, including sourcing policies, supplier standards, and impact measurement.

Ultimately, industry leaders agree the companies investing in circular systems today will be best positioned to thrive in the future of sustainable fashion tomorrow. Meeting these ambitions requires translating high-level commitments into measurable action across complex value chains. Malk works with brands on carbon transition planning, supply-chain mapping, and water and waste reduction strategies, offering one pathway for companies seeking to operationalize circularity at scale.

Growing financial and regulatory pressure on the fashion industry to innovate and reduce waste makes a circular model increasingly attractive to operators. Circularity not only reduces waste and pollution but also offers long-term cost savings, appeals to sustainability-minded customers, and helps companies prepare for tightening regulations. To stay competitive in a changing market, more brands should shift, and are shifting, towards circular systems by integrating reuse and repair programs into their operating structures, designing for recyclability, and encouraging alternative consumption models.

Bios

Melanie Weiss

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Melanie is a Senior Associate on the Growth Team at Malk Partners, where she supports due diligence engagements for growth equity and venture capital investments. Her work includes evaluating growth-stage companies and VC organizations across a range of sectors. Melanie also holds a passion for ethical supply chains in the fashion industry and assists with firmwide marketing initiatives alongside her diligence responsibilities. Prior to joining Malk in 2024, Melanie earned her bachelor's degree in Economics and Business Administration from Northeastern University.

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Vice President, Growth

Emily is a Vice President and leads Malk's Growth Equity and Venture practice, partnering with GPs and portfolio companies to develop ESG programs that support long-term value creation and risk mitigation. Emily has led 200+ ESG due diligence engagements, including significant experience assessing AI companies on governance, ethical use, and emerging regulatory expectations. Emily works closely with GPs and portfolio companies to strengthen ESG programs, reporting, and portfolio-level approaches to responsible AI. Emily earned her bachelor's degree in Sociology from Barnard College.

Bios

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Sales Development Representative

Katherine works on the Business Development team at Malk helping to support the development of thought leadership, sales enablement tools, and research papers. Katherine leads content curation at Malk and works closely with the delivery team to nurture GP / LP relationships and best communicate our ESG offerings. Katherine earned her bachelor's degree in English and Environmental Sustainability, and her master's degree in Public Policy from the University of Virginia.

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