



Circular Fashion

Closing the Loop

Circular fashion emerges as a solution, emphasising a closed-loop system where resources are reused, recycled, or composted, significantly reducing environmental impact. Rooted in the principles of a circular economy, this approach aims to extend the lifecycle of products, minimise waste, and address resource scarcity.

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The global fashion industry, valued at over \$2.5 trillion, has long been a hub of creativity and innovation. However, its traditional linear model of ‘produce, consume, dispose’ has led to escalating environmental challenges, including resource depletion and mounting waste. According to estimates, less than 1% of materials used in fashion are recycled into new garments, showcasing an urgent need for transformation.

Circular fashion emerges as a solution, emphasising a closed-loop system where resources are reused, recycled, or composted, significantly reducing environmental impact. Rooted in the principles of a circular economy, this approach aims to extend the lifecycle of products, minimise waste, and address resource scarcity. By adopting sustainable practices like material innovation, product redesign, and system-level changes, circular fashion meets the rising demand for eco-friendly alternatives while tackling critical issues of waste and pollution.

How Does Circular Fashion Differ from the Linear Model?

Aspect	Linear Fashion Model	Circular Fashion Model
Core Principle	‘Take-Make-Waste’	‘Reduce-Reuse-Recycle’
Lifecycle	Short and ends in disposal	Extended with focus on reusability and recyclability
Resource Use	Extracts new resources continuously	Maximises use of existing materials
Waste Generation	High: 92 million tons of textile waste annually	Minimal waste by reintroducing materials into production
Environmental Impact	High carbon footprint and water usage	Reduced emissions and conservation of resources
Consumer Behavior	Encourages overconsumption and fast fashion	Encourages mindful consumption and product longevity



Essential Insights into Circular Fashion

Recycling Potential

- Globally, only a small percentage of clothing materials—approximately 12%— are recycled back into the fashion industry.
- Circular fashion initiatives aim to address this gap by focusing on closing the loop in textile production and consumption, which could significantly enhance sustainability.

Economic Impact

- Integrating circular practices in the fashion industry could contribute an estimated \$560 billion annually by 2030. This economic boost stems from savings in resource usage and the creation of new employment opportunities in sectors such as recycling, upcycling, and resale.

Carbon Emissions Reduction

- By adopting circular strategies, the fashion industry has the potential to reduce its greenhouse gas emissions by tens of millions of tons each year. This reduction aligns with global efforts to meet climate goals and minimise environmental harm.

2.3 Sustainability Sphere

Waste Minimisation

- Implementing circular practices like repairing, reselling, and renting apparel could cut down textile waste by nearly half by the end of this decade. Such measures promote longevity in clothing use and decrease reliance on landfills.



Circular Fashion: The Need

Circular fashion offers a transformative approach to addressing the pressing environmental, social, and economic challenges posed by the traditional linear fashion model. Below is an analysis of its importance and potential impact:

Environmental Benefits

- **Reducing Waste:** Circular fashion minimises the staggering amount of textile waste—approximately 92 million tons annually—by extending the lifecycle of materials through repair, recycling, and upcycling.
Example: Recycling one ton of cotton conserves 765,000 liters of water.
- **Conserving Resources:** The fashion industry's heavy reliance on resources like petroleum-based fibers and water-intensive crops like cotton is unsustainable. Circular practices lessen the strain on these resources, crucial as global population growth drives clothing demand.
- **Lowering Carbon Footprint:** Fashion contributes 8–10% of global greenhouse gas emissions. Circular solutions like upcycling reduce the need for resource-intensive manufacturing.
- **Mitigating Pollution:** By reducing reliance on landfilling and incineration, circular fashion decreases harmful microplastic pollution and chemical runoff.



Addressing Overproduction & Overconsumption

- **Fast Fashion's Flaws:** Overproduction results in 30–40% of clothing going unsold, leading to waste. Circular fashion promotes mindful consumption and durability over fast, disposable trends.
- **Shifting Mindsets:** Encouraging consumers to invest in quality reduces unnecessary consumption and supports longevity.

Economic Opportunities

- **Emerging Business Models:** Circular fashion fosters avenues such as resale, rental, repair, and upcycling.
- **Data Insight:** The global secondhand clothing market is projected to grow from \$37 billion in 2021 to \$77 billion by 2025.
- **Cost Efficiency:** Recycling materials and reducing waste saves businesses disposal costs while enhancing sustainability.
- **Job Creation:** The shift toward repair and recycling supports job creation, especially in developing economies.

Social Responsibility

- **Improved Labor Conditions:** With reduced emphasis on overproduction, garment factories can prioritise quality, potentially improving worker conditions.
- **Increased Accessibility:** Resale and rental models make sustainable, high-quality clothing accessible to more demographics, promoting inclusivity.

Aligning with Global Goals

- **Sustainability Goals:** Circular fashion supports SDG 12 (Responsible Consumption), SDG 13 (Climate Action), and SDG 6 (Clean Water).
- **Brand Responsibility:** With rising consumer awareness, sustainability enhances reputation and ensures compliance with emerging regulations.

Key Pillars of Circular Fashion



Sustainable Design

- Use durable, recyclable materials
- Avoid mixed fibers that hinder recycling
- Create modular garments that are easy to repair and repurpose

Innovative Materials

- **Organic Cotton:** Free from harmful chemicals
- **Recycled Polyester:** Derived from post-consumer plastics
- **Biofabricated Textiles:** Lab-grown leather or spider silk
- **Compostable Fabrics:** Natural fibers that decompose efficiently

Ethical Production

- Support fair wages and ensure safe working conditions
- Adopt localised production methods to lower emissions
- Build transparent supply chains

Consumer Engagement

- Provide repair services or DIY repair kits

- Offer clothing rental or resale programs
- Share detailed care instructions to prolong garment life

End-of-Life Management

- **Take-Back Programs:** Facilitate garment collection for recycling or resale
- **Advanced Recycling:** Break textiles into reusable raw materials
- **Composting:** Use biodegradable fabrics to replenish soil health

Technology's Role in Advancing Circular Fashion

Circular fashion has emerged as a crucial solution for the environmental challenges posed by the apparel industry. The integration of advanced technology enhances sustainability and efficiency throughout a garment's lifecycle. Here's a breakdown of how technology supports circular fashion:

Design for Disassembly

- **Smart Design Tools:** Advanced software enables designers to create products with recyclable materials and modular designs. Tools like CLO 3D allow simulation of designs to reduce waste during production.
- **Innovative Materials:** Technological advancements are leading to biodegradable and recyclable fabrics, such as Piñatex (pineapple leather) and fabrics from recycled polyester.



Efficient Textile Recycling

- **AI-Powered Sorting:** Companies like Worn Again Technologies use machine learning for precise sorting of textiles, improving recycling quality.
- **Garment-to-Garment Systems:** H&M's "Loop" recycling system transforms old clothes into new products, minimising resource use.
- **Fiber Recovery Innovations:** Renewcell's technology extracts reusable fibers from discarded garments for new textile production.

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Blockchain for Traceability

- **Transparent Supply Chains:** Blockchain records the journey of a garment, ensuring ethical sourcing and sustainable practices.
- **Digital Tags:** Blockchain-enabled tags guide consumers on recycling or repurposing options.

Demand Forecasting & Production Optimisation

- **AI-Driven Demand Forecasting:** Tools analyse consumer trends to reduce overproduction, mitigating waste.
- **3D Printing:** This allows on-demand production, reducing leftover inventory and enabling custom designs with zero waste.

Smart Garments

- **Wearable Tech:** Sensors embedded in clothing track wear patterns, prompting timely recycling or repair.
- **Self-healing Fabrics:** Research in nanotechnology offers fabrics capable of repairing minor damages.

Digital Platforms Supporting Circular Models

- **Resale & Rental Platforms:** Apps like ThredUp and Poshmark encourage garment reuse, extending product lifecycles.
- **Virtual Fitting Rooms:** AR-based tools minimise returns by offering precise digital try-on experiences.

Consumer Engagement through Digital Solutions

- **Gamification:** Apps reward eco-friendly actions, encouraging sustainable consumer behavior
- **AI Recommendations:** Platforms suggest sustainable options based on individual preferences, promoting conscious buying habits.



The Booming Resale & Second-Hand Markets

The resale and second-hand clothing market is growing rapidly, with many brands focusing on sustainability and circular fashion. Here's a look at some key players both in India and internationally:

Indian Brands	Focus	Market
RE-WEAR	Re-wear is a peer-to-peer resale platform for pre-owned fashion. It helps users buy and sell gently used clothes, shoes, and accessories.	Primarily focuses on the urban Indian population, catering to the growing interest in sustainable fashion.
LURAP	Lurap is a fashion rental and resale platform that allows users to rent or sell their pre-loved clothing, especially high-end and occasion wear.	Targets urban consumers who prefer renting or buying second-hand apparel for events and parties.
MYTRA'S PRE-LOVED	Myntra, one of India's largest e-commerce platforms, launched its 'Pre-loved' section in 2022. It allows users to buy and sell gently used fashion items.	Myntra has a significant customer base across urban India, and the pre-loved section appeals to environmentally conscious consumers.
THE CHENNAI SHOP	This brand operates in the second-hand and upcycled fashion space, focusing on reselling pre-owned clothes and accessories with a unique, stylish twist.	Primarily caters to the Indian middle-class and college-going crowd.

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International Brands	Focus	Market
THREDUP (USA)	One of the largest online resale platforms for second-hand clothing. ThredUp allows consumers to buy and sell gently used apparel, shoes, and accessories.	Targets eco-conscious consumers in the U.S., focusing on a broad range of brands and offering a wide array of affordable and designer clothing.
POSHMARK (USA)	Poshmark is a social commerce platform for resale clothing, accessories, and beauty products. Users can buy and sell new or used items.	Targets eco-conscious consumers in the U.S., focusing on a broad range of brands and offering a wide array of affordable and designer clothing.
DEPOP (UK/ International)	Depop is a peer-to-peer mobile marketplace for second-hand fashion, widely popular for vintage and streetwear fashion. It combines resale with social media features.	Particularly popular with Gen Z, the app serves a global audience and is a hub for trendy, one-of-a-kind pieces.
VINTED (EUROPE)	A European platform for selling and buying second-hand clothing, shoes, and accessories.	Predominantly operates in Europe, but its services are expanding into the U.S. and other regions.
THE REALREAL (USA)	Specialises in the resale of luxury and designer items. The RealReal offers authenticated pre-owned high-end fashion, jewelry, watches, and more.	Targets a high-end customer base seeking luxury at a lower price point. The brand focuses on sustainability in luxury fashion.
REBAG (USA)	Specialises in second-hand luxury handbags and accessories. Rebag allows users to sell or trade luxury items, with a strong focus on sustainability.	Luxury-focused clientele, with a strong base in the U.S. but growing international presence.
TRADESY (USA)	Tradesy is an online marketplace for buying and selling new or used designer clothing and accessories. They offer authentication services for luxury goods.	Focuses on high-end brands, catering to fashion-conscious consumers looking for discounted luxury.
GRAILED (USA/ INTERNATIONAL)	A marketplace for men's fashion, especially streetwear, designer, and vintage items. Grailed connects buyers and sellers of high-end, niche fashion pieces.	Popular among fashion enthusiasts, particularly those interested in high-end and limited-edition men's clothing.
VESTIAIRE COLLECTIVE (FRANCE/ INTERNATIONAL)	Specialises in second-hand luxury fashion, including clothing, handbags, shoes, and accessories. The platform offers authenticated items.	Primarily operates in Europe but has a strong presence in the U.S. and globally. It caters to luxury fashion lovers.
KILO SHOP (EUROPE)	A vintage clothing store that sells second-hand clothing by weight, encouraging sustainability and unique fashion.	Operates in Europe with a growing customer base seeking eco-friendly fashion at affordable prices.
RENT THE RUNWAY (USA)	A vintage clothing store that sells second-hand clothing by weight, encouraging sustainability and unique fashion.	Operates in Europe with a growing customer base seeking eco-friendly fashion at affordable prices.

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Brands Pioneering Circular Fashion



PATAGONIA:

Leading with Repair & Recycling

Patagonia, known for its commitment to sustainability, has embraced circular fashion through its Worn Wear program, which focuses on repairing, reusing, and recycling their products. Patagonia encourages customers to buy fewer new products and instead opt for repaired or used items. They also take back worn-out Patagonia gear, offering customers store credit in exchange. The brand also offers repair services and workshops to teach customers how to care for their clothes, fostering a sense of community and environmental consciousness.

Key Benefits:

- **Consumer Loyalty:** Patagonia's commitment to circular fashion has helped build a loyal customer base who values sustainability.
- **Brand Image:** By promoting environmental responsibility, Patagonia strengthens its image as an ethical and eco-conscious brand, attracting consumers who prioritise sustainability.
- **Waste Reduction:** Through the Worn Wear program, Patagonia has successfully diverted thousands of tons of clothing from landfills, significantly reducing its environmental footprint.

LEVI'S:

Upcycling & Sustainable Materials

Levi's has embraced circular fashion through initiatives like Water<Less™, which reduces water usage in the production of



jeans, and Recycled Denim, which involves upcycling old denim to create new products. Additionally, the company promotes its Buy Better, Wear Longer philosophy, encouraging consumers to choose quality over quantity. The company supports various social initiatives, including partnerships with organisations like the Better Cotton Initiative to improve the lives of cotton farmers.

Key Benefits:

- **Cost Efficiency:** By using recycled denim and sustainable materials, Levi's saves on raw material costs and reduces the environmental impact of manufacturing.
- **Innovative Products:** Levi's has launched products like the Levi's WellThread® collection, which features fully recyclable garments that can be returned to Levi's for repurposing.
- **Market Differentiation:** As sustainability becomes a key purchasing criterion, Levi's' initiatives have helped differentiate the brand in a competitive market, appealing to eco-conscious consumers.

H&M:

Conscious Collection & Clothing Recycling

H&M launched its Conscious Collection, which features clothing made from sustainably sourced materials, including organic cotton, recycled polyester, and Tencel. The brand also introduced a Clothing Recycling Program, allowing customers to bring in their old clothes in exchange for store discounts. H&M then recycles or resells these garments, integrating circularity into its business model. H&M's focus on sustainable sourcing and



recycling has inspired other fashion brands to adopt circular practices, amplifying the impact across the industry.

Key Benefits:

- **Increased Sales:** The Conscious Collection, which features eco-friendly materials and designs, has been well-received by customers, contributing to a boost in sales.
- **Consumer Engagement:** The clothing recycling program encourages customers to be part of the sustainability movement, fostering a deeper connection to the brand.
- **Sustainability as a Selling Point:** By promoting circular fashion and sustainability, H&M differentiates itself in the crowded fast-fashion market, especially among eco-conscious shoppers.

STELLA MCCARTNEY:

Sustainable Luxury

Stella McCartney has long been a champion of sustainability in the fashion industry. The brand uses alternative materials like lab-grown leather, recycled polyester, and organic cotton. Stella McCartney also emphasises upcycling, working with waste fabrics to create new collections. The company's circular initiatives are deeply embedded in its luxury business model.

The brand has led innovations in sustainable alternative materials, such as mushroom leather and recycled wool, which have contributed to reducing the environmental impact of luxury fashion.

Key Benefits:

- **Luxury Sustainability:** Stella McCartney has proven that sustainable fashion can be luxurious. The brand's efforts



to use eco-friendly materials without compromising on style have garnered attention in both high-end fashion and sustainability circles.

- **Profitability Through Innovation:** As the demand for sustainable luxury grows, Stella McCartney is well-positioned as a leader in eco-conscious fashion, attracting a high-end consumer base interested in ethical luxury.

Challenges in Implementing Circular Fashion

Implementing circular fashion comes with several challenges, both for businesses and consumers. While the concept of a circular economy offers a sustainable alternative to the traditional linear 'take-make-waste' model, overcoming these hurdles is key to making circular fashion a widespread reality. Here are the main challenges:

Supply Chain & Logistics Complexity

- **Fragmented Supply Chains:** Circular fashion requires the collaboration of multiple stakeholders, from brands and consumers to recyclers and logistics providers. Managing a circular supply chain, where garments and materials are reused, repaired, and redistributed, is complex.
- **Reverse Logistics:** Efficiently handling returns, resale, and recycling requires robust reverse logistics systems. Ensuring that garments are collected, cleaned, and processed in an environmentally-friendly manner presents logistical challenges.
- **Collection & Sorting:** Sorting second-hand clothes based on their material quality and potential for resale or recycling is labor-intensive and requires advanced technology. This often leads to inefficiencies and increased operational costs.

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Quality & Durability of Materials

- **Quality Control:** Resale items or recycled materials may not meet the same quality standards as newly produced garments. For circular fashion to be viable, items need to maintain their durability and appeal over multiple uses.
- **Material Degradation:** Many textiles, especially synthetic fibers, degrade after repeated use and recycling. Garments made from blends of different fibers (e.g., polyester and cotton) are particularly difficult to recycle due to incompatibility during the recycling process.

Consumer Behavior & Awareness

- **Limited Awareness:** Despite growing interest in sustainability, many consumers are still unaware of the benefits and practices of circular fashion. There's also a misconception that second-hand clothing is of lower value or poor quality.
- **Convenience:** The ease of purchasing new clothing often trumps the effort involved in buying second-hand or engaging in clothing swaps. Circular fashion requires consumers to be more active, whether by buying pre-owned items, repairing clothes, or engaging in garment recycling programs.
- **Cultural Perceptions:** In many societies, second-hand fashion is still perceived as less desirable or "inferior" compared to new items, which limits the appeal of resale platforms.

Economic & Financial Incentives

- **Profitability:** Circular fashion models may face financial challenges. Resale, repair, and recycling operations typically require higher operational costs than traditional retail, which may reduce profitability.
- **Market Fragmentation:** The second-hand market is often fragmented into small, niche players, making it difficult for businesses to scale and achieve the same profitability as large fast fashion brands.
- **Price Discrepancy:** Consumers may expect resale prices to be significantly lower than new items, limiting the potential margins for businesses. Offering pre-owned or repaired items at competitive prices while ensuring sustainable practices is a challenge.

Product Design & Manufacturing

- **Design for Longevity:** Circular fashion requires

that products are designed with durability, repairability, and recyclability in mind. Many fast fashion items are made from cheap, low-quality materials that are not intended to last, which contradicts the principles of circular fashion.

- **Lack of Standardisation:** There is no widely-accepted standard or regulation for designing products with circularity in mind. This lack of standardisation/ regulation makes it difficult to scale circular fashion across the industry.
- **High Initial Cost:** Designing products for circularity can lead to higher production costs, which may not align with the price-sensitive nature of many fast fashion consumers.



Infrastructure & Recycling Challenges

- **Recycling Technology:** While advancements are being made, the technology required to recycle textile fibers (especially synthetic ones) efficiently is still underdeveloped. Many textiles end up in landfills because they cannot be effectively recycled.
- **Lack of Collection Systems:** A comprehensive system for collecting old clothes from consumers is still missing in many regions. Without easy access to collection points or incentives for returning old clothes, consumers may continue to discard them.
- **Waste Disposal:** The recycling of fashion is still a relatively small industry, and many garments still end up in landfills or incinerators because they cannot be recycled economically or efficiently.

Policy & Regulatory Barriers

- **Regulatory Hurdles:** Many countries lack comprehensive



policies that encourage circularity in fashion. For example, there may be limited laws or incentives around the reuse, recycling, and repair of garments. Without strong policies, companies may lack motivation to shift from linear to circular models.

- **Taxation & Tariffs:** In some cases, second-hand or recycled goods may be subject to higher taxes or tariffs compared to new goods, making circular fashion less attractive for businesses and consumers.

Brand Resistance & Business Model Transition

- **Brand Resistance:** Many brands are deeply invested in the traditional linear model of fast fashion. Shifting to a circular model requires rethinking product development, sales, marketing, and logistics. This transition can be slow and costly.
- **Competitive Disadvantage:** Brands that embrace circular fashion might face a competitive disadvantage against those that prioritise rapid production and consumption. The slower, more sustainable cycle may not appeal to consumers looking for instant gratification.

Trust & Transparency Issues

- **Lack of Transparency:** For circular fashion to thrive, consumers need to trust that the items they are purchasing are truly sustainable and that

the brands are honest about their recycling and resale processes. This is difficult to achieve without clear communication and certifications.

- **Authentication Challenges:** In resale markets, especially for luxury items, consumers demand proof of authenticity and the condition of goods. Providing this transparency requires significant investment in technology (e.g., blockchain) and authentication systems.

Scalability

- **Scaling Circular Practices:** While small-scale circular initiatives can be successful, scaling them to meet the demands of the global fashion market is difficult. The infrastructure, logistics, and investment needed for global circular systems are immense.
- **International Trade Barriers:** The second-hand clothing market faces trade restrictions in some regions, where pre-owned garments may be subject to tariffs or may not be allowed to enter the market due to concerns over hygiene and quality.



Conclusion

Circular fashion represents a transformative approach to the fashion industry, aiming at minimising waste and maximising resource efficiency. By embracing practices such as recycling, upcycling, sustainable material sourcing, and extended product lifecycles, circular fashion fosters a more responsible and sustainable future. This model not only reduces environmental harm but also drives innovation and creates new opportunities within the apparel industry. As consumers, businesses, and policymakers increasingly recognise the importance of circularity, the shift toward sustainable practices becomes not just a necessity but also an exciting pathway for growth and collaboration. Together, we can redefine fashion's impact, turning it into a force for positive change that aligns style with sustainability.