

Global Fast Fashion Industry: Present Opportunities and Future Challenges for Sustainability

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doi:10.63593/AS.2709-9830.2025.12.002

Abstract

Fast fashion is a business model that has profoundly changed the fashion industry by creating an efficient supply chain for the rapid production of fashionable merchandise. It has revolutionized in clothing industry with the fulfillment of consumer demand through the development of new styles. On the other hand, it produces a large quantity of harmful raw materials, as well as roughly emits 8-10% of global carbon dioxide (CO₂), and disposes excess untreated water and microplastics. The garment workers in this sector are victims of various oppressions, such as low-wages, unhealthy working conditions, and endemic labor injustices. For sustainability, it requires not only technological innovations but also some systemic changes in policies, business practices and consumer behavior to make sure the production is both socially fair and environmentally responsible. This study explores environmental and social implications of fast fashion based on circular economy and environmental justice.

Keywords: fast fashion, circular economy, environmental justice, sustainability, labor rights, microplastic pollution

1. Introduction

Fast fashion is the highly profitable global industry that produces mass amount of cheap and low-quality clothes and accessories very rapidly (Turker & Altuntas, 2014). It is characterized by the rapid production of inexpensive clothing to meet ever-changing trends that has become a dominant force in the global fashion industry (Taplin, 2014). It is a massive, global economic sector, encompassing multiple stages of sourcing and manufacturing from fiber and yarn production to dyeing, printing, cutting, sewing, and quality control (Thomas et al., 2024). Zara, H&Ms, Fashion Nova, Primark, and Shein are well-known companies of fast fashion industry. The Zara has demonstrated that it produces 840 million garments each year for its 6,000 stores worldwide (Ferdows et al., 2005). Every year, more than 100-150 billion pieces of garments are produced globally. Global fast fashion has doubled production over the decades where more than 50% of apparel is thrown away within a year (Dissanayake & Weerasinghe, 2022).

Fast fashion is the fourth-largest user of raw materials and water. Climate influence of it is very terrible. For example, its carbon footprint is roughly 8-10% of global emissions (4-5 billion tons of CO₂ annually), it consumes an awful 215 trillion liters of water per year, and it creates a huge amount of plastic garbage, and 500,000 tons of microplastic fibers dumped into oceans (Jacometti, 2019). Globally about 92 million tons of textile wastes are accumulated at different phases of their life cycles, and only 20% of this waste is collected for reuse and recycling, and more than 80% of clothing waste is discarded in landfills for dumping and incineration that lead to higher carbon footprint, and energy and raw material losses (Gupta et al., 2022).

The fast fashion has undertaken numerous efforts to meet the demand for sustainability, such as launch of

eco-friendly products, transparent supply chain, reduction of environmental consequences, recycling, reuse, and manufacture of new waste-based products (Kim et al., 2021). Although there are relevant technological solutions, such as effluent treatment plants and waterless dyeing methods; and these are largely underutilized due to a lack of financial resources and relevant regulations (Gonçalves et al., 2025). The fast fashion workers face desperate social and ethical implications. For example, frequently they have to deal with deplorable exploitation, sexism, and unhealthy working conditions (Leslie et al., 2014). This article contributes to the academic and policy discourse on sustainable fashion by integrating environmental and social dimensions within a unified analytical framework (Kottala, 2021).

2. Literature Review

A literature review is a survey and critical evaluation of existing scholarly works, such as books, articles, theses, and any other source relevant to a particular issue and research area on a specific topic (Creswell, 2013). It aims to summarize, synthesize, and identify gaps in the existing knowledge to provide context for new research. A good literature review has a proper research question, a proper theoretical framework, and a chosen research methodology (Baglione, 2012). It is the most influential work around any topic by type, area, and time. It is an essential part of biology and health sciences, business, economics, finance, computer science, and natural sciences (Dellinger et al., 2007). It demonstrates the ability to research and expertise on a chosen topic of research. It provides an overview of sources, and the researcher has used in researching a particular topic and to demonstrate the readers how the researcher fits within existing scholarship about the topic. The five C's to write a literature review are cite, compare, contrast, critique, and connect (Galvan, 2015). In the social and behavioral sciences, it has an organizational pattern that combines both summary and synthesis, often within specific conceptual categories (Cooper, 1998; Mohajan, 2020b). Types of literature review are argumentative review, exploratory review, integrative review, historical review, methodological review, meta-narrative review, systematic review, problematizing review, theoretical review, etc. (George et al., 2023).

David Schlosberg has examined how environmental and ecological justice is used in both self-described environmental justice movements and in theories of environmental and ecological justice. He has stressed that the goal of it is the development of a broad, multi-faceted, yet integrated notion of justice that can be applied to both relations regarding environmental risks in human populations and relations between human communities and non-human nature (Schlosberg, 2007). Rijajul Haq Tanjil and his coworkers have indicated that microplastics are increasing in environment, which creates pervasive environmental pollutant, with their presence extending to the atmosphere in urban, suburban, and even remote locations; and become substantial health risks. In their study they have used fluorescent microscopy and Fourier transform infrared (FTIR) spectroscopy to identify transparent and black microplastics, predominantly synthetic textile fibers with lengths ranging from 20 to 180 μm . They have revealed that polyester, nylon, regenerated cellulose, and natural fibers are observed in the atmosphere. Their study provides compelling evidence implicating the textile factory as a noteworthy source of atmospheric microplastic pollution to reduce environmental contamination and protect the health of the employed in textile production plants (Tanjil et al., 2025).

Cagri Bulut and his coauthors have wanted to demonstrate how greenwashing perceptions shape the effects of environmental concern on post-millennials purchasing behavior and intentions toward green and recycled products. They have observed that greenwashing perception decreases the effects of environmental concern on green behavior. They have also demonstrated that greenwashing awareness has a critical role in creating a purchasing behavior of post-millennials that have environmental concerns (Bulut et al., 2021). Muhammed Zakir Hossain and his coauthors have investigated the influence of greenwashing on consumer trust and brand loyalty, emphasizing the variations of these relationships across diverse industries. Their study enhances comprehension of greenwashing impact on consumer behavior and offers practical insights for businesses in sustainability focused sectors (Hossain et al., 2025). Valentina Jacometti and her coworkers have realized that the fashion industry is a sector with a high environmental impact. It involves a very long and complicated supply chain that is associated with large consumption of water and energy, use of chemical substances, water and air pollution, waste production and finally microplastic generation. They have stressed that waste prevention throughout the product life cycle and minimizing waste that ends up in incinerators or landfills, which are two key elements for the fashion industry's transition to circular economy (CE) (Jacometti, 2019).

3. Research Methodology

Research is the careful consideration of a study regarding a particular concern using scientific methods (Mohajan, 2018b). It is the creation of new knowledge and the use of existing knowledge in a new and creative way to generate new concepts, methodologies, and understandings (Turker & Altuntas, 2014). It is a systematic inquiry to describe, explain, predict, and control the observed phenomenon. The true goal of it is to seek answers on previously unanswered questions for contributing to the body of knowledge in a discipline (Goddard & Melville, 2004). Methodology is defined as the systematic method to resolve a research problem through data

gathering using various techniques (Murthy & Bhojanna, 2009). It is a set of principles and ideas that inform the design of a research study (Birks & Mills, 2011). Main types of methodologies are qualitative, quantitative, and mixed-methods. Research methodology is the systematic plan, techniques, and procedures used to collect, analyze, and interpret data to answer research questions, ensuring validity and reliability (Ghayas, 2022; Mohajan, 2017).

This study is based on reliable secondary data sources that are derived from top rated academic and institutional papers published in peer-reviewed journals, books of renowned authors, theses, and project report on cleaner and sustainable production and consumption, and new fashions (Dellinger et al., 2007; Mohajan, 2018b). The study applies a qualitative research design to explore environmental and social facets of the fast fashion industry scope the circular economy (CE) and environmental justice (EJ). We have stressed on life-cycle assessments, carbon footprints, water resource usage, and microplastic emissions to obtain information on labor rights, and transparency for sustainable production and consumption (Turker & Altuntas, 2014). The study also discusses environmental pollution, human exploitation, and sustainable development patterns by interpreting meanings in social contexts (Hossain et al., 2025).

4. Objective of the Study

The fast fashion is characterized by rapidly producing, cheap clothing, and copying runway styles, which is quickly storable (Mathew & Spinelli, 2025). It prioritizes speed, affordability, and constant turnover of inventory. It often makes with low-quality materials and is designed to be worn briefly before being discarded. It has seen some extraordinary shifts over the last three decades that has a significant environmental impact. It is the second-biggest consumer of water and is responsible for about 10% of global carbon emissions (Papamichael et al., 2023). It generates about 92 million tons of textile waste each year. All these factors have led to the destruction of the environment, chemical contamination of water, and pollution of the living space in the regions of production (Priyadharshini et al., 2024). The main objective of this study is to understand the actual environmental and social effects of the current fast fashion industry and how the implementation of the concepts of circular economy and environmental justice could provide a solid base for decision of future making and development (Turker & Altuntas, 2014; Mohajan, 2018a). The minor objectives of the study are as follows:

- 1) to identify the key environmental impacts of fast fashion across production, consumption, and disposal stages,
- 2) to examine how supply chain structures contribute to labor exploitation, unsafe working conditions, and gender inequality,
- 3) to assess the effectiveness of circular strategies, such as recycling, resale, rental, and closed-loop production in reducing environmental burdens, and
- 4) to analyze the roles of policy, corporate accountability, and consumer behavior in facilitating systemic sustainability transitions.

5. Overview of the Fast Fashion Industry

Fast fashion is a design, manufacturing, and marketing method that focuses on rapidly and cheaply producing trendy, mass-market clothing that mimics high-fashion designs, leading to constant new styles at low prices but is creating significant environmental issues (Dewey & Nahoum, 2025). It has grown during the late 20th century when manufacturing of clothing becomes less expensive due to more efficient supply chains, new quick response manufacturing methods, and greater reliance on low-cost labor from the apparel manufacturing industries of South, Southeast, and East Asia, where women make up 85-90% of the garment workforce (Anjum, 2024). It is estimated that it represents more than 2% of the global GDP that is a sum of \$3 trillion (Shirvanimoghaddam et al., 2020).

The term “fast fashion” was coined by the New York Times and was first used at the beginning of the 1990s, when Zara landed in New York (Nguyen, 2023). It refers to low-cost, trendy clothing that rapidly transitions from design to retail for meeting consumer demand. It has revolutionized the global textile and apparel industry through its primacy of fast delivery of affordable goods to the masses (Bhattacharjee, 2018). The fast fashion clothing generation has doubled in the early 2000s, whereas the average lifespan has halved. The model is developed into the driver of global economic growth and a symbol of sustainability problems in production and consumption. The global textiles industry is a major carbon polluter, and it is expected that the industry can grow up to 63% by 2030 (EC, 2022). Significant companies in fast fashion are Fashion Nova, Primark, UNIQLO, Forever 21, H&Ms, Shein, and Zara (Monroe, 2021). Labor practices in fast fashion are often exploitative due to the gender concentration of the garment industry, and women are more vulnerable (Whabi, 2020).

5.1 Production Stage

The fast fashion production refers to the workflow of creating apparel, from initial concept development to retail

distribution. It is preceded in multiple stages, such as design, sourcing, pattern making, sewing, finishing, and distribution (Tokatli & Kızılgün, 2009). At the starting the designers analyze fashion trends, consumer preferences, and seasonal demands, and then choose textiles based on quality, sustainability, and cost. Bulk fabric is cut, stitched, and assembled in factories; and garments undergo inspection for defects, finishing, and labeling. The final products are packaged, tagged, and shipped to the customers (Bumin & Bumin, 2024).

The employment land in this sector is extremely exploitative and unequal, and it seems to be the least developed in either material or energy efficiency (Palacios-Marín & Tausif, 2022). The sector is over-reliance on virgin resources, including cotton and polyester textiles and chemical dyes, perpetuates an economy where wastes and pollutions are irrevocable byproducts using up non-renewable resources (Kirchherr et al., 2017). The textile industry accounts for fresh water pollution that produces 20% of global wastewater and 10% of global CO₂ emissions (EMF, 2023). For the production of sustainable garments, we should set specific goals for the use of recycled materials and other new types of fibers, such as recycling of cotton and the production of recycled polyester and nylon with the use of chemicals and plant-based fibers for making new textiles (Leonas, 2017). Brands and producers have a substantial influence on creating products that can be reused or have a second life from the beginning of the design process (Zikopoulos, 2022).

5.2 Consumption Stage

The consumption stage of fast fashion enables to discover the breakdown between sustainability awareness and purchasing practices. Although the consumers know that fast fashion does environmental harms but they are continued to buy fast fashion due to conceptions of affordability, accessibility, and aesthetics (Mathew & Spinelli, 2025). At the consumer level, the awareness of negative impacts is insufficient. Therefore, the effective transformation requires in behavioral, cultural, and systemic interventions. Education campaigns should focus on value longevity, ethical fashion narratives, and the social costs of cheap consumption (Jimenez-Fernande et al., 2023). Affordable sustainable options, such as resale, rental, and repair initiatives must be accessible to lower-income consumers. Collective action movements can enhance consumer empowerment and policy advocacy. This multilevel strategy recognizes that sustainability must emerge from a shared moral economy, where each stakeholder contributes equitably to reform (Ozturkcan, 2024). This evidence points to the attitude and behavior gap provide that consumer decisions are predicated on some factors, such as lack of income, traditional image consciousness, and market availability instead of values (Perry & Chung, 2016).

The consumption is furthermore connected to the serious issue of the disconnection between consumption motivations and behaviors. The sustainable economy (SE) and circular economy (CE) conceptualize fast fashion consumption as low durability and short life span, which is even shorter due to the fashion novelties (Niinimäki et al., 2020). It fits well the overall study literature that emphasizes the significant gap between the consumers' knowledge and values, and their actual behavior. At present the global consumers purchase an estimated 61.7 million tons of apparel annually, and this number is projected to reach 101.6 million tons by 2030 (Jackson & Shaw, 2008). From a CE perspective, The RealReal, Rent the Runway, and Patagonia's Worn Wear show that there is a significant opportunity to build CE-driven business models that emphasize reselling, leasing, and repairing clothing. However, environmental justice (EJ) offers a different view on the consumption issue, and conceptualizing it as a moral geography (Okur & Saricam, 2025).

5.3 End-of-Life Stage

End-of-life management represents one of the most neglected components of fast fashion sustainability. Less than 1% of the fast fashion clothes are recycled to make new clothing. Some clothes are ended up downcycled into low-valued materials, such as mattress stuffing, offshored, etc., and the rest is disposed in incinerators and landfills that release methane and other harmful poisonous chemicals (Moorhouse, 2020). In least developed countries, waste sites and informal recycling sectors are unregulated and expose local communities to hazardous materials. More than 92 million tons of fast fashion wastes are incinerated or exported as second-hand waste to the developing countries (Somasekaran et al., 2025).

Recently, several NGOs have startups piloted upcycling and fiber recovery projects, but these remain underfunded and small-scale (Palacios-Marín & Tausif, 2022). These findings suggest that technical pathways to circularity are feasible, but their implementation necessitates systemic alignment among manufacturers, policy-makers, and consumers (EC, 2023). The Fiber-to-Fiber process is challenging due to mixed-material compositions of most textiles, lack of sorting infrastructure, and poor product traceability. The effective CE transition should contain EJ safeguards, such as fair trade recycling networks, and circular design principles that would ensure that end-of-life burdens are not offshored to vulnerable regions (Omio, 2024).

6. Sustainability Practices in Fast Fashion

Recently global production and consumption of fast fashion have increased due to the rising of global population and increased economic development (Mathew & Spinelli, 2025). As a result, environmental pollution is

increasing alarmingly (Mohajan, 2021b). At present the sustainability in the fashion industry is often approached from integrated environmental, economic, and social frameworks; reflecting the multi-layered nature of numerous sustainability problems in fast fashion. Circular fashion aims to create a closed loop system, reducing waste and maximizing the lifespan of clothing and textiles (Priyadharshini et al., 2024). Circular economy (CE) and environmental justice (EJ) are two of the most suitable frameworks to comprehend the complex fast fashion sustainability phenomena (de la Motte & Ostlund, 2022).

6.1 Circular Economy (CE)

In linear economy (LE), outputs are produced from raw materials, and then are sold, and used; and ultimately incinerated or discarded as waste. Therefore, it follows “*take, make, use, waste, and throwaway*” policy (Hora et al., 2023). Hence, LE only contains the steps of production, consumption and disposal (Mohajan, 2021a). Unsustainable side effects of LE in the global environment are loss of biodiversity, deforestation, environment pollution, climate change, etc. (Preston, 2012). The circular economy (CE) is an alternative to the traditional LE that indicates how to turn waste into a resource and brings it back into the economic cycle. It optimizes the products and minimizes the wastes (EMF, 2013). It substantially can reduce the environmental pollution. It is an economic system that rethinks to use raw materials and resources for the creation of a sustainable economy; free of waste and emissions (Mohajan, 2021b). It converts the waste into valuable resources in the economy. The CE mainly emerges from 3R’s principles: Reduction, Reuse, and Recycle (Preston, 2012). According to CE “*nothing is lost, everything is transformed*” (Alexandru & Taşnadi, 2014).

In the context of fashion, CE posits itself on the importance of prolonging product usage by means of reuse, repair, recycling, and re-manufacturing (Mohajan, 2020a). The Ellen MacArthur Foundation contends that CE privileges three main principles: designing out waste, keeping materials in use, and regenerating natural systems (EMF, 2013). If enacted properly, these principles can lead to a substantial reduction in the environmental footprint of apparel production. Some of the key CEs in the fashion industry are as follows (Mohajan, 2020b):

- i) Recycling and upcycling that are necessary for the fabrication into new garments to retain the material value of the end product. At present the upcycling technique is also gaining popularity as customers’ concerns about sustainability issues are rising in recent days (Wang et al., 2020).
- ii) Second-hand and resale markets that are prolonging the lifespan of garments by entering back into reuse markets (Gazzola et al., 2020).
- iii) Rental and sharing models that are reducing the overall quantity of goods from owners to users (Jacometti, 2019).
- iv) Closed-loop production that is designing apparel for disassembly and reassembly into the value chain (Mohajan, 2021c).

Despite their potential, CE initiatives remain marginal within the global industry. Studies highlight scalability challenges due to technological limitations, inconsistent regulatory support, and consumer reluctance to adopt circular behaviors (Niinimäki et al., 2020).

6.2 Environmental Impacts

At present the textile dyeing and finishing account for 20% of the world’s industrial water contamination that result in aquatic wildlife death and spread of a waterborne diseases (Hossain, 2018). The environmental implications of fast fashion span the entire product lifecycle from fiber cultivation and production to consumer use and disposal (Mugoni et al., 2024). The apparel industries produce about 1.2 billion tons of CO₂ per year, associated with energy-intensive fiber production, dyeing, and logistics; and the corresponding emissions are similar to those of the aviation sector (Schlosberg, 2007). From the carbon perspective, cotton cultivation and synthetic fiber production are also destructive but less carbon-intensive processes (Abrishami et al., 2024).

The process of cotton cultivation and fabric dyeing are highly water-consumptive, leading to huge amounts of freshwater being altered and poisoned (Tiffin et al., 2022). Moreover, the untreated wastewater of this sector releases into rivers that is rich in toxic dyes and heavy metals. The production and laundering of polyester result in microplastic releases into aquatic systems (Uddin et al., 2023). Over time, the population of such fibers grows, resulting in very problematic human and ecological health problems. Globally less than 1% of discarded clothing is processed further, and the rest goes to landfills and incineration that release methane and other pollutants (Moazzem et al., 2021). These cumulative impacts illustrate that the environmental footprint of fast fashion is not limited to the production stage but extends across the full lifecycle of garments (Shamsuzzaman et al., 2025).

6.3 Environmental Justice

Environmental justice (EJ) takes existing discussions on sustainability but leads by situating it on the climate between justice and disadvantaged human groups. It offers an alternative to humanity that extends the discourses based on classical ethics and differences (Schlosberg, 2007). It originates from the grassroots movements of the

1980s, focusing on the argument that the most disadvantaged groups acquire the least benefits from industrial development and bears the bulk of the cross-section of degradation (Abbas-Abadi et al., 2025). It shows that textile waste is likely to reinforce post-consumer colonialism, a phenomenon when the waste and its disposal are externalized by consumer nations to the poorer economies (Harriss, 2022). It enables a more comprehensive understanding of fast fashion's global footprint by critically assessing the impacts on firms, workers, and communities (Bulut et al., 2021). In the fast fashion context, EJ concerns the geographically embedded inequalities of the global production chain (Hossain et al., 2025). Both CE and EJ act as a dual-lens framework, capturing systemic inefficiencies that include “waste, emissions, and overproduction” and systemic injustices that involve “exploitation and inequitable impacts” (Chen & Chang, 2013).

6.4 Integration of CE and EJ

The CE's resource efficiency integrated with EJ's equity focus will ensure that it does not exacerbate social injustices. The integrated CE and EJ framework offers a holistic re-interpretation of sustainability in the fast fashion sector. Technological innovations, compliance with policies, and social responsibility have an interdependent role in achieving a truly sustainable clothing industry (Iannone & De Chiara, 2019). During the production of fast fashion clothes, the CE focuses on resource efficiency, renewable energy, and waste minimization; and the EJ focuses on fair wages, safe conditions, and gender equity; and the integrated of them focuses that sustainable production must be both low-impact and rights-based (Das, 2025). During the consumption of fast fashion garments, the CE focuses on product longevity, reuse, repair, and responsible purchasing, and the EJ focuses on access, affordability, and ethical responsibility; and integrated of them focuses that the sustainable production must be both low-impact and rights-based (Paiva & Silva, 2024). During the end-of-life of fast fashion clothes, the CE focuses on recycling, upcycling, and EPR mechanisms; and the EJ focuses on waste, equity, community health, and fair trade recycling; and the integrated of them focuses that circular systems must prevent burden-shifting to marginalized groups (Pranta et al., 2025).

The perspective of the EJ theory, the criticism needs to be taken one step further and the emphasis is now on who takes the impact. Bangladesh is a form of ecological and social outsourcing (Schlosberg, 2007). It means that to advance CE and CJ, the production system must perform a transition towards decentralized, resource-minimized, and right-regime-based modes of production (Despeisse & di Milano, 2023). This synthesis illustrates that circularity without justice is incomplete, and justice without circularity is unsustainable; and integrating both frameworks transforms sustainability from a technical optimization problem into a socio-ecological transition, where the distribution of environmental benefits and harms becomes central to design, governance, and accountability (Winslow & Coenen, 2023).

7. Challenges and Sustainable Solutions

The fast fashion indicates the creating and delivering products from the initial design and manufacturing of garments to their distribution and retailing (Alexandru & Taşnadi, 2014). Its unsustainable practices have caused significant environmental impact. It is the second biggest consumer of water and is responsible for 10% of global carbon emissions. It dries up water sources, and pollutes rivers and streams, while 85% of all textiles go to dumps each year (Jain, & Jain, 2025).

7.1 Social and Labor Dimensions

The cheap fast fashion clothes supply chain enables cheap clothing for global consumers systems of production, and ultimately reproduces systemic exploitation for the workers. Workers expressed frustration over tokenistic compliance efforts by brands (Kottala, 2021). The social costs of fast fashion are equally severe. Bangladesh, as a major garment exporter, epitomizes the paradox of economic growth through environmental and social compromise (Humayun & Bhavadharani, 2025). Workers predominantly women subject to harmful conditions, face long hours, low payments, wage suppression, subordinate to little-to-no formal rights, and unsafe workplaces. Although international accords and safety initiatives have been introduced, enforcement remains inconsistent (Nahar, 2024).

Gender inequality is particularly acute, as women represent nearly 80% of the garment workforce yet often occupy the lowest-paid and least secure positions (Kabeer & Mahmud, 2004). The absence of effective union representation further perpetuates vulnerability and restricts collective bargaining power. These conditions highlight the need to align circular economy initiatives with social justice to ensure that sustainability transitions do not reproduce existing inequalities (Wang et al., 2020).

7.2 Key Challenges in Sustainability

Fast fashion is related to fast operations, global sourcing, and air-sea transportation that increase Scope 3 emissions and hinder accountability (Mathew & Spinelli, 2025). The Scope 3 emissions are the GHGs generated by the delivery trucks, business travel, and employee commuting; and also waste generated as part of company operations that occur in the upstream and downstream activities of an organization (Bick et al., 2018). Dyeing

and finishing consume large amounts of freshwater and often discharge untreated wastewater into rivers (World Bank, 2020). Overproduction of garments result in disposal by incineration or landfill (Niinimäki et al., 2020).

The major challenges for fast fashion are downcycling; the lack of effective technologies for post-consumer materials identification and sorting; the inconsistency of post-consumer textiles and apparel; and the contamination of dyes, finishes, and other additives. Some other minor challenges are the lack of information sharing and coordination across the textile, apparel, and recycling industries (Baloyi et al., 2024).

7.3 Risks and Mitigation

The negative environmental impacts of the current linear system of fast fashion are well-documented that result in massive waste and environmental pollution, and require urgent action for sustainability (Hadro et al., 2023). Several risks have threatened the attainment of textile circularity. The risk of quality degradation in recycling processes can be mitigated through the use of chemical recycling for blended fibers, stricter input specifications, better dye, and finish removal (Thomas et al., 2024). The risks of greenwashing and consumer distrust may be mitigated through third party verification, standardized claims, and data sharing enabled by Digital Product Passports (DPPs) (Li et al., 2023). Economic headwinds may provide resistance to investments, and maintaining resilience within the sector will require concentrating on the lifetime value, inventory and optimization (Allen et al., 2024).

The environmental and social crises of fast fashion cannot be solved by isolated measures. The CE and EJ show that the change has to be systemic, uniting efficiency, equity, and ethical approaches. The development of the environmental and social impacts in fast fashion industry is necessary in all stages, such as raw material collection, manufacturing, distribution, consumption and post-consumer waste management (Das et al., 2025a). Fast fashion is a global industry, and international cooperation is necessary to prevent the emergence of regulatory loopholes. Common customs codes and quality standards for second-hand and recycled textiles are required to prevent illegal waste dumping while permitting legitimate cross-border trade (Anner, 2020).

Governments and international institutions must adopt regulatory frameworks that enforce circular accountability and labor protection simultaneously. Extended producer responsibility (EPR) should be mandated to ensure that brands remain responsible for garments throughout their lifecycle (Campbell-Johnston et al., 2022). The possibility of leakage to the landfill or to low-quality export markets should be dealt with through EPR schemes that will define domestic treatment quotas, enforce the quality of exports, and assist in the development of local reuse markets (Gliadelytė et al., 2024). Transparent supply chain mapping must be enforced through digital traceability systems, allowing regulators and consumers to track environmental and social impacts. Incentive schemes: such as tax relief for sustainable practices or tariffs on overproduction, can shift market incentives toward circular innovation (Radulescu et al., 2024). Fast fashion industry of Bangladesh poses severe environmental and social implications along the value chain. Production depletes water, emits GHG and microplastics, and workers remain exploited and subjected to poor working conditions and gender inequality despite the legal attempts (Alexandru & Taşnadi, 2014). Such reforms would require multi-stakeholder collaboration among policymakers, labor unions, and industry associations to balance economic growth with ecological and social stability (Khan & van Dijk, 2024).

To solve the end-of-life products management problems a combined CE and EJ strategies are implemented. For this we have to implement decarbonized logistics, localized production, intelligent inventory management, a circular take-back and recycling scheme, cleaner chemical and water usage, digital and predictive analytics, and adherence to the ESRS and GRI reportage frameworks (Cannavo, 2008). Some industries, such as H&M has applied organic policy on materials and garment collection (Shen, 2014); Zara has adopted emission reduction by rationalized production and clean management; Nike has managed manufacturing waste recycling using grind; and Stella McCartney has applied regenerative materials, immortal design, chain transparency, and operation sustainability that have proven water and carbon reduction outcomes (Monroe, 2021).

7.4 Strategic Solutions

For decarbonized transportations the air freight should be replaced with sea or rail, and prioritize electric vehicles for last-mile deliveries to reduce emissions (Abbate, 2023). For digital optimization predictive analytics and emission-tracking and route-planning software must be applied to drive efficiencies and improve supply chain transparency. Localized production should be increased to reduce lead times, transport emissions, and import taxes and costs (Joy et al., 2012). The cleaner chemical and water management are ensured with the safer dyeing and water-saving technologies. The financing EPR collects should be used to build systems for collection, sorting, and recycling (Nguyen, 2023).

The CE strategies must go beyond recycling and efficiency to restructure value creation across the supply chain. The EJ reframes sustainability to include equity, voice, and empowerment, which ensures that circular transitions do not reproduce exclusion. True sustainability lies in the balance among ecology, economy, and ethics.

Consumers must adopt sustainable consumption behaviors, such as reducing the volume of purchases, using second-hand garments, and accepting repair or rental of clothing (Groenewald et al., 2024).

8. Conclusion

Fast fashion has changed the fashion industry by making fashionable clothing accessible and affordable to common people. It provides clothing industry at an amazing speed with attractive price to the consumers. This study has undertaken a comprehensive analysis to consider the full life cycle of fast fashion and how it can be sustainable. The study has revealed that the industry's production is highly resource intensive and polluting, with textile dyeing, finishing, and synthetic fiber use leading to water pollution, microplastic emissions, and high carbon footprints. Although circular approaches to fashion provide the way forward, they cannot operate in isolation. Meaningful changes will only come through a combination of technological innovation, regulatory enforcement, corporate responsibility, and consumer accountability. The transformation of fashion into a fairer, more sustainable system is not merely a technical challenge but a moral imperative for the twenty-first century. The fashion industry has to play an important role in the path towards sustainability and circular economy for the future development of the textile and clothing sector. The comprehensive sustainability measurements, such as fair wages, gender equity, and safety of working conditions must be developed for the sustainability of this sector.

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