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MORALITY BEFORE KNOWLEDGE

Textile industry sustainability, in the face of fast fashion

Rihlah Fahiranti Marsyea[1,*]
[1] *Department of Environmental Engineering, Faculty of Engineering, Universitas Diponegoro, Semarang, Central Java 50275, Indonesia.*
*Correspondence: marsyea28@gmail.com

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ABSTRACT

Background: The textile industry is one of the main industries in the distribution of pollutants in the world, with the tradition of seasonal fashion with different designs every year according the high demand of every product. **Methods:** This study employed a Systematic Literature Review (SLR) using articles retrieved from the Google Scholar and Scopus databases between 2020 and 2024. The selected studies were systematically analysed to identify key themes and factors influencing sustainability in the textile industry. **Findings:** Fast fashion is the main reason why the textile and cosmetics industry is under intense scrutiny in resource use, waste, and production emissions. Currently, the clothing industry operates in a straight line, where resources are extracted, clothes are produced, and consumers use them for a short period of time until they discard them. This take-make-dispose system creates a huge variety of environmental and social problems. Circular economy provides a solution to the problem of fast fashion, to achieve circular fashion requires systematic and comprehensive stakeholder engagement. Fast fashion can be addressed also by researching advances in textile material separation to more easily fulfill sustainable strategies in textile recycling. Blended textiles will pose difficulties in mechanical recycling, separation of blended fibers can be done by molecule recycling, i.e., dissolving or selectively polymerizing certain polymers in the blend. **Conclusion:** A circular economy in the textile industry requires a shift from the traditional take-make-dispose model toward reuse and recycling, supported by systematic stakehlder engagement and improved resource utilization. **Novelty/Originality of this article:** This article provides a comprehensive synthesis of recent studies on textile waste and fast fashion by integrating circular economy principles with emerging textile recycling technologies, particularly molecular recycling for blended fibers.

KEYWORDS: fast fashion; recycling; reuse; sustainability; textile waste.

1. Introduction

Environmental concern can be defined as the extent to which a person is aware of environmental problems and supports the efforts to solve them, or shows a willingness to give contribution personally to their resolution (Jones & Dunlap, 1992: 482). More than any other field of art and industry, fashion has become essential to being linked to time, finding inspiration from the latest fast-moving trends, many using meteorological seasons as inspirational reference for new styles and beginning or end to era of fashion. With fast production times as the new trend, the ability of the fashion industry to keep up with the latest trends, the production, distribution and marketing models of fast fashion have evolved tremendously over the past decade. From advances in textile production to 3D printing or additive manufacturing, technological changes have further developed production methods that allow manufacturers to make clothes much quicker. The fashion industry is reported to be the largest manufacturing industry worldwide after the automotive industry, with more than 150 billion clothes produced in the world every year.

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The fast fashion business model is an unmitigated success, supported by low selling prices and rapid production, its distribution rotation encourages excessive consumption. In the mid-1970s, many textile brands began to follow the trend of catwalk styles, but produced at a variety price from authentic higher prices with original works and low prices that is supplied cheap fashion products in the retail market within a few months. The business model began to enter the trend in the 1980s, and many described as the democratization of fashion, because following the fast fashion model, reduced prices with poor quality that resembled some designer brands were accessible to the public. The advancement of the fast fashion industry globally has penetrated Indonesia more or less since the late 2010s following the high demand for online shopping, making it important for the market to understand consumers, both in terms of drive and location. In other words, the market is required to understand the factors that motivate consumers and the demand, especially gen-Z in Indonesia to increase the fast fashion industry (Rostiani & Kuron, 2019).

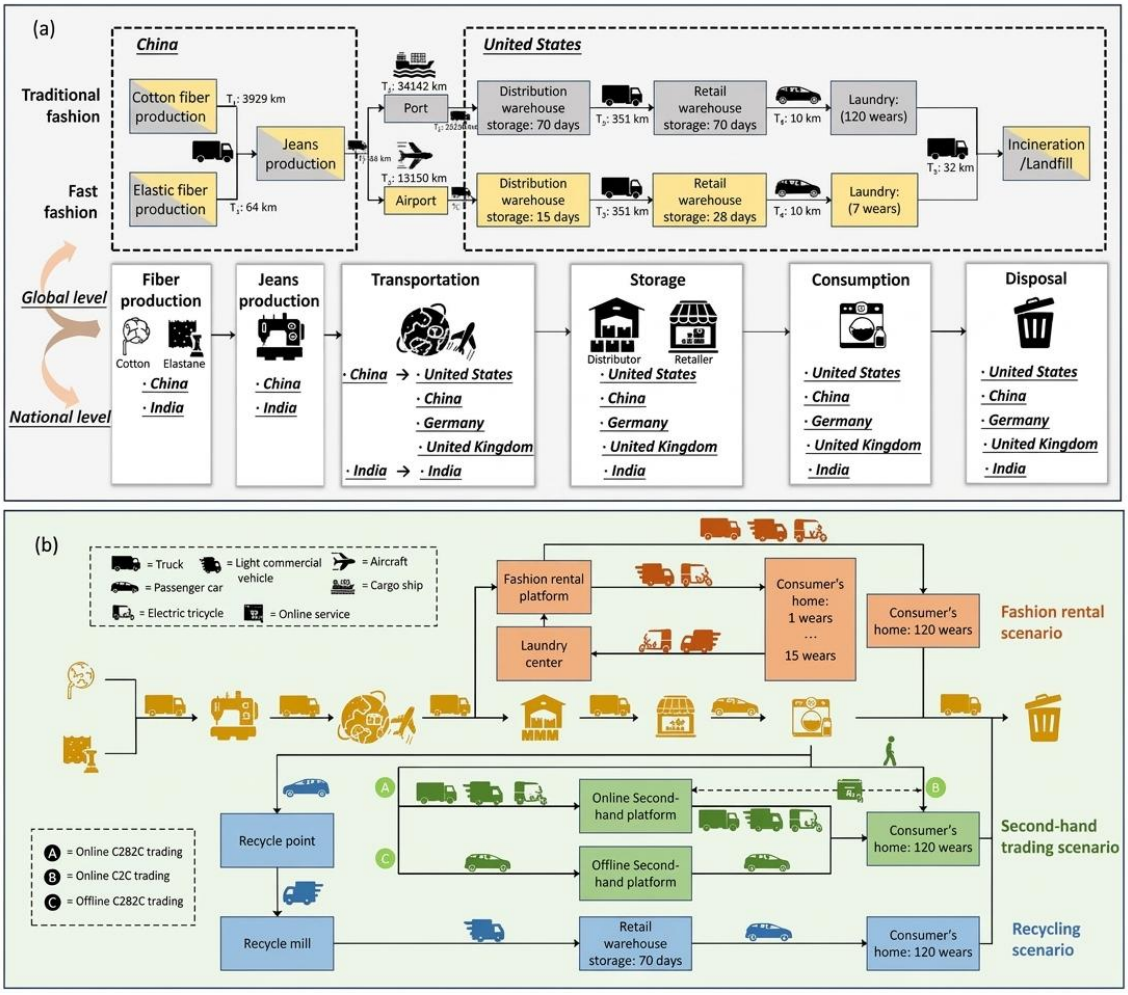


Fig. 1. (a) System boundary of fast fashion consumption (b) Product-service mitigation scenario (Li et al., 2024)

The top countries in the world of textile exports are China, the United States, Europe, and Canada. It is a worrying fact that textile waste is on the rise due to increased consumption associated on the one hand with low-cost fast fashion, decreased life and quality of clothing, which correlates with population growth and the expansion of the middle class, resulting in 10% of carbon emissions and 20% or wastewater worldwide. The total amount of waste may even reach 148 million tons worldwide by 2030 which accounts for a 62% increase compared to 2015 (Schmutz & Som, 2022). The growth has come as fast fashion brands have focused on developing their e-commerce with consumers more comfortable with internet or social media purchases. In recent years, the relationship

between business and sustainability has led innovation-driven companies to start managing their impact on natural ecosystem and society. On the other hand, a sustainable approach becomes a strategic opportunity for growth, allowing the introduction of products with very little impact on the environment, with the same functional and aesthetic characteristics, and recovery in terms of energy and materials at the end of the product life (Furferi et al., 2022).

The textile industry solid and liquid wastes predominantly pollute aquatic ecosystems and soils, fibers from materials not only have a long time to degrade but also use toxic chemicals that are harmful to local ecosystems. Where the process includes fiber preparations, dyeing, printing, finishing, etc, and fabric productions still relies on fossil fuels that can produce carbon dioxide (CO_2) pollutants into air pollution. It has been researched that in 2015, the textile industry contributed 1.2 billion tons of CO_2 to global emissions, expected to increase by 26% in 2050 (Choudhury et al., 2024). Global fiber production in 2021 reached about 113 million tons, which is used in apparel, home textiles, and other applications, including industrial production, medical products, etc.

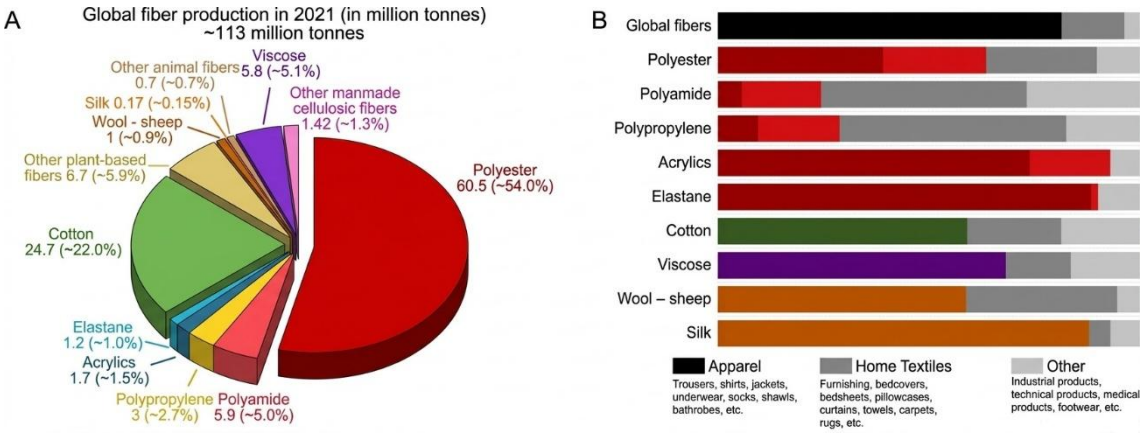


Fig. 2. (a) Percentage of fiber types produced in 2021 (b) Fiber counts used in varies application (Phan et al., 2023)

After use, most textiles end up in landfill or incineration. By 2022 only 25% of textile wasted is recycled, and 75% is incinerated or landfilled, according to (Baloyi et al., 2024) by burning 1 ton of textile waste, 15,800 megajoules (MJ) of energy can be recovered.

Fabrics are being designed to be durable and resistant to degradation, but as the result, textile fibers which are sturdier prone to pollute, which is known to give a major ecological and sanitary consequences. Textile products can be recycled from yarns, fabrics, and garments that will not give the essence of new products but are unique because the specifications and texture are not constant, and can utilize the material advantages of existing products to create new types of products. Recycling of waste clothing needs to be considered for the end user and future sustainability of the company, the end user of the products is usually the party that disposes the clothing, tends to practice environmental preservation and sustainability through the consumption of environmentally friendly products, but this is a difficulty to achieve in terms of utilization of waste products (Lee, 2023). There is an increase in the popular culture of buying used clothing called preloved and thrifting, more than 40% of Gen-Z have made used clothing purchases which will be predicted to reach 77 billion dollars in 2025 up from 36 billion dollars in 2021.

The growing popularity of second-hand clothing offers a potential strategy for extending garment lifespans and reducing textile waste. Life cycle assessment (LCA) research indicates that clothing reuse can reduce environmental impacts when purchasing second-hand garments displaces the production of new clothing. However, the magnitude of these benefits depends on consumer purchasing behaviour, the extent to which reused garments replace new purchases, and the environmental impacts associated with collection, processing, and transportation (Farrant et al., 2010; Sandin & Peters, 2018). Therefore, thrifting should not automatically be considered sustainable in every situation; its

environmental benefits are strongest when it encourages longer product use and reduces demand for newly manufactured clothing.

The circular economy provides a framework for addressing the environmental challenges associated with the conventional linear model of textile production and consumption. Strategies such as reducing unnecessary purchases, designing durable garments, repairing clothing, reusing textiles, and establishing effective collection systems can help retain product and material value for longer periods. A comprehensive review by Saha et al. (2024) highlights the importance of technological innovation, consumer behaviour, and supply-chain collaboration in advancing circular economy practices in the textile and clothing industry. These strategies require cooperation among manufacturers, retailers, consumers, waste-management providers, and policymakers to ensure that textile products are managed more sustainably throughout their life cycles.

Mechanical and chemical recycling technologies offer complementary approaches to recovering value from textile waste. Mechanical recycling typically involves cutting, shredding, and opening textile materials into fibres for subsequent applications, but repeated processing can shorten fibres and reduce the quality of recycled materials. Chemical recycling can instead dissolve or depolymerise selected materials, potentially enabling the recovery of higher-quality fibres or chemical building blocks. Nevertheless, both approaches face technical and economic challenges, particularly when processing blended fabrics such as cotton–polyester textiles, which contain components with different physical and chemical properties (Baloyi et al., 2024; Loo et al., 2023). Consequently, effective recycling requires appropriate sorting, pretreatment, and technology selection based on the composition and condition of the textile waste.

These challenges are particularly relevant to Indonesia, where textile manufacturing and garment production generate waste streams that require improved resource recovery and environmental management. Research on Indonesia's textile industry has identified concerns associated with wastewater pollutants, chemical use, and the need for more effective treatment practices in textile-processing operations (Nurisni et al., 2024). In addition, barriers to circular economy implementation in the Indonesian fashion industry include inadequate waste-management infrastructure and regulatory challenges (Circular economy challenges under uncertainty in the Indonesian fashion industry, 2025). Strengthening textile-waste segregation, recycling infrastructure, producer responsibility, and public awareness could therefore support a transition toward more circular production and consumption. Further research is needed to understand how consumer awareness, thrifting practices, and recycling innovation can contribute to this transition in the Indonesian context.

2. Methods

Waste management in the textile sector is one of the major challenges, as the industry generates a large number of residues, including unsold finished products, the number of residues, the amount of post-consumer textile residues generated each year is enormous (Costa et al., 2022). This paper aims to identify and analyse studies related to the sustainability of the textile industry, using Systematic Literature Review (SLR) as a data collection technique, examining, integrating and collecting various research studies on the topic to be explored. In this research, the paper uses Google Scholar and Scopus databases were used, which have a wide covrrage with extensive collections. The SLR technique uses keyword recognition according to the research, with the keywords used according to the main topic.

Table 1. Search format

Search engine	Keywords
Google Scholar	"Industri Tekstil *Fast Fashion*" AND PUBYEAR since 2020
Scopus	TITLE-ABS-KEY ("Fashion" AND "waste") AND PUBYEAR > 2019 AND PUBYEAR < 2024 AND (LIMIT-TO (Subject area, "Environmental Science")) AND (EXCLUDE (DOCUMENT TYPE, "Book" AND "Book Chapter")
Scopus	TITLE-ABS-KEY ("Textile" AND "waste" AND "Recycle") AND PUBYEAR > 2019 AND PUBYEAR < 2024 AND (LIMIT-TO (Subject area, "Environmental Science")) AND (EXCLUDE (DOCUMENT TYPE, "Book" AND "Book Chapter")

The purpose of the research was to determine significant themes and subtopics, the data collection stage was the most important step in the development of the subject, the articles were analysed to identify key findings, patterns of adaptation, and factors contributing to success and failure in adaptation. The author conducted an in-depth search on two publication platforms as a source of information or materials related to the research subject. Selected publications were analysed to record findings, including information such as article title, author, movement used, study target, techniques used, research methods, software, and individuals involved.

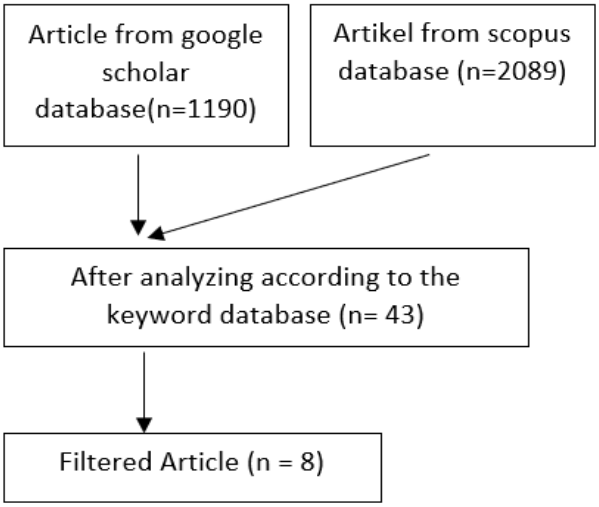


Fig. 3. Research diagram

3. Results and Discussion

The textile industry has a major impact on environmental pollution because it still adheres to the old-fashioned linear economic model that is to make-use-dispose in a circular motion, generating truckloads of waste, as it is known that less than 1% of manufactured materials are recycled. Every time fashion trends change; physical and online stores will add or replace their old collections with new ones. Here are some reviews of articles that focus on textiles industry waste case studies.

Table 2. Literature research result

Title	Author	Foundings
Chemical recycling of polyester textile wastes: shifting towards sustainability	El Darai et al. (2024)	The article focuses the recycling of polyethylene terephthalate (PET) in textile waste, evaluating the environmental impact and sustainability of different chemical recycling methods, using green metrics. Chemical recycling is the most feasible to achieve a circular

Title	Author	Foundings
		economy in the textile industry, but there is still a need for development in research for a more refined method, explore innovative technologies, and derive circular economy models.
Developing Upcycling Techniques to Transform Mass-Production Fabric Scraps and Used Clothing into High-Quality Fashion Accessories	Handani, et al. (2022)	The article focuses on creating sustainable clothing accessories as a form of tackling textile waste by reusing product. The combination of leftover fabrics and second-hand clothing, as well as the incorporation of traditional Indonesian batik, provides aesthetic and sustainable benefits.
Recycling of Blended Fabrics for A Circular Economy of Textiles: Separation of Cotton, Polyester, and Elastane Fibers	Choudhury, et al. (2024)	The article focuses on recycling methods in mechanical, chemical and biological approaches, emphasizing the importance of separating cotton from polyester and elastane from other fibers. Mechanical recycling was found to be effective for wool fabrics but limited with blended fabrics. Chemical recycling provides an alternative approach to the separation of blended fabrics, relying on selective dissolution or depolymerization of certain polymers. The article gives a different approach and gives support for the first article.
Decision-making Algorithm for Waste Recovery Options. Review on Textile Waste Derived Products	Zandberga et al. (2024)	The article focuses on how textile waste is best recovered using Analytic Hierarchy Process, with list of criteria and experts to determine the results proven the market potential from the chosen product. The research has chosen terephthalic acid (TPA) and glucose as the best alternative for the textile waste recovery, with high added-value potential, high share of textile waste in process and flexibility for origin of wasted textile.
Working along the value chain for circular economy transitions in fashion textiles: A participatory framework	Mahanty & Domenech (2024)	The article focuses on Circular Economy in the fashion industry and how stakeholders have the power to advance the discourse and practice in a circular fashion. Stakeholders gives explanation on how they few a circular economy in the industry and what barriers are there in the value chain.
The Transformation of Second-Hand Clothes Shopping as Popular Sustainable Lifestyle in Social Media Era	Oscario (2023)	The article focuses on the successful transformation of second-hand clothing sales in Indonesia, from a practice associated with poverty to a popular trend by Gen Z as a sustainable lifestyle. This transformation, facilitated by social media, demonstrates the power of social construction of reality in reshaping cultural perceptions. Realistic social constructions can be used to deconstruct negative perceptions of local culture and encourage sustainable practices.

Title	Author	Foundings
Circular economy in fashion: consumer awareness and lifestyle, and environmental impact on second-hand clothes	Chen & Tabata (2024)	The article conducts a survey that proves that buying second-hand shirt results in less 6.71 kg CO_2 emissions, where the motivation comes from timeless pieces. But from the questionnaire method, it's founded that consumer are still reluctant in wearing second-hand clothing or clothes from recycled textiles.
Slow Fashion in a Fast Fashion World: Promoting Sustainability and Responsibility	Brewer (2019)	The article suggests reforms, with increased support for sustainable agencies, move the industry towards more ethical and environmentally responsible practices. Slow fashion with ethical sourcing, and durable materials. Legal gaps contribute to the unsustainable fast fashion model of resource consumption and reliance on carbon-intensive production and supply chains.

Table 2 shows the conclusion of literature review from the eitgth journals that focuses how Fast Fashion becomes one of the main waste factors in the textile industry, posing various significant threats to environmental sustainability. The fast fashion model also relies on the use of fossil energy and transportation resulting in the increase of carbon footprint that focuses on transport either through land, air, and water, with numerous gaps in research on how to erase the textile waste product other than focusing on the source of the production and the end user product. According to report from statista, in 2020 freight transportation dominantly uses diesel as source fuel, with approximately 96% of usage which shows that from a worldwide sector is still using diesel fuel. However, waste management itself is a big problem in many sectors, where not only the producer's job to minimize end production waste but also the stakeholders and consumers should also have a hand to a more sustainable industry moving forward, creating a circular waste management whether in industrial or municipal.

A research by (Matuszak-Flejszman et al., 2024), has determine the extent of companies in disclosing impact transportation in overall corporate carbon footprint, total emissions and evaluate effectiveness of the efforts in mitigation. With one of the biggest fashion power horses worldwide reducing emissions more than 50% and achieving almost 90% net-zero emissions in 2018. Highlighting a gradual implementation of Climate Transition Plan, a strategic action plan which outlines a business transition to a sustainable economy to meet their climate goals, where the company focuses on optimization for transport-related carbon footprint,

Table 3. Emission reduction from company A

Indicator	2023	2022	2021
Company owns	11,512	11,232	19,172
Purchased Electricity	0	0	651,266
Supply chain	16,418,450	15,607,245	16,389,372

(Matuszak-Flejszman et al., 2024)

The data in Figure 4 showcase carbon dioxide avoidance in three big countries as an example from a millennial and a gen Z perspective, and overall average in society. Graphic shows that in the United States, awareness through CO_2 avoidance is lesser than countries in Europe, with only 18 percent deem carbon avoidance being the lowest than other countries, where United States is known to be one of the biggest consumer and distributor of Fashion but not giving the biggest impact on the environmental awareness of carbon footprint. It is illustrated that 34 percent of respondents in Germany deems carbon avoidance as important when it comes to sustainability or environmentally friendly

consumption. In the United Kingdom comes second for an average 26 percent on reflecting a greater environmental from both the young and the older generation. Fashion industry especially in recent times where technology is more convenient has influence the online market and automatically risen carbon footprint in both Asia and the United States, with the fast fashion industry being globalized by the United States and Asia being the main producers in Fast Product Industry.

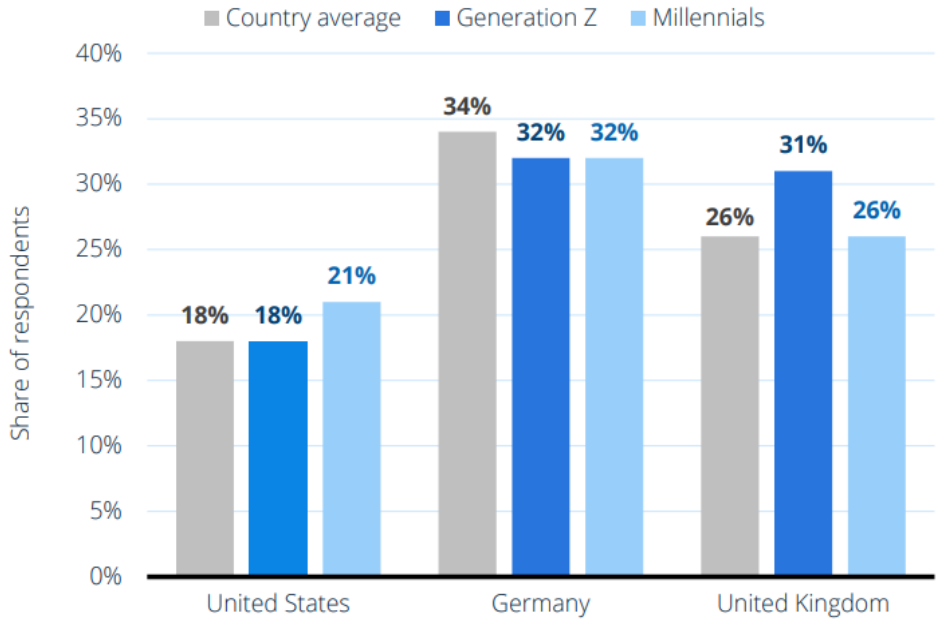


Fig. 4. CO2 avoidance
(Luhmann, 2023)

A business is best to also allow customers to track product material origin for them to know either the ecological impacts of the manufacture process itself from water and energy usage, working conditions, or CO_2 emissions, or focusing on the product materials and the environmental impact for exploitation, manufacturing, and disposal of pesticides.

One of the main solutions to waste is only known through the idea of recycling, but due to the fibre and chemical combinations of clothing, the textile industry has limitations, however there is an option of chemical recycling that can be one of the better or even best options for waste degradation but in the article that has been reviewed states that the technology and future prospects for the chemical recycling of textile is still needing a lot of development in order to be more easily implemented for textile waste reduction. In (El Darai et al., 2024) research explains how chemical recycling focuses on polyester, where polyester releases microfibers that will end up in municipal treatment plants with domestic wastewater, polyethylene terephthalate (PET) itself have a slow decomposition creating an ongoing environmental pollution, where studies have shown methods for a safe recycling, but for a chemical recycling needs a larger scale to be economically feasible. Not only is PET bad for the environment but it also shows to be bad for the human skin and can cause a massive infection or a problem in air circulation especially for a more tropical climate.

In Zandberga et al., 2023 research on waste recovery options via chemical recycling, where in Figure 5 shows that terephthalic acid (TPA) it's mainly used for synthesis of polyethylene terephthalate (PET), TPA was proven through the research to cause cotton degradation product and polyester degradation products, with the help of NaOH concentration can yield 60 – 100%, and glucose via hydrolysis using a fungal fermentation, during the subsequent enzymatic hydrolysis of cotton or PET releases glucose of pretreated fibres, the enzymes are highly specific biocatalysts allowing stepwise hydrolysis and concomitant solubilisation of certain components from blended textile resulting a recovery of valuable building blocks. Both waste recovery options were identified as the top-ranked textile waste recovery products using the Multi-Criteria Decision Analysis (MCDA) method,

integrating the Analytic Hierarchy Process (AHP) and the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). While other textile waste for RDF and ethanol production does not need a high quality in raw materials as well as high flexibility to textile origins, however in line with circular economy and requires significant energy effort in processing.

With the chemical recycling still needing a more advance technology, a few research has given a more systematic in this instantaneous industry with, (Brewer, 2019) suggesting the use of slow fashion, which can provide better quality of clothing with longer use, instead of fast fashion which provides poor quality of clothing with a shorter period of use. The concept of slow fashion has become increasingly popular as both industry and end users hope to minimize the environmental impact of clothing production and adopt the sustainable consumption practices, including buying clothes from second hand or vintage stores, recycling old clothes, and choosing ethically produced clothing (Seock et al., 2024). The quality of instant clothing with cheap fabric is the main reason for the increase in clothing waste, where the estimated time period has one year but can only be decomposed in the next 100 years. Used clothing can also be used as a form of economic circulation with the concept of reselling or becoming something new.

However, the concept highly dependent on consumer and end user, with how the fashion industry always moving and growing, slow fashion can either be popular now or in the next 7 years being a more vintage in line with how the trends in social media is going to be. The second-hand market has been popular for a few generations for every class of people, reusing vintage clothing from 10 and more years ago or using a more layered style fashion to enhance the reusing of clothing.

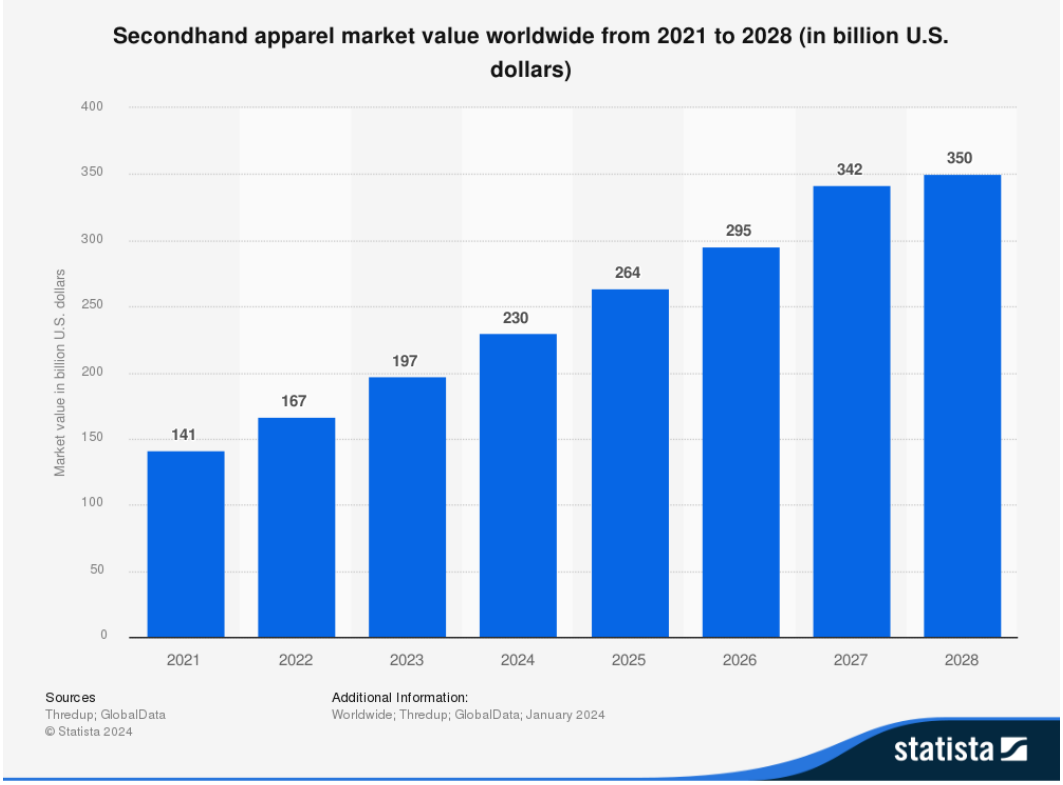


Fig. 5. Value of second-hand market
(Statista, 2024)

Promoting clothing repair and reuse can provide lessons and new habits for people with the help of social media, encouraging wise purchasing habits, and supporting brands committed to sustainability are important steps to reduce textile waste. Studies show that gender also give a massive difference in Second Hand Purchasing, where women are more open to the idea than men, in men who are more influenced by what they observed while

women are more on impulse and self-identity. It also concludes how aesthetic perception can cause a risk in influence the performance in the second-hand market, where other than gender as an individual people preserve intentions in a different way where towards sustainable clothing consumption, high perceived aesthetic risk and economic risk might impact the impression and intention during decision in transition. A consumer willingness to pay for a certain product differs from the economic value but the aesthetic and usage in a product.

Research from Chen & Tabata (2024) have concluded, the average person to use the second-hand fashion or recycle materials market can save up to 6.71 kg-CO_2, but after a survey it shows that consumers interest is not as high, with only 5% of the respondents willing to buy from recycled materials and up to more than 50% of the respondents never buying second-hand clothing. Although purchasing used clothing does not give a significant reduction in CO_2 emissions, the government also plays a crucial role in promoting a more sustainable lifestyle, such as regulations, providing companies for a take-back from end-users where it also can help improve a company's reputation through increase in social and environmental responsibility, to then make a better understanding for other companies to follow suit.

Several informants from the article Yeap et al. (2024) acknowledged that consumers have been decisive in driving the fashion transition, which gen-Z as the trend holder has helped with the popularity of preloved second-hand clothing and batik crafts using used fabrics. The popularity of using preloved platforms to trade second hand clothing between customers can be attributed to two important global developments. Firstly, the democracy of internet commerce where the internet that enables businesses to sell their products online to consumers now empowers any tech-savvy non-business individual to sell goods to other individuals through online intermediaries.

Consumers need to be educated as pillars of the sustainable textile industry, about the environmental and social costs of fast fashion and empowered to make more informed choices. When someone has the intention to donate a pre-loved item, it often stems from an altruistic desire to help others in need. This act of giving can lead to feelings of fulfilment and happiness, as it aligns with their values and contributes to overall life satisfaction (Mohammad et al., 2024). Stakeholders also plays a key role in circular fashion based on outcome such as strategic management or policy orientation, but there are some barriers in understanding perspectives and lack of understanding different parts in the value chain in fashion textile.

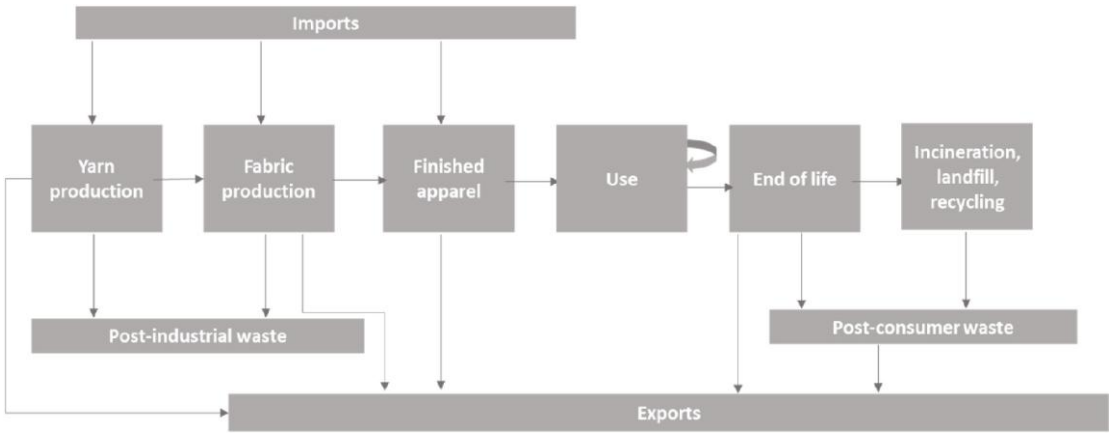


Fig. 6. fashion textile value chain
(Mahanty & Domenech, 2024)

A research on making multiple workshops to understand of enabling circular fashion there are aspects that can help accelerate the CE transition which is in, design as a key enabler and a design stage for product performance, it involves strategies as designing for longer life and remanufacturing or for use of recycling using a more sustainable fibre

(Mahanty & Domenech, 2024). Business models for the loop in fashion textile through targeted business models, that enables the use of existing stocks of textiles. Reuse and recycle to manage the end-of-life textiles, have been issued as a key strategy in enabling CE transitions, through promotions, recirculation, and support for the secondary market or second-hand textiles. Such interventions enable the reduction in consumption of virgin materials, extending the usage life of clothing by increasing the circulation rate from reusable textile. Transversal in the fashion textile chain, strategies that can operate along the whole value chain where the challenge is associated with lack of traceability and gaps in the data around waste and emissions driven by inadequate transparency and material origin traceability.

4. Conclusions

The conclusion that can be gathered from this literature study is that the textile industry is one of the leading industries in the production of pollution, be it in the air, sea or land. Rapid development from the Covid-19 period, fast fashion has become the main production of textile waste, with its short life span. Solutions for waste recycling are left to consumers and producers, due to the limitations of both mechanical and chemical treatment. In-depth research is needed for solutions to recycling techniques. It provides sustainability solutions from resale, reuse, and provides ideas for purchasing clothes with more lasting quality and use. Calls for a systematic shift towards a more circular and sustainable model, emphasizing the need for innovative recycling technologies, adoption of slow fashion principles, and collective efforts from consumers, businesses, and policymakers to address pressing challenges.

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Author Contribution

The author was solely responsible for the conceptualization, methodology, literature search, study selection, data extraction, analysis, interpretation of findings, manuscript preparation, revision, and final approval of the manuscript.

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Ethical Review Board Statement

Ethical review board approval was not required for this study because it was based exclusively on a systematic review of previously published literature and did not involve human participants, animals, or the collection of primary personal data.

Informed Consent Statement

Not available. This study did not involve human participants or the collection of personal data.

Data Availability Statement

The data analyzed in this study were derived from previously published articles retrieved from Google Scholar and Scopus for the period 2020–2024. The relevant sources are cited in the manuscript. Further information regarding the literature selection and analysis can be requested from the corresponding author.

Conflicts of Interest

The author declares no conflicts of interest.

Declaration of Generative AI Use

During the preparation of this manuscript, the author used ChatGPT and Claude AI to assist with language refinement, conceptual organization, and manuscript drafting. The author critically reviewed, verified, and edited the AI-assisted content and takes full responsibility for the accuracy, integrity, and final content of the published work.

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Biography of Author

Rihlah Fahiranti Marsyea, Department of Environmental Engineering, Faculty of Engineering, Universitas Diponegoro, Semarang, Central Java 50275, Indonesia.

- E-mail: marsyea28@gmail.com
- ORCID: N/A
- Web of Science ResearcherID: N/A
- Scopus Author ID: N/A
- Homepage: N/A