

Malaysia's Textile Waste Crisis: A Case Study of Climate-Related Risks and Sustainable Finance Strategies for a Circular Economy Transition

Mohd Sufian Ab Kadir, Intan Liana Suhaime*, Hairiani Abdul Hamid, Nani Shuhada Sehat, Siti Rohana Daud

Universiti Teknologi MARA

*Corresponding Author

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ABSTRACT

Malaysia's textile industry contributes to national economic growth, but it also creates increasing concerns related to waste management. This case-study examines the textile waste problem in Malaysia by reviewing industry reports, government policies and available waste-related data. The findings show that the industry is still largely operating under a linear "take-make-dispose" model, where used clothing, production scraps and textile residues are often sent to landfills or released into the environment. Textile waste also contributes to water pollution and microplastic contamination, especially from synthetic fibres. Although Malaysia has introduced policy directions that support recycling, circular economy practices and cleaner production, there is still no strong legal requirement for clothing producers to take responsibility for collecting, reusing or recycling textile products after use. The case-study also finds that some large apparel firms have introduced sustainability initiatives, but many small and medium-sized textile businesses face limitations in finance, technology, waste tracking and reporting capacity. This case-study highlights the need for stronger waste regulation, better textile waste data, clearer product claims and greater support from regulators, financial institutions and industry players. The originality of this study lies in viewing textile waste not only as an environmental issue, but also as a climate and financial risk for Malaysia's sustainable development.

Keywords: Climate Change, ESG, Textile Industry, Waste Management

INTRODUCTION

Textile history began over 30,000 years ago beginning with natural fibres like flax, linen, and silk (Good, 2012). Archaeologists have discovered spun, knotted, and even dyed wild flax fibres in the Dzudzuana Cave in the Republic of Georgia which clearly shows evidence of human manipulation (some fibres were dyed in various colours and intentionally twisted), Kvavadze et al., 2009. During antiquity, textile production was driven by local climates (linen heavily favoured in Egypt and wool in Europe) and it has expanded to lucrative network of global trade when silk was found in China. The established of Silk Road has connected China to the Mediterranean, transforming these essential agricultural commodities into prestigious global luxury currency.

In the 18th and 19th century, textile was among the first sector to industrialise in the United Kingdom, United States and later in Asia country-Japan because the industry required relatively low capital, simple technology and labour-intensive as compared with heavy and capital-intense industry. Asia's country, specifically Japan lead in textile industrialization (specifically cotton and silk spinning) during the Meiji Restoration (late 19th century) and as labour cost increased after 1950s, textile production shifted gradually to East Asia, first to Hong Kong, South Korea, Taiwan and later to newly industrialized country like Malaysia, Indonesia and Thailand (Ningsih et al., 2026).

According to the official Global Value Chains Sectoral Profiles: Textiles and Clothing Industry report published

by the World Trade Organization (WTO), textiles and clothing represent 3.75% of world merchandise exports in 2022, showing that the sector remains a significant part of global trade. Though the textile and clothing industry is smaller than chemicals, electronics or automotive, but it still a major global manufacturing and trade sector. WTO data shows that clothing alone was worth about US\$576 billion in world manufactured exports in 2022, while textiles were worth about US\$339 billion (WTO, 2024).

Referring to International Labour Organizations 2025 (ILO), textile and clothing factory employs more than 90 million people all around the world. This sector plays a very important role for developing countries to increase economic growth through providing the families job opportunity where most of the workers are women and young people. Consequently, the industry actively advances United Nations goals called the Sustainable Development Goals (SDG) by fostering decent work (SDG8) and simultaneously contribute towards SDG5 allowing women get jobs and achieve financial freedom.

PROBLEM STATEMENT

According to MITI (Ministry of Investment, Trade and Industry), textile industry in Malaysia includes the upstream activities such as fibre production, woven and knitted fabric, bleaching and dyeing and downstream activities such as garments, home textiles and made-up textile products. MITI (2017) defines the textile industry as it is the authoritative agency who responsible for establishing legal frameworks, statutory codes, and business grants with all operating companies must comply. Through the “New Industrial Master Plan 2030 (NIMP 2030)”, MITI has regulates and provide direction to the entire supply chain of textile industries in Malaysia not just focusing into regular fashion clothing stores. The comprehensive approach covers everything from raw materials to recycling waste which assist in systematically classifying manufacturing, fabric processing, apparel, household textiles, industrial textiles and textile waste management seamlessly.

Malaysia shifted toward export-oriented textile and clothing industrialisation in the early 1970s, and the industry demonstrated strong economic significance and in year 2022, recorded exports reached RM24.7 billion and value-added contribution reached RM6.7 billion. The sector contributes towards the creation of employment and supports local livelihoods including workers in manufacturing, retail, tailoring, cultural textiles and SMEs. In line with the pressure to be competitive, companies are also moving towards automation and Industry 4.0 when they start using laser-cutting, automated patternmaking, design software, robotic packaging, and real-time production tracking. This technological shift, combined with Malaysia’s long-standing ability since 1970s to supply quality products, respond quickly to buyers and manufacture changing fashion explains why global brand have chosen the country (Farhana et al., 2022). As a result, local company have earned recognition from various global fashion brand such as Nike, Adidas, Ralph Lauren and Uniqlo. The companies import raw materials which are then processed and assembly domestically before the finished products exported as high-value finished goods (MITI, 2023).

Although the industry faced disruptions in 2020, it recovers rapidly to become a multi-billion-ringgit contributor to the nation’s total exports two years later. Industry directories highlight prominent Malaysian textile related manufacturers such as AG Apparel Industries Sdn. Bhd., Exquisite Textile Industries Sdn. Bhd., Fartex Industries Sdn. Bhd., Sincerely Dyeing & Finishing Sdn. Bhd. These manufacturers are represented by the Malaysian Knitting Manufacturers Association (MKMA). Established in 1975 and based in Batu Pahat, MKMA’s membership spans the entire local supply chain in the textile industry as well as international associate members. MKMA plays a role in Malaysian textile and clothing industry and works closely with government ministries and agencies.

However, despite the strong industrial network and economic success as a high-end manufacturing hub, Malaysia is deeply plugged with the backend of product life cycle, exposing critical vulnerability in its global integration. Between 2017 and 2024, Malaysia recorded to import a huge amount of old clothes and fabric waste around 1.92 million tonnes which worth more than US\$1.09 billion (United Nations Office on Drugs and Crime, 2025). The influx of global textile trade has emerged Malaysia as a primary “sink” for the world’s discarded garments. Consequently, it is no longer a manageable by product of the second-hand “bundle shop” or thrift shop industry when it has evolved into a deluge that threatens national environmental security and soil integrity. As highlighted by Dr. Najua Tulos in The Sun (2026), Malaysia produces a massive amount of 195,300 tonnes of textile waste

every year and because of this growing waste problem, Malaysia needs a better recycling circle system to protect our environment and natural resources.

Reported as the leading textile importer in Asean and forth in the world (after Mozambique, India and Pakistan) high-quality wearable items are sorted out to be resold in local bundle shops or re-exported to Africa and other Asian markets. The harsh reality is that a significant percentage of import consists of low-quality materials that cannot be economically recovered by the country (The Star, 2025; United Nations Office on Drugs and Crime, 2025). Lifeline Clothing Malaysia (LLCM) a social enterprise with profit-oriented entity specialised in commercial sorting facilities frequently collaborate with local environment organizations to manage the growing volume of textile waste. The collaboration made with Kloth Cares (the pink box) to collect and recycle fabrics and systematically discarded into hundreds of categories to prevent them from entering landfills.

The garments are often too cheap, thin and local bundle shops find it increasingly difficult to resell and unfortunately this has forced a large amount of unusable textile waste to throw away directly into landfills (The Edge Malaysia, 2025). The textile industry in Malaysia is undoubtedly important because it helps with economic growth but at the same time trigger to growing concern of environment. Multiple risk toward climate-related issue when the excessive waste accumulation has intensified land saturation and multiple issue of toxic contamination which it is not merely a disposal problem. Therefore, this case study focuses on how Malaysia can address textile pollution through ESG initiatives, especially by involving corporations and financial institutions.

ENVIRONMENTAL AND CLIMATE-RELATED ISSUES

Despite of economically valuable, the textile industry in Malaysia is also circulated within the excessive imports of used clothes. The manufacturers struggle with heavy reliance of synthetic, full chemical materials and the used clothes is contemplating with waste-management that end up creating issues such as landfill saturation, waste accumulation, microplastics and toxic pollution, resource depletion and water stress.

Landfill Saturation and Waste Accumulation

In waste management, landfill saturation refers strictly to a disposal site that exceed its maximum capacity to receive more waste (lifespan exhaustion) and waste accumulation means the continuous build-up of discarded materials over time. In Malaysia, 95%-98% of all collected municipal solid waste was routed directly to landfill and this dependency has become a major weakness in the country's waste system (Fauziah & Agamuthu, 2010). Over 135 landfills operating in Malaysia, but the vast majority (more than 80%) are non-sanitary open dumps and lacking basic environmental protections. Organizations like the National Solid Waste Management Department have openly declared that this reliance is completely unsustainable. Projections indicate that if dependency is not curbed via circular economy initiatives, Malaysia will completely run out of physical space for landfill disposal by 2050 (Malaysian Investment Development Authority [MIDA], 2025).

Textile waste contributes to landfill saturation because many discarded garments cannot be resold, reused, or recycled economically. Waste Management Association of Malaysia (WMAM) highlighted that the rise of fast fashion has encourage the selling of cheap clothing and caused widely use of synthetic textile such as polyester or nylon. But this material degraded very slow compared to natural fibres and its often-become unstable waste.

Malaysia recorded a massive textile waste total 3.1% of the country's accumulate waste in 2021. But still, recent report from the founder of Kloth Circularity, Nik Suzila Hassan mentioned her agency has recover a substantial volume of waste weekly by collecting an average of 90,000 kg of used clothing to divert them from flooding the dumpsites (The Sun, 2025). This situation becomes even worse because the recycling rate for fabric and clothing waste in Malaysia is very low (less 5%) though country's general recycling rate has successfully increased at 37.9% (Solid Waste and Public Cleansing Management Corporation, 2024). The main reasons are because of the technical difficulty of separating mixed-fiber blends such as cotton mixed with polyester that makes the recycling process too expensive (Shirvanimoghaddam et al., 2020). In the other hand, developed nations like Japan, France, Italy have successfully pushed closed-loop textile recycling rates up to 30% via strict separation laws (Picvisa, 2025).

Once the textile failed to be recycled, it occupies landfill space for a long period of time because the non-natural materials were made from plastic-based and do not biodegrade easily. Ndagano et al. (2025) explicitly revealed that synthetic textiles can take up to 200 years to decompose. While natural fibres decompose through biological processes, but both materials still release greenhouse gases and chemicals cause burden to landfill. Over time, the materials may also break into microplastics that move into drains, rivers, soil and coastal areas, they do not truly disappear. Therefore, textile waste is not merely discarded clothing but a long-term environmental burden that contributes to landfill saturation, pollution and climate-related risk.

Microplastic Pollution

Microplastic pollution is another important environmental issue linked to textile waste. Report produced by Textile Exchange, a global non-profit organization in their “Materials Market Report 2025” highlighting out of 132 million tons of global fibres produced, 70% of it were completely synthetic. When the synthetic materials such as polyester, acrylic, nylon and blended fibres are washed, used, discarded or broken down in landfills, they can release tiny plastic fibres known as microfibrils or microplastics. Study conducted by Napper and Thompson (2016) discovered that an average 6kg household wash load of synthetic fabrics could release large numbers of microscopic segment into wastewater. The risk was higher when consumer using bio-detergents and washing at high-temperatures often cause fabric breakdown and it’s a significant source of microplastic pollution in aquatic environments.

In Malaysia perse, of course the textile waste that enters landfills does not simply disappear. Study by Gunasegaran et al. (2025) on Sungai Ikan Landfill in Terengganu found 37,005 microplastic items per kilogram of dry landfill soil. Authors found that microscopic threads and jagged crumbs were the most common shapes, and they explained that these shapes come directly from old synthetic shedding their threads and larger plastic trash breaking down over time. Majority of plastic found was below 1mm in size which smaller than a single grain of salt. Landfill conditions through the heavy pressure, heat and weather can break larger waste into microplastics over time (Gunasegaran et al., 2025).

The risk becomes more serious because microplastics can act as carriers of toxic substances. These aged plastics have more surface area and special chemical changes that soak up highly toxic heavy metals from the surrounding trash. Fluid from rainwater later trickles through the landfill and carry the poison-soaked microplastics out of the dump and washes into our soil, groundwater and rivers where threaten the longevity on mankind (Rodrigues et al., 2022).

Resource Depletion and Water Stress

When Malaysia proudly announces the contribution of textile industry in developing country’s economy, at the same time textiles manufacturing process require large amounts of water, energy, chemicals, dyes, and raw materials. Niinimäki et al. (2020) explain that the textile and fashion value chain creates environmental impacts at many stages, including fibre production, textile manufacturing, garment production, distribution, consumption, and disposal. The same study reports that the fashion industry consumes about 79 trillion litres of water annually, showing that textile production is highly resource intensive.

This huge water consumption directly intensifies global water stress, particularly because the activity of cotton cultivation, dyeing, bleaching, washing, and finishing processes use large volumes of water. Periyasamy et al. (2024) specifically emphasized that the textile sector is a primary global contributor to wastewater generation due the intensive use of chemicals during processing stage. The study also notes that when the textile wastewater discharged untreated, the chemical components can cause water depletion, ecotoxicity, and risks to aquatic ecosystems.

As stated in the problem statement, Malaysian’s textile industry includes upstream activities such as fibre processing, woven and knitted fabric, bleaching, dyeing, and finishing, which may also create pressure on water resources if wastewater treatment and chemical management are weak. Parallel with a study by Masiren et al. (2025), the textile sector is a massive wastewater producer in Malaysia which approximately 22% of the country’s total industrial wastewater. Uddin et al. (2023) through his study found that processing 1kg of textile material used about 164 litres of water and 449gm of chemical and would generating 119 litres of wastewaters.

CHALLENGES FOR CORPORATION

This subtopic discusses the main corporate challenges faced by Malaysia's textile industry in moving towards sustainable and circular practices. The chapter argues that textile sustainability is not only an environmental issue, but also a corporate governance, financial, operational and reporting challenge. The five major challenges identified are externalities and internalisation, governance and behaviour, coalition for sustainable finance, changing business model, and integrating reporting.

Externalities – Internalization

Textile production and the disposal of used garments generated negative externalities forcing society to bear the unpriced environmental issues such as pollution, climate change and risk of health impacts. Activities such as textile dyeing and finishing may release toxic chemicals into rivers, while discarded fabrics occupy landfill space or openly burned may release CO₂ and hazardous pollutants into the air. The impacts of water pollution, greenhouse emission and microplastics from synthetic fibres need to be borne by communities and the environment rather from the firms creating the waste.

This issue is compounded when Malaysian policy has not yet fully internalized these costs. Solid waste is largely managed under jurisdiction of local councils and there is no textile-specific regulation. Therefore, Ministry of Housing and Local Government in year 2024 had launch the New Circular Economy Blueprint (2025-2035) as guideline for manufacturers to comply with the “Extended Producer Responsibility (EPR)” scheme, which mandates them to finance the end-of-life recycling costs of their products. Producers will be required to finance the end-of-life recycling process as a new cost for industry and will be awarded with “Zero-waste-to-landfill” certification that serves as a strategic mechanism to recognize resource-efficient manufacturers and determine their eligibility for green incentives. However, many companies are still facing a shortage of technology and funds to reduce emissions or install the wastewater treatment facilities.

Governance and Behaviour

Corporate governance and management attitudes critically shape sustainability. Large Malaysian exporters (often listed or contract manufacturers for global brands) generally have some formal governance, through annual audits, quality controls, and increasingly basic sustainability policies. By contrast, many smaller textile firms and informal operators have no clear environmental oversight. They see sustainability rules as extra burden, especially when penalties are weak or compliance gives no market advantage (Salin et al., 2023).

Large multinational textile exporters lead in ESG compliance while smaller textile firms significantly lag due to lack of awareness, no immediate benefit and high in cost. Among firms not complying mentioned they struggle with ESG “due to lack of funds, expertise, and knowledge,” whereas large public companies handle it more easily (Mohd Yusop & Abu Seman, 2025). A weak governance gap means many small textile workshops continue “business as usual” and this has become a national challenge to make sure the same wave were shared between both type of companies. Small companies usually lack capital, human resources, and technical expertise for research and development. Without mandated tracking, firms continue using hazardous chemical dyes, exploiting cheap labour and ignoring safety guidelines to keep prices low (International Labour Organization, 2025).

According to Ali et al (2020) textile firms in Malaysia that use Environmental Management System (EMS) like ISO 14001 achieved significantly better financial performance than companies without certification. This clearly suggests that supporting good environmental system boost companies' financial performance. However, many companies in the industry still refuse change their strategy and continue to compete strictly across cost margins. Hence this creates governance gap where voluntarily environmental efforts remain piecemeal or fragmented. Government enforce law across all manufacturers but not the micro enterprise only implements environmental changes on ad-hoc or make-shift basis over systematic compliance (Sweet, 2022).

The executive blind spot or non-parallel behaviour between top executives and operational staff sometimes occur when the decision maker is genuinely committed to sustainability, yet that commitment often stays trapped in corporate reports, mission statements or just a statement in marketing campaigns. While the translation into action

by operational routine staff requires systematic changes that many companies fail to execute (Siddiquei et al., 2025). As a result, the training deficit usually happens when the ground-level workers that handling hazardous materials and generating waste skipped the protocol due to companies' decision to save money or reduce manufacturing time. This issue is compounded by weak enforcement from the middle managers who function as the primary structural between top and operational staff. They are heavily evaluated through production-based Key Performance Index (KPIs) rather than sustainability metrics, leaving the institution with governance gaps regarding safety and environmental matters.

Coalition for Sustainable Finance

Coalition for sustainable finance refers to industry-level alliance involving investors, financial institutions, corporations, regulators and other market actors work together supporting greener business transformation. In the context of Malaysia textile industry, transition to greener operations requires upfront investment involving new machinery, waste treatment technology, renewable energy, ESG reporting system and many more. Obviously, these investments are costly and especially to SME that often have limited collateral, weak ESG data and smaller cash flows.

Malaysia introduced GTFS (Green Technology Financing Scheme) since 2010 and subsequently renewed until GTFS 4.0, specifically designed to support green technology investments. The scheme recognised six key sectors i.e. energy, waste, water, manufacturing, transport and building. The scheme focusses to provide subsidy and provide government guarantees on the financing amount. GTFS formally recognizes these specific sectors as the primary engines for Malaysia's transition to a low-carbon economy.

The green financing schemes reduce the cost of borrowing, but as mentioned before, transitioning to greener operations requires substantial initial investments. Even when SME is willing to invest, accessing green funds like GTFS is rarely a straightforward process. It creates a bottleneck for SMEs in terms of technicality and bureaucracy issues. As mentioned by Mohamad et al. (2024) the SMEs dilemma when facing with dual barrier caused by technical and knowledge gaps across the entire application process. Many small businesses lack with internal expertise to measure and report the complex environmental metrics that demanded by strict certification agencies. Externally, businesses facing traditional bank loan officers who frequently lack with technical knowledge of green innovations which making it incredibly difficult for SMEs to translate their sustainable technologies into conventional proofs of financial viability.

The knowledge asymmetries between banks and applicants have create a unique hurdle to the industry because the industry relies heavily on complex supply chain, micro, small and medium enterprises, and water/chemical heavy processes. Without precise definitions from regulators and tailored risk-assessment tools from banks, textile firms struggle to prove their projects meet standard "green" definitions. Therefore, financing green projects in textiles often requires coordinated efforts between regulators, banks and firms.

Changing Business Model

Changing business model requires the businesses to shift on how they operate – not a typical linear business model which produce, sell, use and throw away but requires fundamental changes from designing to material end of life. Company adopting the circular business model starts from designing – produce – sell – collect back – reuse/repair/recycle. However, many Malaysian manufacturers compete on price, hence investing in sustainable materials of at least closing the loops will raises costs. According to Ahmed et al. (2025) small firm cannot easily switch to higher-quality materials example organic cotton because their markets demand are cheap outputs, hence the local market heavily driven by price competition.

Switching to a circular economy is challenging because it often conflicts with the financial goals of company to become highly competitive and focus to win the market through price (Genovese et al., 2023). Sustainable practices often cost more in operational activities which companies see them as a major financial risk. Without government support, financial help, key decision from the leaders or a change in how much consumers are willing to pay, manufacturers will likely continue to avoid these eco-friendly changes (Chountalas et al., 2024).

In short, when the market only cares only about the lowest price, the fast fashion industry will only stick to the

old "make-use-waste" habit. Companies may cut costs just to survive today, they cannot afford the high costs of going green, buying eco-friendly materials, or taking new business risks. This turns sustainable practices into an expensive burden instead of a smart opportunity for the company. Furthermore, the demand for sustainable fashion is still niche and local consumers may not pay premiums for eco-friendly apparel, which this has limited the incentives for change (Dangelico et al., 2022).

Integrating Reporting

Corporate transparency is increasingly important and ESG reporting is a key part of this. Recently, strong steps have been taken by regulators to improve reporting standards in Malaysia. For example, the government officially launched the National Sustainability Reporting Framework (NSRF) in September 2024 (Securities Commission Malaysia, 2024). Bursa Malaysia has also fine-tuned its listing guidelines to make ESG compliance a legal requirement for large companies in a staggered rollout, rather than only urged. But new standards, however looking excellent on paper, have unveiled a massive "reporting gap" in the business world. A joint report in October 2024 by the Securities Commission Malaysia and the World Bank noted that while major, listed firms are reporting a lot of ESG information, small companies are significantly behind. ESG reporting is seen by smaller enterprises as a tick-the-box exercise to fulfil the minimum legal requirement rather than as genuine strategic planning (Securities Commission Malaysia & World Bank, 2024).

This reporting gap is a severe problem notably in the Malaysian textile industry. Most of the firms in this sector, including yarn spinners, dye houses and garment factories, are small and medium enterprises or private companies. They are not listed on the main market and thus not subject to the mandatory rules of Bursa Malaysia and rarely produce formal ESG reports. These textile SMEs face big challenges as they often do not have the internal tracking systems to measure important data such as daily energy use, chemical treatments and waste volumes.

Often, they do not have the necessary expertise to understand complex reporting frameworks like the Global Reporting Initiative (GRI). Because it costs too much for a small factory to hire outside sustainability consultants or auditors, ESG disclosure is often skipped altogether. And when companies do attempt to brand themselves as sustainable without the right data to support that, they can end up with partial reports that hurt their credibility.

This absence of data from these smaller textile companies then starts a detrimental domino effect on the bigger global supply chain. International fashion brands and huge retailers are now under pressure to disclose their Scope 3 emissions, which are the indirect environmental consequences created by their suppliers (Securities Commission Malaysia & World Bank, 2024). Local textile SMEs are unable to produce reliable environmental data. In Malaysia, most of the yarn spinning, dyeing and garment industries are small firms or private companies. Since they are not big enough to be listed on the stock exchange, they are not subjected to the severe reporting regulations imposed by Bursa Malaysia. As a result, they seldom bother to maintain or provide accurate records on their environmental or social effect. This leaves a major guessing game around checking if local fashion is green or not.

This has created a "blind spot" for large global buyers, and they cannot accurately measure their supply chain footprint and as a result this puts unaligned Malaysian SMEs at high risk of being financially excluded as international buyers may choose to drop them and work with more transparent suppliers instead.

Finally, among companies that do strive to share information in Malaysia, integrated reporting is quite unusual. Integrated reporting is about merging audited financial and ESG information into a single, consistent story. Today, most corporations still produce separate annual reports in which the financial numbers and the sustainability statements are kept apart. This is due to the lack of internal auditing processes within companies to translate ESG measures into financial terms, making it difficult for investors to really comprehend their sustainability initiatives (Securities Commission Malaysia & World Bank, 2024).

Strategies Adopted by Companies in Malaysia

The amended EU Waste Framework Directive came into force on October 16, 2025. This has triggered a movement that sends data and finance upstream to Malaysian factory. This regulation is enforced in Europe, but

EU brands (the buyers) shift the burden of implementation to their suppliers in Malaysia. A lot of textile and garment factories in Malaysia (Johor, Selangor, Pulau Pinang) make ready-made clothes for big brands that are sold in Europe. If the companies in Malaysia fail to meet the environmental data criteria imposed by these EU member states, these European brands will stop placing orders and move to other manufacturing nations.

The Malaysian textile sector and the government are not taking the situation lying down. They're going for a double-pronged approach of digital automation, compliance with international certification and alignment with government policy to avoid local factories being blacklisted by EU companies. As of 2026, Malaysian textile company has taking early protection measures by investing in digital traceability systems and application of Industrial 4.0 automation in Johor and Penang. The company taking initiatives to record environmental data and reduce fabric waste. Local manufactures like Penfabric are also aggressively shifting to recycled materials (such as recycled polyethylene terephthalate) into its fabric lines. The company were also leverages premier global certifications (like GRS and OEKO-TEX) to guarantee product traceability, human health safety, and strict environmental compliance (Penfabric, n.d.).

Government through MITIs shows support by issuing policy called Circular Economy Framework on September 2024. The main purpose of this policy is to shift Malaysia's manufacturing sector from a linear "take-make-waste" model to a circular economy that prioritizes recycling, resource efficiency and sustainable supply chains. A company name Kloth Circularity (Kloth Cares) has installed over 500 fabric recycling bins across country and managed to collect and recycle more than 14,000 metric tonnes of used clothing into value-added downstream products. While international retail brands like Uniqlo and H&M has complemented these efforts by voluntarily implementing instore take-back bins for customers clothing disposal (Kloth Circularity, n.d.).

Malaysia establishes SIRIM ECO 034:2019 that outlines the updated eco-labelling criteria to guarantee that apparel and textile products meet sustainable manufacturing requirements. It enforces strict regulations on fibre composition, mandating that certified products must be made entirely from natural fibres such as cotton, linen, silk and wool. This thereby helps our local textile companies to maintain the market export access to regions like the European Union (EU) which is currently tightening Extended Producer Responsibility (EPR) laws.

Officially, implementation of SIRIM ECO 0.34:2019 is voluntarily basis rather mandatory. Due to client data confidentiality, a complete list of participating companies is not available. However, the business-to-business (B2B) textile manufacturers, Government Green Procurement (GGP) suppliers, and local sustainable fashion brands are the primary users of this standard. The local textile factories in Johor and Penang who supply fabric to international brands and handle large export orders were the example for B2B. Local companies that supply uniforms, hospital textiles, or fabric materials to government agencies or company that holds a SIRIM ECO-Labelling certificate is eligible to register in the MyHIJAU Directory.

The registration gives them a competitive advantage in winning government tenders and qualifies them for the Green Investment Tax Allowance (GITA) from Malaysian Green Technology and Climate Change Corporation (MGTC). Whereas our local social enterprise such as Batik Boutique creates traditional batik products using eco-friendly dyes while supporting local artisans and lower-income (B40) communities, the Biji-Biji Ethical Fashion uses an upcycling method to turn industrial waste, like factory textile scraps and used car seatbelts, into premium handbags and accessories and Earth Heir utilizes handmade natural materials to produce bags and accessories, providing stable income for refugees and indigenous communities under fair trade standards.

DISCUSSIONS

Malaysia's textile industry has two sides; while it helps the economy by creating jobs and exports but at the same time it creates heavy waste through landfill saturation, microplastic pollution, wastewater contamination and resource depletion that threatens the environment. This means disposing of used garments isn't just a trash problem anymore, it's ruining the planet in long term and cost a lot of money. What makes it worse is that Malaysia is turning into a giant trash bin for all these extra wastes of the global textile value chain. We continue to import tonnes of second-hand clothes and cheap fabric waste that our local waste management can't handle. That's why the fashion industry needs systemic approaches that link the way we create, buy, throw away and reuse clothes from start to finish.

The government has set up frameworks like the New Industrial Master Plan 2030 and the Circular Economy Blueprint (2025-2035) as well as legislation for EPR and zero-landfill goals. The regulation of EPR is important because the financial and environmental costs are often borne by society and a lot of clothes and textiles are thrown into landfill without being reused or recovered.

Top manufacturers and brands are already starting to respond with environmental initiatives. The move is away from polyester to organic cotton and to solar power to reduce carbon impact, but mostly for established, multinational stores. One appropriate theory to explain this change is the Natural Resource-Based View (NRBV) developed by Hart (1995). The underlying argument here is that firms can out-compete their competitors by developing capabilities that reduce environmental harms. The smart companies will see going green as a strategic asset that makes them competitive, not as an added cost for environmental compliance. When companies do that, they tackle pollution at the source, create better products, and think long term. This concept is relevant in the case of Malaysia's textile industry as the companies are investing in environmentally cleaner operational activities, focusing on traceability and ESG reporting could earn a long-term reputation, market trust and investors' confidence.

The first aspect of NRBV is pollution prevention. This means companies need to cut down on waste, emissions and chemical discharges at the very beginning and not just try to clean up the problem once it has occurred. Textile production uses large amounts of water, dyes, chemicals and energy and discarded clothing often ends up in landfills and as microplastics in the environment. Such initiatives can reduce the impact on environment and focus on efficient use of resources which helps in sustainability and performance of the company (Hart, 1995; Niinimäki et al., 2020).

The second element of the theory is product lifecycle management where organisations should consider the life of their products from design to disposal. Companies need to move away from the old linear model of textiles – make, sell, use and dispose of – to a circular model where clothes are made to last longer and are easier to recycle and recover. Used clothing should be collected, sorted, reused, repaired, recycled or upcycled instead of going straight to landfill.

Kloth Circularity's textile bins, in-store take-back programs run by international retailers, and upcycling activities by local social enterprises demonstrate that circular practices are possible. However, these efforts are still limited due to Malaysia's need for stronger sorting facilities, better recycling capacity, and more consumer participation (Kloth Circularity, n.d.; Ningsih et al., 2026).

The third is sustainable development. This means that the expansion of the firm should also safeguard the environment and society. Malaysia can see this in the New Industrial Master Plan 2030, MITI's Circular Economy Policy Framework and the Circular Economy Blueprint 2025–2035. The policies aim to reduce waste, promote a circular economy, extend producer responsibility and green investment. But good policies are not enough, if the implementation is bad. Many smaller textile manufacturers, bundle dealers and informal operators still do not have the funds, technical skills, ESG data and ambition to change. This creates a divide between larger exporters that are more ready for ESG regulations and smaller businesses that rely on low-cost business strategies.

In sustainable finance, greener textile operations need funding in the early stage, as companies may need to invest in renewable energy, wastewater treatment or recycling facilities, product design improvements and reporting systems. Larger organisations may find it easier to raise finance as they tend to have better track records, assets and reporting systems. SMEs, however, may face more challenges as they tend to have poor collaterals, limited documentation on ESG and lack of information on how to apply for green finance. Hence, we need a coalition for sustainable finance with regulators, banks, investors, brands, manufacturers and recyclers."

In conclusion, the problem of textile waste in Malaysia cannot be solved by small-scale recycling initiatives alone. It needs a full cycle transition through design, production, use, disposal and recovery. The Natural Resource-Based View (Hart, 1995; Hart & Dowell, 2011) suggests that firms can achieve long-term competitive advantage by efficiently managing their natural resources, avoiding pollution and taking responsibility for their goods throughout the whole life cycle. Malaysia's textile sector needs to move from a low-cost linear business model to a circular one with good data, funding and more cooperation. By strengthening EPR, enhancing

recycling infrastructure, improving ESG disclosures and embedding finance within circular economy business models, Malaysia can safeguard its textile competitiveness and mitigate climate and environmental risks.

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